2024
ANNUAL REPORT

AGRICULTURAL SCIENCE CENTER AT LOS LUNAS

THE NMSU AGRICULTURAL EXPERIMENT STATION SUPPORTS RESEARCH THAT ADDRESSES REAL-WORLD PROBLEMS. RESEARCH IS AT THE CORE OF NMSU'S MISSION TO IMPROVE THE LIVES OF PEOPLE GLOBALLY.

LOSLUNASSC.NMSU.EDU

College of Agricultural, Consumer and Environmental Sciences
Agricultural Experiment Station

Agricultural Science Center at Los Lunas

NM STATE

Table of Contents

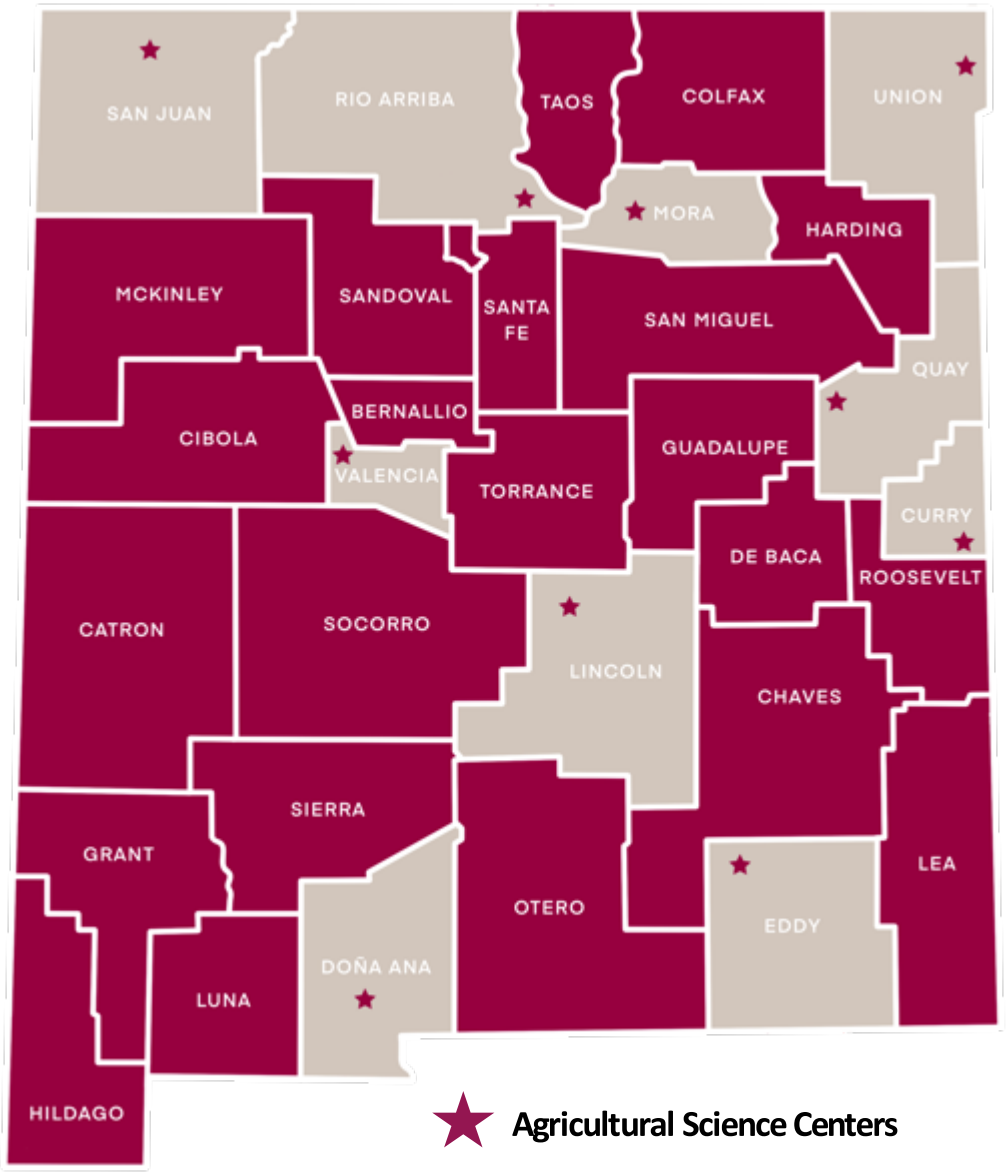
Notice to Users of this Report

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 and other vegetables, turf grass, native plants, fruit trees, 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 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 2024, the Los Lunas ASC:

- Hosted 23 events at the station bringing in over 645 attendees to the ASC in 2024; 3 of these were national and international groups that brought broader exposure and recognition to the ASC.
- The ASC hosted 15 different research projects from 10 different faculty and staff in 2024.
- Broadened work with the Natural Resources Conservation Service, as part of a new Urban Agriculture Demonstration agreement ($500k) funded in 2024, laying the foundation for the Urban Agriculture ‘Center of Excellence.’

The Los Lunas ASC achieved several goals and objectives outlined for 2024. First and foremost, they obtained $500k in funding to begin work on the Urban Agriculture Demonstration via an NRCS agreement to develop a demonstration project that will install infrastructure and expertise in urban farming and horticultural pursuits at the ASC. This will lay the groundwork for a future Urban Ag ‘Center of Excellence’. In addition, the Center began developing student projects, working with local schools, non-profit organizations, and CES County Agents to bolster student outreach and recruitment efforts. They were able to inspect and repair both irrigation wells on the farm with appropriated funds, which will lead to many more years of reliable irrigation water available for future research and farm operations. Work began on procuring and installing two housing units for temporary student, faculty, and staff housing. More attention was brought to the station through an increased (more than double 2023) number of workshops and research/farm tours, two of which hosted an international audience. The process for replacing the IPM Specialist position (Los Lunas ASC based) is now underway, and the job announcement is posted. A national search will begin in early 2025.

