2019 Annual Report of Accomplishments and Results

New Mexico
New Mexico State University

I. Report Overview

The NIFA reviewer will refer to the executive summary submitted in your Plan of Work. Use this space to provide updates to your state or institutions as needed.

*The activities discussed below reflect planned programming from the 2019 Plan of Work.

1. Executive Summary (Optional)

New Mexico State University College of Agricultural, Consumer and Environmental Sciences (ACES) has a mission to improve the lives of New Mexicans, the nation, and the world through research, teaching, and extension. Research and extension at NMSU focus on four identified critical issues for New Mexico that will also have a global impact. These planned programs are (1) Food & Fiber Production and Marketing, (2) Water Use and Conservation, (3) Family Development and Health of New Mexican, (4) Environmental Stewardship all of which are based on the foundation of education and training of qualified professionals in the field of agriculture.

The activities surrounding these planned programs provide fundamental support through applied science and research to benefit New Mexico's citizens in the economic, social, health, and cultural aspects of agriculture, natural resources management, and family issues.

1. **Food & Fiber Production and Marketing**: Projects in the following areas have been focused on throughout 2019: animal genetics and genomics, nutrition, reproduction, physiology, stresses, and management systems; genetics, genomics, stresses, efficiencies, and management systems of plants; and pests and pathogens of plants and animals, weeds, biological control, and integrated pest management systems.
2. **Water Use and Conservation:** Research in this area has focused on water management systems for irrigation systems, policy, conservation, and use.
3. **ACES' Family Development and Health of New Mexicans:** Research and extension programs focus on health from mental to physical for the whole family. Extension efforts are targeted towards child, adolescent and youth development, including 4-H, human nutrition with a focus on at-risk populations, clothing and textiles and family resource management.
4. **Environmental Stewardship** - Through teaching, research, and Extension programs, projects include soil coverage and management of saline and sodic soils, management of natural resources, forest sustainability, and natural resource and environmental management.

II. Merit and Scientific Peer Review Processes

The NIFA reviewer will refer to your Plan of Work. Use this space to provide updates as needed or activities that you would like to bring to NIFA's attention.

Process	Updates
1. The Merit Review Process	All projects conducted by AES and CES are subject to a merit-review process. Planned activities and research can be brought forward by faculty and/or specialists in response to an area of interest or high demand or can be brought forward by external advisory boards. These advisory boards provide suggestions to ensure research is meeting the needs of the communities that CES and AES serve in varying parts of the state.
2. The Scientific Peer Review Process	All projects conducted by AES and CES are subject to a peer-review process. Planned activities and research can be brought forward by faculty and/or specialists in response to an area of interest or high demand by faculty. Faculty ensure that research is meeting stakeholder needs and upholding the research integrity of NMSU. Moreover, in 2019 AES set forward an internal competitive process for fund allocation based on proposal merit according to planned programs.

III. Stakeholder Input

The NIFA reviewer will refer to your Plan of Work. Use this space to provide updates as needed or activities that you would like to bring to NIFA's attention.

Stakeholder Input Aspects	Updates
Actions taken to seek stakeholder input that encouraged their participation with a brief explanation	1. Regular Advisory Committee meetings, which present research findings and seek input on research needs. We have addressed multiple local research questions in the past five years. 2. Provide time for questions at the end of research and extension presentations. When we don't have an answer, we find it or develop a program to discover possible answers. 3. Ask questions of stakeholders when they make requests for information.
Methods to identify individuals and groups and brief explanation.	1. The Advisory Committee selects its members composed of a broad spectrum of farmers, ranchers, and small landholders; local business people who support agriculture and extension programs. 2. Participating in producer programs exposes us to stakeholders with interests. 3. Others contact us, and, hence, identify themselves

Methods for collecting stakeholder input and brief explanation.	1. Minutes are taken at Advisory Committee meetings. 2. Notes are taken as questions are asked by individuals. 3. Field day and extension program attendees complete surveys to gather input on programming and needs for future research. 4. Social media, email and phone communications from stakeholders with research/ extension interests.
A Statement of how the input will be considered and brief explanation of what you learned from your stakeholders.	1. Input assists in determining research priorities and planning extension programming. Any stakeholder input is deemed as valuable in helping guide programs forward. NMSU relies on stakeholders to learn about what has been tried and the degree of success or lack thereof.

