

Arun Babu

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Educational Background

- 2014- 2018 North Carolina State University, Department of Entomology & Plant Pathology, Raleigh, NC.
Doctor of Philosophy in Entomology (4.0 GPA)
Dissertation title: Farmscape ecology of *Euschistus servus* (Hemiptera: Pentatomidae) in a corn, wheat, soybean ecosystem and development of a sampling plan in corn.
Major advisor: Dr. Dominic D. Reisig
- 2011- 2013 Mississippi State University, Department of Biochemistry, Molecular Biology, Entomology & Plant Pathology, Starkville, MS.
Master of Science in Entomology (4.0 GPA)
Thesis title: Implications of volunteer corn and cross-pollination of Bt and non-Bt corn on corn earworm (Lepidoptera: Noctuidae) Bt resistance management.
Major advisor: Dr. Fred R. Musser
- 2004-2008 Kerala Agricultural University, College of Horticulture, Thrissur, Kerala, India.
Bachelor of Science in Agricultural Science (8.5/10 GPA)

Professional Experience

- 2020 August – present: **Postdoctoral Research Associate**, Department of Entomology, University of Georgia, Athens, GA.
- 2018 October – July 2020: **Postdoctoral Research Scholar**, Department of Entomology & Plant Pathology, North Carolina State University, Raleigh, NC.
- 2014 – 2018: **Graduate Research Assistant**, Department of Entomology & Plant Pathology, North Carolina State University, Raleigh, NC.
- 2017 Jan-May: **Teaching Assistant**, ENT 207: Insects and Human Disease, Department of Entomology & Plant Pathology, North Carolina State University, Raleigh, NC.
- 2011 - 2013: **Graduate Research Assistant**, Dept. of Biochemistry, Mol. Biol., Entomology & Plant Pathology, Mississippi State University.
- 2008 – 2010: **Level One Expert (Agriculture)** at **Kisan Call Centre**, Kerala, India; a project sponsored by the Ministry of Agriculture, Department of Agriculture & Co-operation, Government of India. My duties were:
 - Provided answers to growers' questions related to various agricultural operations, including land preparation, seed treatment, fertilizer application, irrigation, weed management, harvesting, post-harvest treatment, and storage.
 - Diagnosed crop pest and disease incidence and assisted growers in implementing Integrated Pest Management measures.

Certification

1. Georgia commercial pesticide applicators license (Expiry 10/26/2025).
 - License category 21: Plant agriculture
 - License category 33: Demonstration and research
2. Graduate certificate in diversity and inclusion, University of Georgia (2021-2022)
Completed following modules

- Diversity at UGA: beyond the numbers
 - Emotional intelligence and diversity
 - Countering unconscious bias
 - It's really not all in your head: understanding mental health disabilities
 - Global dawgs: intercultural competency and communication skills
 - UGA's non-discrimination anti-harassment policy and the USG sexual misconduct policy
3. Certified ARM user (2020)

Professional Membership

4. Entomological Society of America (2011-present)
5. North Carolina Entomological Society (2017 -2020)
6. Mississippi Entomological Association (2012-2013)
7. Florida Entomological Society (2013)
8. American Society for Horticultural Science (2012)

Honor Society Membership

- Phi Kappa Phi (2012-present)
- Golden Key International (2012-2016)

Grantsmanship

Participated in writing 6 competitive grants. Responsibilities included designing the study, writing the grants, and preparing the grant budget.