Research Highlights

Beneficial Arthropod Diversity in Big Sacaton, Lance-Leaf Coreopsis, and Western Yarrow

Investigator: Scott Bundy (cbundy@nmsu.edu)

Collaborating Agricultural Science Center: Leyendecker Plant Science Center

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 the 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. Extensive sampling was conducted in 2024. Preliminary results show numerous key predator and parasitoid groups found on each plant species. Data continue to be taken and taxa identified, and data remain to be analyzed.

Meeting the Needs of New Mexico: Big sacaton is well-established as an important wind break in New Mexico and the Southwest. However, little is known about the species composition of beneficial insects and other arthropods that are found on this plant. The other two plant species are known to attract beneficials; however, the species composition has not been well-documented for New Mexico. Therefore, this study will provide valuable information on generating seed mixes for NM that can be used as a wind break and to attract beneficial insects to the system.

Impacts: This project will provide important information on the species composition of beneficial arthropods 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. Key beneficial arthropod groups will be identified for each plant species and will provide important data on species compositions specific to New Mexico.

Funding Acknowledgement: USDA NRCS

Soil Carbon Storage Under Common Land Use Systems in Arid Regions

Investigators: Rajan Ghimire (rghimire@nmsu.edu), Pramod Acharya, Deb Raj Aryal *, Mark A. Marsalis, and Omololu J. Idowu

Collaborating Agricultural Science Center: Clovis Agricultural Science Center

Project Overview: Climate change mitigation through land management involves maximizing soil carbon (C) storage under diverse land uses. The interactions among different soil C and nitrogen (N) fractions in common land use systems of arid regions provide a comprehensive understanding of the soil C sequestration potential of arid lands. This study examined several C and N fractions at three depth layers within 0–60 cm across four land-use systems: continuous alfalfa, tall fescue, annual crops, and cottonwood orchards. Results indicated that perennial systems enhanced C pools in the top layer, suggesting the biologically mediated C sequestration, while conventionally managed annual crops increased mineral-associated C in deeper layers, indicating physicochemical pathway of C formation and stabilization. Soil inorganic N and potentially mineralizable N stocks (0–60 cm) under annual crop rotation were greater than in other land-use systems. Different land use and management practices significantly affected soil C and N dynamics, leading to varying C sequestration at different depths.

Meeting the Needs of New Mexico: In arid and semi-arid lands of New Mexico, landowners could utilize the research results to identify land management strategies that enhance soil C sequestration, improving soil health and resilience. The findings suggest that perennial systems, such as alfalfa and tall fescue, enhance soil organic C pools on the surface, while annual cropping systems promote C stabilization in deeper soil layers. These insights support climate change mitigation efforts and help New Mexico land managers adopt practices that improve long-term soil productivity by optimizing soil C storage.

Impacts: The study provided science-based insights into how different land-use systems affect soil C sequestration and N availability, which are critical for soil health and climate resilience in arid regions like New Mexico. Another important finding was the depth-dependent distribution of soil C and N fractions in different land use systems, affecting their C sequestration potential. It also demonstrated that perennial systems enhance surface C pools through biological processes, while annual cropping systems contribute to deeper C stabilization via physicochemical mechanisms. Inorganic C storage appeared to be another dominant mechanism in storing C in arid lands, specifically in conventionally managed annual cropping systems. By informing sustainable land management strategies, the research supports long-term agricultural productivity and environmental stewardship.

Funding Acknowledgement: United States Department of Agriculture-Natural Resources Conservation Service, New Mexico

Evaluating the Potential of Cover Cropping on Soil Carbon Sequestration in Sandy Soils

Investigators: Rajan Ghimire (rghimire@nmsu.edu), Mark A. Marsalis, and Grace Woodard

Collaborating Agricultural Science Center: Clovis Agricultural Science Center

Project Overview: Cover cropping is promoted to improve soil health in arid and semi-arid environments. However, their soil carbon sequestration potential in sandy soils of dry regions is not studied well. Therefore, a cover crops study was conducted at ASC Los Lunas from 2022-24. The study has nine treatments (three cover crops x three termination strategies). Soil health status was measured by evaluating several carbon and nitrogen indicators, including total, labile, and microbial carbon and nitrogen fractions. Average soil total carbon and total soil nitrogen were similar for all forage crops (corn, sorghum, millet), and no-till management showed consistently greater total carbon, total nitrogen, and inorganic nitrogen content in soil at all depths than conventional and roller-crimped treatments. Soil microbial indicators, microbial biomass carbon and potentially mineralizable carbon were greater in no-till than the other tillage treatments.

Meeting the Needs of New Mexico: This project supports the NMSU soil health and carbon management initiative and helps improve the sustainability of agriculture in dry regions by improving soil health. The slow adoption of cover crops in New Mexico is associated with additional costs of cover cropping and the impacts on soil health. Understanding its role in soil health and carbon sequestration will help farmers design best management practices in sandy, low-productive soil conditions.

Impacts: Soil health degradation has been a major issue worldwide. Climate change has further exacerbated agricultural sustainability challenges. Early results of cover cropping show the benefit of using cover crops in sandy soils of dry regions. Labile C components started responding to cover cropping practices, which could help in cash crop production following cover cropping and improve long-term soil carbon storage.

Funding Acknowledgement: USDA NRCS

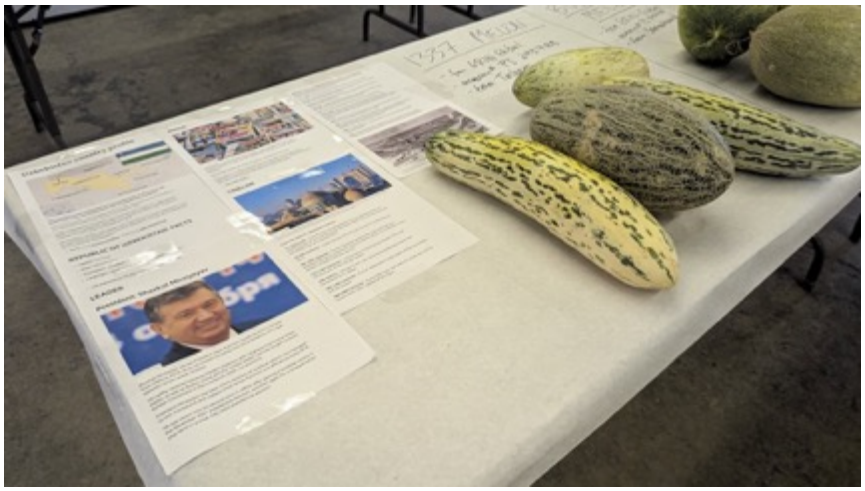
Exploring Melons of Central Asia

Investigator: Charles Havlik Ph.D. (chavlik@nmsu.edu)

Project Overview: The Los Lunas ASC is researching melon varieties from Central Asia, in order to gather information on adaptation, yield, and flavor leading to a more formal research trial. From there, they will select the best performing and tasting melons into seeds to pass on to local farmers, in hopes to bring these amazing, sweet, and unique melons to more people across New Mexico. Most of these melons have not been grown in New Mexico previously.

