



# Agricultural Experiment Station Leyendecker Plant Science Center

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## MISSION

The mission of the Leyendecker Plant Science Research Center is to improve the lives of New Mexicans, the nation, and the world through research, teaching, and Extension. The Leyendecker Plant Science Research Center serves as the outdoor agronomic laboratory for researchers located on the NMSU main campus in Las Cruces. Leyendecker is an emerging hub for the application of digital agriculture tools to southwestern agriculture.

The Seed Certification and Noxious Weed Free Program (SCNWFP) is located at the Leyendecker PSRC.



Early evaluation of breeding and genetic studies for chile pepper varieties use the facilities at the Leyendecker Plant Science Center and the Fabian Garcia Research Center.

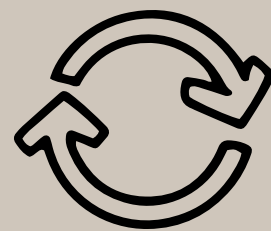


The New Mexico Cotton Breeding Program was established in 1926 and has been led by five generations of breeders.



### Value Added to New Mexico

- Cotton
- Wind and Solar Energy
- Digital Agriculture
- Pecans



Leyendecker headquarters was purchased by the University in 1969 and consists of 203 acres. Projects occurring at the Leyendecker Plant Science Center include cotton, chile, alfalfa, and onion plant breeding, precision farming, pecan research, drip irrigation research, soil health research, and a multitude of other projects and programs.

## Ongoing Research

- The interactive effects of cover crops, compost applications to the soil, and microbial inoculation of soil on the pecan root and rhizosphere microbiome. The results of this study will provide insights into how pecan producers can actively manage their orchard floors to favor populations of beneficial root/rhizosphere microbial species, such as mycorrhiza. This, in turn, is expected to have positive tree health and nut production outcomes for orchards with alkaline soil pH, soil salinity, or other abiotic stress factors. The study is supported by Specialty Crop Block Grant Program.
- Research to assess how a barely cover crop, and the timing of its termination, affects chile emergence and early season weed suppression. Preliminary results indicate that barley cover crops have some efficacy in reducing early-season weed emergence. Chile pepper emergence was not negatively affected by cover crops, regardless of the termination date.
- Research to improve the management of weeds that are difficult to control in chile crops using sorghum as a rotational crop. This involves planting sorghum the year prior to chile to allow a different suite of herbicides to control weeds and reduce the weed seed bank.
- Cotton breeding research program is working on cottonseed oil and its genomic basis, textile quality of new cotton lines, breeding for improvement of cottonseed oil quantity and quality, and resistance to Fusarium wilt race 4. The cotton breeding program is funded by multiple agencies including USDA-NIFA, Cotton Inc., USDA-ARS Crop Genetic Research Unit, and USDA-ARS Southwestern Cotton Ginning Laboratory.

