CENTER FOR BIOLOGICAL CONTROL

Newsletter

COLLEGE OF AGRICULTURE AND FOOD SCIENCES
FLORIDA AGRICULTURAL AND MECHANICAL UNIVERSITY
Tallahassee, FL 32307-4100

INSIDE THIS ISSUE

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CBC Hosts USDA–FAS Fellows Representing Seven Countries

During Fall 2024, the Center for Biological Control (CBC) hosted international research fellows from seven countries for a three-month training in biological control, IPM, and advanced research methods. Supported by the USDA Foreign Agricultural Service through their Borlaug Fellowship and Scientific Exchange Cooperation, and Scientific Exchange Programs, this initiative strengthens FAMU's global partnerships and contributes to agricultural sustainability worldwide. The exchange allows CBC to share knowledge and skills while also learning from the diverse expertise of visiting researchers. These programs cultivate the next generation of agricultural scientists who will advance trade, build capacity, and enhance global food security. Through this partnership and collaboration, CBC continues to expand its international reach and empower professionals who will drive innovation and sustainability in their home countries.

USDA, FAS Fellows from Left Mr. Alvis Opoku (Ghana), Mrs. Intan Masari (Malasia), with Dr. Otgonpurev Sukhbaatar (Mangolia), Dr. Patricia Tello (Peru), Dr. Armin Bhuiya (Bangladesh), Dr. Alhafizah Gul (Pakistan), Mr. Rodrigo Pinheiro (Brazil, not in this picture) with Dr. Muhammad Haseeb and Dr. Ly Nguyen at the USDA Headquarter in Washington DC (September 17, 2024).

Editorial

Navigating Progress Through Innovation, Challenges, and Opportunities

Dr. Muhammad Haseeb

The Center for Biological Control continues to elevate its service to stakeholders and clientele through innovative programs, strong partnerships, and expanded national and international collaborations. As we look ahead, the Center has identified several strategic priorities that will guide our growth and impact. These include: (a) Renovating the Collins Building at Innovation Park to co-locate the Entomology Program, CBC researchers, and collaborators, creating a unified hub for biological control innovation; (b) Expanding the scope and diversity of our research portfolio to address emerging pest management challenges in Florida and beyond; (c) Increasing student recruitment, training, and experiential learning opportunities; (d) Supporting the University's efforts to achieve R1 Carnegie status through enhanced research productivity, graduate training, and scientific visibility; (e) Expanding opportunities to build the next generation of scientists and agricultural professionals in pest management and the conservation of biological control; and (f) Recruiting highly qualified students and scientists to support sustained growth and innovation. Meaningful progress has already been made toward these goals. CAFS and FAMU leadership remain committed to strengthening the Center's resources, research facilities, and scientific infrastructure, ensuring we are well equipped to meet stakeholder needs. Continued investments in laboratories, equipment, and faculty development are positioning the Center to play an even greater role in statewide and national pest management initiatives. The expansion of strategic collaborations both within the University and with federal agencies continues to generate new opportunities for cutting-edge research, workforce development, and international engagement.

Dr. Alexander Gaffke

These collective efforts reflect our long-term commitment to scientific excellence, community service, and the advancement of sustainable pest management solutions. The Center's faculty continue to secure competitive grants, forge valuable partnerships, and develop professional development pathways that prepare young scientists for careers in research, extension, and industry. The CBC will also benefit from enhanced fundraising support through the FAMU administration, allowing us to build the staffing capacity and specialized facilities essential for sustained excellence. This year brought several distinguished accomplishments for our Center community. Dr. Muhammad Haseeb received the prestigious 2025 Research Excellence Award from the Florida Entomological Society (FES), recognizing his outstanding contributions to entomology and biological control. Dr. Kanga and Dr. Haseeb organized a major symposium on invasive pests and their management at the International Congress of Entomology (ICE 2024) and led additional symposia for the 2025 Florida Entomological Society and the Entomological Society of America. These events were highly regarded by partners, stakeholders, and scientific colleagues for their relevance and quality. In addition, Dr. Haseeb and Dr. Anamika Sharma secured significant funding from the USDA NIFA CPPM funding to advance the FAMU Extension Integrated Pest Management Program, strengthening our statewide outreach and service mission. The Center continues to earn recognition both nationally and globally. We are grateful for your ongoing support of the Center as we advance our mission and look toward an exciting future.

Awards: During the 2025 Florida Entomological Society meeting, three of our graduate students Dr. Jessica Cabral, Ms. Sandreika Laird, and Ms. Monique Farquharson presented their scientific findings and received awards for their outstanding work. In addition, five students were honored this year with the prestigious W. L. Peters Memorial Scholarship Awards from the Reuben Capelouto Foundation. These achievements reflect the growing excellence of our faculty, students, and research programs, as the CBC continues to earn recognition both nationally and globally. We are grateful for your ongoing support of the Center as we advance our mission and look toward an exciting future.

Celebrating the Distinguished Career of Dr. Jesusa C. Legaspi upon Her Retirement from USDA-ARS, CMAVE

Dr. Jesusa Legaspi with her outstanding Extension Award from Florida Entomological Society

Dr. Jesusa C. Legaspi earned her Ph.D. in Entomology from Purdue University (1991), an M.Sc. in Applied Entomology from the University of Newcastle-upon-Tyne (1985), and a B.S. in Biology from the University of the Philippines, Los Baños (1979). Her career focused on sustainable pest management, biological control, and environmentally sound technologies for horticultural and organic crops. She worked extensively across international, national, and federal research institutions and trained numerous exchange students, postdoctoral researchers, and Borlaug Fellows from around the world. During her tenure, she secured over $3 million in extramural funding to support her research. A prolific scientist, Dr. Legaspi published more than 150 peer-reviewed articles and became widely recognized as a global authority in biological control and Integrated Pest Management (IPM). She delivered numerous presentations nationally and internationally and provided leadership in professional societies, including ESA and FES. Her outstanding contributions earned her multiple prestigious awards from ESA, FES, the Southeastern Branch of ESA, and the International IPM Award Program. Dr. Legaspi's research significantly advanced IPM science. She evaluated biorational insecticides, biological control agents, and insect-resistant crops against major horticultural pests; pioneered the use of sunflower intercrops to enhance natural enemies; and demonstrated the effects of organic and synthetic fertilizers on pepper pest dynamics. She developed a "push–pull" framework for sustainable management of the sweetpotato whitefly, identifying mustard-based repellents as highly promising tools. Her foundational studies on the spined soldier bug, its diet, reproductive biology, ovigeny, and life history remain widely cited. She contributed novel insights into predator foraging, ant–cactus mutualisms, and validated CLIMEX bioclimatic models for important pest species. Dr. Legaspi retired from USDA-ARS, CMAVE in 2023. As Co-Director and Adjunct Associate Professor in the Center for Biological Control and the Entomology Program at Florida A&M University, she played an instrumental role in mentoring students, co-supervising research, and fostering experiential learning for young scientists across the United States and abroad. Working with Dr. Legaspi has been an honor for our faculty, students, and collaborators. We extend our heartfelt appreciation for her contributions and wish her every joy in this next chapter of her life.

