UC RIVERSIDE

DEPARTMENT OF ENTOMOLOGY

Entomology Seminar Series

Speaker:

Morgan N. Thompson, Ph.D.

Date: Thursday, February 27, 2025
Time: 4:00 pm - 4:50 pm
Format: In-Person Seminar & Virtual Access
Location: Student Success Center, Room 316

Zoom: 912 7230 4505

Passcode: 478039

Title:

"The Chemistry of Conflict: How Plant Defenses Against Insect Herbivory Affect Ecological Communities"

Abstract:

Plants face the constant threat of attack from insect herbivores. To withstand insect herbivore feeding damage, plants activate chemical defenses locally at the site of attack and systemically throughout the whole-plant. Despite expanding knowledge on plant antiherbivore defense, gaps remain in our understanding of how plant defense differs towards aboveground leaf-feeders or belowground root-attackers. Further, little is known about the cascading consequences for plant-mediated interactions in ecological communities. My research program addresses these knowledge gaps by investigating the ecological effects of local and systemic plant defense against insect herbivory. During my talk, I will delve into prior work and future plans for my research program at the University of California, Riverside, which will focus on the chemical, molecular, and community ecology of plant-insect interactions. First, I will describe previous research comparing local plant defense against herbivory in aboveground leaves and belowground roots. By characterizing leaf and root defenses for multiple plant species, my research determined herbivore-induced changes in defensive chemicals were more pronounced aboveground than belowground. My results revealed a novel pattern in plant chemical diversity. Next, I will discuss prior work examining how belowground herbivory affects systemic leaf defenses, aboveground insect herbivore behavior, and neighboring plants. My research discovered belowground herbivory altered chemicals of aboveground leaves, which repelled aboveground foraging herbivores and enhanced neighboring plant resistance against herbivory. Notably, my findings documented a previously unknown form of chemically mediated interactions between neighboring plants. Lastly, I will detail previous research on the role of microbes in plant-insect interactions, focusing on how plant-associated microbes both enhance plant defense and are also shaped by herbivory. Expanding on my prior work, I will conclude with future directions for my research program at the University of California, Riverside. Overall, my research program generates new insights on how plants detect and respond to herbivore attack aboveground or belowground, advancing our understanding of plant antiherbivore defense and offering sustainable approaches for managing insect pests in natural and agricultural ecosystems.

https://ucr.zoom.us/j/91272304505?pwd=qdb9epdVXbvu2dqMrbpy3POkaLbCVo.1

Refreshments will be served in the Entomology Building at 3:00 pm