Meeting the Needs of New Mexico: The aim of this project would be to bring crops from a similar climactic region in Asia to explore in New Mexico. Adding diversity to the local markets and in some cases bringing a sense of home to people from the original regions, something that reminds them of home. On-farm crop diversity is lacking in the region, and prices for traditional crops are often low due to over-saturated supplies.

Impacts: Adding diversity to the local markets in a time of shifting climate uncertainty and saturated commodities could provide additional food resources and farm income. The uniqueness of these melons could attract an alternative market or niche opportunity, thereby increasing farm profitability and sustainability.



NMDA Table Grape Project

Investigators: Maryel Lopez (maryel16@nmsu.edu) (PI), Kevin Lombard (PI), and William G. Giese (Co-PI)

Collaborating Agricultural Science Centers: Sustainable Agricultural Science Center at Alcalde, Fabian Garcia Research Center, and Farmington Agricultural Science Center

Project Overview: New Mexico has diverse climatic zones ranging from hot and dry desert, to highlands, prone to frost and winter cold. New table grape varieties, Glenora, Neptune, Hope, Faith, Joy, Gratitude, Compassion, Swenson Red, and Everest Seedless offer production advantages of cold hardiness, improved cluster architecture and berry characteristics, phylloxera tolerance, and staggered ripening/timing. This project provides commercial producers, market, and home gardeners with regionally pertinent information to select cultivars suited to New Mexico's environments. The study's experimental vineyard sites: Alcalde, Farmington, and Los Lunas represent a substantial degree of the state's diverse growing conditions.

Meeting the Needs of New Mexico: Information on these table grape varieties for New Mexico is limited. New Mexico has a viable wine grape economy, with approximately 1,000 acres statewide. Table grapes offer a potential economic alternative for the state's commercial grape producers and aspiring small market farmers as well as options to support a diverse, healthy, diet for New Mexico's home gardeners. Taking advantage of these opportunities relies on identification of suitable varieties for local conditions based on local research results.

Impacts: During this project we focus on enhancing the competitiveness of table grapes, through consumption, greater capacity for sustainable practice of production and maintenance, and increased efficiency. 100 students from Farmington High School took consumer surveys that yielded preliminary preference results in flavor. 5 varieties were introduced to them because not all cultivars matured as fruitful. Field day seminars at Farmington, Alcalde, and Los Lunas exposed ~ 40 growers and ~ 300 total participants to the new varieties, trellis options, and information concerning their production. All sites grew through the growing season without the application of pesticides and unusual maintenance practices of any vineyard in New Mexico, proving that New Mexico's climate is conducive to sustainable practices that enhance the competitiveness of specialty crops and economy.

Funding Acknowledgement: New Mexico Department of Agriculture




Statewide Alfalfa Variety Testing

Investigators: M.A. Marsalis (marsalis@nmsu.edu), L.M. Lauriault, and I. Ray, C. Pierce

Collaborating Agricultural Science Centers: Artesia Agricultural Science Center, Farmington Agricultural Science Center and Leyendecker Plant Science Center

Project Overview: As part of a statewide program coordinated from the Tucumcari and Leyendecker ASCs, a new 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.

Impacts: 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.

Cover Crop and Tillage Practices for Improving Soil Health and Forage Production

Investigators: M.A. Marsalis (marsalis@nmsu.edu), Grace Woodard (NRCS), Richard Strait (NRCS), Keith White (NRCS), and Rajan Ghimire

Collaborating Agricultural Science Center: Clovis Agricultural Science Center

Project Overview: 2024 was the third and final year of a study designed to compare three forage cover crops commonly grown in New Mexico (corn, millet, sorghum-sudangrass) mixed with a legume (cowpea) using three tillage treatments each year after terminating the cover crops. The specific objectives of the study are to measure the effects of tillage practices on forage production and forage quality, and the effects of different cover crops and tillage methods on soil health. The overall goal of this study is to enhance cover crop and tillage recommendations and better inform conservation planners on implementing conservation practices. Preliminary analyses of a few key measures (forage yield, quality, soil carbon, bulk density, microbial biomass) for forage production and soil health recorded in 2024 growing season are presented in the NRCS internal annual report. Forage yield results show that conventional tillage resulted in higher yields than no-till in wet years (2 of the 3 years); however, no-till was more beneficial in an exceptionally dry year. Further soil analyses will be conducted, and conclusions will be reported in later publications on soil health benefits.

Meeting the Needs of New Mexico: New Mexico soils are largely depleted of organic matter and nutrients necessary for sustainable and profitable crop production. Smother/cover crops have the ability to improve overall soil health, sequester carbon, suppress weeds, and can be utilized for forage purposes. Finding crops and tillage practices that provide a balance of soil-improving qualities and adequate forage yield and quality can maximize soil health efforts in the state, while giving producers an acceptable alternative for profitability. New Mexico producers will have more crop options and better understanding of the utilization of forages for use in alternative soil-health driven situations.

Impacts: Soil health plays a crucial role in enhancing farm productivity and profitability in the long run. Soil cover reduces soil erosion, conserves moisture, reduces soil temperature, suppresses weeds, and provides habitat for soil biota. A combination of practices such as no-till, cover cropping, and crop rotation generates synergistic effects that benefit soil health. We expect this study will demonstrate that cover crops can be planted to gain soil health benefits (e.g., carbon sequestration, increased organic matter, reduced erosion) without an excessive disruption in forage production, as well as help us improve cover crop and tillage recommendations.

