COLLEGE OF AGRICULTURAL, CONSUMER AND ENVIRONMENTAL SCIENCES

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New Mexico State University

AGRICULTURAL SCIENCE CENTER AT ARTESIA

The Agricultural Science Center (ASC) at Artesia is dedicated to research and Extension work that enhances agricultural enterprises and sustains natural resources critical for economic development in southeastern New Mexico.

The Agricultural Science Center at Artesia's mission is to:

- Support the agricultural enterprises of southeastern NM.
- Promote best management practices.
- Sustain natural resources in a changing climate.
- Stimulate economic development.

Areas of Research

- Soil fertility
- Entomology
- Water management
- Manure management
- Plant breeding field evaluations
- Commercial variety trials
- Sustainable agriculture
- Alternative crops

SELECTED PARTNERSHIPS

- USDA–ARS
- USDA–APHIS
- Texas A&M University
- Kansas State University
- University of California
- CEMRC, Carlsbad, NM
- Cotton Inc.
- Cotton Foundation
- Dow AgroSciences
- Bayer Crop Science
- CEHMM, Carlsbad, NM
- WSARE
- Bayer
- Sorghum partners
- Golden Acres
- Pioneer Hybrid Seeds
- Sun Grant Initiative
- Kemin Industries

SELECTED ASC ARTESIA ACCOMPLISHMENTS AND IMPACTS

Food and Fiber Production and Marketing

- Variety trials direct farmers toward higher-yielding or better-quality varieties that could use less water or reduce losses to salinity.
- Cotton seed treatments are being evaluated to save $2.7 million/year in losses from thrips.
- Glandless cotton represents a new product for NM growers. Work at ASC Artesia focuses on evaluating performance and fertility management, and developing pest management strategies for successfully producing this more susceptible crop in the presence of insect pests.
- In sorghum, sugarcane aphid biocontrol and plant resistance can save up to $4.6 million/year in NM and $20 million/year in adjacent Texas counties.

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- Corn evaluations for the dairy industry target technology that increases pounds of milk/ton of forage, enabling greater milk sales ($1.2 million in 2016).
- Biological control of alfalfa weevil by reintroduction of parasitoids can save over $1.2 million/year.
- Biological control of pecan nut casebearer could save up to $1.6 million/year.
- Pecan zinc applications can be made through sidedressing Zn EDTA underground, preventing repeated applications of zinc sprays and lowering production costs below $2,600.

Water Use and Conservation

- Our energy crop project evaluates the effects of low-quality water on yield and energy value. This may impact production potential as new varieties arise.
- We address pest management issues that threaten the sustainability of low-water-use crops, particularly cotton, guar, and sorghum.
- NMSU students and farmers have benefited from soil moisture probes that document leaching, drought, and on-time applications for improved health and development.

Health of NM (Public & Environmental)

- Chagas disease is an increasing concern in the U.S., with over 100,000 cases annually. We determined that over 60% of kissing bugs in southeastern NM are infected with the Chagas disease pathogen, which highlights the need to educate and mitigate risk in southeastern NM.
- High soil test copper has been linked to dairy effluent water, resulting in some crop losses. The toxicity is ameliorated as soil organic matter is increased with sustainable agriculture practices.
- Jujube fruit, which is high in vitamin C and antioxidants, could become an economically viable crop in southeastern NM as variety trials are underway across the state.

Environmental Stewardship

- NM's 325,000 dairy cows produce 6,825 million tons of manure per year. NM's Groundwater Protection Act mandates groundwater remediation if nitrate-N is above 10 ppm. Remediation treatments can cost $32,000 per acre inch of water. Annual water treatment at a 2,000 head dairy would approach $43M per year. Our soil test software optimizes nutrient rates to both reduce nitrogen contamination to groundwater and avoid extreme remediation expenses.
- Insecticide applications in New Mexico are being reduced by developing pest management tools to control insect pest populations using plant resistance and cultural and biological controls.

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