

Center of Excellence in Sustainable Food and Agricultural Systems

Creating impact for New Mexico through innovation, workforce development, and value-added agriculture.

College of ACES



CESFAS

BE BOLD. Shape the Future.[®]
New Mexico State University

Workforce and Economic Development



CESFAS — Center of Excellence in Sustainable Food and Agricultural Systems

Agricultural Economics & Agricultural Business

CESFAS Summer Internship Program

Mid-Summer Employer Evaluation

- 100% employers would hire candidate if available
- Intern was “prepared” for responsibilities
- Recommend to start hiring process earlier
- 100% plan to continue to work with CESFAS in the future



**Center of Excellence in Sustainable Food
and Agricultural Systems**

INTERNSHIPS

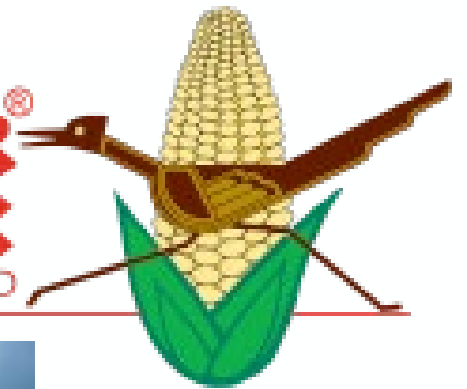
ACES CESFAS



Olam

ROADRUNNER[®] FOOD BANK

O F N E W M E X I C O



BizSprint
Meat Processors



Join us for a **FREE** accelerator program and summit for New Mexico Meat Processors.

Apply today!

Applications close June 17th

For more information and to apply, use the QR code or go to:
https://arrowheadcenter.nmsu.edu/program/sprints/bizsprint_meat_processors/index.html

Contact Alex Wilson for questions at wilson85@nmsu.edu or 505-989-4283



Agricultural Economics & Agricultural Business

Hosted 27 New Mexico meat processors at the NM Farm and Ranch Museum, June 30-July 1, 2023.

- Toured A&M Meat Processing, Alamogordo, NM
- Toured NMSU Meat Facility
- Presentations from Rebecca Thistlewaite, Oregon State University



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CESFAS
CENTER OF EXCELLENCE IN SUSTAINABLE FOOD AND AGRICULTURAL SYSTEMS

Supported by EDA

Partnering with Industry Through Specialized Lab Services



CESFAS — Center of Excellence in Sustainable Food and Agricultural Systems



Food Safety Laboratory

Services

- Detection of foodborne pathogens and spoilage organisms in food and water
- Shelf-life studies
- Microbial challenge studies
- Whole Genome Sequencing
- Nutrition Facts Panels
- USDA-FSIS
- FDA-BAM

Vision Statement

- To be the Southwest's premier hub for food safety innovation and expertise, fostering a collaborative environment where science and industry converge to ensure a safe, sustainable, and trusted food and feed supply for all.
- A student-powered laboratory with expert guidance.

Short-term Goal

- Pursuing A2LA ISO 17025 Accreditation for regulatory activities



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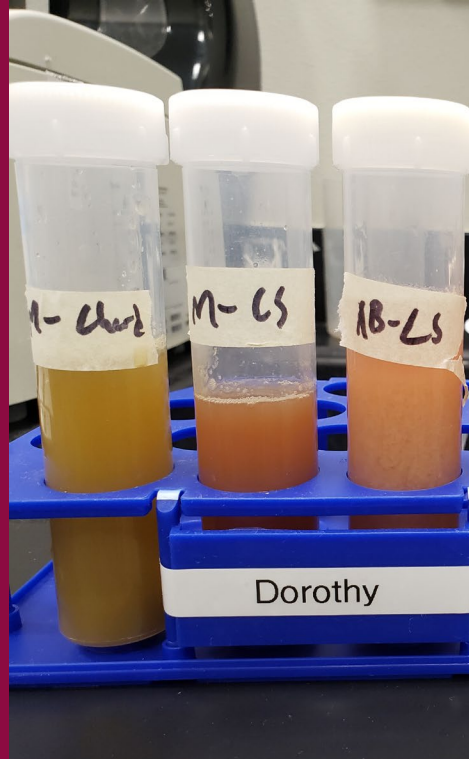
CESFAS Wine Analysis Lab

The Wine Analysis Lab, housed in the Food Science Learning and Safety Center, provides several services for our industry partners:

- Quality control of common juice and wine parameters, comparable to national labs
- Troubleshooting of wine techniques and their effects on quality and risk reduction
- Seamless integration with NMSU extension
- Reinforcement of economic impacts of the industry through consistency



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Strategic Directions



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CESFAS Strategic Initiatives

Foster Entrepreneurship & Commercialization

Support faculty innovation, technology translation, and new venture development in partnership with Arrowhead Center

Lead Binational Innovation

Build a Sotol Distillation and Fermentation Initiative with Universidad Autónoma de Chihuahua and NM distillers to support specialty crop development and economic growth

Expand Cooperative Education & Workforce Training

Use CESFAS specialized laboratories to build workforce pipelines through paid internships, applied training, and industry-aligned credentials



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New Mexico State University
Arrowhead Center



Contact Information

Center of Excellence in Sustainable Food and Agricultural Systems

College of Agricultural, Consumer and Environmental Sciences

(575) 646-1806

cesfas@nmsu.edu



Visit us at

<https://aces-cesfas.nmsu.edu/index.html>



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Additional Highlights & Emerging Work

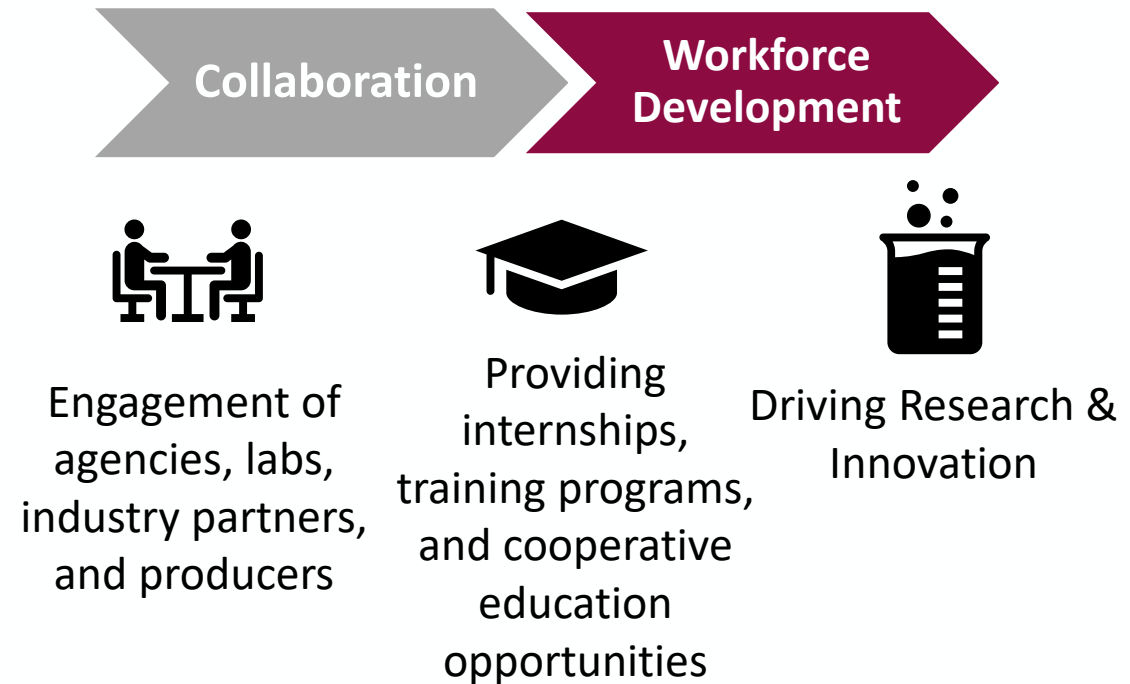
BEYOND THE CORE PRESENTATION



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CESFAS Strategic Priorities and Guiding Goals

- **Promote sustainable agriculture innovation:** Advance development, innovation, and expansion of sustainable and value-added agricultural industries in New Mexico.
- **Foster cross-sector collaboration:** Engage leaders from state agencies, higher education, business, national laboratories, and community organizations to work jointly toward sector growth.
- **Develop and implement strategic plans:** Create and implement strategies to strengthen the sustainable and value-added agriculture sector.
- **Pursue diverse funding sources:** Actively seek funding to support initiatives.
- **Ensure accountability through reporting:** Submit annual reports detailing goals and achievements



CESFAS Leadership



- Faculty, Staff, Postdoc
- 11 Continuing Projects
- 8 Departments
- 2 Colleges; Agricultural, Consumer, and Environmental Sciences (ACES) & The College of Engineering (COE)