IV. Planned Program Table of Contents

V. Planned Program Activities and Accomplishments

Please provide information for activities that represent the best work of your institution(s). See Section V of the Guidance for information on what to include in the qualitative outcomes or impact statements. Add additional rows to convey additional accomplishments. You may expand each row as needed.

*The following does not reflect all of the work that was conducted at NMSU throughout 2019, these are selected highlighted impacts that consist of research and extension activities.

No.	Title or Activity Description	Outcome/Impact Statement	Planned Program Name/No.
		Food & Fiber Production and Marketing	
1.	Sheep as a model to improve reproductive success in livestock and women	NMSU researcher is pioneering an innovative approach to enhance understanding of placental development by delivering treatments at the fetal-maternal interface in sheep. Specifically, there is a focus on suppressing chemokine, a protein secreted by cells, during implantation. This understanding can have a dual benefit to livestock production and human reproductive efficiency.	Food & Fiber Production and Marketing
2.	Reducing the risk of bovine respiratory disease	Increasing growth performance and the immune response of newly received feedlot calves in an important way to decrease morbidity and mortality associated with bovine respiratory disease (BRD). More than 25% of beef cattle placed in feedlots are affected by BRD. Estimated antimicrobial treatment per animal is approximately $23.60 with a success risk of 71%. Research reducing morbidity and mortality is significant regionally and nationally for producers, feed yards, and consumers. Preliminary statistical analysis of data collected at the NMSU Clayton Livestock Research Center has shown that antimicrobial metaphylaxis therapy is effective to reduce illness and numbers of treatments required for BRD control.	Food & Fiber Production and Marketing
3.	Trichomoniasis	Trichomoniasis is a venereal disease of cattle that, once present in a herd, can be economically devastating in a short time. The disease is known to reduce herd fertility, and the economic impacts from reproductive losses can be substantial for the livestock enterprise with extensive implications for both production and economic sustainability. The disease became an NM reportable disease in 2005. In 2006, Extension Veterinarian developed a Trichomoniasis control program centered on producer education. To date, more than 128 Trichomoniasis educational programs have been presented. In 2005, 6.5%	Food & Fiber Production and Marketing

		of 781 bulls tested positive for the disease. In 2019, less than 2% of 13,526 bulls tested positive for the disease.	
4.	Profitability	Profitability is a growing concern for cattle producers in New Mexico. New Mexico's gross income from cattle and calves totaled $829 million in 2017, down 7.8% from the previous year. The NM inventory value of all cattle and calves also decreased to $1,310 per head, down 14 percent from a year earlier. CES developed cattle producer programs designed to address the concerns of profitability by cattle producers. Program participants reported an increase in knowledge of manage managing beef cow nutrition during times of drought and understanding of Trichomoniasis in beef cattle.	Food & Fiber Production and Marketing
5.	Inflammatory disease disrupts ovarian function	Infertility and adverse pregnancy outcomes have been associated with infection. Infections resulting in the accumulation of lipopolysaccharide derived from Gram-negative bacteria can result in ovarian dysfunction. These types of infections can subsequently cause infertility in both women and livestock by altering estrogen concentrations, follicular development, and oocyte quality. Elucidating the impact of bacterial infections on ovarian function can lead to understanding and management of reproduction and reduce the consequence of disease on female fertility.	Food & Fiber Production and Marketing
6.	Optimizing metabolize protein of growing cattle grazing wheat pasture	Winter wheat pasture is a unique and economically important renewable resource in northeast New Mexico and the southern Great Plains. Production risk concerning the rate of live weight gain of growing cattle grazing wheat pasture decreases the value of cattle. NMSU research increased cattle performance by optimizing metabolizable protein (microbial protein synthesis and bypass protein). Weight gain increased by 0.20 lb./day which represents an increase in profit of about $30 per grazing period for each head. This research is accomplished by measuring the flow of nutrients through the gastro-intestinal tract of cattle with cannulas at the rumen and the duodenum.	Food & Fiber Production and Marketing
7.	Large animal emergency rescue	As we examine many of the threats and hazards of concern as it relates to livestock, we have identified that in many areas of New Mexico, it is highly likely that an incident involving animal agriculture will exist. When animals are involved in emergencies, specialized training is required to ensure animal safety and the safety to those responding. Unfortunately, according to a recent survey of law and fire service personnel, it was discovered that only about 5% of first responders had minimal knowledge of handling large animals with low levels of comfortability with handling a large animal. This shows a need for more training to safely rescue large animals. In 2019, the CES addressed	Food & Fiber Production and Marketing