- The University of Georgia, Office of Research, Postdoctoral Scholar Domestic and Foreign Travel Program 2022. **\$800 (funded)**.
- NIFA- Agriculture and Food Research Initiative Grants Program (PI: D. D. Reisig, and R. L. Gonzales). Have GM-herbicide tolerant crops selected for weeds that have shifted insect pest pressure? (2021-2025). **\$496,188 (not funded)**
 - While Dr. Reisig was listed as the formal PI of this grant, I wrote and formulated many of the ideas for this grant and prepared the budget and budget justification. His role as PI was a formality required by the university.
- Corn Growers Association of North Carolina, Inc. (PI: D. D. Reisig, A. Huseeth, and C. Sorenson). Identifying corn fields at risk for stink bug infestation. (2020-2021). **\$20,894 (funded)**.
 - Presented proposal to the Corn Growers Association of North Carolina in a formal PowerPoint presentation.
- NIFA- Biotechnology Risk Assessment Research Grants Program (PI: D. D. Reisig, and W. Everman). Should new Plant Incorporated Protectant crop registrations consider the impact of herbicide-tolerant crops on weeds and their potential to influence the insect pest complex? (2019-2023). **\$438,278 (not funded)**, recommend for resubmission with preliminary data).
 - While Dr. Reisig was listed as the formal PI of this grant, I wrote and formulated many of the ideas for this grant. His role as PI was a formality required by the university.
- North Carolina Cotton Producer's Association. (PI: D. D. Reisig, and **A. Babu**). Insecticide screening for major North Carolina cotton insect pests. (2020-2021). **\$12,000 (funded)**.
 - Participated in the ideation of this grant and presented it to the North Carolina Cotton Producer's Association in a formal presentation.
- Corn Growers Association of North Carolina, Inc. (PI: D. D. Reisig, and H. Mehl). Improving stink bug management in corn. (2016-2017). **\$17,733 (funded)**.

Service as a Peer Reviewer

Peer reviewer for multiple academic journals, including Environmental Entomology, International Journal of Pest Management, Journal of Insect Science, Journal of Economic Entomology, and Crop Protection.

Refereed Publications (10)

- E. M. Rhodes, **A. Babu**, A. A. Sial, O. E. Liburd. 2023. Potential alternatives to spinosad as the killing agent mixed with two attractant products in attract-and-kill formulations used to manage the spotted-wing drosophila, *Drosophila suzukii* (Diptera: Drosophilidae). J. Econ. Entomol. 116: 202-208.
- **Babu, A.**, C. Rodriguez-Saona, and A. A. Sial. 2022. Comparative adult mortality and relative attractiveness of spotted-wing drosophila (Diptera: Drosophilidae) to novel attract-and-kill (ACTTRA SWD) formulations mixed with different insecticides. Front. Ecol. Evol. doi: 10.3389/fevo.2022.846169
- **Babu, A.**, C. Rodriguez-Saona, A. A. Sial. 2021. Factors influencing the efficacy of novel attract-and-Kill (ACTTRA SWD) formulations against *Drosophila suzukii*. J. Econ. Entomol. DOI: <https://doi.org/10.1093/jee/toab273>
- Bryant, T. B., **A. Babu**, D. D. Reisig. 2021. Brown stink bug, *Euschistus servus* (Hemiptera: Pentatomidae), damage to seedling corn and impact on grain yield. J. Insect Sci. 21: 1-9.
- **Babu, A.**, D. D. Reisig, M. P. Pes, C. M. Ranger, N. Chamkasem, and M. E. Reding. 2021. Effects of chlorantraniliprole residual on *Helicoverpa zea* in Bt and non-Bt cotton. Pest Manag. Sci. DOI: 10.1002/ps.6263
- **Babu, A.**, A.I. Del Pozo-Valdivia, and D. D. Reisig. 2020. Baseline flight potential of *Euschistus servus* (Hemiptera: Pentatomidae) and its implications on local dispersal. Environ. Entomol. 49: 699-708.
- **Babu, A.**, D. D. Reisig, J. F. Walgenbach, R. W. Heiniger, and W. Everman. 2019. Influence of weed manipulation in field borders on brown stink bug (Hemiptera: Pentatomidae) densities and damage in field corn. Environ. Entomol. 48: 444-453.
- **Babu, A.**, and D. D. Reisig. 2018. Within-plant distribution of adult brown stink bug (Hemiptera: Pentatomidae) in corn and its implications on stink bug sampling and management in corn. J. Econ. Entomol. 111: 1927-1939.
- **Babu, A.**, and D. D. Reisig. 2018. Developing a sampling plan for brown stink bug (Hemiptera: Pentatomidae) in field corn. J. Econ. Entomol. 111: 1915-1926.
- **Babu, A.**, D. R. Cook, M. A. Caprio, K. C. Allen, and F. R. Musser. 2014. Prevalence of *Helicoverpa zea* (Lepidoptera: Noctuidae) on late season volunteer corn in Mississippi: Implications on Bt resistance management. Crop Prot. 64: 207-214.