Funding Acknowledgement: USDA-NRCS Plant Materials Center

Pasture Demonstration on Tribal Lands & Cool-season Perennial Grass Trials

Investigators: M.A. Marsalis (marsalis@nmsu.edu), Richard Strait (NRCS) and County & Tribal Extension Agents

Project Overview: This project was initiated in 2020 and will continue until 2026. Investigation of various species of improved and native grasses potentially adapted to the northern 2/3 of New Mexico (especially on tribal land), for improving grazing and haying systems, increasing land output, and stimulating local economies. Testing of multiple species at various locations, including the Los Lunas ASC and tribal lands. Yield and nutritive value measurements have been collected over multiple years. Results indicate that there is broad adaptability of most of the native and non-native species planted at multiple locations, and that there is clear separation for higher yielding grasses and vast nutritional differences among the species. While tall fescue remains the highest yielder at all sites, other grasses such as tall and green wheatgrass, meadow fescue, and orchardgrass appear to be consistent performers, broadly adapted, and may be acceptable alternatives under varying situations (e.g., saline situations). In addition, data collected at the sites has been used to develop a pasture production-grazing model and calculator that has helped fine-tune traditional models and estimations used to predict pasture productivity and quality, animal outputs, and economic returns.

Meeting the Needs of New Mexico: The most appropriate improved, pasture grass species have yet to be researched for adaptability, yield, and forage quality in north-central New Mexico. New and improved forages have been developed that have potential for high yields and high feed value for livestock. Educational programs targeting irrigated forage production are lacking on tribal lands, and information is lacking on the adaptability of new/improved forages in much of New Mexico.

Impacts: As a result of long-term monitoring of the demonstrations and small plot research, the Cooperative Extension Service will be better prepared to make pasture grass recommendations to the diverse clientele and stakeholders in northern New Mexico. Pasture-grazing models will help landowners better predict production potential of grasses and animal performance. Adoption of new species is expected to increase, and subsequent land (tons/ac) and animal outputs (e.g., ADG, lbs of gain) will improve. Both animal and hay sale profitability will increase. Quality of life on tribal lands will be improved by not only the economic stimulus, but also the satisfaction that comes from a healthy, symbiotic relationship with the land.

Funding Acknowledgement: USDA-NRCS

Pasture Demonstration on Tribal Lands & Cool-season Perennial Grass Trials Pictures

Figure 1: Graduate student, Simon Gomez, prepares to take a forage sample at Ohkay Owingeh Pueblo in 2022.

Figure 2: Grass strips at Santa Clara Pueblo in the fall of 2024.

Figure 3: Cool-season species trial at the Los Lunas ASC; harvest in summer of 2023.

Cost-Benefit Comparisons Between Cover Crop and Herbicide Methods for Controlling Early-Season Weeds in Chile Pepper

Investigators: Brian Schutte (bschutte@nmsu.edu) and Ram Acharya

Collaborating Agricultural Science Center: Leyendecker Plant Science Center

Project Overview: Barley cover crops that are mowed and incorporated into the soil (herein "barley green manure") suppress early-season weeds and reduce hand hoeing requirements in chile pepper. Researchers conducted a field study and partial budget analysis to determine if a barley green manure improves profitability of conventional chile pepper production. Although further research is needed, first-year results suggest barley-induced reductions in hand hoeing expenditures may not offset barley-induced reductions in gross return caused by statistically insignificant reductions in yield.

Meeting the Needs of New Mexico: Chile pepper is central to the agricultural economy and heritage of New Mexico. However, chile pepper production in this state is threatened by high costs for hand hoeing caused by infestations of annual weeds. To address this threat, researchers are determining the benefits and limitations of an ecologically based method for reducing weeds and hand hoeing requirements in chile pepper. The results from this project will help farmers in New Mexico make informed decisions on a new weed management method that does not involve synthetic herbicides and promotes soil conservation.

Impacts: Through previous work in this project, NMSU researchers developed an ecological tactic for managing weeds and reducing reliance on both herbicides and hand hoeing in chile pepper production. This ecological tactic involves a cover crop that provides multiple ecological benefits in addition to weed suppression. The decision to adopt the new tactic for weed management requires knowledge of the tactic's economic impact in the context of the local cropping system. Accordingly, this project generates the information needed for farmer decisions on the adoption of this ecological tactic for managing weeds. Adoption of the tactic is expected to reduce soil erosion on agricultural fields, reduce pesticide applications, and minimize labor expenditures in chile pepper production.

Funding Acknowledgement: US Department of Agriculture/National Institute of Food and Agriculture NIFA, Crop Protection and Pest Management Program

Developing Region-Specific Guidelines for Selecting Cover Crop Species in New Mexico

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

Collaborating Agricultural Science Center: Leyendecker Plant Science Center, Agricultural Science Center at Farmington, and Agricultural Science Center at Clovis

Project Overview: Cover crops provide multiple ecological benefits linked to agricultural productivity. To maximize benefits from cover crops, farmers must select cover crop species that consistently produce large amounts of biomass when grown under the environmental conditions that typify the farmer's region. This project is determining biomass production and growth characteristics of sixteen cover crop species across four regions of New Mexico. The results from this project will help New Mexico farmers select cover crop species that are best suited for their location.

Meeting the Needs of New Mexico: New Mexico has over two million acres of cropland that generate over $800 million in agricultural product sales. Maintaining and enhancing this level of cropland productivity involves replacing external inputs with management of biodiversity in crop production systems. Cover crops — crops grown between periods of cash crops — are means for diversifying crop production systems. This project is developing region-specific guidelines for selecting cover crop species in New Mexico. With knowledge of cover crop species best suited for their location, farmers in New Mexico can maximize benefits from cover crops that include, but are not limited to, soil conservation, pest suppression, and increased cash crop yield.