Two New Postdocs Joined the CBC in 2025

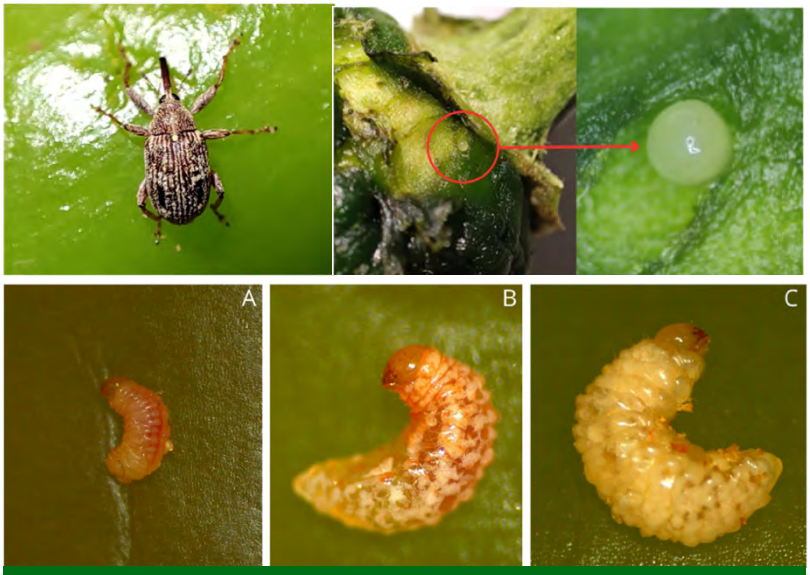
Dr. Ahmad Ali (a new postdoc fellow) from Pakistan joined the CBC in May. His major project is on IPM best management practices in the specialty crops

Dr. Jessica Cabral (a new postdoc fellow) from Brazil joined the CBC in January. Her major project is on the sweet potatoes IPM

Research & Outreach NEWS:

Detecting the Unseen: CBC Advances in Acoustic Monitoring of Invasive Pests

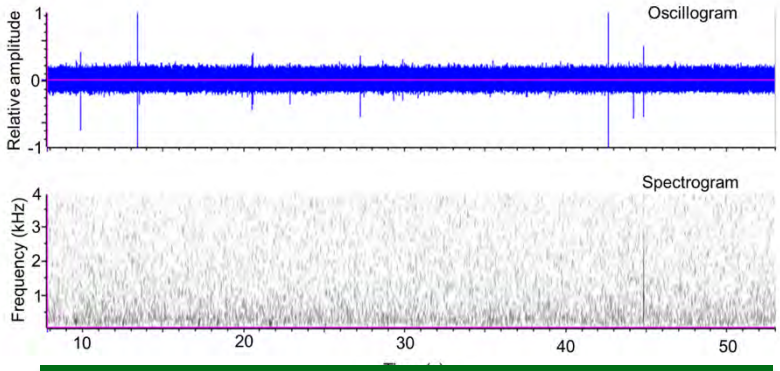
The pepper weevil (*Anthonomus eugenii* Cano) remains one of the most damaging pests of Florida's pepper industry, with unmanaged infestations capable of reducing yields by nearly 60% and contributing to more than $9 million in annual economic losses. Growers and inspectors face persistent challenges because the weevil's larvae develop concealed within pepper buds and fruit, making infestations extremely difficult to detect through visual inspection alone.



Life stages of the pepper weevil (adult, eggs, and three larval instars

To address this challenge, the CBC is advancing innovative acoustic technologies that enable rapid, non-destructive detection of hidden larval activity. Using directional microphones in a semi-anechoic chamber, our team analyzed acoustic emissions from three pepper cultivars jalapeño, sweet bell, and scotch bonnet. Two dominant sound types were consistently detected in infested fruits:

- Chewing bursts: Short, repetitive impulses produced during larval feeding.
- Locomotion rustling: Low-frequency, irregular movements within fruit tissues.



Pepper weevil recordings using acoustic detection tool

All infested fruits (100%) produced identifiable acoustic signatures, while all uninfested controls yielded only background noise specific to the test environment. Spectrogram analyses demonstrated clear spectral separation between infested and uninfested samples, confirming the diagnostic power of acoustic monitoring.

This work builds on decades of insect bioacoustic research targeting concealed pests and highlights the expanding role of sound-based diagnostics in Integrated Pest Management (IPM). The approach holds strong promise for:

- Farmers seeking early detection before economic damage occurs
- Produce handlers requiring rapid screening of shipments
- Border and port-of-entry inspectors tasked with safeguarding national biosecurity

By integrating acoustic sensors into routine monitoring, Florida's pepper industry and the broader specialty crop sector can reduce reliance on chemical controls, strengthen early-warning systems, and protect agricultural productivity through precision detection technologies**.** *The project was funded by the USDA, APHIS, PPQ, S&T. Team: Richard Mankin, Stanley Northe, Jr, and Muhammad Haseeb. (submitted by Dr. R. Mankin).*

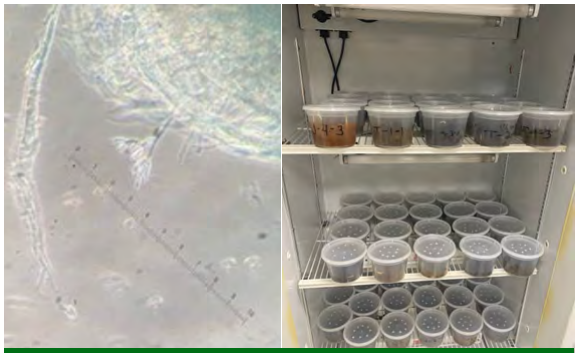
In a Prickly World, You Better Follow the Leader

Larvae of the invasive Argentine Cactus Moth

Following in the footsteps of Stephen Hight, retired research entomologist and longtime member of the CBC, USDA-ARS research continues to assess the importance of a trail pheromone for control of the invasive Argentine cactus moth impacting populations of prickly pear cactus across the southern United States. A native to South American, the Argentine cactus moth is devastating populations of native cactus in the south, threatening habitat for protected species such as gopher tortoises, and presenting an existential treat to commercial cactus production. USDA-ARS technician John Mass is rearing and testing all life stages of the moth for response to the trailing pheromone, with new methodologies being developed to streamline the testing. The result of these experiments could have significant implications for the management of the Argentine cactus moth in the United States *(submitted by Dr. A. Gaffke).*

Biological Control of Red Imported Fire Ants Using Entomopathogenic Fungi in Northwest Florida

This project is gear towards evaluating the effectiveness of naturally occurring entomopathogenic fungi in managing red imported fire ants (*Solenopsis invicta* Buren) (Hymenoptera: Formicidae) (hereafter called RIFA). In 2023 and 2024 (funded 2022-2023 and 2023-2024) survey was conducted to evaluate the expansion of six species of phorid flies and other natural enemies in northwest Florida for red imported fire ants. The survey was conducted at 10 sites: Pensacola, Jay, Panama City Beach, Blountstown, Quincy, Lake City, Gainesville, MacClenny, Jacksonville, and Tallahassee. In the survey, we found three phorid species in urban and peri-urban locations at the selected sites. *Pseudacteon tricuspis, Pseudacteon curvatus,* and *Pseudacteon obtusus* were collected. Microsporidium, *Kneallhazia solenopsae* were recorded from four sites. Soil samples were also collected from the selected sites. Selected soil samples were analyzed by galleria baiting. We did not observe any *Beauveria* sp., however, from two sites we observed a possible entomopathogenic fungus (EPF), *Metarhizium* sp. Currently we are confirming the presence and identity of EPFs from the Tallahassee region and evaluating the efficacy of *Trichoderma virens* and *Trichoderma harzianum* in laboratory conditions. Technical grade *Trichoderma virens* and *Trichoderma harzianum* are obtained from BioWorks and tested for sporulation on Sabouraud Dextrose Agar (SDA) media. RIFA colonies were collected from Tallahassee. Bioassay is in progress. RIFA samples were collected from the field. *The project was funded by the USDA, APHIS, PPQ, S&T. Team: Anamika Sharma and Kiara Ivy* (*submitted by Dr. A. Sharma).*