Submitted/In preparation (3)

- **A. Babu**, E. M. Rhodes, C. Rodriguez-Saona, O. E. Liburd, A. A. Sial, Comparison of attract-and-kill formulations for managing *Drosophila suzukii*: behavioral and lethal effects. PLoS ONE (in review).
- **Babu, A.**, R. Adhikari, and A. A. Sial. 2023. Vacuum Extraction- an effective larval sampling method for spotted-wing drosophila in small fruit crops. J. Econ. Entomol. (in preparation)
- **Babu, A.**, D. D. Reisig, J. Adhikari, et al. 2023. Predicting cotton reproductive tissue abscission probability triggered by bollworm damage. J. Econ. Entomol. (in preparation)

Non-Refereed Publications (16)

- **Babu, A.**, R. Adhikari, and A. A. Sial. 2022. Evaluating Entrust 2SC added with the adjuvant combi protec in managing spotted-wing drosophila in blueberries, 2021. Arthropod Manag. Tests 47: 1-2.
- **Babu, A.**, B. Panthi, and A. A. Sial. 2022. Efficacy of a innovative nanoparticle-based formulation for managing spotted-wing drosophila in blueberry, 2021. Arthropod Manag. Tests 47: 1-2.
- Chandasir, N., **A. Babu**, and A. A. Sial. 2022. Comparing the efficacy of insecticides mixed with and without a novel adjuvant, combi-protect, in managing spotted-wing drosophila in blueberries, 2021. Arthropod Manag. Tests 47: 1-2.
- Chandasir, N., **A. Babu**, and A. A. Sial. 2022. Comparing the efficacy of Entrust SC mixed with and without a novel adjuvant, Combi-protect, in managing spotted-wing drosophila in blueberries, 2021. Arthropod Manag. Tests 47: 1-2.
- **Babu, A.**, S. Neupane, Z. Williams, and A. A. Sial. 2021. Efficacy of selected insecticides for managing spotted-wing drosophila in blueberries, 2020. Arthropod. Manag. Tests 46: 1.
- **Babu, A.**, C. L. DiLorenzo, and A. A. Sial. 2021. Efficacy of attract-and-kill formulations using the adjuvant ACTTRA SWD OR1 for the management of spotted-wing drosophila in blueberries, 2020. Arthropod. Manag. Tests 46: 1.
- **Babu, A.**, C. Rodriguez-Saona, A. Mafra-Neto, and A. A. Sial. 2021. Efficacy of attract-and-kill formulations using the adjuvant ACTTRA SWD TD for the management of spotted-wing drosophila in blueberries, 2020. Arthropod. Manag. Tests 46: 1.

