

# Leyendecker Plant Science Center

The University purchased the Leyendecker Plant Science Center (PSC) headquarters in 1969 consisting of 200 acres. Since then, the center has served to advance research and outreach related to sustainable crop production in New Mexico. Current projects at the Leyendecker PSC include management and breeding trials on cotton, chile and alfalfa, precision farming, pecan research, irrigation research, agrivoltaics research, soil health research and many more.



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## MISSION

The mission of the Leyendecker Plant Science Research Center is to improve lives in New Mexico, the nation and the world through research, teaching and Extension.

## VISION

Leading the arid southwest in climate-smart and precision agricultural management systems for sustainable and climate-resilient irrigated cropping systems.

## VALUE ADDED TO NEW MEXICO

- Optimization of crop irrigation through artificial intelligence.
- Development and evaluation of breeding lines of different commodity crops.
- Demonstration of management practices for soil health improvement.
- Use of robotics in data collection for farm management decisions.

## Research Focus

Ongoing research trials at the Leyendecker Plant Science Center are focused on optimizing water use for various crops, including artificial intelligence-driven irrigation and crop management systems. Robots for collecting crop data for management decisions are being tested. Other research activities include sustainable soil health, weed management and crop improvement through adaptive breeding.



## Recent Impacts

- Currently, New Mexico growers are faced with climate change impacts that create adverse growing conditions and greater water demand. They are also experiencing rising costs of supplies and expensive seed. Describing and publicizing all the improved qualities and the unique flavor of open-pollinated NM-type chile will increase demand for the product, and breeding for traits that minimize the impacts of adverse growing conditions will improve the industry.
- Chile production in New Mexico relies on hand hoeing for weed control. This reliance reduces profitability and threatens the sustainability of chile pepper production in New Mexico. In this project, we are determining the financial implications of a new crop rotation that reduces weeds and hand hoeing in chile peppers. Information on a novel tactic's economic impact can help farmers with adoption decisions. This field study generates foundational facts to an education-outreach program that presents new strategies for reducing hand hoeing in chile pepper production. With knowledge gained from this study, farmers in New Mexico can better utilize a crop rotation that improves profitability by diminishing hand labor requirements in chile pepper production.
- Cotton is among the top agricultural commodities of New Mexico. Insect pests cause significant economic losses to cotton in the state. Thrips are one of the most persistent early-season pests of cotton. They can significantly reduce cotton stand establishment and cause injury to terminal growth, which impacts yield, among other issues. Transgenic cotton varieties have been developed that target sucking pests, including thrips. This research evaluates the impact of thrips populations in southern New Mexico on these important varieties, thus providing valuable data for their efficacy against thrips under our unique growing conditions. This benefits farmers in the region in terms of variety selection.
- This project studied the field water balance by collecting data on water distribution in pecan fields. Water-saving measures that could be implemented to optimize the growth and yield of pecans are being developed. Different irrigation methods concerning the water cycle for sustainable pecan production in the Mesilla Valley are being evaluated. The transdisciplinary team works with growers, irrigation districts and ecosystem managers to adopt and adapt climate resilience strategies, train the next generation of transdisciplinary practitioners and produce an online dashboard for data-driven decision-making.

## COMMUNITY ENGAGEMENT

Leyendecker hosted a Soil Health and Biochar workshop in May 2025. Farmers, agricultural support professionals, faculty and students participated in the workshop. Information on how to make biochar from scratch using the "Ring of Fire" biochar kiln was demonstrated. Pecan wood waste was used as the feedstock for the biochar. Results of the long-term soil health site at Leyendecker were also shared with participants. The audience had the opportunity to walk through cover crop fields and ask questions about how different management practices impact soil health.