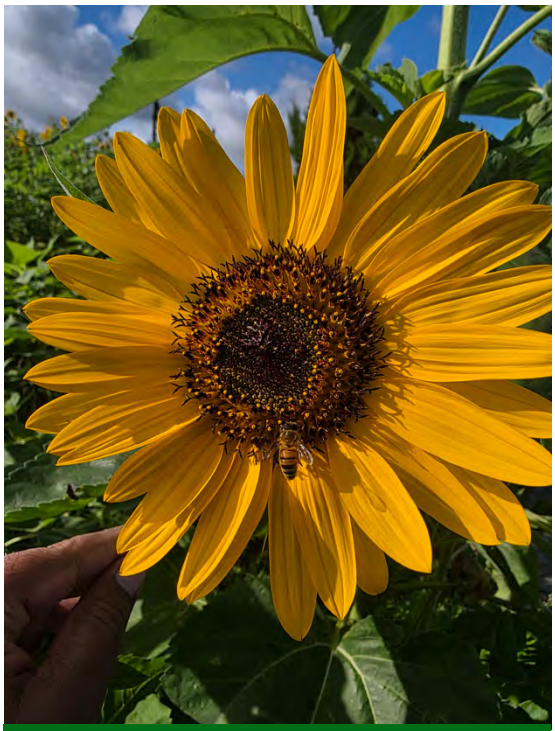


Collection and storage of soil samples and fungi from Jay and Tallahassee, Florida

Early Detection of Invasive Honeybee Pests and Monitoring of Resistant Alleles in Varroa Mites and Small Hive Beetles

Honeybees (*Apis mellifera* L.) are among the most economically valuable pollinators in modern agriculture. Beyond honey production, their pollination services contribute an estimated $20 billion annually to U.S. crop systems. Despite their importance, honeybee colonies have experienced declines exceeding 40% in recent years. Multiple stressors including parasites, pathogens, pesticides, and management practices collectively contribute to reduced colony survival.

Among these stressors, the Varroa mite (*Varroa destructor* Anderson & Trueman) is widely recognized as the single most destructive pest of honeybees in the United States and globally. Varroa mites weaken colonies by feeding on developing brood, transmitting viruses, and accelerating colony collapse. A second major pest, the small hive beetle (*Aethina tumida* Murray), continues to expand its range and has become a serious threat to beekeeping operations. Small hive beetles damage combs, contaminate honey, and may serve as vectors for viral pathogens such as deformed wing virus and bacterial diseases including American foulbrood. The economic impact of small hive beetles alone has been estimated at $3 million annually for Florida beekeepers.



Honeybee and flower connection

Long-term exposure of both pests to commonly used chemical pesticides has resulted in documented insecticide resistance in Varroa mite populations and small hive beetles. The increasing frequency of resistance alleles threatens the effectiveness of existing chemical tools and underscores the urgent need for early detection and resistance monitoring strategies to guide IPM decisions.

Global biosecurity risks further amplify the need for vigilance. Tropilaelaps mites are the major honeybee parasites in Southeast Asia cause significant colony losses in Thailand, the Philippines, Pakistan, and neighboring regions. The mites have already been reported in Iran, Kenya, South Russia, Papua New Guinea, and Ukraine. Should Tropilaelaps mites establish in the United States or Europe, economic losses and colony declines would likely accelerate dramatically. Therefore, developing rapid, reliable surveillance methods for Tropilaelaps detection is essential to prevent establishment following accidental introductions.

Through collaborative research and advanced diagnostic approaches, the Center for Biological Control continues to support beekeepers, regulatory agencies, and agricultural partners by improving strategies for early pest detection, resistance assessment, and honeybee health protection across Florida and beyond. *The project was funded by the USDA, APHIS, PPQ, S&T. Team: Lambert Kanga and Beatrice Obungu* (*Submitted by Dr. L. Kanga).*

Managing Economically Significant Fruit Flies in Ghana: Regulatory Progress and Future Directions

Some identifying features:
1. Lateral yellow stripes.
2. Dark hind tibiae.
3. Red-brown scutum with black streaks.
4. Black T-shaped mark on the abdomen.

Tephritid fruit flies continue to threaten Ghana's fruit and vegetable industries, inflicting substantial economic and trade-related losses. These pests attack a wide range of hosts especially mango, citrus, guava, and peppers causing internal feeding damage, fruit rotting, premature ripening, and fruit drop. As a result, production losses are severe, export volumes remain low, and domestic markets face increased postharvest waste. Current estimates indicate that less than 10% of Ghana's fruits and vegetables, particularly mango, enter export markets, while over 60% of annual production is lost due to fruit fly infestations and postharvest deterioration.

The economic consequences extend beyond production. Infested commodities trigger strict international quarantine measures, and Ghana's agricultural sector faced significant setbacks following the 2015 European Union (EU) export ban**,** which was imposed due to high fruit fly infestation rates. Since then, Ghana has made notable progress through strengthened regulatory frameworks, targeted surveillance, enhanced farmer training, and the adoption of integrated pest management (IPM) practices including baiting, field sanitation, male annihilation techniques, and parasitoid conservation. Despite these gains, fruit flies remain a persistent challenge across West Africa, underscoring the need for greater national coordination**,** improved diagnostic capacity, and investment in postharvest treatment technologies (e.g., vapor heat treatment, irradiation). Such measures would not only suppress pest populations but also improve market confidence and expand access to high-value trading partners, including the United States. Economic analyses suggest that for every US$1 invested in fruit fly management, growers and the national economy receive approximately US$93 in return, highlighting the transformative potential of sustained investment. Strengthening Ghana's regulatory and operational capacity in fruit fly management will be essential for reducing crop losses, increasing farmer income, enhancing export competitiveness, and contributing to long-term national food security. *The project was funded by the USDA, FAS Borlaug Fellowship Program. Team: Elvis Opoku, Erick Rodriguez, Gary Steck, and Muhammad Haseeb. (submitted by Dr. M. Haseeb).*

Confronting the Diamondback Moth: Advancing Biological Control Amid Rising Pesticide Resistance

Diadegma insulare

Conura sp.

