NC STATE UNIVERSITY

College of Agriculture and Life Sciences
Department of Crop and Soil Sciences

https://cals.ncsu.edu/crop-and-soil-sciences

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A. Douglas Worsham Weed Science Lecture Series

Contrasting Resistance Management Approaches for Weeds and Insects

Dr. Fred Gould
William Neal Reynolds Professor of Agriculture
Department of Entomology and Plant Pathology
College of Agriculture and Life Sciences
Co-director of Genetic Engineering and Society Center
North Carolina State University

February 13, 2020
2405 Williams Hall
Refreshments at 2:45 pm
Seminar at 3:00 pm

Contact:
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The Gould lab is doing research in applied and basic evolutionary biology of insects. We are investigating the genomic basis of pest adaptation to control efforts that use conventional pesticides or genetically engineered crops. We are using population genetic modeling and experiments to make predictions about the utility of novel gene-drive strategies for suppressing or altering the characteristics of pest populations. We collaborate with molecular biologists, agronomists, and scholars from social science and humanities disciplines to train students in more holistic approaches to innovation in the life sciences.

Research:
The research mission of our lab group is to investigate the ecology and genetics of insect pests in order to better understand natural and human-induced evolution. We believe that this knowledge will contribute to improving food production, and the health of humans and the environment. We use diverse approaches to achieving our goals, ranging from molecular analysis and ecological experiments to mathematical and computer modeling. We strive to work hard as a team, respect each other's contributions, and have fun along the way. Some of our projects have clearly defined, applied objectives, while others are motivated solely by the desire to better understand the evolution of biological diversity. Our lab has historically focused on pests of agricultural importance, as seen in research projects with the headings "plant-insect interactions", "evolution of moth sexual communication systems", and "evolution of resistance in crop pests". In the past 5 years we have expanded our research to also include pests such as mosquitoes that have direct impacts on human health. Our project on "genetic pest management" reflects our belief that genetic engineering of insects can be used as a tool for reducing the impacts from pests of medical and agricultural importance.

Teaching:
ENT 731- Insect Ecology, ENT 590 - Field Ecology and Natural History, ENT 599 - Plant-Herbivore Interactions, ENT 801 - Genetic Pest Management, ENT 791 - Molecular Techniques in Ecology and Evolution

Education:
BS, Queens College, City University of New York (1971)
PhD, State University of New York at Stony Brook (1977)

Honors and Recognition:
National Academy of Science (2011)
Fellow, American Association for Advancement of Science (2012)

The A. Douglas Worsham Weed Science Lecture Series

The *Weed Science Program* in *Plant, Insect, Microbe and Soil Systems* of the College of Agriculture and Life Sciences provides a lecture series designed to enhance collaboration among weed scientists at North Carolina State University and others involved in the understanding and management of weeds. The lecture series is named in honor of Dr. Arch Douglas Worsham who had a distinguished career as a weed scientist at North Carolina State University for many years. Dr. Worsham impacted many students at both undergraduate and graduate levels and served many others during his career. Dr. Worsham has long been considered a unifying figure among weed scientists at North Carolina State University. Dr. Worsham began his career at North Carolina State University in 1960 after receiving BS and MS degrees in Agronomy from the University of Georgia and his PhD in Crop Science from North Carolina State University. His research focused on witchweed (*Striga asiatica*) management, no-tillage systems, and many other important aspects of sustainable weed management. Dr. Worsham made significant contributions to the North Carolina Agricultural Extension Service (now the Cooperative Extension Service) and was the instructor of the undergraduate weed science course at North Carolina State University. The series includes 3 to 5 lectures each year from a broad spectrum of weed scientists.