

Los Lunas Agricultural Science Center Annual Report



2025

Table of Contents

Notice to Users of this Report	4
Agricultural Science Center Locations Map	5
Executive Summary.....	6
New Faculty/Staff Spotlight.....	7
Research Highlights	8
Beneficial Arthropod Diversity In Big Sacaton, Lance-Leaf Coreopsis, And Western Yarrow.	9
Restoring The Experimental Vineyard at the Los Lunas Agricultural Science Center	10
Impacts of Organic Amendments on Soil Health and the Productivity of Perennial Forage Systems in the Arid Southwest	11
Alfalfa Variety Trial.....	12
Post-Emergent Herbicide Weed Control in Perennial Forage Grasses	13
Student Outreach Programs at the Los Lunas ASC.....	14
The Compatibility and Contribution of Natural Enemies in Western US Alfalfa Management	15
Crop Safety of Dimethenamid-p on Chile	16
Magnitude of Residue Study of Linuron on Dry Beans	16
Determining Costs and Benefits of Crop Rotations for Improved Weed Control in Chile	17
Developing Region-Specific Guidelines for Selecting Cover Crops in New Mexico.....	18
New Mexico Urban Agriculture Center of Excellence	19
Integrating Saffron into Small Vegetable Production Systems of New Mexico to Enhance Profitability and Sustainability	20
Effects of Urban Landscape Ground Covers on Soil Health, Moisture, Temperature, Weed Control, and Tree Establishment.....	21
Protecting NM Tomatoes from Disease while Generating Electricity through Agrivoltaics ...	22
Undercover Tomatoes (Ongoing Study)	23
Assessing Different Transplant Methods with Chile Pepper to Mimic Direct Seeding	24
Jujube Cultivar Trial	25
Jujube Dongzao Cold Storage Study	26
Jujube Cultivar Selection Through Open Pollination Progenies	27
Exploring The Nutritional And Medicinal Profiles In Fruit And Seeds Of Jujubes In New Mexico	28
Research Publications, Sponsored Projects, and Outreach	29
Research Publications:	30
Extension and Non-Research Publications.....	31

Outreach Activities	32
<i>People and Partnerships</i>	34
Cooperators and Collaborators	35
Advisory Committee	36
ASC Personnel.....	37

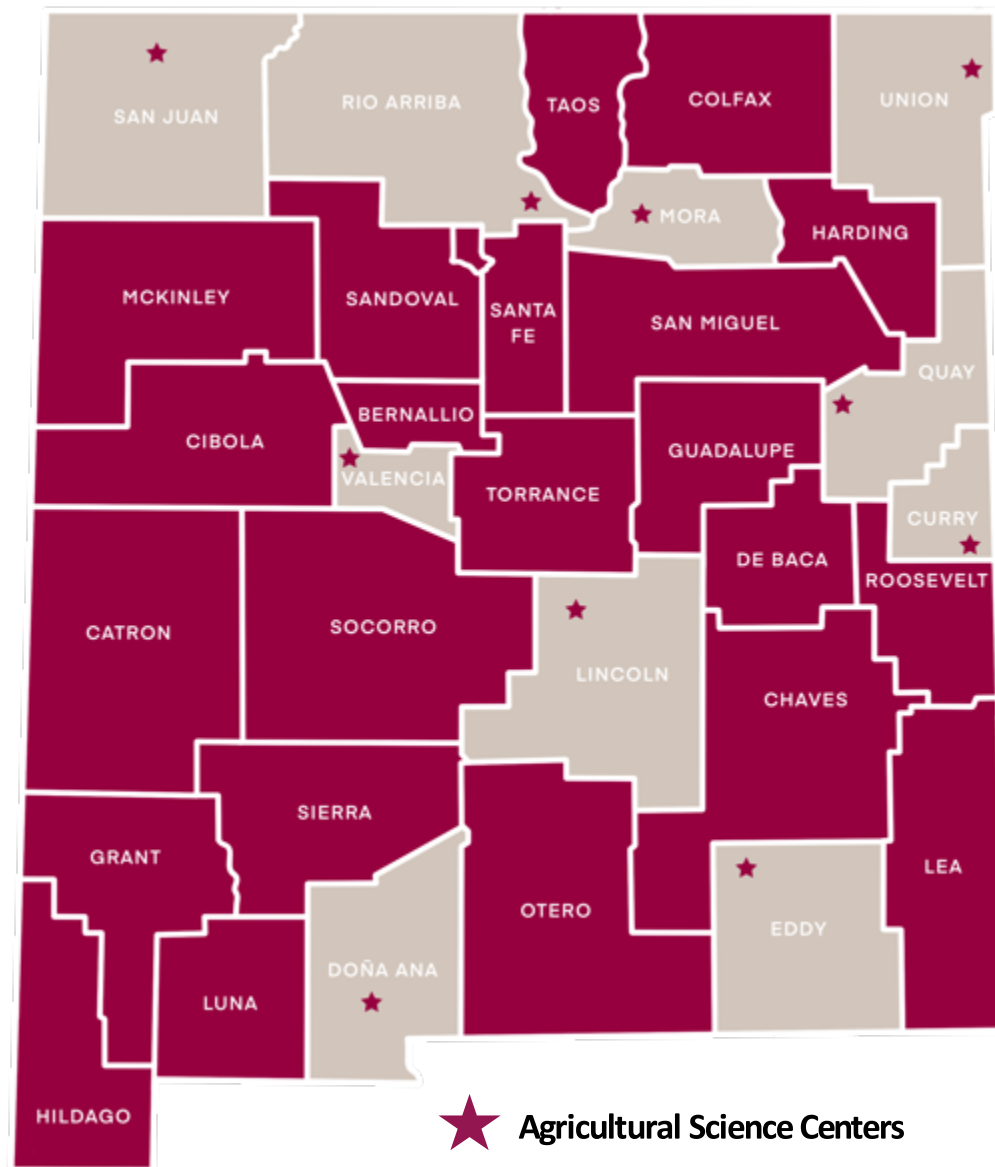
Notice to Users of this Report

These are not formal Agricultural Experiment Station Report research results. The reader is cautioned against drawing conclusions or making recommendations as a result of the summaries in this report. In many instances, data represents only one of several years' results that will ultimately constitute the final formal report.

None of the data are authorized for release or publication without the written prior approval of the New Mexico Agricultural Experiment Station.

Any reference in this report to any person, organization, activities, products, or services related to such person or organization is solely for informational purposes and does not constitute or imply the endorsement or recommendation of New Mexico State University or any of its employees or contractors. NMSU is dedicated to providing equal opportunities in areas of employment and academics without regard to any protected categories as outlined in federal and state anti-discrimination statutes. The College of Agricultural, Consumer, and Environmental Sciences is an engine for economic and community development in New Mexico. ACES academic programs help students discover new knowledge and become leaders in environmental stewardship, food and fiber production, water use and conservation, and improving the health of all New Mexicans. The College's research and extension outreach arms reach every county in the state and provide research-based knowledge and programs to improve the lives of all New Mexicans.

Agricultural Science Center Locations Map



Executive Summary

Established in 1957, the 204-acre research farm began as a joint resource conservation venture with the USDA-Natural Resources Conservation Service, Plant Materials Center. Initial NMSU research efforts were placed on forage and vegetable crops. Research has expanded to include different crops, including alfalfa, corn, sorghum, grapes (wine and table), pasture grasses, chile, tomatoes, and other vegetables, turf grass, native plants, fruit trees, saffron, and ornamental plantings. In addition, efforts have been broadened to include insect (both beneficial and pest) and weed control studies. The multi-faceted programming at the ASC has produced significant improvements in species and variety selection, plant and water management, beneficial insects and pollinators, integrated pest management (IPM), and urban landscapes. Programs address the needs of small- to medium-acreage farmers located on the 50,000+ irrigated acres of the Middle Rio Grande Valley, and urban gardeners and homeowners in the largest urban region of the state.

The Los Lunas ASC (LLASC) is fulfilling the missions of AES, ACES, and NMSU by being a very active research, Extension, and Outreach arm of the university. The faculty and staff at the station conduct numerous critical research projects and host numerous Extension and public Outreach events each year. The combined programs of Viticulture, Forage, Integrated Pest Management, Fruit Production, and Urban Horticulture lead to thousands of contacts each year. In 2025, the Los Lunas ASC:

- Hosted 20 events at the station, bringing in over 528 attendees to the ASC in 2025
- The ASC hosted 18 different research projects from 11 different faculty and staff in 2025
- Urban Agriculture and Student Outreach programs initiated, expanded, and integrated
- Multiple facilities upgrades/additions, including two housing units for visiting researchers and students

The LLASC was able to hire both an Assistant Farm Manager (Johnny Chaves) and fill the vacated Extension Integrated Pest Management Specialist (Dr. Joanna Bloese) position in 2025. These are critical positions for the ASC and will help move the station forward in research and public-facing efforts.

