



**Extension service senior entomologist Dr. Carol Sutherland answers questions at the Plant Clinics, where NMSU experts diagnose plant problems.**

## **PARTNERSHIPS**

- USDA–U.S. Forest Service
- USDI–Bureau of Land Management
- Eight Northern Indian Pueblo Councils
- New Mexico Energy, Minerals and Natural Resources—State Forestry
- New Mexico Department of Agriculture—Entomology and Nursery Industries, Pesticides, Agricultural Programs and Resources
- Soil and Water Conservation Districts—Doña Ana and Sierra Counties
- Entomological Society of America Southwestern Branch (SWBESA)—Insect Detection and Youth Science Committees
- NMSU Extension Specialists and County Agents
- University of Arizona Cooperative Extension Service—Four eastern counties
- Texas A&M University, Department of Entomology
- Oklahoma State University, Department of Entomology
- Western Nevada College, Small Farm Task Force
- Native Plant Society of New Mexico

## **INDUSTRY INTERACTIONS**

- New Mexico Crop Production Association
- New Mexico Pest Management Association
- West Texas Pest Management Association
- Western Pecan Production Association
- New Mexico Chile Producers Association
- New Mexico Alfalfa Producers Association
- New Mexico Organic Producers Association

## **PRESENTATIONS AND DISPLAYS**

- New Mexico Chile Conference
- New Mexico Pecan Conference
- New Mexico Pest Management Association
- Pesticide Applicator Training and Certification
- Workshops at regional and county levels
- New Mexico Master Gardeners—Entomology
- SWBESA: Current projects, committee reports
- Field Day displays at Alcalde and Artesia
- Entomology presentations for classes in two NMSU departments

## **YOUTH PROGRAMS**

- New Mexico 4-H Entomology—District and state identification and basic entomology contests, maintain and revise program materials
- New Mexico Future Farmers of America—State contest for identification and safe pesticide use, maintain and revise program materials
- 'Agriculture Days' and Entomology for 'Kids, Kows & More' at select school locations

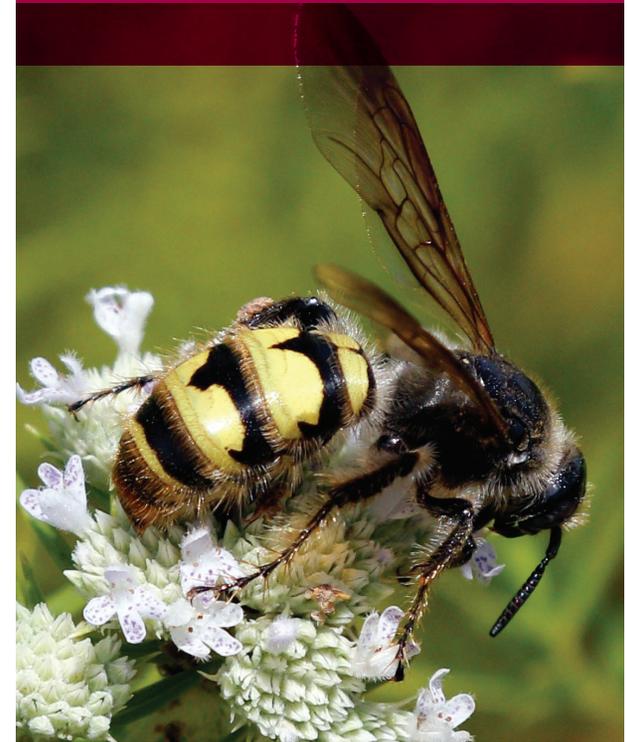
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## ARTHROPOD IDENTIFICATION

Annually, Dr. Sutherland receives from 600 to over 1,000 sets of specimens and inquiries from New Mexico county agents, colleagues, Master Gardeners, pest control operators, producers, various agencies, and the general public. Spiders, ticks, bed bugs, biting flies, caterpillars, grubs, a diversity of wood borers, and everything in between are identified for each inquirer. Answers are returned with accurate, science-based information about each submitted arthropod's role in the environment, life cycle, host range, periods of activity, and appropriate methods and EPA-registered products for managing it, when necessary. Identifications are reported to the National Pest Diagnostic Network, while specimens are integrated into the NMSU Arthropod Collection.

Identification services make it possible to intercept invasive, exotic arthropods that continue to arrive in New Mexico. Since 1980, Dr. Sutherland has identified at least 30 new pests for the state and at least 10 "beneficials," and has monitored the eradications of boll weevil, pink bollworm, and Japanese beetles.

Instead of making 10+ insecticide applications for boll weevils and pink bollworms, New Mexico cotton growers now make NO applications for these pests, cutting production costs and increasing profits. Regulatory surveys for Japanese beetles and imported fire ants make possible intra- and inter-state shipments of New Mexico nursery stock.

## MASTER GARDENERS

As part of the curriculum, Dr. Sutherland has a three-hour presentation for Master Gardener classes covering basic entomology and common pests of vegetables, fruits, nuts, turf, shrubs, and trees, in addition to displaying a variety of native arthropods likely to be encountered.

## PLANT CLINICS AND GARDEN WALKS

Plant clinics allow Master Gardener volunteers to interact with Dr. Sutherland and other specialists, as well as the public as they bring arthropods or damaged plants to our booth at farmers markets or community events. Garden walks allow Master Gardeners to find arthropods in their natural habitats while Dr. Sutherland and other specialists help with identification and commentary.

## FIRST DETECTOR PROGRAMS

Master Gardeners taking first detector classes learn about invasive exotic pests. In 2015, a first detector student alerted Dr. Sutherland to a potential infestation of emerald ash borer (EAB); further investigation determined the host tree was honey locust, but the evidence collected by the Master Gardener pointed to EAB. A multi-agency investigation at the site revealed infestation by *Agrilus difficilis*, which is in the same genus as EAB and leaves the same evidence of infestation as EAB. The field trip became a "dress rehearsal" for the arrival of EAB, receiving recognition by the USDA-EAB program leader.

## PESTICIDE APPLICATOR TRAINING AND CERTIFICATION

Dr. Sutherland has an hour-and-a-half presentation for Category 3A (Ornamentals & Turf) trainees and a one-hour annual review of pest identification highlights for licensees delivered at pesticide applicator training workshops statewide. Trainees see and hear explanations for 45 study guide topics for their state exam. Licensees see and hear about identifications of new or unusual arthropods, damage alerts, updates in distribution, and population trends.

In addition to five multi-county pesticide applicator workshops, she tailors presentations for licensed applicators to local needs or requests from commodity groups for at least 10-12 additional events annually.

With certification, licenses are maintained. With current attendance records and an estimated \$35,000 annual salary for many applicators, around \$10.5 million is maintained annually in New Mexico's economy. At least \$10 million is maintained in the state's economy when private applicators (farmers and ranchers) are certified.