College of Agricultural, Consumer and Environmental Sciences

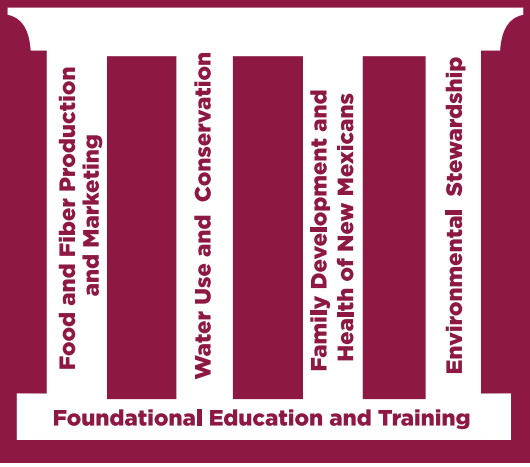
Department of Entomology, Plant Pathology, and Weed Science Profile

eppws.nmsu.edu • 575-646-3225

Quick Facts

- EPPWS differs from other ACES units in having expertise largely focused on the organisms that damage crops, animals, and facilities, rather than on commodity organisms. Our understanding of organisms like weeds, nematodes, bacteria, fungi, viruses, prions, insects, and spiders allows us to develop strategies to avoid the damage they cause.
- EPPWS faculty authored or co-authored more than 30 refereed papers and six book chapters in 2017, and made a similar number of presentations at scientific conferences.
- EPPWS faculty served as primary advisors for more than 20 graduate students in four different programs and as members of more than 20 other committees.
- Return on investment. Over the past five years, EPPWS investigators have attracted nearly $7 million in extramural funds from public and private sources. The products of our research, deployed largely by Extension faculty, have an annual economic impact estimated to be roughly 30 times our faculty salaries.
- A new curator for the NMSU Arthropod Museum and an entomology faculty member joined EPPWS in 2017.

ACES Pillars for Economic and Community Development



Mission Statement

We are a multi-disciplinary group of scientists and teachers whose mission is to provide academic instruction, research, and service that focuses on managing pests in semi-arid ecosystems. The strength of the department is the interaction of these disciplines in understanding the biology of pest organisms, their interactions, and how pests impact urban, agricultural, and natural resources.

Selected Program Impacts

- **The EPPWS Weed Science program** developed practical, ecological tactics for depleting weed seedbanks and educational models that project weed seed costs to promote adoption of these tactics. The program is also expanding conventional options for weed management, such as a Special Local Needs registration for flumioxazin. Weeds have enormous economic impacts of up to $30 million annually in New Mexico. These new tactics have the potential to save up to $300 per acre in hand weeding annually in chile alone.

- **NMSU's urban entomology program,** which was the first to discover populations of bed bugs resistant to neonicotinoid insecticides, has launched an integrated pest management approach to bed bug management. This national scope strategy includes a wide range of nonchemical methods, which not only reduce toxicity risks of insecticides in the home but also short-circuit the bugs' ability to overcome management programs.

- **EPPWS scientists have broken the secret to cloning pecan trees,** a discovery that will dramatically shorten the time needed to breed better varieties, particularly for improved rootstock, and solve problems with environmental stresses on the trees, potentially producing better nuts for the $500 million/year U.S. pecan industry. Springboarding from this innovation, NMSU scientists have now taken the lead in a national initiative to improve the resilience and productivity of the trees as well as the nutritional value of pecan nuts. New Mexico, the second-largest pecan producer in the U.S., is now also the birthplace of pecan cloning.

Selected Partnerships and Collaborators

- Independent growers engaged in on-farm research
- Dow AgroSciences
- USDA–APHIS
- USDA–ARS
- New Mexico Department of Agriculture
- Many other NMSU departments
- 4-H
- Future Farmers of America
- New Mexico Chile Association
- IR-4
- Navajo Agricultural Products Industry
- NM Cotton Growers Association
- NM Organic Commodity Commission
- Other universities, including University of Georgia, Oklahoma State University, University of Tokyo, Michigan State University, University of California, University of Illinois, Montana State University, University of Florida, and University of Wyoming
- American Phytopathological Society, Entomological Society of America, Weed Science Society of America, American Society for Microbiology, and Soil Science Society of America

Selected Program Impacts (cont.)

- **The NMSU Arthropod Museum** reached 25,000 K–12 students in the past five years. The insect specimens reached thousands more through use in CES presentations, and served as a resource for researchers in the identification of new insects, contributing to more than five research articles each year. The museum gives kids a fun exposure to science and helps teachers organize a field trip to campus.

- **NMSU ACES enjoys a rich environment of cooperation across departmental boundaries.** Nowhere is that more evident than in responses to urgent issues in pest management. Scientists from EPPWS, Extension Plant Sciences, Plant and Environmental Sciences, and the New Mexico Department of Agriculture partner to provide rapid pest detection and both short-term and long-term response strategies. Recent examples include discovery and containment of an emerging nematode with potential to devastate onion crops, as well as early detection of the pecan weevil outbreak in eastern New Mexico. Early detection and fast action are hallmarks of this partnership and are key to preventing large-scale economic losses.

Faculty and Expertise

Entomology

Ashley Bennett, IPM Specialist
Scott Bundy, Professor, Insect Taxonomy and Outreach
Brad Lewis, College Assistant Professor, Economic Entomology
Jane Pierce, Associate Professor, Economic Entomology
Alvaro Romero, Assistant Professor, Urban Entomology
Dave Thompson, Professor, Entomology

Plant Pathology

Rebecca Creamer, Professor, Plant Virology
Steve Hanson, Associate Professor, Molecular Biology
Jennifer Randall, Associate Professor, Plant Physiology
Soum Sanogo, Professor, Fungal Plant Pathology
Steve Thomas, Distinguished Professor, Nematology

Weed Science

Leslie Beck, Weed Scientist
Erik Lehnhoff, Assistant Professor, Weed Scientist
Abdel Mesbah, Weed Scientist
Jerry Sims, Department Head, Environmental Microbiology
Brian Schutte, Weed Scientist

7/2018