		the issue and provided awareness courses to 231 first responders throughout the state and the demand for more training continues to increase.	
8.	Assessment of environmental stress on onion growth and quality	Over 7,000 acres of onions are harvested in New Mexico. Abiotic and biotic stressors like water deficiency, thrips feeding, and Iris Yellow Spot Virus infections can reduce harvest by affecting photosynthesis, therefore, diminishing onion quality. Five New Mexico cultivars were grown under these stressors and select cultivars demonstrated reduced photosynthetic activity, an indicator of poor onion health. The findings aid in understanding photosynthetic processes during onion growth to improve their production under environmental conditions common to New Mexico.	Food & Fiber Production and Marketing
9.	Southwestern heirloom corn varieties	There has been an increased demand for locally-grown heritage foods, in particular, that are gluten-free. Researchers with the NMSU Corn Breeding Program at identifying southwestern heirloom or "landrace" corn varieties that are at risk of being lost and improving upon these varieties for the specialty food market. Producers can learn about sustainable farming practices and receive premium prices for the grain. Additional research has shown that the required cooking time for alkali-processing (nixtamalization) is less for most landraces because they have soft kernels; they also make great tasting tortillas!	Food & Fiber Production and Marketing
10.	Increasing commercially available jujube cultivars	There are currently only 5-6 jujube cultivars commercially available in the United States with, Li as the dominant one. The NMSU Sustainable Agriculture Science Center at Alcalde jujube program has been evaluating more than 50 cultivars in the past ten years and has recommended 8-10 fresh eating cultivars. Those cultivars will give growers nationwide more choices with better fruit quality and extended maturation dates and achieve $1-2 more premium per pound. This study predicts that jujube acreage nationwide will increase significantly.	Food & Fiber Production and Marketing
11.	Shaping the future of chile	Research at NMSU, in conjunction with Curry Chile Genetics Company (the US leader in the development of commercial chile lines and the largest supplier of seed to domestic chile producers), is evaluating biocontrol agents in chile that can enhance phytonutrient profiles. The development of chile lines with high lutein, a phytonutrient shown to slow macular degeneration and Alzheimer's and this value-added chile can help keep domestic chile production viable.	Food & Fiber Production and Marketing

