2024
ANNUAL REPORT

SUSTAINABLE AGRICULTURE SCIENCE CENTER AT ALCALDE

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College of Agricultural, Consumer and Environmental Sciences
Agricultural Experiment Station

Sustainable Agriculture Science Center at Alcalde

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Notice to Users of this Report

This report has been prepared to aid Science Center staff in analyzing the results of various research projects from the past year and to record data for future reference. 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 data in this report. In many instances, data represents only one of several years' results that will ultimately constitute the final formal report. Although staff members have made every effort to check the accuracy of the data presented, this report was not prepared as a formal release.

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

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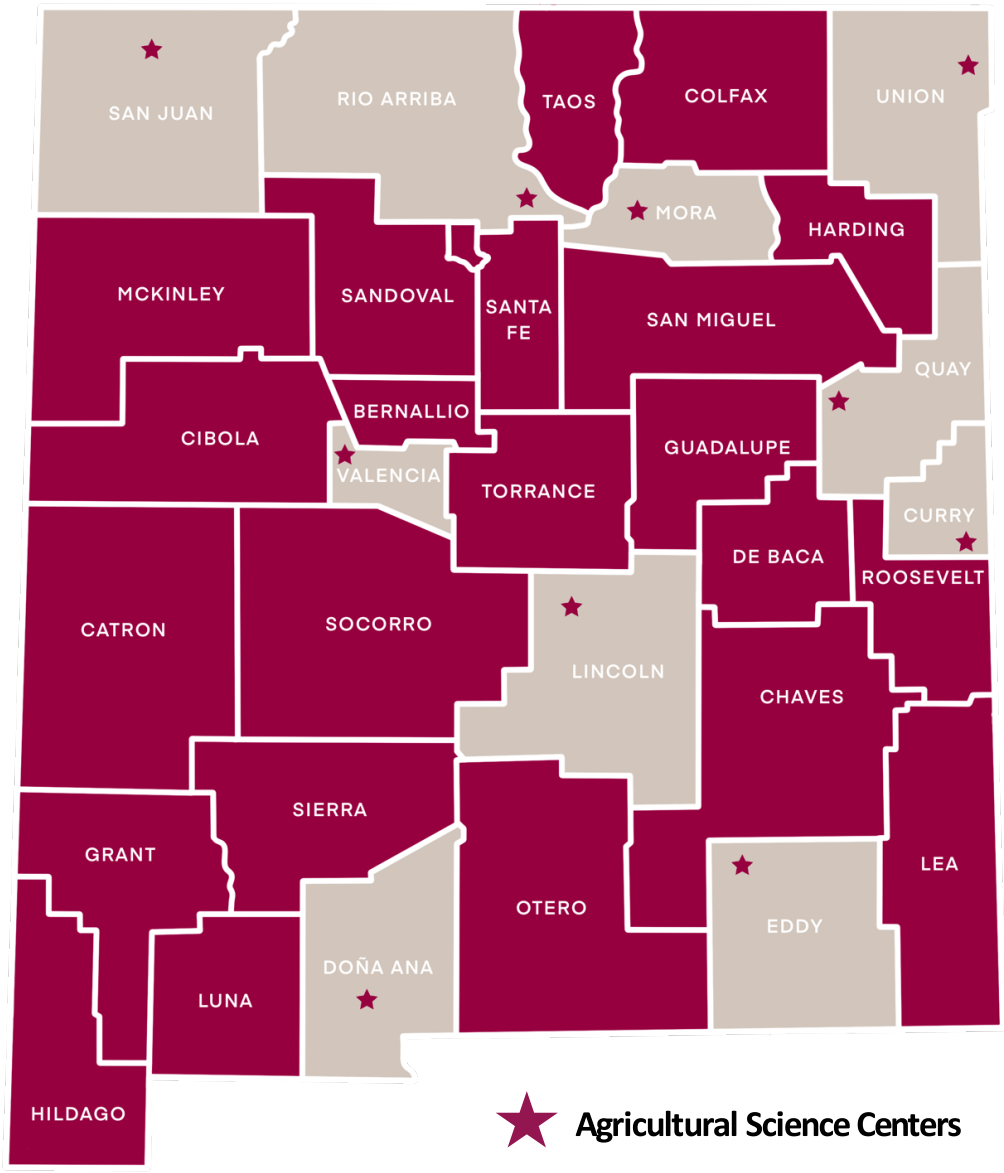
Agricultural Science Center Locations Map



