

2013 New Mexico State University Combined Research and Extension Annual Report of Accomplishments and Results

Status: Accepted

Date Accepted: 05/19/2014

I. Report Overview

1. Executive Summary

New Mexico (NM) agriculture must remain competitive in U.S. and world markets. This requires a continuous flow of appropriate technology addressing local needs within New Mexico. It is critical that the College maintains and strengthens programs that address these needs. The College recognizes that agricultural competitiveness and efficiency should take into account social and environmental costs. Determining these factors requires a coordinated, team approach within the College and among researchers and Extension faculty.

New Mexico Cooperative Extension has a tremendous role in helping to keep New Mexico's agricultural economy strong particularly in light of international border competition issues. Drought and water disputes, use of expansive range lands, invading diseases and pests, and national economic downturns, all play a role in maintaining, retaining and building New Mexico's agriculture infrastructure. Extension specialists and agents are working toward resolving conflicts through researched solutions, mediation through involvement of clientele in problem solving, incorporation of technology applications whenever feasible, and continuous reintroduction of tried and true practices.

New Mexico is continuing work to ensure an adequate and safe food and fiber system. Researchers continue to address promotion of regulatory compliance, product process development, food safety (contamination and protection) and sanitation, and marketing of specialty food products. Target audiences include clientele in nearly every county along with Native American meat processors and many farmers' market groups. A challenge in programming is to deliver the same basic message at several different levels of complexity to non-technical audiences, multicultural, and multilingual populations, as well as scientists and industry clientele. Research and education complement each other in the on-going efforts to control and reduce the introduction of pathogens into the food supply. While researchers are constantly seeking ways to reduce or eliminate contamination in the production and processing of food products, extension personnel are working with food handlers to ensure the safe delivery of food and food products from farm to consumer.

Even though New Mexico has a strong agricultural based economy, hunger issues persist for children and families. Extension efforts will continue to focus on improving the accessibility of food that is nutritious, safe, culturally acceptable, and affordable in both rural and urban areas. Food safety and security outreach will include strategies and programs aimed at both consumer and producer education. Extension specialists, agents and educators will continue to implement food safety programs targeted to food managers and handlers, as well as to home food and specialty farm producers and consumers.

A healthy, well-nourished population can be a consequence of access to, safe processing of, and delivery of nutritious foods particularly in households that are economically and nutritionally at risk. Even though agricultural and commercial advances have resulted in abundant food at ever-lower prices, many New Mexico households continue to face obstacles in securing a healthy, well-nourishing diet.

Barriers include a lack of resources and a limited understanding of nutrition. New Mexico State University (NMSU) works annually on strengthening food and nutrition programs and doing research

designed to alleviate barriers and improve the nutrition, well-being, and food security of NM citizenry. Agricultural Experiment Station researchers address the research needs of the agricultural products grown in NM. Cooperative Extension faculty deliver food preparation and nutrition education programs. In this tricultural state, not all households choose to consume food in accordance with dietary recommendations nor is regular exercise part of a daily or weekly routine (47.2% are inactive). In recent years, the focus of nutrition and health policy has shifted, because for many Americans, the problem is now one of overconsumption of certain foods or components. In fact, 4 of the top 10 causes of death in the United States are associated with diets that are too high in calories, total fat, saturated fat, or cholesterol or too low in dietary fiber. Improvements in diet and health can reduce illness and productivity losses, improve educational attainment, and prevent premature death. Solutions center on education to improve consumer understanding, behaviors, and food choices. New Mexico has a rich and diverse land and natural resource base that is arid and semiarid and, in many respects, extremely fragile. This natural resource base is a major contributor to the economic well-being of the state's residents. Its economic uses result in demands for various resources. In addition to direct demands for land and water, there is increasing pressure for recreation-related activities that represent a growing economic opportunity. Activities related to the state's natural beauty and its wildlife make a major contribution to the economy. The potential to develop, manage, and protect natural resources needs to be encouraged.

Both rural and urban human activities can pollute land, water, air, and food. Through teaching, research, and Extension programs, the New Mexico State University College of Agriculture and Home Economics is committed to furthering our understanding of human impact on the environment, and to supporting environmentally-sound agricultural and natural resource practices. The College will continue its efforts to understand the interaction between the environment and production agriculture. New Mexico's future is increasingly tied to regional environments and a global economy. Clearly defined regional and international perspectives are essential for the programs of the College. The University's traditional programs can be enriched by regional and international components and thereby better achieve their full potential.