The Urban Agriculture 'Center of Excellence' is off and running. We were able to hire a Program Manager (Willie Sommers), and work has begun on clearing old, decaying infrastructure and orchards in order to house the project. New trees are being planted along with composting and raised bed infrastructure. Installation of a new irrigation well is underway and is planned to be completed by late spring of 2026.

Additional new staff located at the Los Lunas ASC in 2025: Rob Heyduck (Research Scientist) and Diane Stevenson (Master Gardener Coordinator).

We continued to conduct multiple Extension/Outreach events at the ASC in 2025. We had 20 events that brought in 528 visitors to the station. Several of these events were in coordination with the local County Ag Agent to do more local student education and outreach as part of legislative funding secured in 2024. We continued developing student projects, working with local schools (started conducting programs in the classroom and at the ASC) and County agents to bolster our student outreach and recruitment efforts. In 2026, we will continue to integrate this effort with the Urban Ag Demo to leverage both sets of resources for greater impact. We will develop areas at the ASC (within the Urban Ag Demo) that can be utilized by the Student Outreach program for on-site participation and implement educational events.

New Faculty/Staff Spotlight

Dr. Joanna Bloese

The LLASC is pleased to announce the recent hiring of Dr. Joanna Bloese, Extension Integrated Pest Management Specialist. She holds a B.S. in Agriculture from the Univ. of California-Chico, and an M.S. and Ph.D. in Entomology from the Univ. of California-Davis. Most recently, she was Assistant Extension Specialist and Statewide IPM Director at the Univ. of Hawaii-Manoa. Dr. Bloese began working for NMSU (Extension Plant Sciences Dept.) on December 16, 2025 and is housed at the LLASC.



Willie Sommers

Mr. Willie Sommers is the new Urban Agriculture Program Manager located at the LLASC. Willie is a native to Arizona and has been active in small-scale gardening and both agricultural and rangeland resource planning and management for many years. He holds a B.S. in Environmental Resources from Arizona State Univ. and an M.S. in Range Management from the Univ. of Arizona. Willie began work at the ASC on July 1, 2025.

Johnny Chaves

Mr. Johnny Chaves was hired into the newly created Assistant Farm Manager position. He has a B.S. and M.S. in Wildlife Conservation from Unity College in Maine. Johnny started with nearly 10 years of experience with the Valencia Soil & Water Conservation District. He will assist the Farm/Ranch Manager with daily farm and research duties and management of farm operations and staff. Johnny began work on June 4, 2025.

Rob Heyduck

In summer of 2025, long-time Research Assistant Dr. Charles Havlik moved into a new position with NMSU Cooperative Extension. In August, 2025, Mr. Rob Heyduck came on board to fill the Research Assistant/Scientist position. Rob has been a long-time employee of NMSU having been located at multiple science centers in the state and comes with a wealth of experience and knowledge in agricultural and horticultural research programs.

Diane Stevenson

Ms. Diane Stevenson is the new Master Gardener Program Manager. She holds an A.S. in Horticulture Technology from Oklahoma State University and a B.S. in Environmental Science, Biology from New Mexico Institute of Mining and Technology. Diane brings an array of experience and skills in horticulture and environmental sciences, having worked with people of diverse abilities and ages. Diane began work at the LLASC on August 1, 2025.

Research Highlights



Beneficial Arthropod Diversity In Big Sacaton, Lance-Leaf Coreopsis, And Western Yarrow

Principal Investigator: Scott Bundy (cbundy@nmsu.edu)

Project Overview: Three plant species were chosen to compose an herbaceous buffer to evaluate their impact on beneficial insects on arid and semi-arid agricultural land in New Mexico. These species were chosen to combine the benefits of a buffer mix on wind erosion with attractiveness of beneficial arthropods. After extensive background research, the species chosen were big sacaton, *Sporobolus wrightii*; lance-leaf coreopsis, *Coreopsis lanceolata*; and western yarrow, *Achillea millefolium*. Sacaton is well-established as an excellent wind buffer and is known to do well in New Mexico. Both coreopsis and yarrow attract a wide range of beneficial arthropods including predators and parasitoids, and these species have been recommended for use in New Mexico. Data from multiple collection methods (sweep net, pitfall trap) have been taken over the last two years. 1000s of insects are being processed to determine insect taxa biodiversity in each plant species.

Meeting the Needs of New Mexico: Little is known about the species composition of beneficial insects and other arthropods that are found on big sacaton, which is well-established as an important wind break in New Mexico and the Southwest. The other two plant species are known to attract beneficials; however, the species composition has not been well-documented for either in New Mexico. Therefore, this study evaluates the biodiversity of insect groups found on these plant species to determine which beneficial species may be found in this system.

Impact: This research provides important information on the biodiversity of beneficial arthropod species found on big sacaton, lance-leaf coreopsis, and western yarrow. These plants have the potential to be a valuable combination when planted as a seed mix. The resulting mixture will create an important buffer to reduce wind erosion as well as attract beneficial insects that are important as biological control agents for pests, pollinators, etc.

Collaborating Agricultural Science Center:
Leyendecker Plant Science Center

Funding Acknowledgement: USDA NRCS



***Graduate Student Supported Work: Sara Parra Perez (MA – Entomology)**

Restoring The Experimental Vineyard at the Los Lunas Agricultural Science Center

Project Investigator: Geraldine Diverres (diverres@nmsu.edu)

Project Collaborators: Dr. Kevin Lombard- New Mexico State University- Educator, Researcher and Producer; Dr. Ciro Velasco-Cruz- New Mexico State University- Researcher; Dr. William Gill Giese- Arkansas State University- Educator and Researcher; Farmington High School

Project Overview: After years of the Viticulture Extension Specialist position being vacant, the experimental vineyard at the Los Lunas Agricultural Science Center (ASC) is being restored for research and demonstrations. The main goal during this phase has been vine recovery rather than fruit production. Spur and cane pruning were performed to reconduct vines into the trellis system, improve structural integrity, and re-establish vine balance. Additional maintenance activities, including the removal of invasive elm trees, were completed by the ASC personnel.

Meeting the Needs of New Mexico: The experimental vineyard serves commercial growers, small producers, hobbyists, students, and stakeholders seeking science-based management strategies adapted to regional challenges. Re-establishing vine balance and structural integrity ensures that future research trials are built on uniform, healthy plant material. Additionally, the vineyard provides the opportunity for hands-on extension programming, strengthening technical capacity among growers and improving long-term vineyard sustainability in the state.

Impact: The rehabilitation of the Los Lunas ASC vineyard has reactivated an important research and extension asset for New Mexico's grape industry. In 2026, the vineyard will serve as a demonstration site for a pruning workshop focused on restoring balance in mature, under-managed vines. Participants will gain practical, field-based training on corrective pruning strategies and principles of vine balance.



Impacts of Organic Amendments on Soil Health and the Productivity of Perennial Forage Systems in the Arid Southwest

Project Investigators: Raymond Tetteh, Dr. John Idowu, Dr. Anowar Islam, Dr. Mark Marsalis

Project Overview: Perennial forage grasses are essential to animal production and deliver vital ecosystem services in the arid southwest. However, the productivity of forages is challenged by declining soil health, low and unpredictable precipitation, higher-than-average temperatures, and recurrent drought. Building soil health to enhance the resilience of perennial grass production systems will increase forage output in the region and enhance farm income. This study investigates the productivity of perennial winter and summer grasses and their impacts on multiple soil health indicators when amended with different organic products, including compost and manure.

Meeting the Needs of New Mexico: New Mexico producers are looking for strategies to enhance the resilience of their cropping systems. These multilocal trials will provide valuable information on how summer- and winter-perennial grasses perform under different organic amendments, addressing the needs of forage producers across New Mexico agroecosystems. Soil health improvements and forage productivity will be documented and shared with producers in New Mexico.

Impact: This trial focuses on how organic amendments affect winter and summer perennial forages in the arid Southwest. The trial has the potential to generate information that will help producers manage their perennial forages for increased productivity, while building resiliency into their cropping systems through improved soil health. Additionally, using manure and compost as soil amendments will promote a circular economy within the agricultural production systems in New Mexico.