Executive Summary

The Sustainable Agriculture Science Center (SASC) at Alcalde is a sixty-acre research farm seven miles north of Española. The farm stretches from the Acequia de Alcalde to the Rio Grande and is representative of the irrigated farmland along the Rio Grande, Rio Chama, Rio Embudo and other smaller drainages in the area. Irrigated pasture and forages dominate, but there are also numerous orchards and intensive, high-value fruit and vegetable producing operations. The mission of the SASC is to conduct agricultural and natural resource research on native and high-value crops, improving sustainable and climate-smart approaches to benefit small family farms and ranches in north-central New Mexico.

Our research focuses on crops and cropping systems for north central New Mexico, including various horticultural and agronomic crops, organic and sustainable production methods, as well as acequia hydrology. Current research focuses on jujube variety development and testing (2 acres), pome and stone fruit production (2 acres), table grapes (1 acre), pollinator habitat and buffer strips (3 acres), Saffron production, and high tunnel fruit and vegetable production (five thousand square feet of covered growing space). The center also includes twelve acres of forage crops, including alfalfa, red clover, western wheatgrass, Russian wildrye, smooth brome, tall fescue, and orchardgrass. Six acres of the station are certified organic, and certified crops in 2024 included apple, peach, and plum.

In 2024, the SASC hosted the 2024 multistate NC140 (Fruit Tree Rootstock Group) annual meeting in Santa Fe, New Mexico, from Nov. 5-8, 2024, with 32 attendees from 19 states and one Canadian province. Two new research projects were initiated on “Effects of Planting Time and Irrigation Treatments on Saffron Yield in Northern New Mexico” and “S1084: Industrial Hemp Production, Processing, and Marketing in the U.S.” The Center also welcomed a group of 35 to 40 visitors from the Environmental Protection Agency (EPA) of the New Mexico Department of Agriculture (NMDA), along with Agriculture Secretary Witte, and hosted international visitors from the Leadership Program of the U.S. Department of State, as well as visitors from Argentina, Pakistan, Rwanda, the Philippines, Costa Rica, and Majuro. Moreover, in 2024, faculty members of SASC at Alcalde secured funding from the Specialty Crop Block Grant Program of the New Mexico Department of Agriculture for three additional research projects: "Integrating Saffron into Small Vegetable Production Systems of New Mexico to Enhance Profitability and Sustainability," "Chickpea: A High-Value, Low-Input Specialty Crop for New Mexico," and "Exploring the Nutritional and Medicinal Profiles in Fruit and Seeds of Jujubes in New Mexico."

Research Highlights

Organic Apple Rootstock Trial with Tall Spindle Training

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

Project Overview: An organic apple rootstock trial with 11 rootstocks at 1.0 x 3.5 m planting density in tall spindle training system was established in 2015. The cultivar was Modi, a selection from Italy, and the eleven rootstocks were G.11, G.16, G.202, G.214, G.222, G.30, G.41, G.690, G.935, G.969, and M9-337 (control). The cultivar Liberty on G.935 was used as a pollinizer. Organic chicken manure was applied twice per year, beginning at 0.2 lb N/tree and increasing to 0.8 lb N/tree in 2021. The trees were trained to a tall spindle system following the protocols from the NC-140 group. The trees started to produce a light crop in 2016 but yield and quality varied by rootstock. Despite good bloom and fruit set, trees produce normal crops, but the data harvested were not representative due to elk damage which ate all fruit lower than 6 ft. So far, G890 was the best performing rootstock, followed by G.30. M9-337, G222, G202 and G16 produced the least yield. M9-337 had the highest death rate among all rootstocks tested.

Meeting the Needs of New Mexico: Apple is the number one fruit species in New Mexico. States with big apple operations utilize high density planting and dwarfing rootstocks to boost crop production; yet there is limited research on what growing methods are most suitable for New Mexico apple growers. Trees in high density planting systems produce earlier crops with higher yields than conventional systems. The NC-140 program is a nationwide rootstock evaluation program for different temperate fruit tree species.