International activities enhance global understanding incorporating international dimensions into the ongoing instruction, research, and Extension efforts of the College. Graduates of the College need an education that will allow them to achieve success in a global economy. They must have the skills necessary to keep New Mexico a supplier of food and fiber throughout the world and keep New Mexico a destination for tourists from around the world.

Economic opportunity and quality of life vary greatly for New Mexican. New Mexico still suffers from some of the highest statistics nationally relative to families with children poverty levels, per capita retirement incomes, numbers of high school graduates, illiteracy, crime, unemployment in rural communities, teen-pregnancy, and uninsured motorists among other unsatisfactory figures. Addressing the quality of life issues is a core piece in New Mexico Extension's educational effort.

Total Actual Amount of professional FTEs/SYs for this State

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	38.5	0.0	61.0	0.0
Actual	32.2	0.0	47.5	0.0

II. Merit Review Process

1. The Merit Review Process that was Employed for this year

- Internal University Panel
- External University Panel
- External Non-University Panel

2. Brief Explanation

Projects are reviewed by faculty of the College of Agricultural, Consumer and Environmental Sciences. When necessary or appropriate, we have faculty from outside our college review projects.

III. Stakeholder Input

1. Actions taken to seek stakeholder input that encouraged their participation

- Use of media to announce public meetings and listening sessions
- Targeted invitation to traditional stakeholder groups
- Targeted invitation to non-traditional stakeholder groups
- Targeted invitation to traditional stakeholder individuals
- Targeted invitation to non-traditional stakeholder individuals
- Targeted invitation to selected individuals from general public
- Survey of traditional stakeholder groups
- Survey of the general public
- Survey specifically with non-traditional groups

Brief explanation.

See above checklist.

2(A). A brief statement of the process that was used by the recipient institution to identify individuals and groups stakeholders and to collect input from them

1. Method to identify individuals and groups

- Use Advisory Committees
- Use Internal Focus Groups
- Use External Focus Groups
- Open Listening Sessions
- Needs Assessments
- Use Surveys

Brief explanation.

See above checklist.

2(B). A brief statement of the process that was used by the recipient institution to identify individuals and groups who are stakeholders and to collect input from them

1. Methods for collecting Stakeholder Input

- Meeting with traditional Stakeholder groups
- Survey of traditional Stakeholder groups
- Meeting with traditional Stakeholder individuals
- Meeting with the general public (open meeting advertised to all)
- Survey of the general public
- Meeting specifically with non-traditional groups
- Survey specifically with non-traditional groups
- Meeting specifically with non-traditional individuals
- Meeting with invited selected individuals from the general public

Brief explanation.

See above checklist.

3. A statement of how the input will be considered

- In the Budget Process
- To Identify Emerging Issues
- Redirect Extension Programs
- Redirect Research Programs
- In the Staff Hiring Process
- In the Action Plans
- To Set Priorities

Brief explanation.

See above checklist.

Brief Explanation of what you learned from your Stakeholders

National priorities often are not aligned with state needs and priorities.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
1879829	0	1884770	0

2. Totaled Actual dollars from Planned Programs Inputs				
Extension			Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	2566563	0	4400921	0
Actual Matching	2702563	0	4478976	0
Actual All Other	136000	0	78055	0
Total Actual Expended	5405126	0	8957952	0

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous				
Carryover	{No Data Entered}	{No Data Entered}	{No Data Entered}	{No Data Entered}

V. Planned Program Table of Content

S. No.	PROGRAM NAME
1	Global Food Security and Hunger
2	Agricultural Markets, Trade, and Economic/Business Development
3	Sustainable Management of Natural Resources
4	Food Safety
5	Health and Wellbeing
6	4-H and Youth Development
7	Climate Change
8	Sustainable Energy
9	Childhood Obesity

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Global Food Security and Hunger