12.	Roundup-resistant redroot pigweed	Roundup-resistant redroot pigweed is becoming a troublesome weed in corn-producing areas and growers are having a hard time controlling it in their fields. Several studies are being conducted at the Agricultural Science Center in Clovis, NM to evaluate redroot pigweed control and corn response to several herbicides other than glyphosate. Results showed excellent pigweed control using pre-plant followed by post-emergence herbicides applied early in the season. In addition, corn yield losses due to pigweed competition were reduced by 90 %. Corn growers in our area are using this information to increase their income and reduce pigweed infestation in their fields.	Food & Fiber Production and Marketing
13.	New Mexico agriculture transition planning Initiative	New Mexico has the second-highest average age of producers in the U.S. (59.8), second only to Hawaii. As the next generation of farmers and ranchers take ownership of New Mexico farms, there is a need to ensure they are equipped with the business and financial acumen to maintain or grow the agricultural industry's contribution to the state's economy. New Mexico agriculture is in a transition phase right now, and because agricultural enterprises are so complex, there is an ever-increasing need to provide resources for farm and ranch operators to successfully navigate the transition process. New Mexico State University's Department of Extension Economics has proposed an Agriculture Transition Planning Initiative to support farm transition: 1. Establish a statewide Agricultural Transition Planning Team: This team would be comprised of accountants, lawyers, and other agricultural professionals to develop and adapt training material and workshop agendas. 2. Develop Educational Materials: Develop and identify web and print-based materials for succession planning in New Mexico. 3. Farm Succession Workshops: A series of workshops to connect farmers and ranchers to professionals, consultants, agency and extension professionals to serve as resources to farms transitioning from one generation to the next. Issues related to women and minority farmers will be included in workshops. 4. Create a "Legacy Consultant" training program: Often, an independent outsider can help families navigate the process of developing a comprehensive transition program. This proposal creates a program to train agricultural professionals to assist with farm and ranch transitions.	Food & Fiber Production and Marketing

14.	Youth ranch camp	Every year the number of individuals making a living or pursuing a career in ranching and natural resources declines. It is of the utmost importance that we encourage youth and provide opportunities to explore these career fields so these vital industries will continue to feed the US and the world. The NMSU Youth Ranch Management Camp was developed by CES to address the declining individual numbers. Twenty-seven in-state and three out-of-state youth, ages 15 to 19, received the opportunity to participate in the 2019 hands-on, weeklong camp. CES in cooperation with the CS Ranch in Cimarron, NM host the management camp. State specialists, agriculture agents, and ranchers in the industry provide instruction to the students. To date, 8 camps with 237 students have gone through Ranch Camp. The feedback from the New Mexico Cattle Growers Association, producers and parents have been outstanding. Numerous organizations, ranches, and private individuals have contributed thousands of dollars to make this activity an outstanding educational opportunity and a financially stable endeavor. It has also served as a recruiting tool for NMSU with students choosing to attend NMSU.	Food & Fiber Production and Marketing
Water Use and Conservation			
15.	Deficit irrigation management of alternative crops to sustain Ogallala Aquifer	The Ogallala Aquifer provides water for farming in the Great Plains area. Researchers at NMSU are identifying low water use, stress-tolerant alternative crops that will reduce Ogallala Aquifer depletion if adopted in large acres. By developing suitable deficit irrigation management strategies for diverse alternative crops to further reduce their irrigation water use to increase adoption. This will protect a multi-billion dollar rural economy and may help in transitioning our agriculture from deficit irrigation to dryland farming. If crops like guar, safflower, and canola are grown on 25% of the agriculture land in the region, in addition to reduced Ogallala depletion, they will produce raw materials for local oil and natural gas, food, dairy and bioenergy industries.	Water Use and Conservation
16.	Produced water quality spatial variability and alternative-source water analysis applied to the Permian Basin.	Groundwater is needed for agriculture and is becoming scarce in the Permian Basin where produced water (PW) is extracted with oil, but poor water quality impedes the use of PW. Characterizing PW compositional variability is needed to evaluate environmental impact, treatment, and reuse potential. Both energy and food production sustainability are required for our industries and population, especially when they are both located in	Water Use and Conservation