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Department of Entomology, Plant Pathology, & Weed Science

The Department contributes to CESFAS through its faculty member Soum Sanogo, with collaborative research and outreach focus on the utilization and valorization of agricultural byproducts to manage soilborne plant pathogens and enhance crop health



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Efficacy of Pecan Husk and Shell Phenolic Extracts Against Phytophthora Blight in Chile Pepper

Phillip Lujan,¹ Srijana Dura,¹ Ivette Guzman,¹ Mary Grace,² Mary A. Lila,² Robert Steiner,³ and Soum Sanogo^{4,*}

¹ Plant and Environmental Sciences, New Mexico State University, Las Cruces, NM 88003

² Plants for Human Health Institute, North Carolina State University, Kannapolis, NC 28081

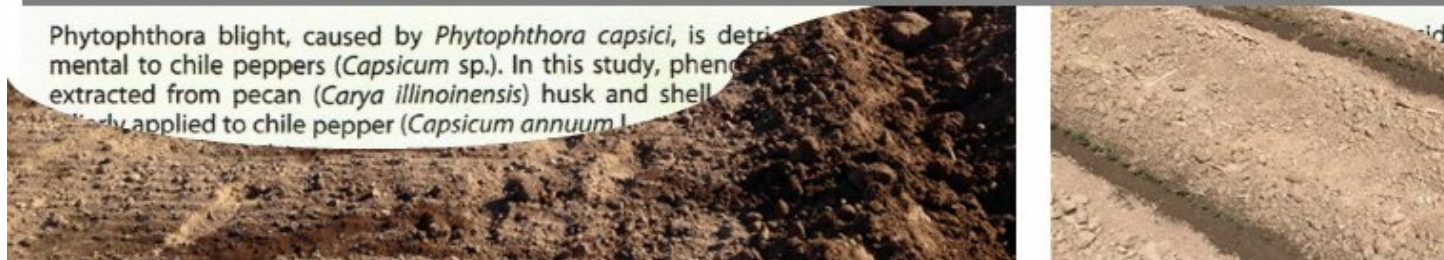
³ Economics, Applied Statistics and International Business, New Mexico State University, Las Cruces, NM 88003

⁴ Entomology, Plant Pathology and Weed Science, New Mexico State University, Las Cruces, NM 88003

Accepted for publication 18 April 2021.

Pecan byproducts for soil and crop health

Phytophthora blight, caused by *Phytophthora capsici*, is detrimental to chile peppers (*Capsicum* sp.). In this study, phenolic extracts from pecan (*Carya illinoensis*) husk and shell were applied to chile pepper (*Capsicum annuum*).





Department of Fish, Wildlife & Conservation Ecology

Aquaponics (growing fish and plants in recirculating systems) Research and Outreach

Optimizing fish feeds by using insect and plant-based proteins

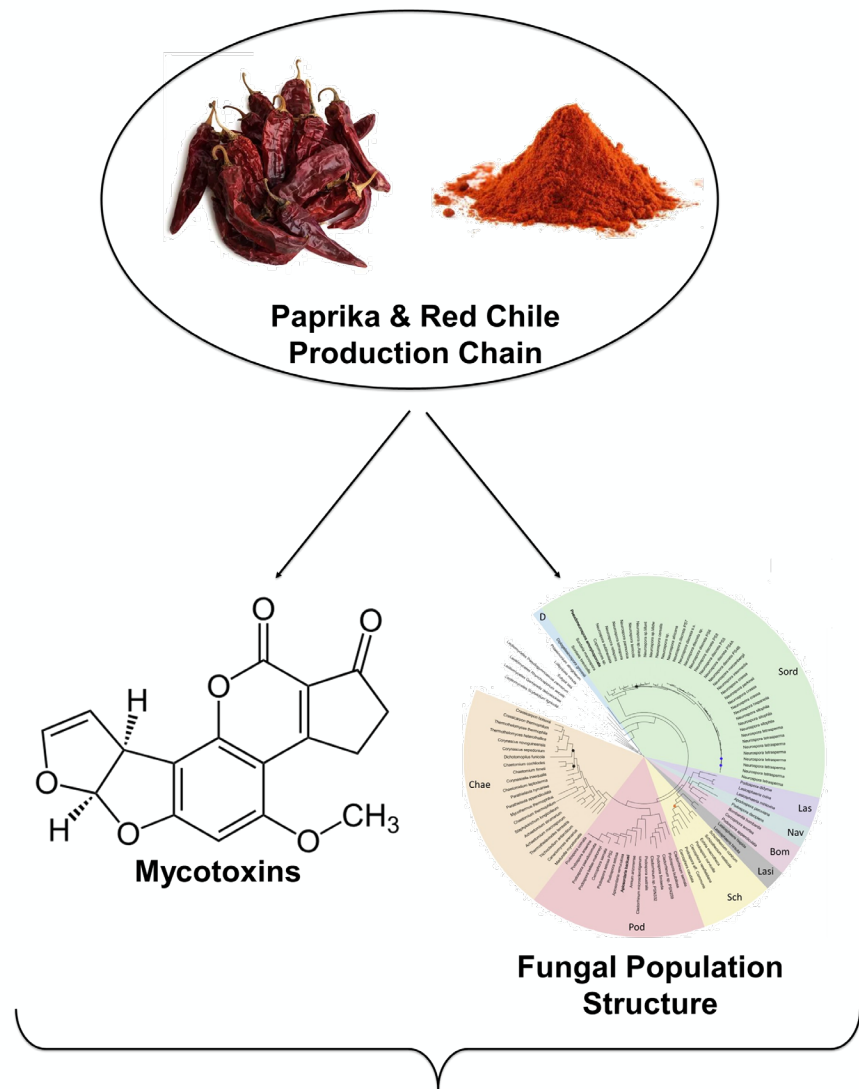
\$ 1 million in USDA Funding (\$400 K to NMSU)