- Reisig, D. D., **A. Babu**, M.-A. Aghaee, J. Greene, S. Paula-Moraes, F. P. Reay-Jones, P. Roberts, R. Smith, and S. Taylor. 2020. Developing a cotton-based method for Bt resistance monitoring, pp. 250-253. *In* S. Boyd, M. Huffman, L. Krogman and A. Sarkissian (eds.), 2020 Beltwide Cotton Conferences, January 8-10, 2020, Austin, TX. National Cotton Council, Memphis, TN.
- **Babu, A.**, and D. D. Reisig. 2020. Efficacy of selected insecticides for managing brown stink bug in corn, 2019. *Arthropod. Manag. Tests*. *Arthropod. Manag. Tests* 45: 1.
- **Babu, A.**, and D. D. Reisig. 2020. Efficacy of selected insecticides for managing aphids in cotton, 2019. *Arthropod. Manag. Tests*. *Arthropod. Manag. Tests* 45: 1.
- Britton, T., **A. Babu**, and D. D. Reisig. 2019. Evaluating the application timing and efficacy of bifenthrin for managing brown stink bug in corn, 2018. *Arthropod. Manag. Tests* 44: 1.
- **Babu, A.** 2018. Farmscape ecology of *Euschistus servus* (Hemiptera: Pentatomidae) in a corn, wheat, soybean ecosystem and development of a sampling plan in corn. Ph.D. dissertation, North Carolina State University, Raleigh, NC.
- Reisig, D. D., and **A. Babu**. 2017. North Carolina corn: Scouting, managing stink bugs in seedling fields. AgFax.com (<https://agfax.com/2017/04/21/north-carolina-corn-scouting-managing-stink-bugs-in-seedling-fields/>)
- **Babu, A.** 2013. Implications of volunteer corn and cross-pollination of Bt and non-Bt corn on corn earworm (Lepidoptera: Noctuidae) Bt resistance management. M.S. thesis, Mississippi State University, Starkville, MS.
- **Babu, A.**, A. Alangadan, et. al. 2008. Popularizing Meliponiculture as an additional source of income. *In* The road to prosperity: proposals for development project in agriculture and allied sectors for Perumatty Gramapanchayath. College of Horticulture, Kerala Agricultural University, Thrissur, Kerala.
- **Babu, A.**, 2008. Rural agricultural work experience programme. Bachelor's Dissertation, College of Horticulture, Kerala Agricultural University, Thrissur, Kerala.

In preparation (1)

- **Babu, A.**, and A. A. Sial. 2023. Field efficacy of delegate added with the adjuvant combi protec in managing spotted-wing drosophila in blueberries, 2021. *Arthropod Manag. Tests*. (in preparation)

Extension Publication (1)

- Reisig, D. D., and **A. Babu**. 2017. Scouting and managing stink bugs in seedling corn. North Carolina Cooperative Extension Service, College of Agriculture and Life Sciences, Raleigh, NC. (<https://entomology.ces.ncsu.edu/2017/04/scouting-and-managing-stink-bugs-in-seedling-corn/>)

Selected Academic Presentations (26)

- **Babu, A.**, R. Adhikari, and A. Sial. 2023. Optimizing vacuum extraction as an effective larval sampling technique for spotted-wing drosophila in small fruit crops. 2023 ESA Southeastern Branch Meeting, Little Rock, AR. **(Invited)**.
- Rhodes, E., G. LaTora, C. Chase, P. Urbaneja, C. Rodriguez-Saona, **A. Babu, A. Sial**, and O. Liburd. 2023. Spotted-wing Drosophila, *Drosophila suzukii*, movement and management utilizing attract-and-kill technology. 2023 ESA Southeastern Branch Meeting, Little Rock, AR. **(Invited)**.
- Sial, A., and **A. Babu**. 2023. Recent advancements in behavioral management of spotted-wing drosophila. 2023 ESA Southeastern Branch Meeting, Little Rock, AR **(Invited)**.
- **Babu, A.**, and A. A. Sial. 2022. Vacuum extraction: A novel larval sampling method for detecting spotted-wing drosophila infestation in small fruits. ESA, ESC, and ESBC Joint Annual Meeting Nov 13-16, Vancouver, Canada. (Virtual).
- Sial, A. A., and **A. Babu**. 2022. Efficacy of combi-protec bait-and-kill strategy for spotted-wing drosophila control in blueberries. ESA, ESC, and ESBC Joint Annual Meeting Nov 13-16, Vancouver, Canada.
- Sial, A., **A. Babu**, and B. Panthi. 2022. Spotted-wing drosophila monitoring and management update. 84th Annual Georgia Entomological Society meeting, Jekyll Island, GA.
- **Babu, A.**, A. Sial, and C. Rodriguez-Saona. 2022. Identifying suitable insecticide formulations for mixing with acttra SWD adjuvants for preparing attract-and-kill formulations to manage spotted-wing drosophila. 2022 Joint SEB and APS-CD Meeting, San Juan, PR.

