

**Fabian Garcia Research Center
and Leyendecker Plant Science Research Center**

**College of Agricultural, Consumer and Environmental Sciences
New Mexico State University
Strategic Plan 2020-2025**

MISSION

The mission of the New Mexico State University (NMSU) Leyendecker Plant Science Research Center and the Fabian Garcia Science 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; the Fabian Garcia Science Center is oriented toward horticultural research. The mission is consistent with the mission of NMSU and that of the College of Agricultural, Consumer and Environmental Sciences (ACES): to contribute to the economic development of New Mexico through education, research, and service.

STRATEGIC PRIORITIES

Note: Goals and objective numbers correspond to the College of Agricultural, Consumer, and Environmental Sciences (ACES) strategic plan, but some objectives do not apply to these Centers and have been omitted.

GOAL 1: ENHANCE STUDENT SUCCESS AND SOCIAL MOBILITY

Supporting the College Teaching Mission

This goal will contribute to an innovative program that effectively educates the next generation of scientists, enhances diverse enrollment, supports program demand, facilitates student retention and timely graduation, and produces highly qualified graduates with value-added career outcomes.

Objective 1.1: Maintain and enhance the existing structure that supports student success.

Actions:

- Encourage and support student training, development, and recognition.
- Support hands-on learning opportunities and entrepreneurship training for students.
- Provide student work and internship opportunities within the College and industry.

Goal 1 Key Performance Indicators (KPIs)

- Outreach events at ASCs with a recruiting component
- Internships offered/internships conducted
- Graduate research activity

GOAL 2: ELEVATE RESEARCH AND CREATIVITY

This strategic priority identifies research and creative strength, engages students, strategically builds capacity, generates funding, and builds ACES reputation within NMSU, nationally, and internationally. In ACES, research and creativity are defined through four pillars for economic and community development: 1) food and fiber production and marketing, 2) water use and conservation, 3) family development and health of New Mexicans, 4) environmental stewardship and foundational education and training.

Objective 2.1: Conduct research, teaching, and Extension programs on emerging issues.

Actions:

- Emphasize value-added byproducts and genetic improvement of agronomic crops.
- Develop urban horticulture programs to assist small agricultural efforts and the green industry.
- Expand on existing post-harvest technology.
- Increase research on organic and conventional crop production.
- Support discovery research relating to agronomic industries that benefit the economy of New Mexico.
- Expand and enhance efforts in biomedical and bio-economy research.
- Support initiatives that enhance the production of alternative and specialty crops (e.g., medicinal plants, local foods, community gardens, and farmers' markets).
- Foster interdisciplinary and collaborative research projects with other faculty, agricultural research institutions, industry, and farmers.

Objective 2.2: Address critical water use and conservation issues in New Mexico and beyond (national/international) using a science-based approach.

Actions:

- Characterize groundwater and surface water resources to understand and quantify water availability.
- Elaborate requirements for water resource sustainability within semi-arid systems.
- Assess and understand the impacts of prolonged drought, climate change, and increasing aridity on available water supply, agricultural water utilization, and ecological sustainability.
- Increase water quality and quantity through improved water use, treatment, and conservation.

Objective 2.4: Address critical environmental issues in New Mexico and beyond.

Actions:

- Advance our understanding of controlling processes and mechanisms influencing soil quality resiliency through alternative water irrigation and soil salinization.
- Develop novel methods for characterization of soil erosion with consideration of both wind erosion and ephemeral storm-flood events.
- Use novel methods to assess dust, soil erosion, and industrial release impacts on air pollution.

- Determine the role of livestock in the control of wildfire and invasive plant species.
- Support programs that seek to understand how microbial community diversity and ecosystem functionality impact desertification and rangeland management, as well as soil health in cultivated systems.
- Investigate the natural environmental system and agricultural industrial controls over nutrient fluxes, utilization, and cycling/recycling.
- Develop novel utilization approaches and advance our understanding of the environmental impacts of renewable energy (e.g., biofuels) within desert environments.
- Investigate forest management practices that improve forest health and water values in connection to climate change and fire risk.

Goal 2 Key Performance Indicators (KPIs)

- Research and development expenditures
- Contributions to intellectual property and technology innovation and transfer
- In-kind funding
- Number of graduate student projects associated with Fabian Garcia and Leyendecker centers
- Publications (refereed journals, plus AES and Extension publications)
- Number of joint/collaborative projects between ASCs
- Number of joint/collaborative projects between ASCs, governmental, and other agencies (e.g., national labs, USGS, NRCS)
- Number of workshops/presentations/field tours
- Gift revenue (total \$)

GOAL 3. AMPLIFY EXTENSION, OUTREACH, AND ECONOMIC AND COMMUNITY DEVELOPMENT

Extension consists of transferring university scientific knowledge and advancements to relevant external audiences through open-access information resources, presentations, events, training programs, and individual consultations. Outreach activities include presentations, connections with communities and families, multigenerational engagement, economic development and entrepreneurship, and collaborative efforts with industry and corporations.