		desert areas. NMSU collaborating with UTEP discovered PW salinity decreased with further increases in depth. Contour maps of salinity illustrate spatial variability across the Permian Basin, which suggests that upon treatment PW would support some beneficial uses, such as onsite reuse and mining.	
17.	Promoting soil moisture sensors and adopting deficit irrigation strategies	Promoting soil moisture sensors and adopting deficit irrigation strategies could help to irrigate an additional 20-25% of land. Conservation agriculture targeting limited irrigation strategies improves crop water productivity across the Southwestern US. ACES preliminary results show a water-saving of about 25% of seasonal irrigation amount while maintaining crop yield. The extrapolation of this study into the farmers' field targeting the Navajo Agricultural Product Industry (NAPI) with more than 72,000 acres developed, could help in increasing the actual capacity to irrigate additional 15,000-18,000 acres of the 35,000 acres that can be potentially developed by NAPI. Soil moisture sensors help optimizing irrigation management and improving water conservation.	Water Use and Conservation
18.	Water stress modeling to improve policy and management	The American Southwest and Northern Mexico need to adapt to and manage water stresses associated with changing climates. Because it is important for regional stakeholders to see the results and to experiment with policy proposals they would like to consider researchers at NMSU developed policy analysis models to compare options for protecting aquifers and adapting to various water supply scenarios under different potential climate conditions.	Water Use and Conservation
19.	Sustainable management of aquatic resources	Interest in aquaponics is growing in New Mexico. These systems are particularly suited to arid environments such as New Mexico. In response, NMSU Extension hosted a one-day Aquaponics Workshop to provide an overview of aquaponics, with information about fish culture, plant culture, water quality, and food safety issues. There were 90% of participants reported an increase in knowledge about aquaponics after the workshop and 100% reported that they would adopt at least one new practice about which they had learned.	Water Use and Conservation
ACES' Family Development and Health of New Mexicans			
20.	Childhood obesity	Childhood obesity remains a critical public health concern given that it can lead to significant health conditions such as diabetes and other cardiovascular issues. In the literature, some studies examine diverse populations, including Latino populations who have increased rates for obesity and other health issues. Yet, these studies concentrate on obtaining quantitative data from adults. ACES researchers have chosen to examine this	ACES' Family Development and Health of New Mexicans

		issue using qualitative interviews and have also chosen to examine the issue from children. The purpose of this is to better understand the perspectives of children while taking into account cultural aspects and design an appropriate intervention.	
21.	National Diabetes Prevention Program (NDPP)	According to the American Diabetes Association, diabetes and prediabetes cost an estimated $2 billion in New Mexico each year. Approximately 241,120 people in New Mexico, or 14.1% of the population, have diabetes. In addition, 603,000 New Mexicans, 39.7% of the adult population, have prediabetes with blood glucose levels higher than normal but not yet high enough to be diagnosed as diabetes. Moreover, a reported 25% of children and teens are overweight. NM Cooperative Extension has partnered with HealthInsight to offer the National Diabetes Prevention Program (NDPP) in 12 counties over a 5-year period. NDPP is an evidence-based, lifestyle intervention program facilitated by a trained lifestyle coach through the Centers for Disease Control and Prevention. NDPP is a free year-long lifestyle change program for people with pre-diabetes or having risk factors for developing diabetes. NM CES reaches more than 200,000 citizens annually through workshops on nutrition, parenting, and physical fitness. CES Nutrition Education Program improved participants' nutrition practices by 86%, improved diet quality by 75%, improved physical activity by 69%, and saved the state $10 million in health-related expenses.	ACES' Family Development and Health of New Mexicans
22.	NMSU Fit Families	New Mexico, a state of poor socio-economic status, struggles to provide adequate resources for children and families. CES Fit Families, a preventative education program, provides basic nutrition, physical activity, social-emotional well-being, and hands-on cooking demos to families seeking to lead a healthier lifestyle. In 2019, the program was awarded a grant from Blue Cross and Blue Shield. Five classes were delivered in Southern New Mexico, reaching 45 families, 122 adults and children. Familias En Forma, Spanish curriculum, was also delivered in underserved Spanish-speaking communities. Also, the partnership has allowed Fit Families to connect with various organizations, which has led to recruitment opportunities, an increase in program awareness, and greater interest to partner and provide NMSU Fit Families referrals.	ACES' Family Development and Health of New Mexicans
23.	Retiree impact on New Mexico's economy	New Mexico's economic development stakeholders continuously investigate opportunities to strengthen the state's economy and improve the lives of New Mexicans. One economic development strategy that has received attention recently is that of attracting retirees to the state. One way some development organizations are increasing	ACES' Family Development and Health of New Mexicans

