

# Department Strategic Plan

Department of Plant and Environmental Sciences | <https://aces.nmsu.edu/academics/pes/>  
Agronomy, Horticulture, Turfgrass, Genetics, Soils, and Environmental Sciences

## Departmental Mission

The mission of the Plant & Environmental Sciences Department (PES) at New Mexico State University (NMSU) is to improve the quality of life for the citizens of New Mexico (NM), the United States and globally, through multiple duties: teaching, research, Extension, outreach, and service in the study and application of plant and environmental sciences relevant to agriculture, food and fiber production and environmental sustainability, particularly in arid southwestern USA, but with relevance in arid regions globally. It is a mission 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

### GOAL 1: ENHANCE STUDENT SUCCESS AND SOCIAL MOBILITY

Goal: This goal will contribute to an innovative program that effectively educates the next generation of plant and environmental 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 departmental, intellectual and professional structures that enable student success.

#### Actions:

- Initiate new faculty lines to provide instruction in needed or emerging fields related to programs in PES.
- Encourage and support faculty and staff training, development, and recognition.
- Pursue extramural grants and fellowships that target instruction, research opportunities, and professional training for students.
- Support pathways for students to transition directly from PES into careers.
- Provide hands on learning opportunities and entrepreneurship training for students.
- Provide student work and internship opportunities within the College, industry, and internationally.
- Encourage student leadership development across the university

**Objective 1.2:** Regularly review and revise curricula to be current, exciting and innovative and thereby increase student enrollment, retention, and learning.

#### Actions:

- Review and when necessary, revise, update and restructure, PES curriculum at regular intervals, with emphasis on evolving career opportunities.
- Develop distance education opportunities that engage faculty and students with agricultural science centers and Extension programs across New Mexico.



**Objective 1.3:** Increase recruitment, retention and graduation rates of undergraduate and graduate students in PES programs.

**Actions:**

- Implement a coordinated undergraduate and graduate recruitment and retention plan aimed at traditional and nontraditional, domestic, and international students.
- Promote participation in student clubs, university extracurricular activities, internships, exchanges, and other opportunities to all students
- Facilitate the effective use of scholarships and research positions as recruitment/retention tools.
- Continue efforts to include K-12 teachers and Extension in cultivating and recruiting high-quality students.
- Recruit and mentor more underrepresented minority students.

**Key Performance Indicators (KPIs)**

	Metrics		
	Year 1	Year 3	Year 5
Enrollment Growth	Five-yr department average: of 145 students	Increase by 2%	Increase by 3%
Graduation Rates	Quantify current four-yr graduation rate	Increase by 5%	Increase by 10%
Student Satisfaction	Quantify current student satisfaction	Increase by 2%	Increase by 5%
Distance Education Opportunities	One online course offering	Three online course offerings	Five online course offerings
Employment Rate	Current placement: 43%	Increase by 3%	Increase by 5%
Internships Placement Rate	Current placement: ≥ 80% of enrolled students	≥ 80% of enrolled students	≥ 80% of enrolled students

**Leading Indicators**

- Job, fellowship and internship placement rates
- Enrollment demographics of diverse groups
- Student participation and success in local, regional, national, and international meetings
- Faculty participation in teacher-training programs, seminars and distance education for improved course-deliver
- Student satisfaction ratings from exit surveys

**GOAL 2: ELEVATE RESEARCH AND CREATIVITY**

This strategic priority identifies research and creative strength, engages students, strategically builds capacity, generates funding, and builds PES 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 on current and emerging agricultural issues, while enhancing and maintaining research infrastructure.

**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.
- Initiate research on artificial intelligence.
- 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 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:**

- Advance understanding of impacts of using alternative water sources for irrigated agriculture.
- Characterize groundwater and surface water resources to understand and quantify water availability.
- Discover requirements for water resource sustainability within the fragile environment of 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 2.3:** Address critical environmental issues in New Mexico and beyond.

**Actions:**

- Discover and develop methods for characterization and treatment of contaminants of emerging concern (CEC) within soil, water, and plants.
- Advance our understanding of processes and mechanisms influencing soil quality resiliency through alternative brine 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.
- Advance our understanding of natural and managed dryland ecosystems.
- Expand the database for how microbial community diversity and ecosystem functionality impact desertification and rangeland management.
- Investigate both natural and built ecosystem controls over nutrient fluxes, utilization, and cycling/recycling.
- Develop novel approaches and advance our understanding of environmental impact of renewable energy (e.g., biofuels) within desert environments.
- Investigate forest management practices that improve forest health and water supplies in connection to climate change and fire risk.

## Key Performance Indicators (KPIs)

	Metrics		
	Year 1	Year 3	Year 5
Externally funded research and creative activities	≥ \$200,000/100% Research FTE/yr	≥ \$210,000/100% Research FTE/yr	≥ \$230,000/100% Research FTE/yr
Research productivity	≥ 4 pub/100% Research AOE/yr	≥ 4.5 pub/100% Research AOE/yr	≥ 5 pub/100% Research AOE/yr

AOE: Department Allocation of Effort

## Leading Indicators

- External funding (numbers of proposals submitted, proposals funded, amount of grant funding)
- Research expenditures
- Contributions to intellectual property and technology innovation and transfer
- Number of faculty research awards and recognitions for research accomplishments
- Faculty service (proposal review panels, journal service, organizations)
- Number of graduate students and post-docs
- Number of faculty, staff, and student researchers (FTE)
- Conference presentations
- Publications (AES and refereed journals)
- Number of field days
- Number of advisory board meetings
- Student employment

## **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 (communications) addressing issues that are relevant to New Mexico and expand the clientele base.

