



AGRICULTURAL SCIENCE CENTER AT TUCUMCARI

The Agricultural Science Center at Tucumcari is boldly shaping the future by conducting locally driven, globally relevant research designed to discover, develop, and disseminate knowledge related to crop (including forages) and livestock production under irrigated and dryland conditions to (1) improve the quality, safety, and reliability of food and fiber products and enhance agricultural profitability; (2) stimulate economic development using natural resources, sustaining the environment and protecting natural resources with sound practices; and thereby (3) improve the quality of life for the people of New Mexico.

In 2018, ASC Tucumcari Faculty:

- Authored or co-authored 10 peer-reviewed and 10 non-peer-reviewed research publications.
- Made three presentations to regional, national, or international scientific audiences.
- Revised two Extension publications.
- Made nine presentations to stakeholder groups statewide.
- Co-advised five graduate students.

SELECTED PROGRAM IMPACTS

- **Planting legumes with sorghum forages increases forage nutritive value.** A \$750,000 revenue increase annually could result if 5% of New Mexico's growers implemented the practice. Research evaluating canopy development and light interception patterns of several sorghum-legume mixtures demonstrated that faster canopy coverage and greater light interception occurred with mixtures compared with monoculture sorghum. Lablab, cowpea, lima bean, and pole bean are promising legumes.
- **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.
- **Alfalfa variety testing potentially returns \$38 million to New Mexico's growers.** Differences between the highest- and lowest-yielding varieties in irrigated alfalfa tests statewide

ranged from 0.99 to 2.41 tons per acre in 2018. If sold as hay, this translates to a potential difference in returns of \$213 to \$518 per acre due to variety, or an increase of at least \$38 million for the industry.

- **Strip tillage for corn production has environmental and economic benefits in New Mexico.** Corn constitutes about 17% of New Mexico's irrigated crop area. The strip tillage yield advantage in corn in New Mexico is estimated to be \$12.9 million over conventional tillage, in addition to considerable energy savings. Additionally, conservation tillage has the relative advantages of controlling soil erosion and improving water-and nutrient-use efficiency.
- **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.

ACES Pillars for Economic and Community Development



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ONGOING PROGRAMS TO ADDRESS ACES PILLARS FOR ECONOMIC AND COMMUNITY DEVELOPMENT

- **Beef cattle feed efficiency testing:** Discovering genetic differences that impact feedlot feed:gain; now includes water use and management as a component.
- **Forage crop research:** Alfalfa management; candidate species for local adaptation; forage nutritive value improvement; grazing trials.
- **Semi-arid cropping systems research:** Tillage, crop rotations; cover crops; fertility; limited irrigation.
- **Crop performance evaluations:** Alfalfa, corn, cotton, grain sorghum, jujubes, 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 using 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 few 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">• Tucumcari Municipal Schools• Mesalands Community College• City of Tucumcari and Quay County• Canadian River and Western Mora Soil and Water Conservation Districts• Ute Reservoir Watershed Alliance• USDA-ARS, FSA, NIFA, and NRCS• Quay County Cotton Boll Weevil Control District• Arch Hurley Conservancy District• Tucumcari Feed Efficiency Test, LLC• Quay County TableTop Food Coop• Rocky Mountain Farmers Union• New Mexico Water Trust Board• New Mexico Hay Association• New Mexico Economic Development | <ul style="list-style-type: none">• Cornell University• Louisiana State University• University of Nebraska-Scottsbluff• Texas A&M University System• West Texas A&M University• Syngenta Crop Protection• Valent USA• BRAZIL: University of São Paulo• INDIA: ICRISAT, ICAR, multiple universities• ITALY: University of Padova• MEXICO: INIFAP, SENASICA, Universidad Autónoma de Baja California• PAKISTAN: Multiple universities• PUNJAB: The Islamia University• UNITED KINGDOM: Sirius Minerals, PLC |
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