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
101	Appraisal of Soil Resources	8%		8%	
102	Soil, Plant, Water, Nutrient Relationships	5%		5%	
201	Plant Genome, Genetics, and Genetic Mechanisms	6%		6%	
202	Plant Genetic Resources	6%		6%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	14%		14%	
204	Plant Product Quality and Utility (Preharvest)	6%		6%	
205	Plant Management Systems	5%		5%	
206	Basic Plant Biology	4%		4%	
211	Insects, Mites, and Other Arthropods Affecting Plants	4%		4%	
212	Pathogens and Nematodes Affecting Plants	12%		12%	
214	Vertebrates, Mollusks, and Other Pests Affecting Plants	2%		2%	
215	Biological Control of Pests Affecting Plants	1%		1%	
216	Integrated Pest Management Systems	2%		2%	
301	Reproductive Performance of Animals	10%		10%	
302	Nutrient Utilization in Animals	10%		10%	
305	Animal Physiological Processes	1%		1%	
312	External Parasites and Pests of Animals	4%		4%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890

Plan	3.0	0.0	6.6	0.0
Actual Paid Professional	14.6	0.0	26.8	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
1171713	0	2395124	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
1171713	0	2395124	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Sixty mature Rambouillet ewes were used to examine effects of estrus synchronization at 2 stages of the estrous cycle on serum progesterone profiles and conception rates. The objective of the study was to determine if fertility was impacted by CIDR use at different stages of the estrous cycle. The CIDR has been previously shown to effectively synchronize estrus by reliable delivery of progesterone. As a reproductive tool, it will allow producers to manipulate time of lambing, take advantage of seasonal markets, consolidate feed and facility use as well as maintain a tight synchrony of lambing.

Research findings demonstrated that plasma amino acid concentrations decrease in steers exposed to an endotoxin, and suggest that the metabolic demand for essential and non-essential amino acids may increase under conditions in which the immune system is stimulated in growing beef cattle. The research also demonstrated that the negative effects of inflammation and stress on nitrogen balance can be alleviated by increasing the dietary crude protein concentrations from 14.5 to 16%. However, providing supplemental dietary methionine alone to growing beef steers does not alleviate the negative effects of infection on nitrogen balance. Research also demonstrated that the negative effects of inflammation and stress on nitrogen balance are not alleviated by post-ruminal supplementation of branched-chain amino acids or arginine. However, post-ruminal supplementation of branched-chain amino acids or arginine increased nitrogen retention of both healthy and immune-challenged steers. Additionally, research demonstrated that supplementation of rumen-protected methionine to growing feedlot heifers increased animal performance and feed efficiency, but did not affect morbidity. Responses to supplementing newly received feedlot calves with rumen-protected branched-chain amino acids were variable. An initial study demonstrated that rumen-protected branched-chain amino acids improved performance and the adaptive immune responses of newly-received feedlot steers. However, a second study at the Clayton Livestock Research Center showed that supplementation of rumen-protected branched-chain amino acids for 28 days after initial processing increased dry matter intake, but did not improve performance and health of newly received feedlot calves. Additionally, our research demonstrated that plasma amino acid concentrations decreased in bottle-fed Holstein calves exposed to an endotoxin. This suggests that

metabolic demand for amino acids may increase during periods of immunological stress. However, fortifying a 20% crude protein milk replacer with additional essential amino acids did not improve nitrogen retention of bottle-fed calves, which implies that the milk replacer was not limiting in essential amino acids. Additional feedlot cattle research demonstrated that delaying a bovine viral diarrhea vaccination and initial growth implant for 28 days tended to decrease calf performance during the first 56 days on feed in the feedlot. Therefore, delaying a bovine viral diarrhea vaccination and initial growth implant did not improve efficacy of the vaccination and implant program in stressed calves receiving antibiotic therapy.

Three field studies were completed to evaluate the strategic placement of low-moisture block protein supplement (LMB) and low-stress herding (LSH) are effective for manipulating distribution of grazing cattle in large, topographically diverse pastures without additional fencing or water. A 2-year study was completed near Tucson, Arizona in mountainous terrain of the Sonoran desert dominated by Lehmann lovegrass (*Eragrostis lehmanniana* NEES). Another 2-year study was completed in Chihuahuan desert rangeland near Las Cruces, NM. A 1-year study was conducted in Juniper/Ponderosa pine mountain rangeland near Cloudcroft, New Mexico. Overall, targeted cattle grazing using LMB and LSH was effective in reducing fine fuels at moderate levels (~40 to 50%) on diverse rangelands. This may be particularly important for focusing cattle grazing in specific areas within large pastures where utilization is generally low because of rough topography or at locations farther than 1 to 2 km from water.