Objective 3.1: Develop innovative, multidisciplinary educational programming addressing issues relevant to New Mexico and expand the clientele base.

Action:

- Produce materials to be delivered through mass media outlets – publications, news items, social media content, and different languages.

Objective 3.2: Connect current research with the community.

Actions:

- Hold workshops and field days.
- Improve websites that describe the results of current research.
- Increase social media presence to highlight research and creativity activities.

- Demonstrate the importance of natural resource conservation and management practices.
- Assist Cooperative Extension Service disseminates research-based information to the citizens of NM, including co-authoring Extension publications based on research conducted at the ASCs.

Goal 3 Key Performance Indicators (KPIs)

- Financial investment in research programs and centers
- Outreach expenditures
- Outreach programs related to community and economic development
- Clientele contacts, workshops, courses, and field days
- Number of collaborative industry, agency, and community activities
- Number of public programs hosted at ASCs
- Number of youth, students, faculty, and staff engaged in programs at the ASCs
- Number of general publications and media releases
- Number of invited presentations
- Number of stakeholder events, meetings, and tradeshow attended
- Number of community, stakeholder, state, or national events attended

GOAL 4. BUILD A ROBUST UNIVERSITY BY IMPLEMENTING AGRICULTURAL SCIENCE CENTER SYSTEM-WIDE, MISSION-SUPPORTING STRATEGIC INITIATIVES

Unique ASC elements can promote learning, inquiry, diversity and inclusion, social mobility, and Extension by integrating across and between disciplines throughout ACES, extended to K–12 and lifelong learners both locally and internationally.

Objective 4.3: Encourage interdisciplinary and integrated management approaches in planning and implementing programs, emphasizing both applied and fundamental methods for developing comprehensive solutions to important issues.

Action:

- Encourage interdisciplinary and integrated initiatives to promote collaborations across different university entities.

Objective 4.4: Elevate and promote the impacts and visibility of the Fabian Garcia and Leyendecker Centers.

Actions:

- Maintain and enhance existing infrastructure and capability that supports research.
- Develop information that can be used to communicate the broad and high-quality activities of the ASCs.
- Inform the people of New Mexico about accomplishments, areas of excellence, and the impacts of the ASCs’ accomplishments.
- Inform ACES and other colleges across NMSU of how the ASCs are helping them

solve key problems for the people they represent.

Objective 4.6: Increase the level of support for ACES from the citizens of New Mexico; local, state, and federal governments and agencies; private corporations; foundations; and alumni.

Actions:

- Continue participation with constituency and lay groups within cooperative ventures and coalition-building with the College of ACES.
- Use Advisory Committees and other key constituents to expand and refine ACES legislative initiatives.
- Foster engagement with industry through internships, externships, and work experiences for students.

Objective 4.7: Encourage and cultivate staff excellence, and support staff training, development, and recognition.

Actions:

- Strengthen initiatives in leadership development.
- Provide faculty and staff with training opportunities that will empower them to identify and implement processes that enhance system efficiency.
- Recognize faculty and staff excellence in service and research support.

Goal 4 Key Performance Indicators (KPIs)

- Number of stakeholder-identified concerns addressed through research, Extension, or outreach activities
- Number of collaborative efforts across departments, colleges, and scientific organizations across the region and nation to address the critical problems affecting New Mexico's agriculture and rural areas
- Number of public communications and news stories regarding research, Extension, and outreach efforts taking place at ASCs
- Number of stakeholders who participate in cooperative ventures and coalition-building to increase resource support for the college
- Establishment of a system of incentives for excellence in research and external grantsmanship
- Number of ASC-related news stories, accomplishments, and areas of excellence presented to New Mexico legislators and New Mexico citizens
- Development of transdisciplinary initiatives for digital and prescriptive agriculture, New Mexico agriculture value chain enhancement, agriculture literacy initiative, and youth development via online learning
- Economic sustainability (grants, sales, services, etc.)
- Increased number of collaborative/new research projects fostered by communication with stakeholders
- Novel research support by the ASCs for preliminary data to gain grant access
- Number of personnel development programming opportunities afforded to staff