Impacts: In 2024, this ten-year project was completed. Rootstocks G890 and G30 were recommended for high pH soils and the tall spindle production system for apple production. Growers can adopt those rootstocks if they are interested in apple high-density planting.

Funding Acknowledgement: USDA Specialty Crop Block Grant funding $15,120 through NMDA 2014-2017. This apple rootstock trial ended in 2024.

Jujube Cultivar Selection Through Open Pollination Progenies

Investigator: Shengrui Yao (yaos@nmsu.edu)

Collaborating Agricultural Science Center: Los Lunas Agricultural Science Center

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 trees grow and produce well across New Mexico. Jujube breeding and selection is scant in the U.S. The Sustainable Agricultural Science Center at Alcalde started the jujube cultivar selection through open-pollinated progeny in 2021. So far, 900 seedlings from nine mother cultivars have been planted at Alcalde (2021 and 2022) and Los Lunas (2023). Around 140 plants were fruited in 2024, and the fruit quality was evaluated weekly from Sept to mid-October. Cultivar selection is a long-term project. The goal is to release several NM-selected jujube cultivars.

Meeting the Needs of New Mexico: Late frost challenges fruit production each year in central and northern New Mexico. Growers are encouraged 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 good 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.

Impacts: Like any perennial fruit species, jujube cultivar selection will be a long-term project which 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.

Funding Acknowledgement: USDA/NMDA Specialty Crop Block Grant Program

Seedling planted in 2023 fruited in 2024 at Los Lunas ASC.

Expanding Organic Systems to Reduce Water Demand and Increase Agricultural Resilience in the Southwest

Investigators: Alexander Fernald, Connie Maxwell (alamosa@nmsu.edu), Kevin Lombard, Ivette Guzman, Jay Lillywhite, Rob Heyduck, Richard Davidson, Don Bustos

Collaborating Agricultural Science Centers: Fabian Garcia Science Center and Farmington Agricultural Science Center

Project Overview: This team's goal is to develop a protocol and toolkit for dryland and minimally irrigated organic system plans that provides effective targets and innovative pathways for adaptations to climate changes and water demand-reductions through transitions to resilient organic crops and practices. In 2024, we established trials of low water use medicinal herbs and native fruit trees that we hope provide a marketable product as well as pollinator and wildlife habitat, erosion control, windbreaks, and other ecosystem services. Survival of perennial crops and shrubs is high, but we will replant missing plants in 2025.

Meeting the Needs of New Mexico: Climate change has resulted in less snowpack, earlier spring runoff, and sharp reductions of irrigated agriculture in some regions, yet keeping water in agricultural valleys is critical for resilience of these working landscapes and communities. Expanding organic systems may be one of the few remaining viable options for reducing water demand that can also achieve resilience for agricultural communities in New Mexico's drylands, arid and semi-arid regions.

Impacts: The USDA-NIFA Organic Transitions Program supports research and extension that improves the competitiveness of organically raised crops and livestock. This project will address these priorities by using a systems approach to collaboratively develop improved strategies, models, and metrics to optimize productivity, sustainability, ecosystem services and the climate variability adaptation ability of organic systems.

Funding Acknowledgement: USDA-NIFA Organic Transitions Program

Selecting Adapted Cultivars of Lavender for Northern New Mexico

Investigators: Robert Heyduck (rheyduck@nmsu.edu)and Kevin Lombard

Collaborating Agricultural Science Center: Farmington Agricultural Science Center

Project Overview: Building on work done from 2003 to 2011, researchers plan to select hardy lavender cultivars adapted to the growing conditions of northern New Mexico. Seeds were collected in 2018 from 120 lavender plants that had survived weather extremes and suboptimal management conditions. These plants represent 22 lines and were likely open-pollinated by other remaining plants. Lavender germination can be low due to the quality of seed and dormancy, and researchers generated 112 individuals in one round of seeding in 2023, and these were split between Farmington and Alcalde. In 2024, a small trial of five cultivars was planted at Alcalde.