The fire models BehavePlus and FlamMap were used to evaluate how reductions in herbaceous fuels and fuel bed depth would be expected to alter fire intensity and behavior, assuming a 60.7 ha target area. Targeted cattle grazing (TCG) was able to alter fire behavior most effectively when both fine fuels and stubble height were reduced to levels observed in the Arizona study. Grazing treatments were more effective in grass dominated areas compared to grass/shrub sites, which may require additional or alternative fuel treatments. Fire models projected that flame lengths with moderate fuel moisture conditions would be reduced by over 1.2 m with TCG. On grass-dominated sites rate of fire spread was reduced by about half except with extremely dry conditions. Cattle grazing treatments shortened the distance traveled by simulated fire by about 1.6 km. Costs of using TCG treatments will vary widely depending on the situation of implementation. Grazing treatments along an urban/wildland urban interface area would likely be more costly but potentially provide large payoffs in reduced fire hazard and fire intensity. Targeted grazing treatments conducted in Arizona and New Mexico were used as the basis for estimating the time, effort and costs required to implement TCG treatments along the urban interface and on existing grazing allotments. Targeted cattle grazing may be most advantageous when relatively small reductions in fine fuels are desired. If fine fuel reductions of over about 700 kg/ha are desired, holding animals with temporary electric fence would be more cost effective than using low-stress herding and supplement. Targeted cattle grazing can be a feasible alternative to reduce fine fuels in some scenarios because costs are similar to alternative treatments to control fine fuels such as mowing and prescribed fire.

Abnormalities in placental development (i.e., placentation) occur early in gestation and are a fundamental cause of pregnancy loss in livestock, causing a serious economic drain on producers. Improving livestock fertility is paramount for efficient agricultural productivity and sustainability of food supplies. Establishment of functional fetal and placental circulation is one of the earliest events during embryonic development and proper placental vascular development is extremely important for fetal growth and survival. Aberrant vascular development is linked to a number of serious pregnancy-related complications including intrauterine growth restriction, preeclampsia or early pregnancy loss. A comprehensive understanding of the sub-cellular, molecular mechanisms involved in vascularization and growth of the placenta will help reveal causes of poor fertility and provide fundamental knowledge to improve reproductive success in livestock. As each pregnancy loss is estimated to cost the producer \$600, improvements in reproductive success will reap drastic savings for producers. The impacts from our studies are the generation of fundamental knowledge with respect to factors driving vascularization of the placenta to improve food-animal management. Research leading to improvements in livestock productivity helps not only the farmer and Our work on the response of chile pepper and cotton plants to salinity has

helped identify some varieties that are more sensitive or tolerant to salts during germination and emergence stages. Selection of salt-tolerant chile pepper varieties will improve local economies by reducing water requirements for irrigation and improve agricultural yields of chile and cotton, both important New Mexico commodities.

Chemokines and their receptors may be fundamental factors regulating implantation and vascularization of the placenta. The C-X-C chemokine receptor 4 (CXCR4) is up regulated in endometrium during early pregnancy and has only one recognized ligand, (C-X-C motif) ligand 12 (CXCL12). We have recently shown increased CXCL12 and CXCR4 mRNA and protein expression in ovine fetal (trophoblast) and maternal placental tissues during the timeframe of fetal attachment and placental development. However, the specific localization of CXCL12 and CXCR4 in fetal and uterine tissues during early gestation has not been evaluated. We propose CXCL12/CXCR4 signaling plays a role in maternal-fetal communication and possibly contributes to fetal attachment and subsequent placentation. Further, CXCL12 promotes recruitment of select white blood cells into human decidual tissues. These reports, suggest that similar recruitment of immune cells may occur in livestock. To our knowledge, this is the first report characterizing localization of CXCL12 in uterine and fetal tissue of ruminants during early gestation, thus providing new insights into the importance of this chemokine during attachment and placental development. Results from these studies have augmented our understanding of how CXCL12/CXCR4 signaling is affecting early pregnancy in livestock.