- **Babu, A.** 2021. Factors influencing the efficacy of novel attract-and-kill (ACTTRA SWD) formulations against spotted-wing drosophila. Fall Department of Entomology, University of Georgia, Athens seminar series on 27 September 2021 (**Invited**).
- **Babu, A.,** C. R. Rodriguez-Saona, and A. Sial. 2021. Insect biology and host fruit volatiles can influence the efficacy of novel attract-and-kill (ACTTRA SWD) formulations against *Drosophila suzukii*. Entomological Society of America Annual Meeting. Denver, Colorado.
- Chandasir, N., **A. Babu,** and A. Sial. 2021. Comparing relative attractiveness of adult spotted-wing drosophila to blueberries treated with different insecticides with or without a novel adjuvant combi-protec. Entomological Society of America Annual Meeting. Denver, Colorado (Virtual).
- Rhodes, E. M., **A. Babu,** P. Urbaneja-Bernat, C. Rodriguez-Saona, V. Walton, and O. E. Liburd. 2021. Behavioral tactics for SWD management. Organic Management of Spotted Wing Drosophila 2021 Webinar. eOrganic. 9 March 2021. <https://eorganic.org/node/34578>.
- Rhodes, E. M., P. Urbaneja-Bernat, C. R. Rodriguez-Saona, **A. Babu,** A. Sial, and O. E. Liburd. 2021. Which organic insecticides are effective as the kill in attract-and-kill technology for *Drosophila suzukii* management? Entomological Society of America Annual Meeting. Denver, Colorado.
- Sial, A., **A. Babu,** and B. R. Panthi. 2021. Novel strategies for organic management of spotted-wing drosophila. Entomological Society of America Annual Meeting. Denver, Colorado.
- Rhodes, E., P. Urbaneja, C. Rodriguez-Saona, **A. Babu,** A. Sial, and O. Liburd. 2020. The effects of fruit density and attractant formulation on *Drosophila suzukii* management using attract-and-kill technology. ESA Southeastern Virtual Branch meeting 2021.
- Reisig, D. D., J. Greene, S. Paula-moraes, F. Reay-Jones, R. Smith, S. Taylor, **A. Babu,** and M. A. Aghaee. 2020. Developing a cotton-based method for Bt resistance monitoring. Beltwide Cotton Conference 2020, Austin, TX.
- **Babu, A.,** and D. D. Reisig. 2018. Sampling plans for the brown stink bug, *Euschistus servus* (Say) (Hemiptera: Pentatomidae) in corn for pest management and population estimation. ESA Southeastern Branch annual meeting 2018, Orlando, FL.
- **Babu, A.,** D. D. Reisig, W. Everman, R. W. Heiniger and J. F. Walgenbach. 2017. Within-plant distribution of brown stink bug in corn. Graduate student symposium 2018, Department of Entomology and Plant Pathology, NCSU, Raleigh, NC.
- **Babu, A.,** D. D. Reisig, W. Everman, R. W. Heiniger and J. F. Walgenbach. 2017. Within-plant distribution of brown stink bug, *Euschistus servus* (Say) (Hemiptera: Pentatomidae) in corn and its implications on stink bug management in corn. ESA annual meeting 2017, Denver, CO.
- **Babu, A.,** D. D. Reisig, W. Everman, R. W. Heiniger and J. F. Walgenbach. 2016. Impact of farmscaping on stink bug density over corn. XXV International Congress of Entomology 2016, Orlando, FL.
- **Babu, A.,** and D. D. Reisig. 2015. Developing a standard method to quantify injury from bollworm to cotton reproductive tissue. Beltwide Cotton Conference 2015, San Antonio, TX.
- **Babu, A.,** D. Cook, M. Caprio, C. Allen and F. Musser. 2013. Prevalence of late season volunteer corn in Mississippi and its implications on corn earworm Bt resistance development. ESA Southeastern Branch 87th annual meeting. Baton Rouge, LA.
- **Babu, A.,** D. Cook, M. Caprio, C. Allen, and F. Musser. 2013. Prevalence of late season volunteer corn in Mississippi and its impact on corn earworm Bt resistance management. Annual Future of Agriculture Graduate Student Competition, Mississippi State University, Starkville. MS.
- **Babu, A.,** M. Caprio, D. Cook, C. Allen and F. Musser. 2012. Impact of pollen-induced Bt toxicity by a multi-toxin Bt corn variety on survivorship and growth of corn earworm and its implications on current IRM practices. ESA 60th annual meeting, Knoxville, TN.
- **Babu, A.,** M. Caprio, D. Cook, C. Allen and F. Musser. 2012. Cross-pollination between Bt corn and non-Bt refuge: implications on corn earworm resistant management. 2nd Annual MEA MWSS MAPPAN Joint Meeting, Starkville, MS.
- **Babu, A.,** F. Musser, M. Caprio, D. Cook and C. Allen. 2012. Effect of Pollen-mediated gene flow of transgene by a multi-toxin Bt corn variety on survivorship and growth of corn earworm. ESA Joint Meeting of the Southeastern and Southwestern Branches, Little Rock, AR.
- **Babu, A.,** F. Musser, J. Reed, R. Arancibia, and J. Main. 2012. Evaluation of cover crops and tillage systems as IPM components for sustainable sweetpotato production systems. National Sweetpotato Collaborators Group annual meeting, Birmingham, AL.