		the attractiveness of a geographic location for retirees is through the creation of Certified Retirement Communities. Research conducted by faculty in the ACES Extension Economics Department provides insights and guidelines relative to the development and management of Certified Retirement Communities. If successful, retirement communities can significantly increase retiree attraction, resulting in increased fiscal and economic benefits to the state.	
24.	Eat well Otero	According to the National Restaurant Association (2017), seventy percent of consumers say the availability of healthy menu items influences where they eat out. With such a large percentage of the population eating out regularly, restaurants that make healthier menu options available and promote them to customers can play a critical role in increasing fruit/vegetable consumption and reducing portion sizes. Almost 400 New Mexicans completed a survey to gauge interest in healthy options when eating out. As a result, Eat Well Otero was developed by CES to assist restaurants with modifying existing menu options to be healthy or the addition of new healthy menu items. Eat Well Otero also conducts a nutritional analysis of the healthy menu options to be included on printed menus which includes calories, fat, carbohydrates, and protein. Once healthy items are identified and analyzed, Eat Well Otero offers menu design, and marketing services for restaurants.	ACES' Family Development and Health of New Mexicans
25.	Resilient mothers resilient children	When parents are depressed, mentally stressed or thinking about suicide, their families suffer – which can result in poor mental health among children. New Mexico is the second most stressed-out state with family-related stress causing some of the most significant problems. Southern New Mexico women raising children also are more likely than other women statewide to suffer from poor mental health. In efforts to reduce stress, CES offered *Resilient Mothers, Resilient Children,* a program designed to reduce the incidence of stress and mental illness in southern New Mexico and improve the ability of mothers to form positive relationships with their children. Six programs were delivered to diverse audiences including three classes in Spanish, one at Holloman Air Force Base, and one session for Native American women. Extension Family Consumer Science agents, Promotoras, and a member of the Holloman Air Force Base were trained to deliver the programs in their respective communities.	ACES' Family Development and Health of New Mexicans

26.	How to get a $500 per month raise without asking your boss!	Nationally, 75% of the workforce lives paycheck to paycheck. The number one cause of financial stress in New Mexico is debt. Low credit score, debt, and spending are major problems, especially for families with limited resources. "How to Get a $500 Per Month Raise without Asking Your Boss" explores how you can save money and add it to your monthly cash flow by improving your credit, paying off debt, and plugging everyday spending leaks. Discussions regarding the importance of credit, how to improve credit scores, types and level of debt, cost of debt, strategies on how to get out of debt, and being mindful of tracking spending were included. Mindfulness and behavioral economics were used to help 95 participants reflect on current and future financial situations.	ACES' Family Development and Health of New Mexicans
Environmental Stewardship			
27.	Modeling rangeland wind erosion in an uncertain future	Modeling wind erosion is difficult because key processes are highly variable in space and time. Model uncertainties are often on the same order of magnitude as predictions. Researchers at NMSU have taken a new approach to wind erosion modeling that shows replication of the range of variability in wind erosion for given landscapes. They predict a distribution of probabilities for erosion and dust emission rather than a single value. This work will better inform decisions and increase our ability to consider the impacts of management and climate changes on rangelands in the future.	Environmental Stewardship
28.	Turfgrass plant water status influence on herbicide phytotoxicity and efficacy	Due to the need to reduce turfgrass water use, an AES research study at NMSU was designed to provide turfgrass managers a tool to select the correct herbicide or opt-out of herbicide applications during reduced water use conditions. The results indicate the reduction of herbicide use in New Mexico and other semi-arid regions of the world, and they determine the effective control options if herbicides are used.	Environmental Stewardship
29.	Guar in New Mexico	Identifying alternate crops that can grow with minimum irrigation water, reduce inputs, improve soil quality, and also provide economically sustainable returns to the growers of the region is important. ACES has shown that guar can be successfully grown in New Mexico conditions and can help reduce reliance on imports (estimated US guar imports in 2012 are $1 billion) to meet the needs of the US gas and oil industry. Cover crop research has provided cover crop options that can be integrated into organic or conventional cropping systems by local growers to meet their sustainability goals.	Environmental Stewardship