NuMex 01 is a high oleic Valencia peanut (*Arachis hypogaea* L. subsp. *fastigiata* var. *fastigiata*) cultivar, developed by the New Mexico Agricultural Experiment Station and released on September 17, 2013. NuMex 01 originated from a cross made between 'New Mexico Valencia A' (NM Valencia A) and 'Brantley'. NM Valencia A has predominantly 3- to 4-seeded pods, while Brantley has mostly two-seeded large Virginia pods. NuMex 01 is the first high oleic Valencia peanut cultivar released (O/L ratio 23.3 compared to 1.1 in NM Valencia A). It has better taste and good roasted flavor attributes.

In 2013, we initiated a new trial on assessing dual purpose (forage and grain) production of winter canola in comparison to winter wheat. Early September planted winter canola produced higher forage yield compared to winter wheat for most of the winter and early spring season. The quality of winter canola forage, especially crude protein, was much better than winter wheat. In general, differences between canola cultivars were smaller than the differences between two species. Dual purpose canola production is a promising technology to reduce forage shortage in the region. Underutilized crops like Quinoa and Amaranth are promising in drier New Mexico and preliminary trials are being conducted.

We continued to work with compensated root water uptake using partial rootzone drying (PRD) techniques. The experiments were conducted using chile plants (NuMex Joe Parker; *Capsicum annum*). Results supported our previous observations that chile plants were able to take up more water from less water stressed part of the soil profile while maintaining the transpiration rate at the same rate as control treatment. No significant differences were noted in the plant heights between treatments. Water balance analysis showed that PRD techniques have a potential to be adopted as water saving practices in chile production especially for environments with limited water.

Cotton is one of the most important field crops in New Mexico, with a total value of ca. \$90 million from lint and seed production. As a niche market for organic cotton and cotton with premium fiber quality, southern New Mexico farmers still grow both conventional Acala cotton and Sea-Island (Pima) cotton that were developed by New Mexico State University at an estimated 10% of the cotton acreage (but not reported by USDA). The newly released Acala 1517-08 increased lint yield by 20% over the check - Acala 1517-99 and its replacement of the older Acala 1517 cultivar will have a significant economic impact. When this new cultivar is grown in 20% of the cotton acreage in the state, its yield increase will be translated to 2 million pounds more fibers, equivalent to 1.8 million dollars. Several new advanced breeding lines averaged 20-30% more yield than Acala 1517-08 based on multiple tests and their

commercialization in 20% of the cotton acreage will further improve the net return (by 1.8 million dollars) for cotton producers in New Mexico. A new glandless cotton line with comparable lint yield to Acala 1517-08 has been developed and its production will lead to added value to the cottonseed since it can be used as a source for human food and a feed for non-ruminant animals. In summary, the NMSU cotton breeding program is continuing to make progress in further increasing cotton yield and improving other traits, providing promising breeding lines in the pipeline for producers in the southwest region. The use of these new products will significantly increase the net income for the New Mexico producer through technology transfer and dissemination.

Since 2005, sorghum grown for silage has increased 75% and statewide production has nearly doubled over the past several years from 210 to 400 thousand tons. This indicates that producers are learning of forage sorghum benefits, particularly the water-saving benefits that allow for money savings and disaster prevention. In addition, milk production in New Mexico has increased 17% over the same period, indicating that increased feeding of sorghum silage has not negatively impacted milk production, as some feared. Producers have been educated on best management practices of forage sorghums and corn in limited irrigation situations and their knowledge has been increased significantly about such systems. Awareness of the urgency to produce more water-conserving crops has been increased as the landscape has changed, particularly in eastern New Mexico, to include more irrigated sorghum crops (both silage and hay). This has only been strengthened due to extreme drought in 2011-2013. The variety testing program is used to evaluate variety and hybrid adaptation to both irrigated and dryland growing scenarios in eastern New Mexico. Use of better-adapted varieties allows growers to utilize their resources more efficiently and leads to economic savings. Particularly, more efficient water and nitrogen utilization contributes to conservation efforts and sustainable agricultural production. Requests for variety information are on the rise, especially with respect to forage and grain sorghums, which are gaining popularity in silage and dryland grain production systems that are hindered by limited water quantities and droughts. Multi-year results indicate that conventional forage sorghums can out-yield corn under restricted irrigation. Dry matter produced per unit of irrigation water is greater for conventional forage sorghums than for corn at restricted irrigation rates. However, corn is more affected by in-season rainfall and this variable determines how well corn competes with conventional forage sorghum in any given year. Forage sorghum is more consistent in its productivity regardless of year. Results have also indicated that on-farm inputs can be reduced by 25% without any detriment to productivity of the forage sorghum silage crops grown with restricted amounts of irrigation.