Extension Presentations (7)

- **Babu, A.** 2019. Managing brown stink bug in corn. Cleveland county field day 2019, Shelby, NC.
- **Babu, A.** 2019. Managing brown stink bug in corn. Northeast Ag Expo summer field day 2019, Shawboro, NC.
- **Babu, A.** 2018. Stink bugs management in corn. Randolph County Cooperative Extension field day 2018. Asheboro, NC.
- **Babu, A.** 2017. Stink bugs management. Pamlico County farm tour 2017. Grantsboro, NC.
- **Babu, A., and Reisig, D. D.** 2017. Stink bugs sampling and economic threshold in field corn. Duplin County farm tour 2017. Kenansville, NC.
- **Babu, A., and Reisig, D. D.** 2016. Stink bugs control in corn. Southeast Virginia Field Crop Conference 2016. South Chesapeake, VA.
- **Reisig, D. D., and A. Babu** 2015. Stink bugs in corn. Blackland Farm Managers tour 2015. Belhaven, NC.

Poster Presentations (5)

- **Babu, A., D. D. Reisig, W. Everman, R. W. Heiniger and J. F. Walgenbach** 2018. Within-plant distribution of brown stink bug, *Euschistus servus* (Say) and its implications on stink bug management in corn. Annual North Carolina Entomological Society meeting 2017, Raleigh, NC
- **Babu, A., D. D. Reisig, W. Everman, R. W. Heiniger and J. F. Walgenbach** 2016. Impact of farmscaping on the stink bug density over corn. ESA Southeastern Branch Meeting 2016, Raleigh, NC.
- **Babu, A., M. Caprio, D. Cook, C. Allen and F. Musser** 2013. Effects of refuge contamination by Bt transgenes on survivorship and growth of corn earworm. ESA Southeastern Branch meeting 2013. Baton Rouge, LA.
- **Babu, A., M. Caprio, D. Cook, C. Allen and F. Musser** 2012. Prevalence of corn earworm in late season volunteer corn in Mississippi and its implications on Bt resistance development. ESA 60th annual meeting, Knoxville, TN.
- **Babu, A., F. Musser, J. Reed and R. Arancibia** 2011. Impact of cover crops on sweet potato insects. ESA 59th annual meeting, Reno, NV.

Software Skills

- Proficient in MS office, SAS, GraphPad Prism, SigmaPlot, EndNote, Adobe Photoshop, and Adobe Lightroom.
- Certified ARM user
- Basic knowledge in ArcGIS.