Impacts: This project has determined the suitability of summer cover crop species for the following four agricultural regions of New Mexico: Colorado Plateau, High Plains, Middle Rio Grande Valley, Lower Rio Grande Valley. Research clarifying the suitability of winter cover crop species is ongoing. Based on the amounts of biomass produced in summer 2023 and summer 2024, sorghum-sudangrass (*Sorghum* × *drummondii*) is a well-adapted grass cover crop species for the Colorado Plateau, High Plains, Middle Rio Grande Valley of New Mexico. For the Lower Rio Grande Valley, sudangrass may be the best choice for a grass cover crop in summer. Best-choice legume cover crops for summer include cowpea (*Vigna unguiculata*) for the Colorado Plateau and Middle Rio Grande Valley, sunn hemp (*Crotalaria juncea*) for the High Plains, and sesbania (*Sesbania herbacea*) for the Lower Rio Grande Valley. These regional recommendations are expected to help farmers selection high performing cover crops for their specific locations.

Funding Acknowledgement: USDA Natural Resources Conservation Service

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

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

Collaborating Agricultural Science Center: Leyendecker Plant Science Center

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: High costs for hand hoeing are severe threats to chile production in New Mexico. To address this threat, we are clarifying the economic benefits of a crop rotation that is expected to reduce hand hoeing but increase fertilizer requirements for chile pepper production. The results from this project will help farmers make informed decisions on a crop rotation that is both well-suited to the climate and soil of southern New Mexico and a new strategy for managing weeds in chile pepper. In the near-term, adoption of the crop rotation addressed in this project is expected to increase profitability of chile pepper production. Long-term adoption of the crop rotation will conserve and improve soil supporting crop production.

Impacts: Chile production in New Mexico is reliant on hand hoeing for weed control. This reliance reduces profitability and threatens sustainability of chile pepper production in New Mexico. 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. With knowledge gained from this study, farmers in New Mexico can better utilize a crop rotation that improves profitability by diminishing hand labor requirements in chile pepper production.

Funding Acknowledgement: New Mexico Chile Association

Protecting NM Tomatoes from Disease While Generating Electricity Through Agrivoltaics

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

Collaborating Agricultural Science Center: Leyendecker Plant Science Center

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 began at the Los Lunas Agricultural Science Center in 2024 and will continue into 2025. It is funded by the 2022 NMDA Specialty Crop Block Grant Program and aligns with a sister study on chiles grown under agrivoltaic panels conducted at the NMSU Leyendecker Agricultural Science Center in Las Cruces from 2023 to 2024.

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 Leyendecker Plant Science Center in 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? Researchers are comparing Curly Top Virus (CTV) infection rates, plant vigor, and yields under solar panel shade to those under full sun conditions.

Impacts: Tomato-related problems are among the topmost 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, 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 1,000 service hours and grew over 6,400 lbs. of tomatoes in 2024. Based on the estimated national value of each volunteer hour of $33.49, that's over $33,000 in equivalent wages for the Urban Horticulture Program this year alone.

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

Funding Acknowledgement: Funded by the 2022 New Mexico Department of Agriculture Specialty Crop Block Grant Program

Mechanical Harvestable Chile Breeding Line Seed Increase

Investigators: Stephanie Walker, swalker@nmsu.edu**,** Israel Joukhadar, and Danise Coon

Project Overview: A long-term research objective of the Extension Vegetable Program is the development of new, high-yielding and quality, NM type chile cultivars with an emphasis on mechanical harvest efficiency. After years of selection, evaluation and replicated trials, the final critical step prior to releasing a new breeding line is a large-scale, breeder seed increase conducted in an isolated field to prevent cross-pollination with different chile varieties. A seed field for the new cultivar 'NuMex Venture' was established in 2024.

Meeting the Needs of New Mexico: New Mexico chile is a critical crop for the state; however, largely because of labor shortages and expense, acreage has dramatically dropped to about 8,500 ac/yr, about half of which is the hand-harvested, labor-intensive, green chile crop. Adopting mechanical harvest is essential to reversing the declining acreage. Successful transition to a mechanized system is dependent on the development and availability of new varieties efficient for machine pick.

Impacts: Net operating profit per acre of manually harvested NM type green chile is approximately $1,000/acre. When using new, highly efficient mechanical harvest varieties developed by this program, the net profit increases to about $3,000/acre. With research and development in breeding these new varieties to spur full adoption of mechanical harvest, the potential economic impact if all of the NM green chile crop is mechanically harvested is $8,500,000 annual net proceeds to producers.

Funding Acknowledgement: NM Chile Association, NM Chile Commission and NMSU Agriculture Experiment Station

Figure 1 Seed pod drying for the new cultivar 'NuMex Venture' at the Los Lunas ASC.

Plant Breeding Partnership: A Systems Approach to Mechanical Harvesting in Pepper

Investigators: Stephanie Walker, swalker@nmsu.edu and Alan Van Deynze

Project Overview: In 2024, 'NuMex Odyssey' was planted using three methods, direct seeding, ihort® Q plugs, and paperpots®, at the NMSU Agricultural Science Center in Los Lunas, NM. The study employed a randomized complete block design with five replications. Plant architecture, root, and yield data were collected. Preliminary findings show no statistical difference in marketable green fruit yield among the planting methods during mechanical harvest. However, taproot lengths of ihort Q plugs and direct-seeded plants were significantly longer than those of paper pot transplants. These results suggest that taproot length did not impact marketable green fruit yield during mechanical harvest. The findings indicate that ihort plug and paper pot transplanting methods have the potential for efficient mechanical harvesting of New Mexico green chile.

Meeting the Needs of New Mexico: This project directly benefits New Mexico agriculture by addressing labor shortages and reducing harvesting costs for green chile farmers. By evaluating transplant sowing methods that develop taproots compatible with mechanical harvesting, the study supports the transition from labor-intensive hand-picking to efficient mechanization. Conducted at NMSU's Agricultural Science Center in Los Lunas, the research provides farmers with viable alternatives to direct seeding, ensuring sustainable production while meeting growing consumer demand. The findings offer practical solutions to maintain high yields and profitability, ultimately strengthening New Mexico's agricultural economy and preserving the state's iconic green chile industry.