The diamondback moth (DBM) remains one of the most difficult pests to manage in the Cole crops due to its exceptional ability to develop resistance to nearly every class of insecticides. This global "definition pest" of pesticide resistance continues to undermine control efforts and increase production costs for growers. At the Center for Biological Control (CBC), efforts are underway to strengthen sustainable solutions by conserving native parasitoids that naturally suppress DBM populations. Two key species 1). *Diadegma insulare* (a larval parasitoid) and 2). *Conura* sp. (a pupal parasitoid) play a significant role in regulating DBM in the field, though their current densities are too low to provide effective control. Last year, CBC collected and established laboratory colonies of both parasitoids, and ongoing research is focused on rearing these and other beneficial species for field release. This work aims to enhance biological control and reduce reliance on chemical insecticides for managing this serious pest. *The project was funded by the USDA, NIFA and FAS. Team: Muhammad Haseeb, Jessica Cabral, Rodrigo Pinheiro. (submitted by Dr. M. Haseeb).*

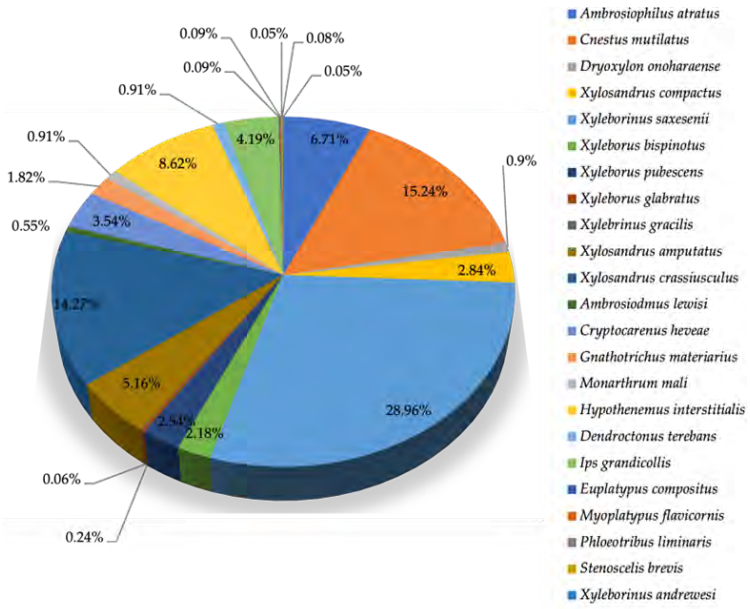
Assessment of Potential Inundative Release Sites of *Megamelus scutellaris*

Megamellus scutelaris colony

Megamelus shows excellent control in the greenhouse on young plants of about 20cm in diameter with plants mostly destroyed whether blooming or not. However, older plants 30cm or more in diameter and 40cm or taller still thrive. This suggests that early season releases to control younger developing plants before that get to their peak is the best strategy. This insect may be an excellent option for spring fed rivers such as the Wacissa River and the Wakulla River due to about 70ºF water temperatures year-round. Water hyacinth can grow and develop year-round in these systems which could allow insect to survive year-round. In lentic systems such as ponds and lakes, temperature swings will likely require releases each year. *The project was funded by the USDA, APHIS, PPQ, S&T and FWC. Team: Raymond Hix & Mariah McKinnis (Submitted by Dr. R. Hix).*

Student News and Research:

Understanding the Diversity and Seasonal Dynamics of Pine Bark and Ambrosia Beetles in the Florida Panhandle

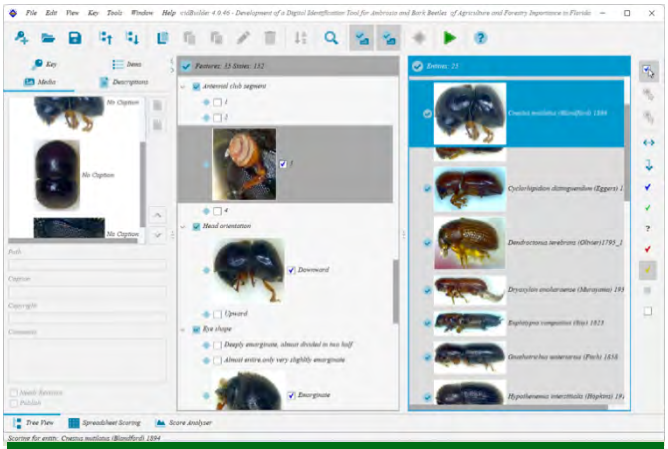


Relative abundance of pine bark and ambrosia beetles in Leon County, Florida

The study examined the diversity and seasonal abundance of ambrosia and pine bark beetles (PBBs) across Leon and Gadsden Counties in the Florida Panhandle. From July 2022 to October 2023, baited Lindgren traps collected 1,657 beetles representing 24 species and 18 genera**.** In Leon County, *Xyleborinus saxesenii*, *Cnestus mutilatus*, and *Xylosandrus crassiusculus* were the dominant species, while *Xylosandrus amputatus* was most prevalent in Gadsden County. Notably, two beetle species including *Xylosandrus amputatus* and *Ambrosiodmus lewisi* were documented for the first time in Leon County. Additionally, *Cyclorhipidion distinguendum* was recorded for the first time in Gadsden County. Three ambrosia beetle species within the Platypodinae—*Euplatypus compositus*, *Myoplatypus flavicornis*, and *Euplatypus compositus* were collected in both counties.

Clear seasonal trends emerged, with peak beetle activity occurring in spring and early fall, periods characterized by warmer temperatures that support PBB development and dispersal. Findings from this study enhance our understanding of beetle population dynamics and will strengthen monitoring and management strategies, particularly as climate variability increases pest pressures. These results will directly support forest health professionals, timber producers, and land managers in designing targeted approaches to mitigate infestations and promote sustainable forest ecosystems in the Florida Panhandle and surrounding regions. *The project was funded by the USDA, NIFA, and McIntire Stennis Forestry Program. Team: Muhammad Haseeb, Ann Marie Robinson-Baker, and Lambert Kanga. (submitted by Dr. M. Haseeb).*

Advancing Forest and Agricultural Biosecurity: A Digital Tool for Identifying Ambrosia and Bark Beetles in Florida



A screenshot of the digital tool on the ambrosia and bark beetles

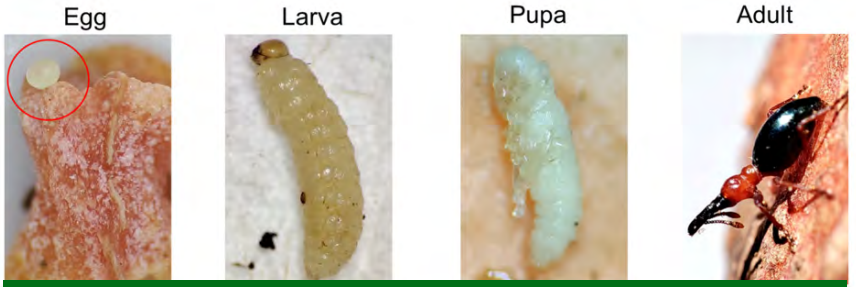
Florida's forest and agricultural ecosystems face increasing pressure from ambrosia and bark beetles [Coleoptera: Curculionidae (Scolytinae, Platypodinae)], many of which attack coniferous hosts such as pine (*Pinus* spp.), causing substantial damage to the paper, resin, and lumber industries. Several invasive species have also become established in the United States through the movement of imported goods, with some spreading between forests, orchards, and urban landscapes each year. These beetles present serious ecological, economic, and regulatory challenges, underscoring the urgent need for accurate and accessible diagnostic tools.

To address this need, the Center for Biological Control is developing a Digital Identification Tool that documents 25 beetle species across 18 genera, including *Ambrosiodmus*, *Ambrosiophilus*, *Cnestus*, *Cryptocarenus*, *Cyclorhipidion*, *Dendroctonus*, *Dryoxylon*, *Euplatypus*, *Gnathotrichus*, *Hypothenemus*, *Ips*, *Monarthrum*, *Myoplatypus*, *Phloeotribus*, *Stenoscelis*, *Xyleborinus*, *Xyleborus*, and *Xylosandrus*. High-resolution dorsal and lateral habitus images were produced using a Leica MZ16 stereomicroscope to highlight diagnostic characters such as body shape, coloration, antennal structure, pronotal form, elytral punctation, setae and scale patterns, spines, tubercles, and other key morphological traits.