### **Actions:**

- Produce multilingual materials that can be delivered through mass media outlets – publications, internet videos, news items, and social media.
- Promote agricultural and environmental literacy initiatives.
- Identify faculty to provide additional expertise in areas identified by stakeholder advisory committees.

**Objective 3.2:** Connect current research and teaching to the community.

**Actions:**

- Hold workshops and field days on and off campus.
- Improve websites that offer results for current research.
- Demonstrate how responding to stakeholder input drives research outcomes and impacts.
- Inspire confidence and conviction among New Mexico’s youth to become tomorrow’s leaders by strengthening faculty involvement in educational programs both on and off campus
- Increase faculty and staff participation in pathway to connect 4-H and FFA youth to NMSU community.
- Partner with private and public sector.
- Clientele contacts: Disseminate research-based information and community development activities to the citizens of NM.

**Objective 3.3:** Collaborate with small- and large-scale industry, tribal communities, and community organizations to enhance food and fiber production and marketing, conserve water, resolve family development and health issues, and steward the environment.

**Actions:**

- Work with tribal communities, industry, and community organizations throughout New Mexico to share knowledge on environmental stewardship and health and wellness efforts across the state and region.
- Hold workshops to address specific environmental, health, wellness, and youth needs determined by tribal and other communities.
- Connect tribal youth to undergraduate and graduate degrees in PES.

**Key Performance Indicators (KPIs)**

	Metrics		
	Year 1	Year 3	Year 5
Outreach and Extension events of the department	≥ 4 events/yr	≥ 5 events/yr	≥ 6 events/yr

**Leading Indicators**

- Number of collaborative industry, agency, and community activities
- Clientele survey on Extension activities.
- Student, faculty, and staff service to communities, NMSU, ACES, and professional societies.
- Number of development opportunities for NM Youth.
- Number of educational publications and media releases: Educate and inform clientele through publications and media distributions.

## **GOAL 4: BUILD A ROBUST UNIVERSITY BY IMPLEMENTING COLLEGE-WIDE, MISSION-SUPPORTING STRATEGIC INITIATIVES**

PES's unique elements promote learning, inquiry, diversity, inclusion, social mobility, and Extension by integrating disciplines throughout NMSU to educate K-20 and life-long learners at local and international levels. These PES initiatives provide a diverse academic environment that is reflective of a global society.

**Objective 4.1:** Recruit undergraduate and graduate students and faculty globally and increase the recruitment from underrepresented groups.

### **Actions:**

- Provide PES support for educational outreach efforts that serve high schools with high percentages of students from underrepresented groups.
- Develop a program to enhance transition of underrepresented undergraduates to graduate programs within PES.
- Support departmental interaction with ACES Global Initiatives Program.
- Maintain diversified expertise of faculty and staff.

**Objective 4.2:** Elevate and promote the impacts and visibility of the Department.

### **Actions:**

- Maintain and enhance existing infrastructure and capability that supports research, teaching, outreach, and Extension.
- Develop information that can be used to communicate the broad and high-quality services of the Department.
- Inform the people of New Mexico about accomplishments, areas of excellence, and the impacts of PES accomplishments.
- Inform ACES and other colleges across NMSU of how PES is helping them solve key problems for the people they represent.
- Encourage interdisciplinary and integrated initiatives to promote collaborations across different university entities.
- Continue communication and cooperative efforts with family and agricultural commodity groups, and trade, business, and educational associations.
- Promote and market the academic programs in PES and inform our constituents of the career opportunities a PES degree provides.
- Continue technological development and improvement of classes and facilities.
- Give high priority to improving classrooms, online distance education capabilities and other educational facilities (hands-on/experiential) for students.

**Objective 4.3:** Continue a targeted involvement in multistate, regional, and international programs.

### **Actions:**

- Encourage and reward multistate, regional, and international research, teaching, and Extension activities.
- Participate in NMSU's effort to internationalize its courses of study.
- Work with industry to develop workforce opportunities for students (i.e. internships, externships and work experiences).

**Objective 4.4:** Encourage and cultivate faculty and staff excellence, and support faculty and staff training, development, and recognition.

**Actions:**

- Increase the number of endowed chairs, fellows, professorships, and postdocs.
- Promote faculty and staff excellence in teaching, research, and outreach/Extension.
- 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.
- Encourage nomination of PES faculty for early- mid- and late-career awards through professional societies, academic, state and federal agencies, nationally and internationally.

**Key Performance Indicators (KPIs)**

	<b>Metrics</b>		
	<b>Year 1</b>	<b>Year 3</b>	<b>Year 5</b>
Successful tenure and promotion applications.	Maintain 100% Success Rate for eligible faculty	Maintain 100% Success Rate for eligible faculty	Maintain 100% Success Rate for eligible faculty
Research and outreach collaborative activities.	Maintain 100% Faculty Involvement	Maintain 100% Faculty Involvement	Maintain 100% Faculty Involvement
Post Baccalaureate Education Enrollment	≥ 46%	≥ 46%	≥ 46%

**Leading Indicators**

- Proportion of successful tenure and promotion applications, relative to total Tenure & Promotion applications.
- Stakeholders participation in cooperative ventures and coalition-building to increase resource support for the college.
- Number of collaborative research and outreach collaborative activities.
- Establishment of a system of incentives created for excellence in teaching, research, extension, external grantsmanship.
- Number of PES news stories, collaborative projects
- Number of national and international recognitions
- Areas of excellence presented to New Mexico legislators and other New Mexicans

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. New Mexico State University is an equal opportunity/affirmative action employer and educator. NMSU and the U.S. Department of Agriculture cooperating.