A second year of studies was completed in late 2012 investigating the effects of ultra-low irrigation and dryland systems on corn and sorghum grown for grain. This project is irrigated via subsurface drip tapes and allows for multiple water treatments to be applied to the two crops (along with 2 varieties each and 2 seeding rates). It focuses on when and how much water is needed at different growth stages in order to utilize the low amounts most effectively. Preliminary results indicate that both corn and sorghum can be relatively productive with minimal amounts of water, with corn requiring slightly more to be economical. Grain sorghum is the most advantageous under true dryland conditions, but even small amounts of irrigation added to the system quickly makes corn just as competitive from a yield standpoint. This work is encouraging in that adequate yields were obtained with low irrigation both years in perhaps the worst two drought years on record for the Clovis Agricultural Science Center.

Producers need reliable information on which crop cultivars will produce well in their region. Some strawberry cultivars available in seed and nursery catalogs will do fine in other parts of the country, but will fail in New Mexico because of climate and soil differences. Results from our study show which cultivars grow well in our region.

The Evapotranspiration (ET) internet site is nearly complete. Farmers will be able to access this site and track irrigation water use. They will be able to follow the water use for their crop and determine when to irrigate next. This internet site will help the farmer to use the right amount of water at the right time. As

farmers properly manage water applications, other input costs will be minimized. A presentation on this internet site is scheduled for presentation in the spring of 2014. Developing a simple spreadsheet tool that will evaluate irrigation pump performance, will help irrigation farmers track energy use and efficiency and help identify any problems that are developing. This tool will identify a problem before thousands of dollars are lost to inefficient pumping. Developing a low cost, easy to construct water control gate will help irrigation districts and farmers manage water more efficiently. This device will be safer than stop-log structures and individual irrigation districts or farmers will be able to construct this gate with common fabrication tools that they have available. Canal control algorithms will help irrigation districts determine how much water to divert down canals to meet the water demands of individual farms. Water use will be matched to the needs of the water users with little or no waste.

The NMSU alfalfa cultivar, NuMex Bill Melton, was developed for hay production in arid and semiarid environments of the southwestern U.S. that possess both abundant and limited irrigation capabilities. Seed of this cultivar is being commercially produced as part of an exclusive release agreement between the New Mexico Agricultural Experiment Station and a member of the alfalfa seed industry. In 2013, our industry cooperator in California produced foundation-class seed of NuMex Bill Melton. Certified seed of this variety should be available to farmers in 2015. In a separate study, we employed DNA marker assisted selection (MAS) to transfer 10 DNA markers from an experimental alfalfa population into different elite cultivar backgrounds over two generations. These markers were previously determined to be associated with alfalfa forage yield and root biomass productivity during drought stress. These MAS-derived populations were evaluated in 2011-2012 under limited irrigation (LI) and normal irrigation (NI) management field conditions near Las Cruces, NM. In the first-generation MAS populations, selection for high shoot and high root biomass markers, and selection against low shoot and low root biomass markers, benefited forage productivity by 3 to 23% in the LI study. These same populations, however, yielded similarly to each other in the NI study. To produce the second-generation MAS populations, six of the first-generation MAS populations were each mated to three alfalfa cultivars which possessed varying degrees of drought tolerance. Significant forage yield differences were detected among the six MAS hybrids within each cultivar group in both the LI and NI studies. These results suggested that marker assisted selection impacted alfalfa productivity in all three cultivar genetic backgrounds.

Germplasm was identified that possessed a reduced number of thrips per plant than most entries. Entries were identified that exhibited less severe IYS disease symptoms than most entries. Selection for reduced thrips number and IYS disease severity appears to be effective. Additional cycles of selection may be beneficial for increasing tolerance to thrips and/or IYS. The onion industry in New Mexico and the United States is valued at farm gate annually at 50-60 million dollars and 900- 1,000 million dollars, respectively. The potential impacts of this study are the offsets of yield reduction caused by IYS and onion thrips and the cost of chemical control of thrips. The potential economic impacts of this research could be 10-15% of the current farm-gate value that is estimated to be lost due to injury from IYS and onion thrips. In addition, the cost of chemical control of thrips, which is estimated at 7.5-12 million dollars, could be saved with the availability of a thrips-tolerant onion cultivar.