### 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

Foundational Education and Training

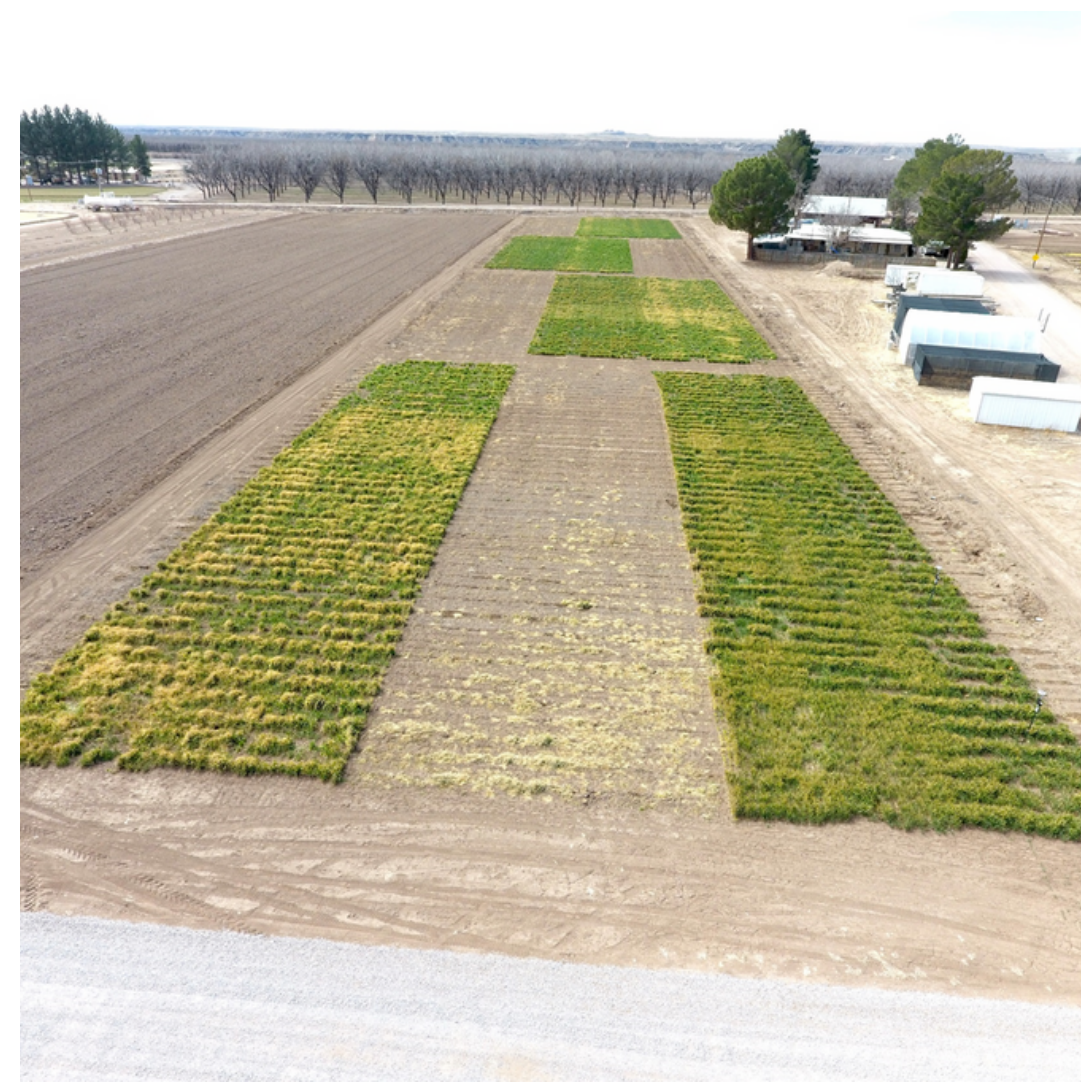
The College of Agricultural, Consumer, and Environmental Sciences is an engine for economic and community development in New Mexico, improving the lives of New Mexicans through academic, research and Extension programs.



## Recent Impacts

### Soil Health Program

- Reduced tillage and cover crops enhance profitability and environmental sustainability. Sustainable soil management is challenging in arid and semiarid agroecosystems. Major issues affecting the sustainability of arid farming are the frequent, intensive tillage operations for crop production in the region and the lack of cover crops during the period of intense wind erosion in the spring. The intensive tillage operations practiced in the region and wind erosion, normally lead to degradation of soil health, necessitating a yearly increase in production input costs to compensate for the lost productivity. Through applied research, we documented that different reduced tillage practices such as no-tillage and strip tillage, combined with yearly cover crops can maintain field crop yields in southwestern New Mexico and reduce the impacts of wind erosion. The soil health research established that reduced tillage systems can save farmers up to \$100 per acre on the cost of tillage practices and with the application of winter grasses as cover crops, sediment loss by wind erosion can be reduced by up to 92%.
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## Community Outreach

### Youth/Student Outreach

- Wildlife Habitat Education Program (WHEP) State 4-H contest held at Leyendecker
- Silver City FFA chapter visit to Leyendecker
- Sustainable Production of Agronomic Crops (NMSU Students Field Tour)

### Farmer Outreach

- Biochar and Soil Health Field Day
- Cotton Incorporated Growers Meeting and Field Tour

### Community/International Outreach

- Tour and discussion with NM State Representative Micaela Lara Cadena
- Universidad de Sonora (Unison) Tour (Faculty and Graduate Students)
- Tour and Discussion with Catapult (a data analytics services and consulting group)

### Field Day

The annual field day is a free event for community members. This is the perfect opportunity for producers to tour and see the research projects that are being conducted at Leyendecker and also to ask questions and get answers in a one-on-one setting.



### Leyendecker Plant Science Center

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