



Speaker:

Micky D. Eubanks, Ph.D.

Professor
Department of Agricultural Biology
Colorado State University

Date: Monday, April 27, 2026
Time: 4:00 pm - 4:50 pm
Format: In-Person Seminar & Virtual Access
Location: Genomics Auditorium 1102A

Zoom: 943 6687 2379
Passcode: 453393

Title:

“Indirect ecological effects and pest management: From invasive ants to smelly plants”

Abstract:

This presentation explores the ecological consequences of indirect ecological effects in agroecosystems, focusing on how species interactions influence pest dynamics and crop yield. Using the red imported fire ant (*Solenopsis invicta*) as a model system, the work demonstrates that interactions between ants and aphids can shift along a continuum from antagonistic to mutualistic depending on ecological context. Although fire ants generally suppress arthropod populations, their tending of aphids increases ant abundance on plants and enhances predation on other herbivores, such as caterpillars. This interaction results in reduced plant damage, resulting in a form of context-dependent mutualism in which aphids can indirectly benefit plants by attracting predators. The research then examines the invasive sorghum aphid (*Melanaphis sorghi*), a major agricultural pest responsible for significant economic losses. Controlled experiments show that a range of natural enemies, including lady beetles and lacewings, can substantially reduce aphid populations and suppress outbreaks within days. Despite this, aphid outbreaks still occur in the field, prompting investigation into plant-mediated mechanisms that influence predator effectiveness. Results indicate that sorghum varieties differ in their production of Herbivore-Induced Plant Volatiles (HIPVs), which can attract natural enemies to aphid-infested plants. Field experiments demonstrate that varieties with stronger indirect defenses (higher HIPV production) support higher natural enemy-to-aphid ratios and experience lower aphid densities, reducing the likelihood of this pest exceeding economic thresholds and decreasing reliance on insecticides. Overall, this work highlights the importance of multitrophic interactions in pest management and suggests that leveraging natural enemy attraction through plant traits offers a promising pathway toward more sustainable agroecosystems.

Refreshments will be served in the Entomology Building Courtyard at 3:30pm