Impacts: This project enhances the sustainability of New Mexico's green chile industry by addressing labor shortages and reducing harvesting costs. By evaluating transplant sowing methods for mechanical harvesting, the study provides farmers with viable alternatives to traditional direct seeding. Preliminary results indicate that ihort® Q plug and paperpot® transplants produce comparable yields to direct seeding, offering flexible solutions for growers. These findings support the adoption of mechanized harvesting while maintaining productivity, ensuring that New Mexico's signature crop remains economically viable. Ultimately, this research benefits local farmers, strengthens the agricultural economy, and helps meet the increasing consumer demand for green chile.

Figure 1 Students transplanting field in Los Lunas in May 2024

Jujube Cultivar Trial

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

Collaborating Agricultural Science Centers: Sustainable Agricultural Science Center at Alcalde, Leyendecker Plant Science Center, Rex E. Kirksey Tucumcari Agricultural Science Center

Project Overview: Researchers have collected/imported over 50 varieties at 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 are all growing and producing well. In 2024, researchers did not collect yield data but sampled cultivar fruit samples for a metabolomic study, mainly at Los Lunas, and some samples from Leyendecker and Alcalde.

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.

Impacts: 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.

Funding Acknowledgement: Specialty Crop Block Grant Program and NMDA

Characterization, Genotyping and Uses of Jujube Cultivars/germplasm in New Mexico

Investigators: Shengrui Yao (yaos@nmsu.edu) and Dapeng Zhang

Collaborating Agricultural Science Centers: Leyendecker Plant Science Center

Project Overview: There are 100+ jujube cultivars in the U.S. with the majority imported and some selections across the country. But no cultivar was formally released with detailed information. Renaming, mislabeling and synonyms are common. With single nucleotide polymorphism markers, researchers could get the majority jujube cultivars genotyped/identified. Eliminated synonyms and mislabeled cultivars and got similar cultivars into groups. Researchers also identified jujube germplasm in New Mexico and Tornillo/Fabens, TX, and confirmed a unique jujube population in the Tornillo/Fabens area. Growers/researchers nationwide can use this information to identify their cultivars or guide their jujube cultivar selections.

Meeting the Needs of New Mexico: This jujube genotyping project will directly benefit all jujube growers in New Mexico, nationwide, and internationally. This jujube genotyping project was the first of its kind in the US. It clarified the jujube cultivar confusion and will guide growers for their cultivar selection.

Impacts: This jujube genotyping project will help growers in their cultivar identification and selection. The results from this project eliminate synonyms and mislabeling. Growers will know the relationship among cultivars and avoid fancy names/duplicates.

Jujube Cultivar Selection Through Open Pollination Progenies

Investigators: Shengrui Yao (yaos@nmsu.edu)

Collaborating Agricultural Science Centers: Sustainable Agricultural Science Center at Alcalde

Project Overview: There are limited commercially available jujube cultivars and no formally released jujube cultivar in the U.S. Based on NMSU research cultivar trials and existing jujube trees, jujube trees grow and produce well across New Mexico. Jujube breeding and selection is non-existent 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, researchers hope to select several U.S. jujube cultivars. They have planted over 470 seedlings in 2021 and 2022 at Alcalde, and an additional 600 in Los Lunas in 2023. Researchers tagged all 900 seedlings for both locations in 2024. They evaluated fruit quality weekly from September to mid-October and identified several promising selections in 2024.

Meeting the Needs of New Mexico: Late frost challenges fruit production each year in central and northern New Mexico. Researchers encourage growers to diversify their operations in order to minimize the revenue fluctuation for fruit growers. Since jujube blooms later and can avoid late frosts in most years and produce a reliable crop each year, it will be a perfect alternative crop for commercial growers and home gardeners in New Mexico. The jujube cultivars at three locations have proven it in the past 10 years.

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.

Figure 1: Fruiting seedling at Los Lunas in 2024

By The Numbers

Research Publications

Journal, Research Reports, Proceedings

- Joukhadar, I., Ortega, F., Velasco-Cruz, C., Barchenger, D., Hill, T., Van Deynze, A., and **Walker, S.** (2024). Correlations among New Mexico pod-type green chile (*Capsicum annuum*) fruit morphology characteristics with destemming force. *Crop Science*, 64(5), 2698-2708.
- Joukhadar, I., **Havlik, C.**, and **Walker, S.** (2024). Effect of Plant Density on Mechanical Harvest Efficiency of New Mexico Pod-type Green Chile Pepper. *HortTechnology*, 34(2), 181-186.
- Lauriault, L.M., and **M.A. Marsalis**. 2024. Performance of an alfalfa-sainfoin mixture in the semiarid Southern High Plains of the USA. *Crops*. 2024; 4(4), 514-522. https://doi.org/10.3390/crops4040037.
- **Thompson, M.**, Joukhadar, I., **Walker, S.**, **Havlik, C.**, VanLeeuwen, D. Total Tomato Yields Not Affected by Root Pruning Treatment. submitted to *HortTechnology*, December 12, 2024.
- Lauriault L., I. Ray, C. Pierce, K. Djaman, R. Flynn, **M. Marsalis**, **C. Havlik**, G. Martinez, and M. West. 2024. The 2023 New Mexico Alfalfa Variety Test Report. NM Agric. Exp. Stn., Las Cruces, NM.
- **Marsalis, M.A.**, P. Acharya, and R. Ghimire. 2024. Cover Crop and Tillage Practices for Improving Soil Health and Forage Production. 2023 Report of Activities. NRCS-Los Lunas Plant Materials Center. January 2024.
- **Yao, S.** and J. Cerza. 2024. Genetic Diversity and Population Structure of Jujube Cultivars in the United States Revealed. *American Society for Horticultural Science* Press Release. August 29, 2024. https://ashs.org/news/news.asp?id=680983.
- Acharya, P., Ghimire, R., Idowu, O.J., and **Marsalis, M.A.** 2024. Soil carbon sequestration potential of different land use systems under semi-arid climate. *In* Abstracts ASA-CSSA-SSSA International Annual Meeting, ASA-CSSA-SSSA, San Antonio, TX. November 2024.
- Coon, D., Joukhadar I., and **Walker S.** Assessing different transplant methods with chile pepper to mimic direct seeding. Abstract and poster submission. International Pepper Conference. Ithaca, NY. October 2024.
- Estrada, M., Coon, D., Joukhadar, I. (Presenter), **Thompson, M.,** Ghimire, R., Lavrova, O., **Walker, S.**, "Agrivoltaics: Protecting NM Chile Crops from Curly Top Virus". *In* proceedings, 2024 World Agrivoltaics Conference, Denver, CO. June 11, 2024.
- Sapkota, D., Zhang, D., Park, S., Meinhardt, L., Lozada, D., Steiner, R. L., Yao, S. (2024). Genetic Diversity and Population Structure of Jujube Cultivars in the United States Revealed by Single Nucleotide Polymorphism Markers. J. Amer. Soc. Hort. Sci., 149(2), 107-120. https://doi.org/10.21273/JASHS05370-23
- Yao, S. (2024). Register of jujube cultivar list. In David Karp and Ksenija Gasic (co-editrors) , Register of New Fruit and Nut Cultivar list (52), HortScience, 59(8), 1220-1292, (1253-1256 for jujubes). https://doi.org/10.21273/HORTSCI18040-24
- Singh Insa, R., E. A. Lehnhoff, B. J. Schutte. 2024. Reducing hand hoeing in chile pepper by controlling weeds in a rotational sorghum crop. Proceedings of the 77th Annual Meeting of the Western Society of Weed Science 77:97