Collaborating Agricultural Science Center: Leyendecker Plant Science Center

***Student supported work (1 PhD student, 2 Postdoc Scientists, and 3 UG students)**



Alfalfa Variety Trial

Project Investigators: Mark Marsalis (marsalis@nmsu.edu) and Leslie Beck

Project Overview: As part of a statewide program coordinated from the Tucumcari and Leyendecker ASCs, a variety trial of 22 entries was planted in September of 2023 and will continue until 2027. Multi-year results are available in the New Mexico Alfalfa Variety Test Report, published each year at: <https://pubs.nmsu.edu/specialty/index.html>.

Meeting the Needs of New Mexico: Alfalfa is New Mexico's #1 or #2 Cash Field Crop every year. Producers need information to select the best variety for their circumstances, and varieties need to be tested at various locations in New Mexico. Performance results are shared with producers in order to select the most appropriate varieties. New breeding lines developed at NMSU's alfalfa breeding program are being tested currently at all science centers.

Impact: Crop variety testing is an important statewide program in New Mexico. Crops tested include alfalfa, corn, sorghum, wheat, and cotton. University variety trials have shown that there is an average 25% higher yield associated with improved varieties, which translates into as much as \$115M additional annual earnings statewide if superior crop varieties are selected over the trial mean. More accurate recommendations can be made when varieties are tested in the varying, unique environments across the state. Drought resilient varieties are being developed through NMSU's alfalfa breeding program, which will increase climate resiliency and sustainability in alfalfa production systems.

Collaborating Agricultural Science Centers: Leyendecker Plant Science Center and Rex E. Kirksey Agricultural Science Center in Tucumcari



Post-Emergent Herbicide Weed Control in Perennial Forage Grasses

Project Investigators: Leslie Beck (lebeck@nmsu.edu)

Project Overview: Due to repeated requests for more information on grass weed control options in perennial grass pastures and hay fields, NMSU responded by developing a study investigating various rates of an herbicide (imazapic; Plateau) labeled for use in many grass species, but mostly unknown to forage producers or unutilized in the state. Varying rates (from low to high) of Plateau were applied (May 23, 2025) to grass species: tall fescue, smooth brome, meadow brome, green wheatgrass, and two native species, western wheatgrass and galleta. Injury ratings were documented every 2 weeks for up to 8 weeks. All grasses tolerated the lowest (4 oz/ac) rate of herbicide, although growth was suppressed on the first harvest following treatment compared to untreated. Tall fescue was the most sensitive to the higher treatment rates (6 and 8 oz/ac), and some stand loss occurred. Native grasses (Western Wheatgrass & Galleta) tolerated the herbicide best of all the grasses, even the high rates. Producers can utilize this new knowledge to assess the impacts on several different common species grown in New Mexico, and determine if weed control is worth the potential risk of injury to their pastures. We can now make recommendations of use of this product at low rates on some grasses, but avoid higher labeled rates on non-native perennials.

Meeting the Needs of New Mexico: New Mexico forage and livestock industries account for over \$2.5 billion annually. Forages constitute a large proportion of the livestock diet, and high-quality pasture and feed are necessary for meat and milk production and proper animal performance. This study provided an opportunity to showcase how Extension is continually striving to use research-based information to educate hay and pasture producers on methods to increase farm sustainability and profitability and protect animal health.

Impact: Weed control is a major issue in perennial grass pasture and hay systems due to the inherent weak competition of grasses and the lack of effective herbicides, particularly those that control grassy weeds. Weeds such as field sandbur and foxtails are particularly problematic in New Mexico due to injury to animals being fed and low palatability. Most post-emergent grass herbicides will injure pastures and may provide only marginal control of grass weeds. Tall fescue is one of the predominant irrigated grass pasture species in the state and is particularly susceptible to herbicide injury. More information is needed in the Southwest on utilization of various herbicides labeled for use in pastures across multiple species.



Student Outreach Programs at the Los Lunas ASC

Project Investigators: Mark Marsalis (marsalis@nmsu.edu), Alexis Barela, Student Intern; Marisa Thompson, Extension Horticulture Specialist; Willie Sommers, Urban Agriculture Program Manager

Project Overview: The general lack of knowledge and interest in agriculture and food production among the younger generation of citizens is a major concern. Funding was provided to the LLASC to conduct student outreach programs from 2024-2026. In 2024, high school students participated in a melon variety research project at the Los Lunas ASC in collaboration with the Valencia County Extension office and Los Lunas Schools. Students were introduced to concepts such as hypothesis testing, experimental design, data collection, and reporting of results. In 2025, high school student interns joined staff and volunteers over the summer at the ASC, learning about the work that researchers do daily, knowledge of plants and growing in our state, and playing a key role in operating a study and participating in research and community building projects. Fall and winter brought tours at the ASC and many workshops and opportunities to interact with students in the classroom and share knowledge, advanced research tools, and more. Workshops at Belen, Valencia, and Los Lunas High Schools taught students about Ag Careers, plant science, and the research projects at the LLASC.

Meeting the Needs of New Mexico: Collaborating with the NMSU LLASC is the perfect opportunity for students to gain knowledge and hands-on experience in agriculture and plant sciences. Increasing understanding of agriculture and plant science careers is integral to advancing research and education efforts for continued food, feed, and fiber production in New Mexico. This can be accomplished by stimulating interest in the future generation of young professionals.

Impact: To date, students of various ages, backgrounds, and interests have received age-appropriate, hands-on education related to multiple facets of plant sciences and general agricultural knowledge. Student testimonials have been very positive, and interest in the program is increasing each year. Students were able to use specialized research equipment including the LI-COR 6800, learn from professionals in the field, and gain knowledge about NMSU, the ASC, and the future of agricultural science.

Outreach Activity: Several student outreach activities have been conducted in both 2024 and 2025 (see summary above). More events are planned for 2026, including involving local schools in building infrastructure for raised beds, planting vegetables and fruit trees, and other educational events tied to the Urban Agriculture Demonstration at the LLASC. In addition to educational presentations, the ASC staff has introduced hydroponic grow kits into the Agriculture and Science classrooms at multiple schools in the region.

Funding Acknowledgement: NM State Legislature



The Compatibility and Contribution of Natural Enemies in Western US Alfalfa Management

Project Investigators: Ricardo Ramirez (ricarami@nmsu.edu)

Project Overview: Through a multi-year project, a field survey of New Mexico alfalfa fields was conducted to evaluate the impact of varied management with and without insecticide applications on the natural enemy community. Moreover, field cage studies were conducted in alfalfa to evaluate how changes in natural enemy communities impact pest suppression.

Meeting the Needs of New Mexico: Broad spectrum insecticides are traditionally used to suppress alfalfa insect pests but have unintended consequences on natural enemy populations like predatory insects that provide natural pest control. Increased natural enemy diversity has been shown to provide improved pest suppression and different species and their life stages contribute to pest suppression. Therefore, conservation of natural enemies can provide a benefit to New Mexico alfalfa growers.

Impact: Broad-spectrum insecticides are traditionally used to suppress alfalfa insect pests but have unintended consequences on natural enemy populations like predatory insects that provide natural pest control. Through a field survey across alfalfa fields in New Mexico we determined that fields bordering alfalfa (i.e., pecan) can have improve specific natural enemies species abundances. Moreover, insecticide treatments for alfalfa pests early in the season showed a decline in the abundance of natural enemies compared to untreated fields. These changes for some species altered the timing of nymphal life stages and their presence to contribute to pest suppression. A cage study in alfalfa also revealed that increasing natural enemy diversity can lead to improved pest suppression. Pairing adult and nymphal natural enemy life stages alone, however, may also contribute to improved pest control. Gaining a better understanding of the contribution of natural enemies on pest suppression and the impacts of crop management on the conservation of natural enemies provides a foundation for improved management strategies.

Collaborating Agricultural Science Centers: Fabiain Garcia Research Center and Leyendecker Plant Science Center



Crop Safety of Dimethenamid-p on Chile

Project Investigators: Chanz Robbins (chanz@nmsu.edu)

Project Overview: This project sought to evaluate degrees of crop injury in chile that might occur as the result of using dimethenamid-p in chile plant production. Chile was cultivated under normal conditions with the herbicide being applied in a split application; one pre-emergent application, and one post-emergent banded application. In addition, several rates were considered to account for overapplication and applicator error. Injury was noted only in plots with higher concentrations, but mainly after the 2nd application. A modified use pattern will consider only the pre-emergent application at the full rate.