Meeting the Needs of New Mexico: Lavender is a crop with long historic use. Its name reflects its connection to washing and its use in soaps and cleaning and freshening agents. It is also used as cut and dried flowers and is widely planted as an ornamental. While not native to New Mexico, it grows well in most parts of the state, does well on alkaline, sandy, and low-fertility soils, and is drought tolerant. Cold tolerance is an important trait for northern areas with colder, longer winters, and demand is increasing for cultivars which are both drought and cold tolerant.

Impacts: Lavender production and products play a part in several New Mexico businesses. Identifying and generating well-adapted and productive cultivars could help make existing businesses and farms more sustainable and promote the expansion of lavender production, and expand the offerings of small-scale growers as cut flowers or as value-added products.

Funding Acknowledgement: New Mexico Department of Agriculture as part of the Specialty Crop Block Grant Program

Jujube Cultivar Trials

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

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

Dongzao at Leyendecker, 2024

Table Grape Cultivar Trial at Alcalde

Investigators: Shengrui Yao (yaos@nmsu.edu) and Kevin Lombard

Collaborating Agricultural Science Center: Farmington Agricultural Science Center and Los Lunas Agricultural Science Center

Project Overview: Due to severe late frosts in central and northern New Mexico, grape can be an alternative crop for fruit growers. Not all grape cultivars are adapted to the high pH soils common across New Mexico. The new growth of grapes can also be damaged by late frosts, but they can regenerate in the same year. The goal is to evaluate table grape cultivars to recommend top-performing cultivars to growers. Eight table grape cultivars were planted in 2021 at Alcalde and are being monitored for their growth and yield. The trellis system was installed in 2024. Due to winter damage and elk browsing, grape plants were still small by the end of 2024.

Meeting the Needs of New Mexico: Unlike most pome fruit and stone fruit species, grapes can regenerate some new growth if they are damaged by late frosts and still generate some income for growers even in years with severe late frosts. For table grapes, most growers can market their fruit directly to local markets, which will increase their revenue. This table grape cultivar trial will be a demonstration for growers. Once we collect enough data, growers can adopt the recommended table grape cultivars in their operations.

Impacts: Once this project is finalized, researchers will recommend top-performing table grape cultivars to local growers who can plant them on their farms to minimize the late frost influence and increase revenue.

Funding Acknowledgement: Specialty Crop Block Grant through New Mexico Department of Agriculture

Saffron Production in North Central New Mexico

Investigators: Saeid Zehtab Salmasi (saeidzs@nmsu.edu) and Robert Heyduck

Project Overview: Saffron (*Crocus sativus* L.) holds a high economic value as the world's most expensive spice. It plays a crucial role in many small farm economies in countries such as Iran, India, Afghanistan, Greece, Morocco, Spain, and Italy. The net global production of saffron amounts to approximately 418 tons annually, produced on approximately 250,000 acres. The dehydrated stigma of saffron contains bioactive compounds with therapeutic properties in treating cancer cells, Alzheimer's disease, and cardiovascular disorders. In recent years, saffron has also been cultivated in California and West Texas. In this project, the effects of three different Saffron corm sizes will be evaluated in high tunnel and open field conditions at Alcalde. About 2000 Saffron corms were planted on September 19th and 20th, 2023. For the first year, researchers harvested flowers from October 18 until November 6. The saffron plants overwintered and produced promising flowers and stigma yields for the second year in 2024. The results showed that saffron can survive during the winter in the open field in Alcalde.

Meeting the Needs of New Mexico: This project will demonstrate the benefits of integrating saffron into traditional small-scale vegetable production systems with the goal of enhancing farm sustainability and profitability while improving overall soil health. We anticipate that this project will demonstrate a boost in farm profitability compared with current vegetable production systems, which will encourage adoption of saffron as a new value-added, low input cash crop. A major goal of this project is to test the feasibility of saffron production at North Central New Mexico and to generate educational resources, including planting, maintenance, harvesting, processing, and marketing. We believe the climate condition in Northern New Mexico should be conducive to producing high-yield saffron, but this requires local testing and trailing.

Impacts: The results of our research in 2023 and 2024 showed that saffron can survive in northern New Mexico climatic conditions, with promising stigma production already achieved in the first two years. Studies showed that U.S.-grown saffron with an average price of $30/g could generate >$50,000 net revenue/acre. Diversification towards high-value crops can be a promising strategy to enhance farmers' economic welfare in the region. The project will produce new knowledge and promote high value, low input plants to the growers of Northern New Mexico and the soil health and environmental benefits can improve overall on-farm resiliency, reduce off-farm inputs, and increase biodiversity.