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Research Approach



Family and Consumer Sciences

Assessing Mycotoxin Contamination in the New Mexico Red Chile and Paprika Production Chain

- ❖ NM Chile Award: \$71,048
- ❖ LC-MS/MS for broad-spectrum detection of fungal metabolites.
- ❖ Metagenomic analysis to profile fungal communities and identify mycotoxigenic species.



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Animal and Range Sciences

The department supports CESFAS through research and service:

- Conversion and valorization of meat processing waste into value-added products
- Antimicrobial resistance in Agri-Food chain
- Harvesting & Processing
- Meat Products
- Youth Engagement



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Agricultural Economics & Agricultural Business

Mid-Supply Chain Participant Interviews

IRB Approved #2505186906

Assess the middle participants of the supply chain in New Mexico

- 48 interviews completed (meat processors, food distributors and food manufacturers)
- Currently in progress with produce brokers/assemblers/aggregators following this fall
- 2 – 20 hrs. graduate students employed



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Plant and Environmental Sciences

Jujube is good alternative fruit crop for New Mexico and the southwest U.S.

Jujube produces reliable crops across New Mexico.

- Dongzao is an excellent late fresh eating cultivar with short supply period.
- We are testing cold storage to extend the fruit season by 6 weeks or longer, growers would have a longer marketing period, and consumers could enjoy the fruit longer.



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Collaboration between Family & Consumer Sciences and Chemical & Materials Engineering

FCS-CHME developed a new ice cream flavor in honor of NMSU's president

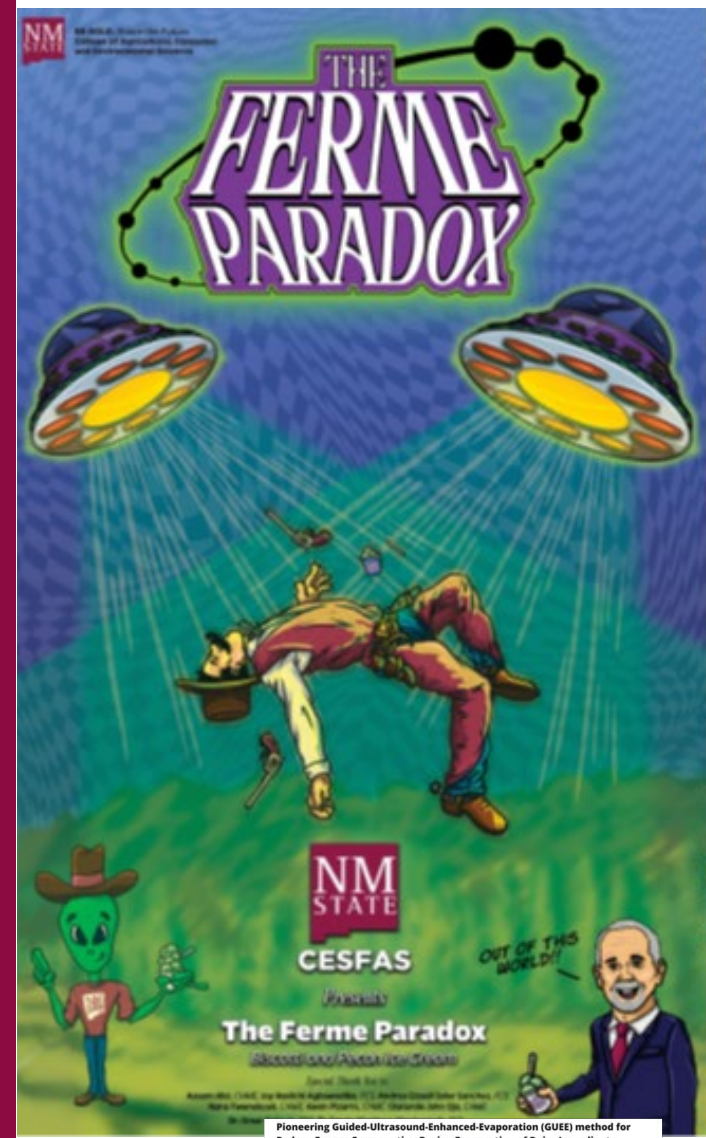
FCS-CHME earn platinum award at national dairy competition