Meeting the Needs of New Mexico: Growing chile in New Mexico is both culturally and economically a significant part of Southwest traditions. Chile production has historically relied heavily on cheap labor to weed, maintain, and harvest chile fields. As labor dynamics change and input costs increase, growers need a modern arsenal of pesticides to meet their pest management needs. This project is necessary to ascertain whether the herbicide dimethenamid-p can be safely used in chile production.

Collaborating Agricultural Science Centers: Sustainable Agricultural Science Center at Alcalde and Leyendecker Plant Science Center

Magnitude of Residue Study of Linuron on Dry Beans

Project Investigators: Chanz Robbins (chanz@nmsu.edu)

Project Overview: This project was prioritized as a National need for dry bean producers in 2024 by IR-4 with field trials allocated for 2025 growing season to test pesticide residues of linuron on dry beans. The cabernet variety kidney bean was grown under normal production conditions. Kidney beans were sprayed according to desired labelling parameters and then grown to maturity. Dry beans were harvested and sent for laboratory analysis and quantification of linuron and constituents.



Meeting the Needs of New Mexico: Pinto beans and more native varieties of tepary beans are culturally significant crops for New Mexico. Historically, producers have relied on various herbicides to achieve higher yields, but newer and better technologies are constantly evolving. This work helps provide growers newer option to help integrate newer technologies and newer modes action into their pest management toolkit.

Collaborating Agricultural Science Centers: Sustainable Agricultural Science Center at Alcalde



Determining Costs and Benefits of Crop Rotations for Improved Weed Control in Chile

Project Investigators: Brian Schutte (bschutte@nmsu.edu), Erik Lehnhoff, Mark Marsalis, John Idowu, and Madhav Regmi

Project Overview: Weeds and hand hoeing in chile pepper are reduced by: 1) sorghum grown for forage the summer prior to chile, and 2) barley grown as green manure the winter prior to chile pepper. Although forage sorghum followed by barley green manure is a promising crop rotation for managing weeds in chile pepper, this crop sequence likely increases the fertilizer requirement for optimal growth of chile. Thus, before forage sorghum followed by barley green manure can be recommended to chile growers, we must first determine if sorghum-barley-induced reductions in hand hoeing expenses are greater than the increased costs for fertilizer associated with this crop rotation.

Meeting the Needs of New Mexico: Rising hand-hoeing costs pose a major challenge to chile pepper production in New Mexico. This project examines the economic trade-offs of using an alternative crop rotation that has the potential to reduce labor needs for weed control, while accounting for possible increases in fertilizer requirements. The findings will help growers make informed decisions about adopting rotations that fit the soils and climate of New Mexico and provide new options for weed management in chile production. In the short term, adoption of this rotation is expected to improve farm profitability, while long-term implementation may enhance soil health and sustain productive agricultural systems that benefit New Mexico producers and communities.

Impact: Chile pepper production in New Mexico depends heavily on hand hoeing for weed management, a practice that increases production costs and raises concerns about long-term sustainability. In this project, we are determining the financial implications of a new crop rotation that reduces weeds and hand hoeing in chile pepper. Information on a novel tactic's economic impact can help farmers with adoption decisions, and thus, this field study is generating the facts that will be central to an education-outreach program that presents new strategies for reducing hand hoeing in chile pepper production. Ultimately, this research will help New Mexico farmers adopt crop rotations that lower hand-hoeing requirements, improve profitability, and support more resilient and sustainable chile pepper production systems.

Collaborating Agricultural Science Centers:
Leyendecker Plant Science Center

Funding Acknowledgment: New Mexico Chile Association

***Student supported research – PhD Student in Applied & Agricultural Biology**



Developing Region-Specific Guidelines for Selecting Cover Crops in New Mexico

Project Investigators: Brian Schutte (bschutte@nmsu.edu), Mark Marsalis, Kevin Lombard, and Rajan Ghimire

Project Overview: Cover crops provide important ecological services that support soil health and agricultural productivity. To help farmers gain the greatest benefits, it is essential to identify cover crop species that reliably produce high biomass under regional environmental conditions. This project evaluates biomass production and key growth characteristics of sixteen cover crop species across four regions of New Mexico. By measuring how each species performs in different climates and soil conditions, the study aims to generate region-specific recommendations. The outcomes will guide New Mexico farmers in selecting cover crops that are best adapted to their location and capable of delivering consistent ecological benefits.

Meeting the Needs of New Mexico: New Mexico has more than two million acres of cropland that contribute over \$800 million to the state's agricultural economy. Sustaining this productivity increasingly depends on reducing external inputs and strengthening on-farm biodiversity. Cover crops, grown between cash crop cycles, offer an effective way to diversify production systems. This project focuses on developing region-specific recommendations for selecting suitable cover crop species across New Mexico. By identifying which species perform best in different regions, farmers can make informed decisions and gain benefits such as improved soil health, reduced pest pressure, better water use, and ultimately higher productivity in their cropping systems.

Impact: This project is generating region-specific guidance on the suitability of summer cover crop species across four major agricultural regions of New Mexico: the Colorado Plateau, High Plains, Middle Rio Grande Valley, and Lower Rio Grande Valley. Findings from summer 2023, 2024, and 2025 indicate that sorghum-sudangrass is a strong grass cover crop option for the Colorado Plateau, High Plains, and Middle Rio Grande Valley, while sudangrass performs best in the Lower Rio Grande Valley. Among legumes, cowpea is most suitable for the Colorado Plateau and Middle Rio Grande Valley, sunn hemp excels in the High Plains, and sesbania is ideal for the Lower Rio Grande Valley. As research on winter species continues, these summer recommendations will support farmers in choosing high-performing cover crops tailored to their local conditions, ultimately improving soil health, water efficiency, and overall farm productivity.

Collaborating Agricultural Science Centers:

Artesia Agricultural Science Center,
Farmington Agricultural Science Center, and
Leyendecker Plant Science Center

Funding Acknowledgement: USDA Natural
Resources Conservation Service

***Student Supported Research – Phd
Student - EPPWS**



New Mexico Urban Agriculture Center of Excellence

Project Investigators: Willie Sommers (wsommers@nmsu.edu), Mark Marsalis, Marisa Thompson

Project Overview: The New Mexico Urban Agriculture Center of Excellence is a long-term demonstration project in sustainable urban and small-farm production. The demonstration project includes 6 acres at the Los Lunas Agricultural Science Center showcasing hoop houses (high tunnels), raised beds, varying irrigation practices, soil health principles, and wildlife habitat management. This project will facilitate educational outreach focused on training and assisting educators, growers and the public on growing methods suitable for the Middle Rio Grande Valley. Lastly, the project will develop resources such as workshops, tours, demonstration plots, newsletters and social media posts to share information with a broad audience.

Meeting the Needs of New Mexico: This project will develop and evaluate sustainable management practices relevant to small farm producers, urban stakeholders and various cropping industries in the state. It will also interpret and share current and relevant research findings and evaluate NRCS cost-share programs for practical use by urban and small farm producers through demonstration plots, workshops and proven Extension and outreach methods. The intended clientele are urban and small farm producers in the Albuquerque area as well as communities throughout the Middle Rio Grande Valley.

Impact: In 2025, the New Mexico Urban Agriculture Center of Excellence project began with the hiring of an Urban Agriculture Program Manager. In their first 6 months on the job, the Program Manager visited 15 urban and small farms to learn about crops and production systems. In order to enhance an existing fruit orchard and wildlife habitat woodland, nonnative invasive tree species were removed by a forestry contractor. As part of the fruit orchard enhancement effort, 47 fruit trees were ordered to be planted this coming spring.

Funding Acknowledgement: USDA Natural Resources Conservation Service

Willie Sommers, Urban Agriculture Program Manager at the Los Lunas Agricultural Science Center



Integrating Saffron into Small Vegetable Production Systems of New Mexico to Enhance Profitability and Sustainability

Project Investigators: Marisa Thompson (risi@nmsu.edu), Saeid Zehtab Salmasi, Marisa Thompson, Chanz Robbins, Ivette Guzman, Sawssan Boufous, Lovepreet Singh

Project Overview: This project tests the feasibility and benefits of integrating saffron (*Crocus sativus*, L.) with summer vegetables in small-scale systems. At the Los Lunas Agricultural Science Center (2025), we installed replicated plots comparing sole crops—Saffron (S), Chile (C), Artichoke (A)—with intercrops—Saffron+Chile (SC) and Saffron+Artichoke (SA). We recorded saffron flowering, fresh flower weight, and stigma dry weight across sequential harvests in October–November, and summed multiple harvests for chile. Saffron’s fall–winter growth complements summer vegetables, enabling two crops to occupy the same bed over a year with modest additional inputs. The project pairs agronomic measurements with grower trainings, field days, and media to support on-farm adoption.