Specimens were identified using multi-pathway entomological keys, ensuring accurate classification and supporting users in distinguishing closely related species are an essential requirement for effective pest management, regulatory decision-making, and rapid response.

Once deployed, this digital tool will serve a broad user community, including pest screeners, identifiers, scientists, students, extension agents, pest managers, foresters, and the general public. It will also provide critical support to regulatory agencies in Florida and neighboring states, enhancing their capability to detect, monitor, and manage ambrosia and bark beetles that threaten agricultural and forest resources. *The project was funded by the USDA, NIFA, and McIntire Stennis Forestry Program. Team: Muhammad Haseeb, Sandreika Laird, Daniel Solis, Paul Skelley and Muhammad Haseeb (submitted by Dr. M. Haseeb).*

Sweet Potato Pests, Production, and Regulatory Challenges in Brazil and the United States



Life stages of *Cylas formicarius*, a serious pest of sweet potatoes in the United States. Not reported in Brazil.

The sweet potato *[Ipomoea batatas* (L.) Lam] is one of the world's most important crops, serving as a staple food, animal fodder, and a key raw material for starch and alcohol production. Over the past two decades, consumption and demand for value-added sweet potato products have grown rapidly, driving the development of new cultivars, expanded acreage, and increased market demand in the United States and abroad.

In Brazil, sweet potato production has risen sharply due to its nutritional value, versatility, and significant contributions to food security and rural economic development. Despite its importance, sweet potato productivity is heavily constrained by insect pests and diseases that cause yield loss and reduce market quality. Root-feeding pests, in particular, present major challenges for both domestic production and international trade. Sweet potato tubers infested with the sweet potato weevil, for example, are prohibited in trade across North and South America, underscoring the broader regulatory implications of pest management. There is a growing need for sustainable, non-pesticide control strategies that safeguard crop quality while reducing environmental impacts. Research into biological control, cultural practices, resistant cultivars, and improved surveillance tools will be essential to maintaining productivity in both Brazil and the United States. Strengthening integrated pest management (IPM) approaches is critical to ensuring safe, cost-effective, and environmentally responsible production.
The project was funded by the USDA, NIFA. Team: Muhammad Haseeb, Jessica Cabral and Marcus Soares.
(submitted by Dr. M. Haseeb).

CBC Students and Postdocs Spotlight:

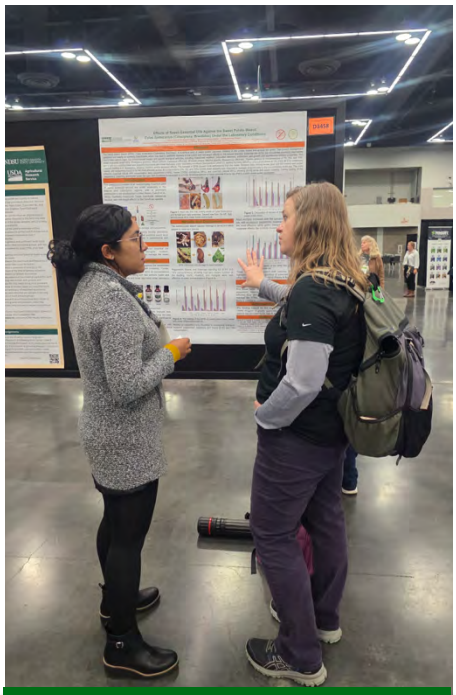
Mrs. Ann Marie Robinson-Baker presenting Insect Science to two visitors during the Florida Capitol for FAMU at the Capitol (April 2025)

From left Mrs. Ann Marie Robinson-Baker, Mr. Jacquez Daniels, Ms. Sandreika Laird and Dr. Jessica Cabral during the ESA Meeting in Portland, OR (November 2025)

USDA, FAS Fellow Mr. Rodrigo Pinheiro from Brazil was trained in the CBC for three months (mentor Dr. M. Haseeb Fall 2024)

Ms. Marcia Mobley (in purple shirt) an undergraduate student intern during a training session with Dr. J. Cabral, Ms. S. Laird, and Mrs. A. Robinson-Baker (Fall 2025)

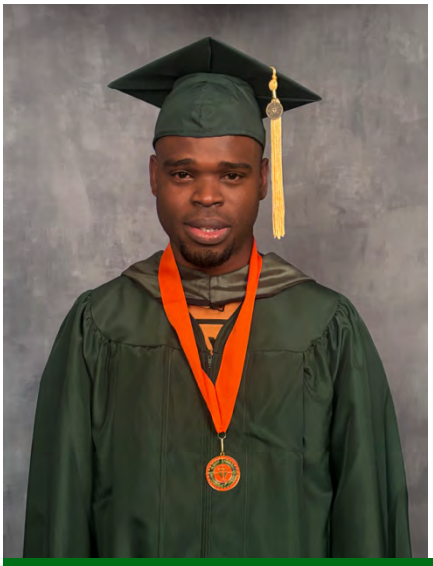
Student orientation and entomology Spring 2024 Meeting

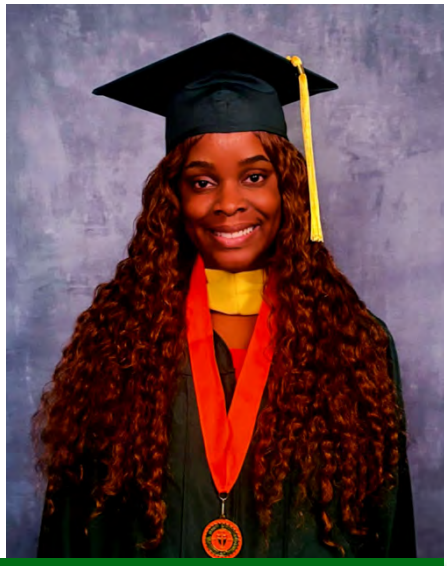


Dr. Jessica Cabral is presenting her scientific findings on the essential oils to control *Cylas formicarius* in the poster session of the ESA Meeting at Portland, Oregon (November 2025)

Mrs. Ann Marie Robinson-Baker with her major professor, Dr. M. Haseeb at the FAMU Graduation Day (December 2024)

Mr. Stanley Northe, Jr., with his major professor, Dr. M. Haseeb after winning first place for his poster presentation during the 1890 ARD biennial Symposium held in Nashville, Tennessee



From left, Mr. Garnett Bramwell, Ms. Beatrice Obungu, and Ms. Monique Farquharson (Summer 2025 Graduation), major professor Dr. L. Kanga

Ms. Skylar Fletcher with her co-advisor Dr. A. Gaffke at the FAMU CAFS (Spring 2025 Graduation)