Extension, Newsletters, Trade/Magazine, Press Releases) of faculty located at the Los Lunas ASC

- Beck, L., L. Lauriault, and **M. Marsalis**. 2024. Managing Weeds in Alfalfa (Revision). NMSU Cooperative Extension Publication. Las Cruces, NM. Guide A-325. February, 2024.
- **Marsalis, M.A.**, G.R. Hagevoort, J.L. Turner, and L.M. Lauriault. 2024. Hay Nutritive Value, Quality, and Testing. NMSU Cooperative Extension Publication. Las Cruces, NM. Circular 711. October 2024.
- **Marsalis, M.**, L. Lauriault, L. Beck, and J. Idowu. 2024. Summary of Recommendations for Forage and Weed Management and Soil Fertility. Bosque Redondo Historic Site. September 15, 2024.
- Lauriault, L. **Marsalis, M.**, L. Beck, and J. Idowu. 2024. Summary of Recommendations for Forage and Weed Management and Soil Fertility. Los Luceros Historic Site. September 15, 2024.
- Vitale, P., M. Regmi, J. Garlisch, and **M. Marsalis**. 2024. 2023 Actual Crop Return Estimates, Full Time/Part Time Farm, Valencia and Bernalillo Co. NMSU Agric. Econ. & Agric. Business Dept. Pub. April, 2024. https://costsandreturns.nmsu.edu/2023/crop.html.
- ACES Magazine. Top Crop: NMSU scientists join forces to advance alfalfa research. ACES Magazine. Vol. 12, Fall 2024. (**Marsalis** Contributor).
- Pierce, J., J. King, and **Marsalis, M.A.** 2024. 2024 Hay Insect Pests: Aphid & Cutworm Heads Up. March 22, 2024. (County Agent Newsletter) (**Marsalis** Contributor).
- Ghimire, R., **Marsalis, M.**, R. Hagevoort, and S. Aney. 2024. Water Situation and Addressing Needs of New Mexico Agriculture. White paper for Ogallala Summit, Liberal, KS. March 18-19, 2024.
- **Marsalis, M.A.**, and T. Padilla. 2024. Specialty vegetables, mechanical chile harvest, agrivoltaics to highlight Los Lunas field day Oct. 19. University Comm. News Article. News Release. October 7, 2024.
- **M. Marsalis**, and A.M. Chavez. 2024. 2025 Southwest Hay and Forage Conference to address growers' challenges, potential solutions. University Comm. News Article. NMSU News Release. November 26, 2024.

Grants and Contracts

- USDA NRCS – Urban Agriculture Demonstration (new: $500,000); Direct to the Los Lunas ASC.
- USDA NRCS ($250,000)
- United States Department of Agriculture-Natural Resources Conservation Service, New Mexico (Grant # GR0007378)
- New Mexico Department of Agriculture as part of the Specialty Crop Block Grant Program provided $52,818.00 – Status: Finalized as of December 2022; however, further labor and data collection needs to be completed.
- USDA-NRCS Agreement; $175,000
- Allelopathic cover crops for pest suppression in chile pepper in the Southwest. USDA NIFA Crop Protection and Pest Management Program, September 2021-September 2024, $191,173. B. Schutte (PI), E. Lehnhoff, S. Sanogo, R. Creamer, S. Bundy, R. Acharya
- New Mexico Department of Agriculture Specialty Crop Block Grant Program (Funding Opportunity Number USDA-AMS-TM-SCBGP-G-22-0003).

- Plant Breeding Partnership: A Systems Approach to Mechanical Harvesting in Pepper - USDA NIFA **(**$799,604) **-** Funding period: 3/1/2023-2/28/2026
- New Mexico Agricultural Experiment Station and the New Mexico Chile Association, July 2024-June 2026, $74,583.