Meeting the Needs of New Mexico: Small farms across New Mexico operate under water limitations, short seasons, and tight margins. Saffron fits this context as a low-input, high-value crop that grows in the fall/winter window, potentially raising annual revenue per bed when paired with summer vegetables. By quantifying yield in sole vs. intercropped plots and demonstrating practical steps (planting, irrigation timing, harvesting, processing), this project offers actionable diversification for underserved and beginning growers. Planned workshops and field days at three of the NMSU Agricultural Science Centers (Alcalde, Los Lunas, and Leyendecker in Las Cruces)—along with a short video and extension materials—translate research results into practical guidance that can be implemented in local production systems

Impact: The 2025 Los Lunas Agricultural Science Center (ASC) trial generated replicated, plot-level data exploring the possibility of saffron integration with summer vegetables while maintaining meaningful saffron output and capturing vegetable yield from the same footprint. At the Alcalde ASC, averaged across reps, saffron stigma dry weight (per plot) was highest in sole saffron (S) at 0.502 g/plot, followed by SM at 0.465 g/plot and SC at 0.365 g/plot; flower counts and fresh flower weights followed the same rank order ($S \geq SM \geq SC$). Across multiple harvests, chile delivered the highest fruit yield (mean 9,541 g/plot) with SC at 7,480 g/plot; mustard averaged 4,825 g/plot with SM at 4,253 g/plot. These results indicate intercropping can retain a substantial share of vegetable yield while adding saffron stigma yield, extending bed productivity into the fall–winter season. Combined with outreach and enterprise budgeting in the SCBGP project, this supports profitability and resilience for small, water-limited farms.

Collaborating Agricultural Science Centers: Sustainable Agricultural Science Center in Alcalde, and Leyendecker Plant Science Center

Funding Acknowledgement: USDA Specialty Block Grant Program



Volunteers harvest chile from rows intercropped with saffron in October 2025.

Effects of Urban Landscape Ground Covers on Soil Health, Moisture, Temperature, Weed Control, and Tree Establishment

Project Investigators: Marisa Thompson (risi@nmsu.edu), Thompson, M. Y., Frene, Juan P., Adhikari, Amrit D., Acharya, Pramod, University of Idaho, Ghimire, Rajan

Project Overview: Research has confirmed the benefits of fibrous, woody mulch on soil moisture retention, weed control, soil health, plant health (root establishment, reduced water stress) in other regions. Until now, this work has not been done on the landscape scale in New Mexico.

Meeting the Needs of New Mexico: In our semi-arid climate, soils are exposed to extreme temperatures, minimal precipitation, and high winds. Protecting those soils is imperative to maintain soil and plant health. For this study, we are investigating the impact of different mulch treatments on tree and soil health. Encouraging the use of cultural practices that improve soil health and water retention is imperative to maintaining healthy plants, which in turn minimizes pest populations. In other regions, research has confirmed the benefits of fibrous, woody mulch on IPM-related horticultural issues (e.g., weedy species control and improving soil health by encouraging beneficial organisms), but this work has not been done on the landscape scale in New Mexico soils.

Impact: Objectives:

1. Compare tree, weed, and soil responses to three treatments: woodchip mulch, rock mulch, and bare ground.
2. With additional research, develop recommendations for increased sustainability of landscape practices in New Mexico.
3. Demonstrate research practices using scientific measurement devices, data sharing, and implementation of IPM techniques in the public Learning Garden at the NMSU Agricultural Science Center at Los Lunas.

Funding Acknowledgement: USDA Natural Resources Conservation Service



Protecting NM Tomatoes from Disease while Generating Electricity through Agrivoltaics

Project Investigators: Marisa Thompson (risi@nmsu.edu), Olga Lavrova, Stephanie Walker, Mariela Estrada, Israel Joukhadar, Danise Coon, Ciro Velasco-Cruz

Project Overview: Agrivoltaics combines solar panels with agriculture to enhance crop production in partial shade. NMSU researchers aim to evaluate protection against Curly Top Virus (CTV) infection in tomato plants grown under solar panel shading (agrivoltaics) and assess potential economic benefits from reduced CTV crop loss and increased electricity generation. This two-year study took place at the Los Lunas Agricultural Science Center in 2024 & 2025.

Meeting the Needs of New Mexico: New Mexico's intense sunlight can lead to fruit disorders, prompting researchers to conduct field experiments at two NMSU Agricultural Science Centers – Los Lunas and Las Cruces. Tomatoes and New Mexico chile are vulnerable to Curly Top Virus (CTV), common in arid regions and infecting over 300 species in 44 plant families, transmitted solely by the beet leafhopper. CTV causes significant crop losses, particularly during years of high leafhopper populations. Farmers have used various management strategies with mixed results; chile pepper growers often overseed for a full crop despite CTV losses, while tomato gardeners apply insect-excluding netting and shade cloth. Though impractical for large fields, shade cloth can deter leafhoppers and minimize CTV transmission. Agrivoltaics are applicable for large field crops. Can shade cover from solar panels reduce tomato plant stress and disease prevalence to the point of increased yield and improved fruit quality? We compared Curly Top Virus (CTV) infection rates, plant vigor, and yields under solar panel shade to those under full sun conditions.

Impact: Tomato-related problems are among the top most commonly fielded questions from the public. Results from studies on tomato planting techniques and methods for disease avoidance may increase the productivity and sustainability of this wildly popular homegrown crop.

In 2024 and 2025, research was conducted with the help of the Los Lunas Agricultural Science Center crew and a robust squad of volunteers. Tomato study volunteers logged over 3,000 service hours and grew over 8,000 lbs. of tomatoes combined in 2024 and 2025.

Engaging studies like these can be used to grab public attention, share sustainable methods, and, ultimately, improve agricultural literacy in the urban sector.

Collaborating Agricultural Science Center:
Leyendecker Plant Science Center

Funding Acknowledgement: NMDA Specialty Crop Block Grant Program

***Student Supported Research – MS Student**



Undercover Tomatoes (Ongoing Study)

Project Investigators: Marisa Thompson (risi@nmsu.edu), Phillip Lujan, Israel Joukhadar, Stephanie Walker, Jacqueline Beacham, Chuck Havlik, Dawn VanLeeuwen, Joshua Sherman, Jessica Jia, Alexis Barela, Elda Quintana, Willie Sommers, Rob Heyduck, Carol Benefield, and local volunteers

Project Overview: In this 8-year, ongoing collaborative undercover tomato study at the NMSU Los Lunas ASC, we continue to explore the effects of diverse shade options on tomato production and disease prevention.

In the 2022-2023 study, which will continue into 2026, treatments include ‘Big Beef Plus’ (indeterminate, hybrid) and ‘San Marzano II’ (indeterminate, heirloom) tomato plants covered with either 1) white 15% shade cloth, 2) white 30% shade cloth, 3) black 60% shade cloth. Uncovered tomatoes of both varieties are designated as control groups. Along with mortality rates from suspected curly top virus infection, dependent variables included canopy temperature, yield, fruit quality (e.g., percentage with side-splits and shoulder cracks), plant size, and plot weediness. Each year, research is conducted with the help of a robust squad of volunteers.

Also highlighted here is the 2018-2019 study of tomato root pruning, which used shade cover as a disease deterrent.

Meeting the Needs of New Mexico: From larger-scale production to tiny backyard gardens, tomatoes are grown by many New Mexicans. Indeed, NMSU County Extension Agents report that tomato-related problems are among the topmost frequently asked questions—often concerning heat stress, water stress, and the dreaded curly top virus. Although tomatoes need adequate sunlight, NM’s high light intensity is often too great and can result in fruit disorders associated with plant stress and water needs. Can shade cover reduce tomato plant stress and disease prevalence to the point of increased yield and improved fruit quality?