Ms. Kiara Ivy graduated (Summer 2024), major professor Dr. A. Sharma

Ms. Skylar Fletcher successfully defended her thesis in the spring of 2025. Skylar's research was housed by the USDA-ARS in Dr. Gaffke's lab, where she conducted behavioral ecology research on the newest biocontrol agent for water hyacinth, the water hyacinth planthopper *Megamelus scutellaris*. In addition to being housed by USDA-ARS, Skylar was awarded a competitive USDA Fellowship for 6 months which afforded her opportunities to increase her knowledge in insect rearing and scientific methodologies. During her masters, Skylar developed a novel indoor rearing program for the water hyacinth planthopper. This rearing program was so successful that the Florida Fish and Wildlife commission quickly adopted it for use in their mass rearing program. Skylar also characterized important behaviors and preferences of the insect. She discovered that the winged and wingless forms of the adults have different preferences when it comes to their host plants. This discovery could be important when mass reared adults are released in the field. Skylar's master's project has resulted in one peer-reviewed publication in development. Skylar is currently applying to PhD programs and has been recruited by multiple prestigious national and international universities. *(Submitted by A. Gaffke)*

UF and FAMU Students Group Photo With outgoing President Dr. Greg Hodges and Incoming President Dr. Lauren Diepenbrock) during the recognition ceremony at the 107th FES Meeting held Lake Alfred Florida (July 2025)

Mr. Elvis Opoku awarded a certificate of accomplishments for his Borlaug Fellowship Training (November 2024)

Dr. Muhammad Haseeb was the recipient of Annual Achievement Award for Research. Receiving his award from Dr. Greg Hodges. President of the Florida Entomological Society (July 2025)

Mrs. Ann Marie Robinson-Baker received Outstanding Young Extension Award from Florida Section of American Society of Agricultural and Biological Engineers (Summer 2025)

Publications and Presentations:

Publications:

1. Cabral, M.J.S., M. Haseeb and M.A. Soares. 2024. Major Insect Pests of Sweet Potatoes in Brazil and the United States, with Information on Crop Production and Regulatory Pest Management. 15: 823. https://doi.org/10.3390/insects15100823.
2. Cabral, M.J.S., M. Haseeb and M.A. Soares. 2025. *Bedellia somnulentella* (Lepidoptera: Bedelliidae) in Sweet Potato in North Florida" Florida Entomologist (scientific note/in press).
3. Cabral, M.J.S., R.A. Pinheiro, I.M. Silva, W.S.B. Ngamgna, M Schmiele, G.L.D. Leite, M. Haseeb and M.A. Soares. 2025. Changes in chlorophyl a fluorescence in *Ipomoea batatas* (Convolvulaceae) genotypes under attack by *Bedellia somnulentella* (Lepidoptera: Bedelliidae). Insects 14, 3529.
4. Diedrick, W.A., L.H.B. Kanga, Rachel Mallinger, Manuel Pescador, Islam Elsharkawy, and Yanping Zhang. 2025. Molecular Assessment of Genes Linked to Honeybee Health Fed with Different Diets in Nuclear Colonies. Insects.
5. Flowers, R.W. 2025. Dangerous liaisons: From cryptic female choice to medieval battlefields in genital evolution of the Galerucini (Coleoptera, Chrysomelidae, Galerucinae). Zoosystema 47(22): 445-471.
6. Gaffke, A.M., Miller, N.W., Sharma, A. and Allan, S.A., 2024. Attraction of sweet potato whitefly, Bemisia tabaci (Hemiptera: Aleyrodidae), and two generalist predators to green leaf volatile compounds. *Insects*, *15*(10), p.750.
7. Haseeb, M. 2024. Dr. Charles W. O'Brien: True Pioneer in Weevil Taxonomy and Publisher. Fla. Entomol. 2024; 107(1): 20240006.
8. Muniappan R., M. Ba, A. Sharma and S. Hendery. 2024. Editorial: Integrated Pest Management of tropical crops. Front. Agron. 6: 1407495. doi: 10.3389/fagro.2024.1407495.
9. Opoku, E., M. Haseeb, E.J. Rodriguez, G.J. Steck and M.J.S. Cabral. 2025. Economically important fruit flies (Diptera: Tephritidae) in Ghana and their regulatory pest management. Insects, 16: 285-308. https://doi.org/10.3390/insects16030285.
10. Robinson-Baker, A.M.S., M. Haseeb and L.H.B. Kanga. 2025. Diversity and seasonal abundance of the pine bark and ambrosia beetles in the Florida Panhandle. Insects (in press).
11. Szalanski, A.L., and R.L. Hix….2025. Genetic variation of rice stink bugs, Oebalus spp. (Hemiptera: Pentatomidae) from Southeastern United States and Cuba. Fla. Entomol. 108(1): https://doi.org/10.1515/flaent-2025-0004
12. Wyckhuys, K.A.G., K.S. Akuse, D.M. Amalin, S.-E. Araj, ….M. Haseeb….D.G.C. Yubak. 2025. Human and machine: Can generative AI anticipate insect biological control outcomes? Computers and Electronics in Agriculture (in press).
13. Wyckhuys, K.A.G., K.S. Akutse, D.M. Amalin, S.-E. Araj, …..M. Haseeb, ….M. Elkakhy. 2024. Functional structure of the natural enemy community of the fall armyworm, *Spodoptera frugiperda* in the Americas. Biological Control 198, 105640. https://www.sciencedirect.com/science/article/pii/S1049964424002056.
14. Wyckhuys, K.A.G., K.S. Akutse, D.M. Amalin, S.-E. Araj, …..M. Haseeb, ….B.A.R. Hadi. 2024. Global scientific progress and shortfalls in biological control of the fall armyworm *Spodoptera frugiperda*. Biological Control 191: 1-27 (https://doi.org/10.1016/j.biocontrol.2024.105460).

Popular Press Articles:

1. Haseeb, M. 2025. Plants Looking Sad? Tiny new invasive pest poses danger to Florida plants. Tallahassee Democrat, 14 November 2025.
2. Haseeb, M., 2025. Silent Killer: Panhandle's iconic palm trees are under attack by palmetto weevil. Tallahassee Democrat, 15 August 2025.

3. Sharma, A., and Ferguson T. 2024. The Red Imported Fire Ant and Its Sting, PestPro, March-April 2024- Extension article in popular magazine.

Symposia Organized:

1. Haseeb, M. 2024. IPM of Specialty Crop Insect Pests. A symposium organized during the 106th Annual Meeting of Florida Entomological Society, held in Quincy, FL (1-3 July 2024).
2. Haseeb, M., and A. Bolques. 2025. IPM Field Day/Workshop organized at FAMU Research and Extension Center, Quincy, Florida (5th August 2025).
3. Haseeb, M., and Y. Kobori. 2025. Specialty Crops IPM in the Changing Global Environment. Two sessions organized during the 11th International IPM Symposium, held in San Diego, CA (2-6 March 2025).
4. Haseeb, M., H. Li-Byarlay and L.H.B. Kanga. 2024. Outcome of Educational Research and Entomology: Best Practices in Education and Outreach. A symposium organized during the Annual Meeting of the Entomological Society of America, held in Phoenix, AZ (10-13 November 2024).
5. Haseeb, M., J.A. Qureshi and L.H.B. Kanga 2024. IPM of Invasive Insect Pests in the Specialty Crops under the Changing Climate Patterns. Symposium Organized during the 27th International Congress of Entomology held in Kyoto, Japan (25-30 August 2024).
6. Haseeb, M., Z. Mersha, and L.H.B. Kanga. 2024. 5th IPM Forum entitled "Climate, Health, and Cultivating the Next Generation of Agriculture Leaders: Providing IPM Based Solutions to Secure Food, Agriculture, and Natural Resources organized during 21th 1890 Association of Research Directors Biennial Meeting, held in Nashville, TN (6-9 April 2024).
7. Li-Byarlay, H., and M. Haseeb. 2025. Innovations in Integrated Pest Management to Protect Beneficial Insects. Section Symposium Organized during the Annual Meeting of Entomological Society of America, held in Portland, OR (9-13 November 2025).