Projects Completed / Training Attended

- Attended four in-person sessions of **Mentoring Professional Development for Postdocs**, a training series led by Dr. Erin Dolan, Professor of Biochemistry and Molecular Biology, University of Georgia, Organized by Office of Postdoctoral Affairs, University of Georgia, Athens, GA. (2022)
- One-day workshop on the **Applications of Unmanned Aerial Vehicle Technology in Field Research, and UAV Image Data Analysis** organized by the Extension and Training Committee, Dept. of Entomology and Plant Pathology, North Carolina State University, Raleigh, NC. (2020)
- One-day training course on **ARM Software Applications** organized by the Extension and Training Committee, Dept. of Entomology and Plant Pathology, NC State University in collaboration with ARM Academy, Gylling Data Management Inc. Raleigh, NC. (2020)
- Training course on **Liquid Nitrogen handling** organized by The Center for Electron Microscopy, North Carolina State University, Raleigh, NC. (2015)
- Project report on **Setting Up Horticulture Based Small Scale Business** after studying the viability of the project through market studies in the Entrepreneurship Development training, for self-help groups, Thrissur, Kerala, India (2008)

- Training on **Project Preparation for Watershed Based Rural Development** – Integrated Rural Technology Centre (IRTC), Palakkad, Kerala, India (2008).
- Training on **Development Banking with Special Emphasis on Rural Development** organized by South Malabar Gramin Bank, Thrissur, Kerala, India (2008).
- Semester long **Rural Agricultural Work Experience Program (RAWEP)**, learning modules including:
 - Watershed Management
 - Participatory Rural Appraisal
 - Farm Planning
 - Entrepreneurship Development Program
 - Non-governmental Organization Training
 - Agro-clinic
- Participated in the two-day **Nature Education Survey** held at **Silent Valley National Park**, Palakkad, Kerala, India to survey the Arthropod Biodiversity of selected regions (2008).
- Participated in the **National Educational Science Exhibition** on Biodiversity India, Calicut, Kerala, India (2008).
- Participated in the 10-day **training camp on Nutrition Security through Sound Agricultural Practices**, Thrissur, Kerala, India (2007).

Achievements and Leadership Roles

- **Organizer and moderator of the symposium** titled “Recent advancements toward developing sustainable IPM for spotted-wing drosophila” during the 2023 ESA Southeastern Branch Meeting, Little Rock, AR.
- **Judge**, Ph.D. student poster competition, 2023 2023 ESA Southeastern Branch Meeting, Little Rock, AR. (2023)
- **Member of the student award committee**, ESA Southeastern Branch meeting, Little Rock, AR. (2023)**Judge**, undergraduate student poster competition, 2022 Joint SEB and APS-CD Meeting, San Juan, PR. (2022)
- **Moderator, MS II**, MS student ten-minute paper competition, 2022 Joint SEB and APS-CD Meeting, San Juan, PR. (2022)
- **Member, student award committee**, ESA Southeastern Branch meeting, San Juan, PR. (2022)
- **Moderator, Grad P-IE: Chemical Ecology**, twelve-minute paper competition, Entomology Society of America National Meeting, Denver, CO. (2021)
- **Moderator and Judge**, SEB Ph.D. ten-minute paper competition, Entomology Society of America Southeastern Virtual Branch meeting (2021)
- **Bayer Crop Science travel grant** (2015)
- **Member of Linnaean games team, second place**, ESA Southeastern Branch meeting, Baton Rouge, LA. (2013)
- **H. C. Mitchell Scholarship**, Dept. of Biochemistry, Mol. Biol., Entomology & Plant Pathology, Mississippi State University, Starkville, MS. (2011).
- Member of the **Multicultural Lions club**, Mississippi State University, Starkville, MS. (2011-2013).
- Secretary, **Computer Club**, College of Horticulture, Thrissur, India (2007-2008).
- Secretary, **Arts Club** of the College of Horticulture, Thrissur, India. Organized annual Arts Meet, Film Festival and Literary gatherings in the College in this capacity (2006-2007).
- Secretary, **Quiz Club** College of Horticulture, Thrissur, India (2005-2006).

References

1. Dr. Dominic Reisig

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2. Dr. Fred R. Musser

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4. Dr. Cesar Rodriguez-Saona

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