Impact(s): Abiotic and biotic stressors limit tomato production in commercial and residential settings in the Southwest and beyond. Results from a preliminary shaded tomato study (2020-2021) suggest multiple benefits of shade cloth, including the possibility of improved fruit quality, reduced water requirements, and perhaps even exclusion of the vector of curly top: the beet leafhopper. The current study builds on this previous work. Los Lunas ASC volunteers contributed over 700 hours of service in 2022, and volunteer hours in 2023 may be even higher. Engaging studies like these can be used to grab public attention, share sustainable methods, and, ultimately, improve agricultural literacy in the urban sector.



Assessing Different Transplant Methods with Chile Pepper to Mimic Direct Seeding

Project Investigator: Stephanie Walker (swalker@nmsu.edu), Israel Joukhadar, and Danise Coon

Project Overview: Plant attributes that contribute to mechanical harvest efficiency in NM green chile include strong single stems/minimal basal branching and a higher height to fruit set. Both of these traits are more predominant in direct-seeded chile plants; transplants tends to exhibit more basal branching and shorter distance to fruit set. Most acreage in NM is direct-seeded however, the use of hybrid varieties necessitates a switch to transplanting because of the high cost of hybrid seed. Therefore, research into different transplanting methods to explore the possibility of obtaining the mechanical harvest-beneficial plant architecture in a transplanted chile plant was conducted.

Meeting the Needs of New Mexico: Commercial acreage of NM-type green chile is threatened due to inconsistent labor availability and the relatively high labor expense compared to competing countries. Mechanizing the harvest of green chile would reduce the need for hand labor and is essential to maintaining large-scale, profitable production of this crop in New Mexico. This program has conducted long-term efforts to develop new NM green chile cultivars efficient for mechanization and develop best production practice recommendations to advance mechanical harvest of the crop.

Impact: Success in mechanizing NM green chile is anticipated to increase chile acres planted in NM. Each acre grown is worth approximately \$7,000 in gross income to NM farmers, so a 10% increase in the current level of acreage would result in more than a \$3 million annual increase in NM farm receipts.

Funding Acknowledgement: USDA-NIFA



***Student Supported Research – MS students in PES**

Jujube Cultivar Trial

Project Investigators: Shengrui Yao (yaos@nmsu.edu) and Robert Heyduck

Project Overview: We have collected and imported over 50 varieties to New Mexico State University Alcalde Center and established cultivar trials at NMSU Alcalde Center (2015), Los Lunas Center (2015), and Leyendecker Center (2017). Plantings at Alcalde, Los Lunas and Leyendecker have been growing and producing well in the past 9-11 years.

Meeting the Needs of New Mexico: Late frost is the most critical issue challenging fruit production in central and northern New Mexico. Most growers had five crops or fewer from 2010-2019. Good alternative crops with reliable yield are needed to diversify their operations and reduce risk. Jujube, also called Chinese date, adapts well to a wide range of soil and climate conditions. With its late-season start-up, same-year flower bud initiation and bloom, and two-month-long blooming period, jujube produces a reliable crop in New Mexico.

Impact: The limited choices of commercially available cultivars to the jujube industry will be greatly improved with the NMSU jujube project. There are currently only 5-6 jujube cultivars commercially available in the United States, of which 'Li' is dominant. The New Mexico State University Alcalde Center jujube program has been evaluating more than 50 cultivars in the past 11 years and has identified 8-10 fresh eating cultivars. Those cultivars will give growers nationwide more choices with extended maturation dates and achieve \$1-2 higher premium per pound than traditional cultivars like Li. The jujube acreage nationwide is expected to increase significantly.

Funding Acknowledgement: NMDA Specialty Crop Block Grant

Collaborating Agricultural Science Centers: Sustainable Agricultural Science Center in Alcalde and Leyendecker Plant Science Center



Jujube Dongzao Cold Storage Study

Project Investigators: Shengrui Yao (yaos@nmsu.edu) and Robert Heyduck

Project Overview: As more growers adopt jujube production, marketing challenges are expected to emerge. Dongzao is one of the best fresh-eating cultivars in our collection and is also the dominant fresh-market cultivar in China. After harvest, Dongzao fruit can maintain acceptable quality for several days at room temperature and for 2–3 weeks under standard refrigeration. Therefore, extending the postharvest supply period is critical for successful marketing.

In 2024, we conducted a preliminary cold storage study at 34–36°F in a walk-in cooler at the Los Lunas Center. Fruit maintained acceptable quality for up to five weeks; however, significant mold development occurred thereafter, primarily near the pedicel-end openings. In fall 2025, we repeated the cold storage study using a lower storage temperature (31–32°F) and four treatments: a control, an ethylene absorbent, and two fungicide treatments (Mentor and Scholar). The results were significant. Fruit from the control and ethylene absorbent treatments developed mold after 5–6 weeks of storage, whereas fungicide-treated fruit—especially those treated with Scholar—maintained acceptable quality for nine weeks or longer, greatly extended storage life.

Meeting the Needs of New Mexico: As more growers adopt jujube production, this Dongzao cold storage study will directly benefit jujube growers in New Mexico. Storage at cold temperatures (0 to –1 °C) combined with a Scholar fungicide treatment can maintain acceptable fruit quality for more than two months, greatly extending the fresh-market supply period for jujube fruit.

Impact(s): This Dongzao cold storage study can extend the fresh fruit supply period by up to two months, allowing fruit availability through the Thanksgiving holiday. This extended storage life will significantly lengthen the marketing window and increase revenue potential for jujube growers.

Funding Acknowledgement: CESFAS



Jujube Cultivar Selection Through Open Pollination Progenies

Project Investigator: Shengrui Yao (yaos@nmsu.edu)

Project Overview: There are limited commercially available jujube cultivars and no formally released jujube cultivar in the U.S. Based on our cultivar trials and existing jujube trees, jujube grow and produce well across New Mexico. Jujube breeding and selection are nonexistent in the U.S. Due to difficulties with jujube's crossbreeding—tiny flowers, difficulty of emasculation, late flowering/fruit interference and low fruit set—NMSU Alcalde Center started the jujube cultivar selection through open-pollinated progeny in 2021. In the long run, we hope to select several US jujube cultivars. We have planted over 470 seedlings in 2021 and 2022 at Alcalde, and an additional 600 in Los Lunas in 2023. We tagged all 900 seedlings for both locations in 2024. We evaluated fruit quality weekly from Sept -mid Oct and identified several promising selections in 2025. We had identified 4 advanced selections from 2024 to 2025.

Meeting the Needs of New Mexico: Late spring frosts challenge fruit production each year in central and northern New Mexico. To reduce risk and minimize revenue fluctuations, we encourage growers to diversify their operations. Because jujube blooms later than many traditional fruit crops, it can avoid late frost damage in most years and produce reliable yields annually. As a result, jujube is an excellent alternative crop for both commercial growers and home gardeners in New Mexico. Performance of our jujube cultivars at three locations over the past ten years has consistently demonstrated this reliability.

Impact(s): Like any perennial fruit species, jujube cultivar selection will be a long-term project that takes at least 8-15 years. Once jujube cultivar(s) are released, commercial growers nationwide can adopt them and generate more revenue with their operation. Home gardeners can also plant them in their yards and improve their food composition with jujube fruit.

Collaborating Agricultural Science Centers: Sustainable Agricultural Science Center in Alcalde and Leyendecker Plant Science Center

Funding Acknowledgement: USDA/NMDA Specialty Crop Block Grant Program



Exploring The Nutritional And Medicinal Profiles In Fruit And Seeds Of Jujubes In New Mexico

Project Investigator: Shengrui Yao (yaos@nmsu.edu)

Project Overview: With cultivar trials conducted at multiple locations across New Mexico, jujube trees have demonstrated strong growth and consistent productivity, particularly in central and southern New Mexico. Jujube fruit is highly nutritious; we have previously analyzed vitamin C, total phenols, and several other nutritional components. With the advancement of metabolomics technology, hundreds of metabolites can now be analyzed from a single sample. Understanding the full nutritional profile of jujube fruit and seeds would be highly beneficial for maximizing its utilization for nutritional and medicinal purposes.

We collected fruit from cultivated jujube cultivars, as well as fruit and seeds from wild jujube trees, at the Los Lunas Center, the NMSU campus, and the El Paso area in Texas in 2025. The outcomes of this study will serve as a baseline for public education, value-added product development and marketing, nutritional supplement formulation, and medicinal or pharmaceutical exploration. In addition, the data will help guide the breeding of new jujube cultivars with enhanced functional and health-promoting compounds.