Scientific Presentations:

1. Bolques, A., M. Haseeb and L.H.B. Kanga. 2025. IPM of Selective Specialty Crops in Passive Protective Structures and Open Field Conditions in Florida. An oral talk presented during the 11th International IPM Symposium, held in San Diego, CA (2-6 March 2025).
2. Cabral, M.J.D.S., M. Haseeb, and M.A. Soares. 2024. Insect Pests of the Sweet Potatoes and Their Management in Florida and Brazil. A research poster presented during the Annual Meeting of the Entomological Society of America, held in Phoenix, AZ (10-13 November 2024).
3. Cabral, M.J.D.S., Soares, M.A., and M. Haseeb. 2025. Insect Pests of Sweet Potato in Florida and Brazil and their Biological Control. A research poster presented during the 11th International IPM Symposium, held in San Diego, CA (2-6 March 2025).
4. Cabral, M.J.S., M. Haseeb and M.A. Soares. 2025. Selected Essential Oils against *Cylas formicarius* under Laboratory Conditions. A research poster presented at during the Annual Meeting of Entomological Society of America, held in Portland, OR (9-13 November 2025).
5. Cabral, M.J.S., Soares, M.A. and M. Haseeb. 2025. Insecticidal Activities of Selected Essential Oils against *Cylas formicarius* (Coleoptera: Brentidae) under Laboratory Conditions. A research poster presented during the 107th Annual Meeting of Florida Entomological Society, held in Lake Alfred, Florida (13-16 July 2025).
6. Daniels, J., Sharma, A., Gaffke, A., Aderibigbe, A., Kanga, L., 2024. Evaluation of life cycle, behavior, and nutritional value of black soldier fly (*Hermetia illucens*) on varied diets, Florida Entomological Society, July 1-3, 2024, at Quincy, Florida.2024.

7. Farquharson, M., L.H.B. Kanga, and M. Haseeb. 2024. Control of the small hive beetle with entomopathogenic fungi. Association of Research Directors Biennial Symposium, Nashville, TN April 6-9.
8. Haseeb, M. 2024. Developing New Leaders in Insect Science: Opportunities and Challenges. An oral talk presented during the Annual Meeting of the Entomological Society of America, held in Phoenix, AZ (10-13 November 2024).
9. Haseeb, M. 2024. Small Farms IPM in the Specialty Crops: Climate Vulnerabilities and Opportunities. Talk presented at the Climate-Smart IPM Workshop, held in Alcorn State University, Lorman, Mississippi (18-20 June 2024).
10. Haseeb, M. 2024. Training Minority Leaders to Manage Invasive Insect Pests in the Specialty Crops in Florida and the Caribbean Pathways. Oral talk presented during the 27th International Congress of Entomology held in Kyoto, Japan (25-30 August 2024).
11. Haseeb, M. 2025. Biological Control in the Specialty Crop Production Systems in North Florida. An oral talk presented during the 107th Annual Meeting of Florida Entomological Society, held in Lake Alfred, Florida (13-16 July 2025).
12. Haseeb, M. 2025. Developing Minority IPM Leaders in the Specialty Crops in Florida. An oral talk presented during the 11th International IPM Symposium, held in San Diego, CA (2-6 March 2025).
13. Haseeb, M. 2025. Insect Pests Monitoring and Control in the United States and Opportunities for Global Collaborations. Special seminar presented at the UFVJM, Diamantina, Brazil (June 24, 2025).
14. Haseeb, M. 2025. Integrated Pest Management in the High Tunnels. 2025 High Tunnel Workshop organized in Quincy, Florida.
15. Haseeb, M. 2025. IPM in Specialty Crops. An oral talk presented during the annual IPM Field Day/Workshop held at FAMU Research and Extension Center, Quincy, Florida (5th August 2025).
16. Haseeb, M. 2025. Recruiting Refuge Crops to Protect Beneficial Insects for Effective IPM in the Specialty Crops in North Florida. An oral talk presented during the Annual Meeting of Entomological Society of America, held in Portland, OR (9-13 November 2025).
17. Haseeb, M., L.H.B. Kanga, S.D. James, and J.C. Legaspi. 2024. FAMU's IPM NextGen Initiative: Training Next Generation's Pest Management Professionals in the Specialty Crops. Oral talk presented in the 5th IPM Forum organized during the 21st 1890 Association of Research Directors Biennial Symposium, held in Nashville, TN (6-9 April 2024).
18. Invited to present a seminar at Nebraska on March 8, 2024, on biological control and IPM.
19. Ivy K., 2024. Presented and placed 2nd in the 3 Minute Thesis Competition at the MANRRS National Conference March 20-24th (Survey of natural enemies of Red-Imported Fire Ants in North Florida)
20. Ivy, K., Presented at the ARD conference on April 6-9, 2024, in Nashville, Tennessee. (Survey of natural enemies of Red-Imported Fire Ants in North Florida)
21. Ivy, K., Sharma, A., 2024. Presented at Farm Foundation Cultivar on January 6, 2024. (Survey of natural enemies of Red-Imported Fire Ants in North Florida)
22. Kanga, L.H.B., C. Gracia, and M. Haseeb. 2024. Monitoring and Management of Insecticide Resistance in Major Pests of Honey Bee (*Apis mellifera*). XXVII International Congress of Entomology, August 25- 30 – Kyoto, Japan.
23. Laird, O.S., A.M.S. Robinson-Baker, P. Skelley and M. Haseeb. Digital Identification Tool for Ambrosia and Bark Beetles of Agriculture and Forestry Importance in Florida. A research poster presented at during the Annual Meeting of Entomological Society of America, held in Portland, OR (9-13 November 2025).
24. Laird, S., A.M. Robinson-Baker, D.A. Solis, P.E. Skelley and M. Haseeb. 2025. Development of a Digital Identification Tool for Ambrosia and Bark Beetles of Agriculture and Forestry Importance in Florida. A research poster presented during the 107th Annual Meeting of Florida Entomological Society, held in Lake Alfred, Florida (13-16 July 2025).
25. Northe, Jr. B.S., A.M., M. Haseeb, C. Okoroji, and L.H.B. Kanga. 2024. Evaluation of Monitoring and Management Strategies for Pepper Weevil (*Anthonomus eugenii*) in North Florida and South Georgia. A research poster presented during the Annual Meeting of the Entomological Society of America, held in Phoenix, AZ (10-13 November 2024).
26. Northe, Jr. S., M.J.S. Cabral, and M. Haseeb. 2025. Repellent, Antifeedent and Oviposition Effects of Essential Oils on the Pepper Weevil Anthonomus eugenii (Coleoptera: Curculionidae) under Laboratory Conditions. An oral talk