Effects of Planting Time and Irrigation Treatments on Saffron Yield in Northern New Mexico

Investigators: Saeid Zehtab Salmasi (saeidzs@nmsu.edu) and Robert Heyduck

Project Overview: The objective of this program is to introduce high-value, low-input crops in Northern New Mexico. Saffron (*Crocus sativus* L.) holds a high economic value as the world's most expensive spice. The Saffron study will occur in field conditions at an organic farm. We will evaluate two production systems of open fields and protected high tunnel along with three irrigation treatments and three planting dates. Flowers will be harvested in October and the dry weights recorded. The following data will be collected: Peak flowering time, number of harvested flowers, flower fresh weight, stigmatic dry weight, and labor hours. Results will be presented at field days to educate growers and the public on saffron cultivation potential in New Mexico drought conditions.

Meeting the Needs of New Mexico: New Mexico has a rich tradition of using medicinal herbs, particularly among Native American and Hispanic communities. Small-scale farmers in northern New Mexico, facing water shortages exacerbated by climate change, are shifting from traditional crops to high-value alternatives. Saffron (*Crocus sativus* L.), the world's most expensive spice, appears to be well-adapted to the climate conditions of northern New Mexico and thus has potential for adoption by small scale farmers in the region.

Impacts: This program aims to introduce low-input, high-value crops, focusing on Saffron's feasibility in northern New Mexico. Research conducted in 2023 and 2024 indicates that saffron can thrive in the region's climate, showing promising stigma production in the initial years. Saffron is well-suited for dry areas, particularly in USDA plant cold hardiness zones 5-9. Although local market potential is uncertain, the US saffron market was valued at $360 million in 2023, with significant imports suggesting strong demand.

S1084: Industrial Hemp Production, Processing, and Marketing in the U.S.

Investigators: Saeid Zehtab Salmasi (saeidzs@nmsu.edu) and Robert Heyduck

Project Overview: Research advances in hemp breeding and genetic improvement need to be coupled with cropping system development. The goal is to develop sustainable cropping systems based on management practices that balance trade-offs in grower profitability, natural resource conservation, and ecological footprint. Innovative and collaborative approaches will be used to evaluate available cultivars and identify agronomic best management practices based on intended markets and regional adaptation.

Meeting the Needs of New Mexico: Following the legalization of hemp (Cannabis sativa <0.3% THC) by the 2018 Farm Bill, farmers expressed tremendous interest in growing the crop and 48 states developed hemp programs. A lack of USDA and academic research for more than 80 years has resulted in an incredibly thin knowledge base to support the deployment of sustainable production systems, develop long-term breeding programs, and/or evaluate the economic viability of hemp. Companies see potential value in developing hemp products.

Impacts: The S1084 project continues to enable U.S.-wide coordination of hemp-related research and collaboration across states, disciplines, and public and private entities. S1084 has increased access to research and management resources through germplasm collection, surveys of pest and disease issues, creation of comment terminology and minimum data standards, and economic analysis tools.

Chickpea Cultivars Selection

Investigators: Saeid Zehtab Salmasi (saeidzs@nmsu.edu) and Robert Heyduck

Project Overview: 10 chickpea Kabuli cultivars from Washington State University were evaluated at the SASC in Alcalde. The grain yield and yield components of 10 cultivars, including Sierra, Nash, USDA Quinn, CA17900005C, CA13900151C, CA13900129C, CA13900139C, CA13900147C, CA17900016C, and CA17900019C were assessed in north-central New Mexico during 2024.

Meeting the Needs of New Mexico: In the U.S., chickpea-planted acreages have changed from 404,000 in 2019, down to 249,000 in 2020, and back up to 502,000 in 2024. With only 10.33% arable land in a semi-arid to arid environment, agriculture in New Mexico relies heavily on both surface and groundwater sources for irrigation. Cool season food legumes, including dry peas, and lentils, are an important feature of the dry farmlands of the western U.S.