30.	Invasive plant species	Invasive plants cause costly problems for agriculture and natural resource management. The perennial Lehmann lovegrass was introduced to the Southwest in the 1930s to restore overgrazed rangeland soils. It spread across Arizona and recently began displacing native grasses in New Mexico. Much research exists on aboveground traits enabling competitive dominance over native plants. Little is known though, about belowground properties, or how rhizosphere microbes may promote or inhibit lovegrass proliferation. Using next-generation sequencing we identified indicator taxa in lovegrass root microbiomes that potentially benefit or harm these plants. Such taxa may lead to soil microbial amendments transforming invasive plant management.	Environmental Stewardship
31.	Ecological restoration in rangeland systems	The importance of effective ecological restoration is well recognized in rangeland systems. When plant cover decreases, soil erosion increases and less native range forage is available, leading to economic losses. An emerging field examines using biological soil crust (biocrust) in addition to traditional rangeland plants in restoration actions. Through international collaboration, AES published a synthesis paper looking at biocrust-plant interactions, propelling this knowledge forward. In addition, to distribute to land managers, they have developed a biocrust restoration manual using current research outcomes. These efforts, as well as ongoing research on biocrust-plant interactions, enhance the ability to effectively restore dry-rangeland systems.	Environmental Stewardship
32.	Bat pollinators	Although insects are the dominant plant pollinators, bats are important pollinators in the desert and tropical regions. Including agricultural products, such as agave used for tequila, as well as maintaining natural ecosystems. Some land-use practices can result in a loss of food plants for these bats. AES researchers are using geographic information systems to develop species distribution models for both the bats and their food plants across the southwestern United States and Mexico. Results highlight key geographic regions that host a high diversity of bat-pollinated plants and important regions and migratory routes necessary to support these bats. The results can be used to devise effective conservation that benefits agriculture and natural ecosystems.	Environmental Stewardship
33.	Assess and manage wildlife damage in New Mexico	Although wildlife is important to New Mexican's, at times wildlife creates human health and safety concerns and damage property. Annually, wildlife is responsible for greater than $1 billion in agricultural production losses and $25 billion in losses to homes, businesses, and municipalities, nationwide. CES trains urban and rural New Mexicans to safely and effectively address wildlife damage issues in their homes, gardens, ranches, farms, and communities using environmentally responsible methods. Presentations and	Environmental Stewardship

		demonstrations are used to deliver scientific information in support of Master Gardener and Pesticide Applicators Training as well as tribal events for all New Mexicans. Funding generously was provided by Extension Animal Sciences and Natural Resources Department and the Range Improvement Task Force at New Mexico State University.	
34.	Prescribed fire training and demonstration for private landowners and extension agents	The Forest Service spent over $2 billion in 2018 suppressing wildfires – the most expensive year on record. These large and severe wildfires threatened lives, property, wildlife habitat, and watersheds. Today's forest managers are seeking solutions to these problems using silvicultural techniques, including prescribed fire. One way to mitigate wildfire threats is to use prescribed fire. By reintroducing fire back to the landscape, managers can reduce the negative effects of wildfire as well as achieve a range of land management goals such as brush management, increased forage utilization, and improved wildlife habitat. Since 2014, CES has trained 83 practitioners and conducted six training burns on 700 acres of private ranches. NMSU's forestry and fire research program provides managers with a demonstration area with over 10 years of data showing how thinning and burning treatments build forest resilience to insects, disease, and wildfire.	Environmental Stewardship