Meeting the Needs of New Mexico: This metabolomics-based study of jujube nutritional and medicinal profiles will benefit jujube growers, researchers, and the general public by expanding knowledge of the fruit's nutritional and pharmaceutical values. The results will assist growers in marketing their products and help encourage broader consumer acceptance and consumption of jujubes.

Impact: The results of this study will provide scientific evidence supporting the nutritional and pharmaceutical value of jujube fruit, increasing confidence among both growers and consumers. Growers will be able to market jujubes more effectively based on validated nutritional data, while consumers will be encouraged to recognize, accept, and consume jujube fruit for its health benefits.

Funding Acknowledgement: USDA/NMDA Specialty Crop Block Grant Program



Sour jujube tree at El Paso, Texas

Research Publications, Sponsored Projects, and Outreach



Research Publications:

- Acharya, P., A. Ogunleye, **M.A. Marsalis**, J.M. Bell, and R. Ghimire. 2025. Enhancing forage production and quality under resource-limited conditions by alfalfa–bermudagrass interseeding. *Agron. Journal*. 2025; 117:e70174. <https://doi.org/10.1002/agj2.70174>.
- Lauriault, L.M., and **M.A. Marsalis**. 2025. A First Report on Planting Arrangements for Alfalfa as an Economic Nurse Crop During Kura Clover Establishment. *Agriculture*. <https://doi.org/10.3390/agriculture15151677>.
- Duval, B., J. Martin, B. Frey, and **M.A. Marsalis**. 2025. Sorghum elemental content response to altered nitrogen input timing and drought stress. *Agrosyst. Geosci. Environ.* 2025;8:e70095. <https://doi.org/10.1002/agg2.70095>.
- Lauriault, L.M., M.K. Darapuneni, K. Djaman, and **M.A. Marsalis**. 2025. Winter and season only irrigation with late summer irrigation termination influences alfalfa dry matter yield and applied water use efficiency. *Agriculture*. 2025; 15, 146. <https://doi.org/10.3390/agriculture15020146>.
- Joukhadar, I., Estrada, M., Velasco-Cruz, C., Coon, D., Lavrova, O., **Thompson, M. Y.**, Guzman, I., **Walker, S.** 2025. Impact of Agrivoltaic Shade on Beet Curly Top Virus and Yield in Chile Pepper (*Capsicum annuum*). *HortScience*, 60(6), 841-851. <https://doi.org/10.21273/HORTSCI18537-25>
- Sapkota, D., Holguin, F. O., Salmasi, S. Z., **Yao, S.** 2025. Fruit and seed metabolomic profiles provide insights into the utilization of sour jujube germplasm. *Journal of American Society for Horticultural Sciences*, 150(6), 316-327. <https://doi.org/10.21273/JASHS05525-25>.
- **Thompson, M.**, Joukhadar, I., **Walker, S.**, Havlik, C., VanLeeuwen, D. 2025. Transplanting Root-bound Tomato Starts Using Methods with High Levels of Root Disturbance Offers No Advantages. *HortTechnology*, 35(3), 337-342. <https://doi.org/10.21273/horttech05590-24>.
- **Marsalis, M.A.**, P. Acharya, and R. Ghimire. 2025. Cover Crop and Tillage Practices for Improving Soil Health and Forage Production. 2024 Report of Activities. USDA-NRCS-Los Lunas Plant Materials Center. March 2025.
- Lauriault L., I. Ray, C. Pierce, K. Djaman, R. Flynn, **M. Marsalis**, C. Havlik, G. Martinez, and M. West. 2025. The 2024 New Mexico Alfalfa Variety Test Report. NM Agric. Exp. Stn., Las Cruces, NM.
- Joukhadar, I., Coon, D., **Walker, S.** 2025. Assessing Different NM Type Green Chile Transplant Methods for Mechanical Harvest. *In Abstracts: 2025 ASHS Annual Conference*. <https://doi.org/10.21273/HORTSCI.60.7S.S1>
- Tettah, R., A. Okunkenu, I. Fademi, M. Omer, C. Cramer, A. Ojekanmi, A. Islam, **M. Marsalis**, and J. Idowu. 2025. Productivity of Perennial Grasses and Their Impacts on Soil Health Indicators in Arid Soils. *In Abstracts CANVAS 2025. ASA-CSSA-SSSA*, Salt Lake City, UT. November 11, 2025.
- Acharya, P., A. Ogunleye, **M. Marsalis**, J. Bell, and R. Ghimire. 2025. Interseeding alfalfa in bermudagrass improved forage production and nutritional composition under resource-limited conditions. *In Abstracts CANVAS 2025. ASA-CSSA-SSSA*, Salt Lake City, UT. November 11, 2025.
- **Thompson, M. Y.**, Joukhadar, I., **Walker, S.**, **Havlik, C.**, VanLeeuwen, D. (2025). Transplanting Root-bound Tomato Starts Using Methods with High Levels of Root Disturbance Offers No Advantages. *HortTechnology*, 35(3). <https://doi.org/10.21273/HORTTECH05590-24>.
- **Thompson, M.** 2025. “Mitigating Beet Curly Top Virus in Tomatoes without Compromising Yield or Quality Effects of Shade Cover & Irrigation”. Abstracts of Presentations from American Society of Horticultural Science 2025 Annual Conference. *HortScience*, 60(7S), S1–S496. <https://doi.org/10.21273/HORTSCI.60.7S.S1>.
- **Yao, S.** 2025. Six fresh-eating jujube cultivar metabolite profiles reveal cultivar differences through widely targeted metabolomics analysis. *In Proc. Acta Horticulturae*, 1436, 91-99. <https://doi.org/10.17660/ActaHortic.2025.1436.12>
- **Yao, S.** 2025. Jujube germplasm fruit and seed metabolomic study. *HortScience* 60(7S): S350 (Abstract).
- **Yao, S.**, Gu, M. 2025. Jujube as a nutritious edible landscape plant. Fort Collins, CO. *In Abstracts: IV International Symposium on Germplasm of Ornamentals*. August 3-8, 2025.

Extension and Non-Research Publications

- Beck, L., **M. Marsalis**, B. Schutte, P. Lujan, and L. Lauriault. 2025. Integrated Weed Management in Irrigated Permanent Grass Pastures and Hayfields in New Mexico. NMSU Cooperative Extension Service Publication. Las Cruces, NM. Guide A-340 (Revision). April, 2025.
- **Marsalis, M.**, and L. Lauriault. 2025. Managing Alfalfa During Drought. NMSU Cooperative Extension Publication. Las Cruces. Circular 646 (Revision). August 2025.
- **Yao, S.** 2025. Jujube cultivars in New Mexico (ed., pp. 1-8). NMSU Cooperative Extension Service Publication Guide H-340. https://pubs.nmsu.edu/_h/H340.pdf.
- **Walker, S.**, Joukhadar, I. 2025. Home Vegetable Gardening in New Mexico (Circular 457). https://pubs.nmsu.edu/_circulars/CR457/.
- **Walker, S.**, Coon, D., Joukhadar, I. 2025. Growing Chiles in New Mexico (ed.). Guide H-230. https://pubs.nmsu.edu/_h/H230/index.html.
- **Walker, S.**, Joukhadar, I. 2025. Growing Zones, Recommended Crop Varieties, and Planting and Harvesting Information for Home Vegetable Gardens in New Mexico (ed.). NMSU Coop Extension., Abstract/Synopsis: Major revisions being implemented in response to new USDA Hardiness Zone map.
- **Marsalis, M.** 2025. Crop Considerations for Reduced Water Situations in the Middle Rio Grande Region - 2025 'News You Can Use' Extension Factsheet. March, 2025.
- Vitale, P., M. Regmi, J. Garlisch, and **M. Marsalis**. 2025. 2024 Actual Crop Return Estimates, Full Time/Part Time Farm, Valencia and Bernalillo Co. NMSU Agric. Econ. & Agric. Business Dept. Pub. April, 2025. <https://costsandreturns.nmsu.edu/2024/crop.html>.
- **Thompson, M.** 2025. "Think Trees NM Urban Tree Care Conference to feature NMSU Extension speakers". NMSU News Release. 14 Jan 2025. <https://newsroom.nmsu.edu/news/think-trees-nm-urban-tree-care-conference-to-feature-nmsu-extension-speakers/s/bc002c00-b363-426c-a155-0e854151d5e7>
- **Marsalis, M.** and A.M. Chavez. 2025. NMSU, NM Hay Association to host Southwest Hay & Forage Conference. University Comm. News Article. NMSU News Release. November 26, 2025.
- Southwest Yard & Garden Columns (collaboration with **M. Thompson**):
 - Abrahamson, Bethany. 5 May 2025. "Winter Aphids", <https://nmsudesertblooms.blogspot.com/2025/05/winter-aphids.html>
 - Abrahamson, Bethany. 3 June 2025. "University Collections and NM-RARe", <https://nmsudesertblooms.blogspot.com/2025/06/the-museum-of-southwestern-biology-and.html>
 - Abrahamson, Bethany. 8 Oct 2025. "Japanese Beetles", <https://nmsudesertblooms.blogspot.com/2025/10/japanese-beetles.html>
 - Abrahamson, Bethany. 27 Oct 2025. "Recognizing Baby Weeds", <https://nmsudesertblooms.blogspot.com/2025/10/recognizing-baby-weeds.html>