Impacts: CA13900139C and USDA Quinn produced the highest grain yield among tested cultivars. In North America, chickpeas are marketed as canned chickpeas for salads, dried chickpeas, and ground as flour for baking purposes. Particularly with the rise in gluten-free options and preferences for consumers. The mild flavor, coupled with a protein level of 17-22%, has encouraged an increased use of chickpeas as a plant-based food ingredient.

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

Investigators: Shengrui Yao(PI) and Dapeng Zhang (Co-PI)

Primary ASC Hosting this Project: Leyendecker Plant Science Center and Los Lunas Agricultural 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, we could get the majority of jujube cultivars genotyped/identified. Eliminated synonyms and mislabeled cultivars and got similar cultivars into groups. We also identified jujube germplasm in New Mexico and Tornillo/Fabens, TX, and confirmed a unique jujube population in 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.

Funding Acknowledgement: Specialty Crop Block Grant through NMDA supported this project with a total of $63,888 from 2023-2026.

Rio Hondo Water Quality Project

Investigators: Sam Fernald (afernald@nmsu.edu) and Robert Heyduck
Primary ASC Hosting this Project: Alcalde
Funding Acknowledgement: Taos Soil and Water Conservation District

Project Overview: With community input, we have selected 20 sampling points along the length of Rio Hondo, beginning at its source and ending where it joins the Rio Grande. We sample year-round for water quality parameters including total dissolved solids, salinity, pH, mineral content, fecal coliform, greases and oils, pharmaceutical residues, and isotopic composition.

Meeting the Needs of New Mexico: This two-year project aims to assess water quality during a phase of rapid development around Taos Ski Valley, addressing community concerns over development impacts.

Impacts: The project will run from September 2023 through September 2025, and this will allow us to gauge pollutant loads over the two water years as development intensifies and traffic and use increase. Preliminary results showed that all metals were below EPA drinking water limits and that all other quality parameters were within a safe range except at one site. Coliform bacteria and E. coli were found at every sampling point, but not at every visit.

By the Numbers

Research Publications

- Khosravani, S., G. Niknam, R. Karimzadeh and S. Zehtab Salmasi. 2024. Comparison of the nematicidal effect of some essential oils and fungal metabolites against Ditylenchus dipsaci under laboratory conditions and identification of their chemical compounds. Iranian Journal of Plant Pathology, 59(1): 20-32. https://doi.org/10.22034/IJPP.2024.2012655.43.
- Niknam, Ghorbani, Z., Khosravani, S., Karimzadeh, R. and Zehtab Salmasi, S. 2024. Comparison of nematicidal activity of some essential oils, Pochonia chlamydospora metabolites and metham sodium on Aphelenchoides besseyi under laboratory conditions. Iranian Medicinal Plants and Technology, 6(1): 113-129. https://doi.org/10.22092/mpt.2024.366826.1167.
- Sapkota, D., Zhang, D., Park, S., Meinhardt, L.W., Lozada, D.N. Steiner, R. 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). Registration of jujube cultivars, in Karp, D. and K. Gasic (co-editors), Register of New fruit and nut cultivars list 52. *HortScience, 59*(8), 1220-1292, (1253-1256 for jujubes). https://doi.org/10.21273/HORTSCI18040-24.
- 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
    - *Each fruit species had its own author/authors and I did the jujube part. In the past list, there were only 6 jujube cultivars listed with information from the 1920s.*
- Zehtab Salmasi, S. and C. Martin. 2024. Introducing Saffron and a few medicinal and high value plants for small farms and water deficit conditions of northern New Mexico. The Journal of Phytopharmacology, 13(4):334-340. https://doi.org/10.31254/phyto.2024.13410.
- Zehtab Salmasi, S., H. Nasiri, R. Heshmati, M.R. Sarikhani and Y. Raei. 2024. The impact of nitrogen-fixing bacteria, iron, and zinc foliar application on dry land yellow mustard (Brassica juncea) grain and oil production. Agricultural Sciences, 15: 719-728. https://doi.org/10.4236/as.2024.157039.