FCS-CHME secured funding from USDA \$745,210 and non-competitive grants \$300,000

FCS-CHME has filed two provisional patents in relation to process improvements and value-added



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Pioneering Guided-Ultrasound-Enhanced-Evaporation (GUEE) method for Reduce Energy Consumption During Evaporation of Dairy Ingredients

Description:
The dairy industry represents the number one agricultural activity in New Mexico, and it contributes to the well-being of many New Mexicans, from cattle nutrition and herd management to the manufacture of dairy products. Annually, New Mexico produces about 7 billion pounds of milk, accounting for 4% of the national milk production (Cabrera & Hagevoort, 2007). Although most of the milk produced in the state is used for cheese production, New Mexico is missing the revenue generated from emerging dairy ingredients, such as protein concentrates and other powders. Indeed, the global market of dairy powders had increased from about \$27 billion U.S. dollars in 2017 to over \$30 billion in 2019, and it is expected to exceed \$38 billion by 2025 (Allied Market Research, 2019).

This project aims to reduce the energy needed to concentrate liquid by coupling guided ultrasound within a falling film evaporator. Our approach consists of the generation of ultrasonic waves and guides them along the evaporation tubes. This research will help improve the sustainability of dairy powders' manufacture. The results will be presented to stakeholders through scientific journals, symposium at a professional meeting and technical meetings with industry. NM and U.S. dairy processors will directly benefit from energy-efficient evaporation, which will help them to remain nationally and internationally competitive. The project will also promote the development of innovative technology and help advance education and public awareness of technological platforms for sustainable food production. The proposed research effort will promote the vision and stewardship of CESFAS in sustainable engagements.

Principle Investigators (PIs)
• Sergio Martinez-Montesgado (Family and Consumer Sciences; sergomm@nmsu.edu)

CESFAS Seed Grant (2021-2022)



United States Department of Agriculture
Research, Education & Economics Information System

Source: NEW MEXICO STATE UNIVERSITY submitted to NRP GUIDED-ULTRASOUND-ENHANCED-EVAPORATION (GUEE): REDUCING ENERGY CONSUMPTION OF FALLING FILM EVAPORATION

Sponsoring Institution	National Institute of Food and Agriculture	Project Status	ACTIVE
Reporting Frequency	Annual	Funding Source	AFRI COMPETITIVE GRANT
Grant No.	2025-67018-44837	Accession No.	1033824
Proposal No.	2024-12049	Cumulative Award Amt.	\$745,210.38
Project Start Date	Aug 1, 2025	Multistate No.	(N/A)
Grant Year	2025	Project End Date	Jul 31, 2029
Program Code	[A1364]- Novel Foods and Innovative Manufacturing Technologies		

NMSU Research & Demonstration Container Farm

Controlled-Environment Agriculture Platform

Specialized system for research, teaching, and public engagement

Built through partnerships with industry partners Mitsubishi Electric, and Allied Controls

Designed and fabricated in-house by ~50 students and staff

Featured in CEAg World for innovative design and integration

Planned as a working exhibit at the New Mexico Farm & Ranch Heritage Museum



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Innovative Media Research & Extension

The department develops educational media to train producers and other stakeholders in sustainable ag practices.

Their professional communicators promote the services of CESFAS programs and share program impact.



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