27. presented during the 107th Annual Meeting of Florida Entomological Society, held in Lake Alfred, Florida (13-16 July 2025).
28. Northe, S.B., M. Haseeb and R.W. Mankin. 2025. Acoustic Detection of Pepper Weevil Larvae: Anthonomus eugenii (Coleoptera: Curculionidae) under Laboratory Conditions. An oral talk presented during the Annual Meeting of Entomological Society of America, held in Portland, OR (9-13 November 2025).
29. Presented at NWFLPMC (Northwest FL Pest Management Conference, FAMU, and UF collaboration) on February 13, 2024, in Niceville FL. (IPM for urban landscape).
30. Presented in ARD Research Symposium 2024 on April 9, 2024 (April 6--9, 2024), Atlanta, GA [IPM for urban landscape and agriculture].
31. Robinson-Baker, A.M., Haseeb, M. L. Simeon, J.C. Legaspi, and L.H.B. Kanga. 2024. Evaluation of Manual and Remote Monitoring Tools for Insect Pests of Agriculture and Forestry Importance. Poster talk presented in the 21st 1890 Association of Research Directors Biennial Symposium, held in Nashville, TN (6-9 April 2024).
32. Robinson-Baker, A.M., M. Haseeb, L. Simeon, J.C. Legaspi, and L.H.B. Kanga. 2024. Evaluation of Manual and Remote Monitoring Tools for Insect Pests of Agricultural and Forestry Importance. Talk presented during the 106th Annual Meeting of Florida Entomological Society, held in Quincy, FL (1-3 July 2024).
33. Robinson-Baker, A.M., M. Haseeb, L. Simeon, J.C. Legaspi, and L.H.B. Kanga. 2024. Evaluation of Manual and Remote Monitoring Tools for Insect Pests of Agricultural and Forestry Importance. Talk presented during the 106th Annual Meeting of Florida Entomological Society, held in Quincy, FL (1-3 July 2024).
34. Robinson-Baker, A.M., M. Haseeb, P.E. Skelley, and L.H.B. Kanga. 2024. Monitoring the Diversity and Abundance of Bark Beetles (Coleoptera: Scolytidae) in Florida. An oral talk presented during the Annual Meeting of the Entomological Society of America, held in Phoenix, AZ (10-13 November 2024).
35. Robinson-Baker, A.M., M.J.S. Cabral, A. Pinheiro, A. Bolques, and M. Haseeb. 2025. Detection and Monitoring of Collard Insect Pests and Beneficial Species in Biochar-treated Field in Quincy, Florida. An oral talk presented during the 107th Annual Meeting of Florida Entomological Society, held in Lake Alfred, Florida (13-16 July 2025).
36. Robinson-Baker, A.M.S., M. Haseeb, P. Skelley and L.H.B. Kanga. 2025. Development of Detection, Monitoring, and Management Strategies for the Pine Bark Beetles (Coleoptera: Scolytidae) in Florida. An oral talk presented during the Annual Meeting of Entomological Society of America, held in Portland, OR (9-13 November 2025).
37. Santos, P., Ashbrook, A., Sharma, A., 2024. Surveying Termite Diversity in SUS Working Group. National Conference in Urban Entomology on May 21, 2024.
38. Sharma, A., 2024. Invited to present a seminar at University of Nebraska-Lincoln, Nebraska on March 8, 2024, on Biological control and IPM.
39. Sharma, A., 2024. IPM for urban landscape and agriculture, National Conference in Urban Entomology, May 19-22, on May 21, 2024, in Mobile, Alabama.
40. Sharma, A., 2024. Natural Allies: Entomopathogenic Fungi Protecting Plants from Nematodes, International Conference on Fungal Interactions with Plants and Animals: Scoping for the Future, Vivekananda Institute of Tropical Mycology (VINSTROM), A Research Unit of Ramakrishna Mission Vidyapith, Mylapore, Chennai, India. (Sep 27-28, 2024).
41. Sharma, A., 2025. Presented at NWFLPMC (Northwest FL Pest Management Conference, FAMU, and UF collaboration) on February 25, 2025, in Niceville FL. (IPM for urban landscape).
42. Sharma, A., 2025. Presented at NWFLPMC (Northwest FL Pest Management Conference, FAMU, and UF collaboration) on February 13, 2024, in Niceville FL. (IPM for urban landscape).
43. Sharma, A., 2025. Presented at Specialty Crops Integrated Pest Management Field Day (August 5, 2025) on IPM for Fire Ants in Specialty Crops.
44. Sharma, A., and Lee, T., 2025. Panelist on the Panel discussion on 'Training Next Generation' at New Orleans Urban Pest Management Symposium (Jan 28-31, 2025).

45. Sharma, A., Ashbrook, A., Portugal, S. 2024. Monitoring of termite diversity in the urban landscape. Florida Entomological Society, July 1-3, 2024, at Quincy, Florida.
46. Sharma, A., Presented at National Conference in Urban Entomology, May 19-22, on IPM for urban landscape and agriculture on May 21, 2024 in Mobile, Alabama.
47. Sharma, A., Presented in ARD Research Symposium 2024 on April 9, 2024 (April 6--9, 2024), Atlanta, GA [IPM for urban landscape and agriculture].
48. Wesly, S., Sharma, A., Haseeb, M., Anandhi, A., Kanga, L., 2024. Evaluation of efficacy of IPM traps for urban arthropod pests, Florida Entomological Society, July 1-3, 2024, at Quincy, Florida.

Field Days and Workshops Organized/Attended:

1. Haseeb, et al. 2025 High Tunnel Workshop, organized by FAMU Cooperative Extension, Quincy, Florida (15 April 2025).
2. Haseeb, M. 2025. Pine bark beetles monitoring and management. A field day and workshop organized the Florida A&M University to host Central State University, University of Belize, West Virginia State University, and Delaware State University, held in Tallahassee, Florida (August 4-8, 2025).
3. Haseeb, M., A.M.S. Robinson-Baker, A. Ali, and A. Bolques. 2025. IPM Field Day organized for specialty crop growers and clientele in Quincy, Florida (August 5, 2025).
4. Haseeb, M., et al. 2025. IPM and Biological Control, booth displayed during the Insect Science Weeks (March 2025 and November 2025).
5. Haseeb, M., M.J.S. Cabral, Robinson-Baker, A.M., and S. Northe. 2024. Climate-Smart IPM Workshop, organized by Alcorn State University. USDA, NIFA (18-19 June 2024).
6. Robinson-Baker, A.M.S. 2024. Addressing new and emerging pests and diseases: The case of pine bark beetle in Belize. A workshop organized in collaboration with USDA, Central State University, West Virgina State University and Delaware State University, held in Belize (July 8-15, 2024).
7. Sharma, A., et al. 2025. W.L. Peters 49th Annual Field Day and Workshop in Entomology. Organized at Tallahassee State College, Tallahassee, Florida (November 5-6, 2025).
8. Sharma, A., et al. 2025. W.L. Peters 49th Annual Field Day and Workshop in Entomology. Organized at Tallahassee State College, Tallahassee, Florida (November 5-6, 2025).
9. Tsolova, V.M. et al. 2025. Grape harvest festival organized by the Center for Viticulture and Small Fruit Research, Tallahassee, Florida (August 23, 2025).

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Opportunities for Graduate Assistantships and Joint Research:

Students interested in joining our M.S. or Ph.D. program in Entomology are encouraged to contact Dr. Muhammad Haseeb (muhammad.haseeb@famu.edu) or Dr. Lambert Kanga (lambert.kanga@famu.edu). Exchange students and visiting researchers are also welcome to engage in research and collaborative activities at our Center.

Weblink: https://cafs.famu.edu/departments-and-centers/research/center-for-biological-control/index.php