

### VISION

**Advancing innovations in high-efficiency agriculture.**

### MISSION

**Researchers at the Fabian Garcia Science Center strive to carry on Fabian Garcia's legacy of innovation in agriculture and passion for educating the next generation of agriculturalists.**

- Includes a botanical garden and gazebo open to the community for photography and seasonal landscape enjoyment.



- Research on plant breeding, regionally adapted and alternate crops, viticulture, algae, brackish water, and best management practices in research plots and greenhouses.



- Includes a student-run greenhouse, providing opportunities for clubs, the Floral Team, the Horticulture Forum, and classes.



### Value Added to New Mexico

- Onion and chile pepper research
- Investigations into the usage of brackish groundwater in agricultural systems
- Forage and alternate crop research



The first deed for Fabian Garcia Science Center was signed in 1906 and today the center has 41.1 acres of land. The Center not only houses the Chili Pepper Institute, but includes, and is not limited to research plots and greenhouses supporting alfalfa breeding and genetics, viticulture, cotton, horticulture, nematology, micro-plot, turf grass water management, IR-4, and onion research. Another greenhouse project occurring is the phytoremediation of contaminated soils.

### ONGOING RESEARCH

Current research at the Center focuses on drought-resilient varieties of alfalfa, onion cultivars resistant to diseases and pests, and chile peppers that can be mechanically harvested. Investigations are being conducted to reduce reliance on declining freshwater through irrigation with brackish water, using regionally adapted cover crop mixtures adapted to hotter and drier climates, and testing alternative, water-saving crops such as guar.

The Jose Fernandez Garden continues to support vegetable growers through testing of underutilized and heat-tolerant vegetables and demonstrating management practices such as solarization for weed control. Research on microalgae contributes to our understanding of its role in sustainable energy sources, human nutrition, and soil health.



*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.*

ACES Pillars for Economic and Community Development



## RECENT IMPACTS

- Investigations for irrigating crops with brackish groundwater may assist in reducing stress on declining freshwater supplies. Improved phytonutrient profiles could change the perception of salinity from being an agricultural threat to being a value-added product.
- Integrated analysis of Alfalfa DNA sequence and field-based data are conducted to identify genetic factors influencing forage yield and nutritive value to develop drought-resilient cultivars for the arid southwest.
- Onion stakeholders identify onion thrips and Iris yellow spot virus as the greatest pest and disease threats to onion yield and economic sustainability. Onion germplasm is being developed and evaluated for onion thrips and Iris yellow spot impact. Also, Fusarium basal rot (FBR) is a soil-borne fungal disease that causes disintegration of the onion bulb basal plate. Investigations are being conducted for breeding for host plant resistance to FBR, which may eliminate the detrimental effects of the disease.
- A post-planting, delayed preemergence application of pendimethalin could provide comparable or better control of annual weeds as currently used herbicides in autumn-sown and winter-sown onions in NM.
- An investigation to develop new Chile cultivars with higher mechanical harvested yield and improved quality is being conducted.
- Numerous projects are focused on Guar, a drought tolerant crop. Evaluating its performance under different salinity levels will help identify tolerant genotypes as well as understand the underlying tolerance mechanisms. Guar can also be used as an alternative legume forage crop in the region that uses less water and produces an optimum amount of good quality forage. The legume and grass mixture may help in producing balanced quality forage.

## COMMUNITY OUTREACH

The Center is highly involved in outreach efforts and hosts numerous educational opportunities each year. In 2022, eight different opportunities were offered, including the NMSU Onion Field Day, the NM Chile Conference, the NM Agriculture Sustainability Workshop, the Jose Fernandez Memorial Garden Ceremony, and five separate presentations to scientists, students, growers from western India, and the local community.

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