Outreach Activities

Several events were conducted at the Los Lunas ASC and by ASC faculty and staff in 2025:

- Vineyard Pruning Workshop – NMSU Viticulture Team & Vino Wines - May 16th (12 attendees)
- Whitfield Training Event/Tour and Soil Sampling Demonstration - May 31st (12 attendees)
- New NMSU President/CES Visit – June 30th (41 attendees)
- CNM Winemaking Bootcamp – NMSU LLASC – Viticulture Team - July 24th (13 attendees)
- Fruit Tree Grafting Workshop – August 9th (10 attendees)
- Tree Stewards Lab activities – August 12th (11 attendees)
- Tree Stewards Lab activities - August 16th (10 attendees)
- Chile Field Day – August 28th (112 attendees)
- Meet and Greet Master Gardeners – August 29th (16 attendees)
- Los Lunas ASC Tour of Urban Ag Demo Area - September 3rd (11 attendees)
- NM AgrAbility/NM DVR ‘Day on the Farm’ - September 18th (25 attendees)
- Jujube Fruit Picking & Tasting Workshop - September 26th (59 attendees)
- Salsa: From Seed to Seal - Valencia County Ext. – September 30th (10 attendees)
- Home School Tour – October 6th (3 attendees)
- Rio Grande Elementary Farm Tour - October 7th (56 attendees)
- Homeschool Tour – October 8th (45 attendees)
- Ristra Making Workshop - October 28th (16 attendees)
- Ristra Making Workshop November 3rd (23 attendees)
- Quince Harvest Party - November 14th (17 attendees)

528 total attendees

- Faculty and staff responded to hundreds of stakeholder requests for information in 2025 via phone calls, emails, office walk-ins, and site visits, including from surrounding states and internationally



Chile Field Day, August 28, 2025



NM AgrAbility/NM DVR 'Day on the Farm', September 18, 2025



Student Outreach Programs, 2025; Farm tour for elementary students (left) and Dr. Marisa Thompson demonstrating the LI-COR photosynthesis system to students at Valencia High School (right).

People and Partnerships



Cooperators and Collaborators

Collaborating Main Campus (and other ASC) Faculty & Staff

Dr. Leslie Beck (Extension Plant Sciences) – Weed control in alfalfa and perennial grasses
Dr. Scott Bundy (Entomology, Plant Pathology, & Weed Science) – Pollinator plantings
Danise Coon (Plant & Environmental Sciences) – Agrivoltaics and vegetable studies
Dr. Murali Darapuneni (Tucumcari ASC) – Alternative water supply for growing vegetables
Dr. Dave Dubois (State Climatologist; Plant & Environmental Sciences) – Weather stations
Rachel Gioannini (Plant & Environmental Sciences) – Horticulture, hydroponics
Dr. Rajan Ghimire (Plant & Environmental Sciences) – Carbon initiatives
Dr. Ivette Guzman (Plant & Environmental Sciences) – Native & medicinal herbs
Dr. John Idowu (Extension Plant Sciences) – Perennial grass-soil amendment study
Dr. Israel Joukhadar (Extension Plant Sciences) – Agrivoltaics and tomato studies
Dr. Joanie King (Extension Plant Sciences) – Entomology
Dr. Bernd Leinauer (Extension Plant Sciences) – Turf & landscape carbon management
Dr. Phillip Lujan (Extension Plant Sciences) – Plant disease testing & diagnostics
Dr. Geraldine Diverres Naranjo (Extension Plant Sciences) – Wine & table grape studies
Dr. Jane Pierce (Artesia ASC) – NIFA EIP IPM funding PI, IPM learning garden
Dr. Ricardo Ramirez (Extension Plant Pathology, Entomology, & Weed Science) – Alfalfa insect study
Chanz Robbins (Extension Plant Sciences) – IR4 program
Dr. Saeid Salmasi (Alcalde ASC) – Saffron specialty crop
Dr. Brian Schutte (Entomology, Plant Pathology, & Weed Science) – Weed control in chile, cover crops

NMSU, University, State, and Federal Collaborations

NMSU Alcalde Sustainable Agricultural Science Center
NMSU Artesia Agricultural Science Center
NMSU Clovis Agricultural Science Center
NMSU Fabian Garcia Research Center
NMSU Farmington Agricultural Science Center
NMSU Leyendecker Plant Science Center
NMSU Mora Forestry Research Center
NMSU Tucumcari Agricultural Science Center
NMSU Extension Master Gardeners
NMSU IR-4 Program
NMSU Pesticide Safety Education Program
NMSU Plant Diagnostic Clinic
NM Cooperative Extension Service (multiple counties)
NM State Forestry
NM Urban Forest Council
Los Lunas High School
Sandia National Laboratories
School of Dreams Academy (SODA)
Valencia County Cooperative Extension
Valencia Soil & Water Conservation District – Whitfield Wildlife Conservation Area
University of Arizona
AZ Cooperative Extension Service

Permian Basin Master Gardener Program
Texas AgriLife Research & Extension
University of New Mexico
USDA-Natural Resource Conservation Service (NRCS), Plant Materials Center

Industry & Tribal

BASF Corporation
Black's Smuggler Winery
City of Albuquerque – Bio Park
City of Las Cruces – Lush and Lean Program
Jericho Nursery
Los Ranchos de Albuquerque Agri-Nature Center
NM Chile Association
NM Chile Commission
NM Hay Association
Osuna Nursery
Santa Ana Pueblo Native Plant Nursery
Santa Clara Pueblo
Think Trees NM
Tree New Mexico – Statewide Tree Stewards Volunteer Training Program

Advisory Committee

A meeting of the Los Lunas ASC Advisory Committee was held on May 6, 2025.

2025 Committee Members:

- Matthew Aragon
- Tony Black (Vice Chair)
- Mathew Chavez
- Debby Hasse
- Casey Ish
- Zena Kinne (Former Chair)
- Lin Yeskie (Chair)
- Sierra Cain (Valencia Co. Agricultural Agent)

ASC Personnel

- Antonio Atencio – Ag Science Laborer (Temporary)
- Aaron Barela – Student Intern
- Alexis Barela – Ag Science Laborer (Temporary)
- Joanna Bloese, Ph.D. – Extension Integrated Pest Management Specialist
- Sunny Bond – Student Intern
- Ariel Cameron – Ag Science Laborer (Temporary)
- Angelo Chavez – Ag Science Laborer (Temporary)
- Johnny Chavez – Assistant Farm Manager
- Cathy Casaus – Fiscal Assistant, Inter.
- Debra Dockens – Ag Science Laborer (Temporary)
- Orion Dockens – Ag Science Laborer
- Emma Fetty – CES/AES Student Intern
- Anthony Gallegos – Ag Science Laborer (Temporary)
- Jose Gonzalez – Ag Science Laborer
- Charles Havlik, Ph.D. – Senior Research Assistant
- Rob Heyduck - Research Scientist, Assoc.
- Mark Marsalis, Ph.D. – Research Director - Extension Forage Specialist
- Max Perea – Ag Science Laborer
- Angie Prado Vela – Student Intern
- Dennis Price – Farm Ranch Manager
- Elda Quintana-Hernandez – Ag Science Laborer (Temporary)
- Candace Sisneros - Administrative Assistant, Assoc.
- Willie Sommers – Urban Agriculture Program Manager
- Diane Stevenson – Master Gardener Program Manager
- Marisa Thompson, Ph.D. – Extension Urban Horticulture Specialist
- Stephanie Walker, Ph.D. – Extension Vegetable Specialist
- Shengrui Yao, Ph.D. – Extension Fruit Specialist