Grants and Contracts

- 2022 Specialty Crop Block Grant through New Mexico Department of Agriculture, $39, 225. Sept 2022-Sept 2025.
- $28,650 from New Mexico Department of Agriculture as part of the Specialty Crop Block Grant Program. Active.
- Specialty Crop Block Grant through NMDA supported this project with a total of $63,888 from 2023-2026.
- Taos Soil and Water Conservation District $18,008.55. Active
- Integrating saffron into small vegetable production systems of New Mexico to enhance profitability and sustainability. Specialty Crop Block Grant through NMDA. 2024-2027, $78,837.80.
- Chickpea, a high value, low input sustainable specialty crop for New Mexico. Specialty Crop Block Grant through NMDA. 2024-2027, $ 70,916.62.

Outreach Activities

Tom Dominguez introduces soil health during small acreage skills series

- Small Acreage Stewardship and Homesteading Skills workshop series. A collaborative effort of Rio Arriba, Taos, Santa Fe, and Los Alamos counties, Tribal Extension, and the New Mexico State University Sustainable Agriculture Science Center at Alcalde.
- April 18: Introduction, Planning, & Setting Goals; Reading the Landscape
- May 2: Acequia Ecology, Custom, & Culture
- May 4: Hoop House Management, Repair, & Prep
- May 16: Soil Health & Cover Cropping Systems
- May 18: Forage Crops & Improved Pasture Management; Native Grass Establishment
- May 30: Vegetable Gardening & Drip Systems
- June 1: On Farm Composting
- June 13: Fruit Orchards & Vineyards Management
- June 15: Rotational Grazing w/Mobile Fencing Options
- June 27: Rain Water Harvesting and Passive Water Catchment in the Landscape
- June 29: Chicken Tractor & Poultry Flock Management
- July 11: Weeds & Insects; Pest Management & IPM Principles; Native Pollinators
- July 13: Beekeeping Basics
- July 25: Rainwater Harvesting and Passive Water Catchment in the Landscape
- July 27: Equipment Maintenance (Tractors, Tillers, Hand Tools, etc.)
- September12: Harvesting the Bounty; Preserving the Harvest; Canning, Dehydration, Freeze Drying; On Farm Processing; Marketing Food Safety

- September 28: Woodland Management & Forest Fire Safety; Thinning Ecology; Firewood & Stove Safety
- October 3. High Value Crops & Medicinal Plants

- Fruit Grower's Workshop - March 15, 2024

- Alcalde Field Day - August 28, 2024

People

Cooperators and Collaborators

NMSU Science Centers and Researchers

- Dave Lowry - Leyendecker ASC
- Dr. Kevin Lombard - Farmington ASC
- Dr. Chadelle Robinson - Agricultural Economics and Agricultural Business
- Dr. Efren Delgado - Family and Consumer Sciences
- Dr. Nancy Flores - Food Technology
- Dr. Alexander Fernald - Water Resources Research Institute
- Dr. Connie Maxwell - Water Resources Research Institute

Other University, State, Federal and Tribal Partners

- Dr. Dapeng Zhang - USDA-ARS Beltsville, MD
- Taos Soil and Water Conservation District

NC-140 Collaborators

- University of Kentucky
- University of Wisconsin
- University of Massachusetts
- Utah State University
- Agriculture and Agri-Food Canada
- University of Vermont
- University of Georgia
- University of Massachusetts
- University of Guelph
- Auburn University
- Pennsylvania State University
- Washington State University
- Michigan State University
- California Cooperative Extension
- University of Idaho,
- University of Maryland
- USDA-ARS/Plant Genetic Resources Unit Purdue University
- University of Minnesota
- Cornell University
- University of Illinois
- Michigan State University
- Ohio State University
- Colorado State University
- University of Maine
- Rutgers University
- North Carolina State University

- Clemson University
- Virginia Polytechnic Institute and State University (VA Tech)
- USDA-ARS/Washington
- S 1084 Collaborators
- University of California
- Purdue University
- University of Florida
- Alabama A&M University
- Pennsylvania State University
- University of Vermont
- Michigan State University
- University of Wisconsin
- Southern Illinois University
- Washington State University
- Kansas State University
- University of Tennessee
- Louisiana State University
- University of Kentucky
- Colorado State University
- Montana State University
- Cornell University
- North Carolina State University

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- Kansas State University
- University of Tennessee
- Louisiana State University
- University of Kentucky
- Colorado State University
- Montana State University
- Cornell University
- North Carolina State University

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