Outreach Activities

- April 19 - Carbon Management/Soil Health Working Group Planning Meeting (16 attendees)
- April 20 - Tour- Learning Garden/Orchards/Walnuts-for Extension Master Gardeners (23 attendees)
- April-October - Los Lunas High School Field Visit & Tour for Student Experiment Project; Research (22 Attendees)
- May-November - Regular volunteer mornings on Tuesdays & Thursdays - Learning Garden & Tomato Study (10 attendees but varies)
- June 17-June 20 - African Fellows Scientific Exchange Program Host/Classes/Tours (10 attendees)
- June 24 - When Trees Need Our Help workshop (22 attendees)
- July 10 - Summer Conservation Camp for Kids & Tour Nature Journaling in Pollinator Garden (15 attendees)
- July 12 - USDA Foreign Ag Service Farm Tour (27 attendees)
- August 1 - Carbon Management / Soil Health Annual Meeting Farm Tour (47 attendees)
- August 13 - Los Lunas ASC Advisory Board Meeting & Farm Tour (26 attendees)
- August 15 - Fruit Tree Pruning & Peach Harvest workshop with Volunteer Crew from Sandia National Labs (36 attendees)
- August 19 - AgrAbility Program Meeting & Farm Tour (7 attendees)
- August 22 - Grow Your Own Mushrooms Demonstration/Workshop (10 attendees)
- September 12 - Tasting the Melons of Central Asia (37 attendees)
- September 21 - Jujube Workshop and Fruit Tasting (20 attendees)
- October19 - Annual Field Day 2024 (69 attendees)
- October 19 - Valencia County Fall Farm Festival. Canceled due to inclement weather
- October 28 - Fall Farm School Trip Corn Maze, and Pumpkin Patch picking (33 attendees)
- November 8 - Autumn Pumpkin Class (Collab. With Valencia Co. Ext. Office) (6 attendees)
- November 12 - Ristra Making Workshop (19 attendees)
- November 23 - Quince Harvest Workshop (10 attendees)
- December 5 - National Young Farmers Educational Association Farm Tour (158 attendees)
- December 5 & December 12 - Learning Garden Planting of Cool Season Crops (10 attendees both day - Volunteer Days)
- December 17 - Agrivoltaics for NM Chile production & Ristra Workshop (15 attendees)
- Volunteers worked weekly with the Horticulture Specialist assisting with tomato research, fruit orchard, and Learning Garden activities (30+ individuals: over 1,035 hours in 2024, valued at over $34,000 in equivalent wages)Faculty and staff responded to hundreds of stakeholder requests for information in 2024 via phone calls, emails, office walk-ins, and site visits, including from surrounding states and internationally

Figure 1 National Young Farmer Educational Association (NYFEA), Field Tour 2024

Figure 2 Soil Health & Soil Carbon Conference, Field Tour 2024

Figure 3 Tasting Melons of Central Asia, Workshop 2024

People

Cooperators and Collaborators

Collaborating Main Campus (and other ASC) Faculty & Staff

- Dr. Leslie Beck (Extension Plant Sciences) – Weed control in alfalfa
- 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. Rajan Ghimire (Clovis ASC) – Cover crop, carbon management, and soil health
- Rachel Gioannini (Plant & Environmental Sciences) – Horticulture, hydroponics
- Dr. Ivette Guzman (Plant & Environmental Sciences) – Native & medicinal herbs
- Dr. Richard Heerema (Extension Plant Sciences) – Fruit tree chill hours outreach
- Dr. John Idowu (Extension Plant Sciences) – Soil carbon management
- 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 Mgmt
- Dr. Phillip Lujan (Extension Plant Sciences) – Plant disease testing & diagnostics
- Dr. Jane Pierce (Artesia ASC) – NIFA EIP IPM funding PI, IPM Learning Garden
- 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
- Dr. Dawn Van Leeuwen (Economics, Applied Statistics & International Business) - Statistics

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
- Valencia County Cooperative Extension
- Valencia Soil & Water Conservation District – Whitfield Wildlife Conservation Area
- University of Arizona
- AZ Cooperative Extension Service
- Colorado State University
- Permian Basin Master Gardener Program
- Texas AgriLife Research & Extension
- University of New Mexico
- USDA-Natural Resource Conservation Service (NRCS), Plant Materials Center
- USFWS Northern New Mexico National Wildlife Refuge Complex

Industry & Tribal

- Amaro, Lescombes, and Noisy Water Wineries
- Arizona Community Tree Council
- Black Smuggler Winery
- Bridgestone Americas Inc.
- City of Albuquerque – Bio Park
- City of Albuquerque – Open Space Patrol Volunteer Training Program
- City of Las Cruces – Tree Stewards Training Program
- Curry Chile & Seed Co.
- Diam Cork Closures
- Double A Nursery
- Duarte Nursery
- Jaramillo Vineyards
- Jericho Nursery
- Lescombes Vineyard
- National Grape Research Alliance
- NM Chile Association
- NM Chile Commission
- NM Farmer's Markets
- NM Hay Association
- NM Wine Growers Association
- Ohkay Owingeh Pueblo
- Osuna Nursery
- Pueblo of Santa Ana and Tamaya Resort Inc.
- Santa Ana Pueblo Farms & Santa Ana Pueblo Native Plant Nursery
- Santa Ana Pueblo Vineyard, Sandoval County
- Santa Clara Pueblo
- Think Trees NM
- Tree New Mexico Tree Stewards Training Program

- Western Sustainable Agriculture Research and Education (WSARE)
- Whole Foods Market, Durango CO and Farmington
- Wine Cartel Inc. (winery consultants, Mr. Michael Dominguez), Mr. Michael Leonardelli, climatologist
- Wines of the San Juan, Blanco, NM

Advisory Committee

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

Graduate Students

- Sara Parra Perez, MS
- Simon Gomez
- Caroline Toth, PhD
- Ram Singh Insa – Plant and Environmental Sciences, PhD

Post Doc.

- Dr. Pramod Acharya

ASC Personnel

- Mark Marsalis, Ph.D. – Research Director - Extension Forage Specialist
- Cathy Casaus – Fiscal Assistant, Inter.
- Orion Dockens – Ag Science Laborer
- Jose Gonzalez – Ag Science Laborer
- Charles Havlik, Ph.D. – Senior Research Assistant
- Jessica Jia – Program Specialist, IPM
- Max Perea – Ag Science Laborer
- Dennis Price – Assistant Farm Manager/Farm Ranch Manager (Interim)
- Candace Sisneros - Administrative Assistant, Assoc.
- Marisa Thompson, Ph.D. – Extension Urban Horticulture Specialist
- Stephanie Walker, Ph.D. – Extension Vegetable Specialist
- Shengrui Yao, Ph.D. – Extension Fruit Specialist
- Vincent Aragon – Ag Science Laborer (Temporary)
- Antonio Atencio – Ag Science Laborer (Temporary)
- Alexis Barela – Ag Science Laborer (Temporary)
- Kioni Charley – Ag Science Laborer (Temporary)
- Alfredo Oliveros – Ag Science Laborer (Temporary)