



## AGRICULTURAL SCIENCE CENTER AT TUCUMCARI

The Agricultural Science Center (ASC) at Tucumcari exists to discover, develop, and disseminate information about innovative solutions for crop and livestock systems in irrigated and dryland agriculture in New Mexico, with specific local application to meet the NMSU College of ACES's four pillars for economic and community development.

### In 2017, ASC Tucumcari Faculty:

- Authored or co-authored one non-peer-reviewed and four peer-reviewed research publications.
- Made six presentations of their research to regional, national, or international scientific audiences.
- Co-authored two peer-reviewed Extension publications.
- Made 12 presentations to stakeholder groups statewide.
- Advised or co-advised six graduate students.

## SELECTED PROGRAM IMPACTS

- **Planting legumes with small grain or sorghum forages increases nutritive value when grown for hay.** If 5% of New Mexico's growers implement the practice, it could lead to an increase in revenues of approximately \$750,000 per year.
- **Beef herd improvements have been made for more than half a century due to feed efficiency testing.** This has led to an estimated value exceeding \$800,000 annually to New Mexico's beef cattle industry.
- **Statewide variety testing identifies varietal yield differences in alfalfa.** If 5% of New Mexico's alfalfa producers make appropriate variety selections, the return could be \$1.5 million or more per year.
- **Including alfalfa in irrigated pastures more than doubles gain per acre for beef yearlings from April through September compared to monoculture grass.** From 2008–2013, irrigated pasture acreage in New Mexico nearly doubled, as did the number of farms with irrigated pastures. If 5% of those new pasture acres were planted with alfalfa or alfalfa-grass mixtures, the increased return could have been \$1 million in September 2013.

- **Benefits of tillage and stubble management in dryland cropping systems depend on soil type and precipitation distribution.** Leaving tall stubble and using conservation tillage generally improves water use efficiency.
- **Teff saves late-season water.** Teff hay production uses half the water typically applied to alfalfa in the second half of the growing season and produces as much yield.
- **Many turfgrasses, trees, and shrubs were evaluated over the past century for windbreak and farmstead plantings.** The value of this research for improving the quality of life for New Mexicans is priceless.

## ONGOING PROGRAMS TO ADDRESS ACES PILLARS FOR ECONOMIC AND COMMUNITY DEVELOPMENT

- **Beef cattle feed efficiency testing:** Discovering genetic differences that impact feedlot feed:gain ratios; will include water use and management as a future component.
- **Forage crop research:** Alfalfa management, candidate species for local adaptation, forage nutritive value improvement, and grazing trials.

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### 4 Pillars for Economic and Community Development

- Food and Fiber Production and Marketing
- Water Use and Conservation
- Health of New Mexicans
- Environmental Stewardship

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 affirmative action/equal opportunity employer and educator. NMSU and the U.S. Department of Agriculture cooperating.

- **Semi-arid cropping systems research:** Tillage, crop rotations, cover crops, fertility, and limited irrigation.
- **Crop performance evaluations:** Alfalfa, corn, cotton, grain sorghum, jujubes, pinto beans, and sorghum forages.



## GOALS DEFINED BY OUR ADVISORY COMMITTEE TO ADDRESS ALL OF THE ACES PILLARS

- Secure recurring legislative funding to evaluate the cropping potential and environmental impacts of reusing treated municipal wastewater for agricultural irrigation.
- Secure recurring legislative funding to address rangeland sustainability needs in northeastern/east-central New Mexico.
- Secure recurring legislative funding to discover horticultural crop options for small farms with low available resources, particularly in regard to water.
- Replace, upgrade, and/or construct buildings and facilities to meet the demands of ongoing and increasing programs.

## On-Site Faculty and Expertise

- **Leonard Lauriault**, Irrigated Forages and Pastures
- **Murali Darapuneni**, Semi-arid Cropping Systems



## CURRENT AND RECENT PARTNERSHIPS AND EXTERNAL CONNECTIONS

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| <ul style="list-style-type: none"> <li>• Tucumcari Municipal Schools</li> <li>• Mesalands Community College</li> <li>• City of Tucumcari</li> <li>• Canadian River Soil and Water Conservation District</li> <li>• Canadian River Riparian Restoration Project</li> <li>• Ute Reservoir Watershed Alliance</li> <li>• Natural Resources Conservation Service</li> <li>• Quay County Cotton Boll Weevil Control District</li> <li>• Arch Hurley Conservancy District</li> <li>• Tucumcari Feed Efficiency Test, LLC (formerly New Mexico Beef Cattle Performance Association)</li> <li>• New Mexico Water Trust Board</li> <li>• New Mexico Hay Association</li> <li>• Missouri Botanical Garden, St. Louis</li> </ul> | <ul style="list-style-type: none"> <li>• Sirius Minerals, PLC</li> <li>• Syngenta Crop Protection</li> <li>• Cornell University</li> <li>• University of Kentucky</li> <li>• Louisiana State University</li> <li>• University of Nebraska – Scottsbluff</li> <li>• Texas A&amp;M System</li> <li>• West Texas A&amp;M University</li> <li>• Valent, USA</li> <li>• <b>ITALY:</b> University of Padova</li> <li>• <b>MEXICO:</b> INIFAP; SENASICA; Universidad Autónoma de Baja California</li> <li>• <b>PAKISTAN:</b> University of Agriculture, Faisalabad; Ghazi University, Dera Ghazi Khan</li> </ul> |
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