



Agriculture Science Center At Artesia

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Mission Statement

The Agricultural Science Center at Artesia (ASC-Artesia) faculty conduct research and extension programs in soil, water, crop and entomological sciences to enhance the agricultural, economic, environmental, and social well-being of southeastern New Mexico.

Our faculty collaborate in local, regional, national, and international research and extension efforts, and are often asked to bring their expertise to colleagues and clientele across the U.S. and in foreign countries. It is our goal to be the premier off-campus center for novel research and extension programming in integrated pest management, water management, soil health, soil fertility and remediation, and the evaluation of new crop genetic material.

HISTORY OF RESEARCH

Founded in 1955 with a focus on the needs and interests of the Pecos River Valley, over the past twenty years the ASC at Artesia has expanded the scope of their research.

Entomology

Years ago the emphasis in cotton entomology was on boll weevil and pink bollworm. These two pests have been successfully eradicated. In the past five years, growers have found it difficult to control thrips, fleahoppers, and cotton bollworm in Bt cotton. In response, ASC Artesia has evaluated resistance to seed treatments, representing a \$2.7 million impact. Research and extension efforts concentrate on cotton, alfalfa, pecan and sorghum, or wherever there may be a need.

High Value Crops

Increased acreage in SE New Mexico prompted research to reduce insecticide applications on pecan nut case bearer with biological control by predators. Ghost spiders were identified in 2012 and 2014 as a key predator controlling up to 73% of insect pests in pecan orchards. Control of pecan nut casebearer could save growers \$2.2 million per year. A new proposal will address enhancing pecan weevil suppression with ghost spiders and birds.

Environmental Stewardship

Water treatment costs after contamination approach \$43 million per year for a typical 2000 head dairy. To avoid groundwater contamination, an NMSU Nutrient Management workbook was developed using data collected at NM dairies. Land application rates and methods are outlined to prevent groundwater exceeding 10 ppm nitrate.



The farm utilizes Artesian water rights using flood, furrow, side roll sprinklers, and linear move irrigation systems.



Home to many high value crops, Artesia focuses on reducing damage from pests and managing water and soils to increase quality and yields for these crops. Research to decrease pests in cotton and pecan nuts save growers over \$5 million per year.



The Ag Science Center has several of the major soil types around in the Pecos Valley consisting of Harkey very fine sandy loam, Karro loam, Pima silt loam, Reagan loam, and Reeves loam.



ACES Pillars for Economic and Community Development

- Food and Fiber Production and Marketing
- Water Use and Conservation
- Family Development and Health of New Mexicans
- Environmental Stewardship

The College of Agricultural, Consumer, and Environmental Sciences is an engine for economic and community development in New Mexico, improving the lives of New Mexicans through academic, research and Extension programs.

Foundational Education and Training

2021 Impacts

- The New Mexico corn and sorghum performance testing program is supported by paid fees from the cooperating companies. Personnel at each location determine which tests will be conducted at their site and seed companies are invited to participate in those tests. Because seed company participation in individual tests and locations is voluntary, many of the hybrids/varieties that are grown in the state are not included in the tests, and different groups of hybrids/varieties are evaluated at the different locations.
- Twelve Cotton Genetics were entered with enough seed for four replicates. Jinfa Zhang Cotton Breeder Trial entered 138 cotton lines for bench two as it is the best spot to test for disease organisms. Jinfa grew 16 cotton varieties at Leyendecker with four replications. Bayer, Dow, Phytogen, and Plains Delinting had nine entries total. Twelve varieties were grown at Artesia, sixteen in Las Cruces 16, eight in Tucumcari, and varieties in Clovis.
- Despite restrictions due to Covid-19 the entomology lab was able to conduct most of our planned field trials with an emphasis on funded cotton trials. One focus of our efforts was on evaluating resistance to Bt genes in *H. zea* and *H. virescens* populations by collecting insects in commercial fields and by evaluating performance in field trials. Another focus was evaluating the potential for okra leaf cotton as a control measure for bollworm in the face of increasing resistance by bollworm.

Ongoing Research

- Virtually all corn and cotton growers in NM grow transgenic Bt varieties to control insect pests. Resistance to multiple Bt genes has been developing in the US including New Mexico. There are no genes in the pipeline to replace those currently available so alternates for controlling pests is an imminent need. In response to this issue, we are monitoring the level of resistance to Bt genes and developing alternative tools for controlling lepidopterous pests.
- The ASC farm at Artesia has maintained good control of alfalfa weevil with biological control for 20 years. Replicating this type of control in just alfalfa, sorghum and pecan will save growers \$6.5 million per year in reduced losses and control costs. We have established some insectaries to increase populations in hayfields in NM.
- Thiamethoxam and imidacloprid are two common systemic insecticide seed treatments applied to commercial cottonseed. Resistance to neonicotinoid seed treatments has been reported, particularly in the Southeastern US, thus it is important to evaluate efficacy in New Mexico. Some evaluations in Artesia with low thrip pressure have suggested that the seed treatments are effective there but more definitive work is needed.



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