The Southwest Border Food Safety and Defense Center was formed in 2005 by the NMSU College of Agricultural, Consumer and Environmental Sciences, NMSU Cooperative Extension Service and the New Mexico Department of Agriculture to help protect the nation's food supply against security threats ranging from events such as foodborne illnesses and supply chain disruptions, to agro-terrorism. The center assesses the security of agriculture operations and provides training for farmers, dairy and livestock producers, public health officials, law enforcement, and the public. The center maintains first-response trailers in communities in central, southern, and eastern New Mexico stocked with equipment to help officials respond to an agriculture emergency. The Center helps coordinate the Emergency Support Function responding to disasters involving agriculture and food, as well as coordinating with other Emergency Support Functions on small animal evacuation and care. The Center distributes emergency

preparedness kits at various events across New Mexico. The Center also collaborates with other institutions such as Louisiana State University and the University of Tennessee, Knoxville on emergency preparedness and response training for the nation and other countries. In the first half of 2013, the Center and its partners trained or provided information to approximately 300,000 New Mexico residents. The New Mexico Department of Homeland Security and Emergency Management partners with the Center for all agriculture- and food-related training opportunities in New Mexico. The Center hosts exercises with partners from across New Mexico, and other states, including the 10 U.S. and Mexican states along the border. The Center trained Cooperative Extension Service county agents to help their county governments develop agriculture preparedness plans. The project trains personnel to write an agriculture emergency operation plan annex to their all hazards emergency operations plan. Extension agents and specialists, and New Mexico Department of Agriculture and New Mexico Livestock Board personnel have all been trained in agriculture bio-security and whole community food protection; the elements of food defense being food safety, food defense and food security.

The New Mexico Agriculture Livestock Incident Response Team or the ALIRT/Syndromic Surveillance Project is quickly becoming the model for animal disease surveillance across the nation utilizing veterinarians who have been trained as first responders. ALIRT includes livestock board inspectors, Extension agents, and 20 large animal veterinarians who are a trained first responder team for incidents involving livestock.

The drought situation in New Mexico has severely impacted livestock numbers, particularly cattle numbers. This along with other factors such as inflated land values, high fuel, and high operating cost limits production profitability to producers, which is marginal at best. Statewide and regional programs each year will include the Cattle Grower's Short course, Southwest Beef Symposium, Cattlemen's college and Cow-Calf standardized Performance Analysis program. Additionally, management recommendations and strategies are incorporated into Extension publications, event proceedings and local/area press.

By following a few general composting recommendations, whole animal composting can be a successful, environmentally safe, and economically feasible method for disposing on-farm carcasses. Cost of whole animal composting, which includes a synthetic liner (if used), is estimated to be approximately \$4 per carcass. However, composting procedures are not absolute and are somewhat forgiving. Trial and error accompanied by close monitoring of pile characteristics will usually produce successful results. Carcass compost is an excellent source of fertilizer for crops used by the dairy farm. However, the compost generated from decomposed animal carcasses should not be given away or sold as compost for off-farm use.

Hypera postica (Gyllenhal) (Coleoptera: Curculionidae), is one of the most significant insect pests in alfalfa in New Mexico. Each year, producers report significant economic losses due to this pest, particularly on first cuts. Most of the damage occurs early in the growing season when weevil populations are high and natural predator and parasitoid populations tend to be low. Typically, the first and second cuttings of alfalfa are the most heavily damaged. Yield reductions as high as 1,000 to 1,500 lb/ac have been recorded in research trials in Artesia and the Mesilla Valley in the 1980s, when such losses were considered common. Biological control has lessened those losses somewhat, particularly in the Mesilla Valley and particularly since 2000, but in some areas and in some years, growers still experience significant losses. The cotton season has almost ended and most farmers in the State have finished with harvesting. Pest and disease pressures were minimal this year and some growers have reported slightly above average yield. However, cotton acreage was much less than in 2012 due to uncertainties in the price of cotton. About 30,000 acres of cotton were planted in NM, which is about a 35% drop in acreage compared to 2012. At this year's cotton conference, over 85% of attendees were satisfied with the information presented.

The New Mexico wine industry revenue doubled in the last five years to approximately \$60 million. This increase reflects the commercial activity of many New Mexicans. The largest share of the revenue is generated by direct marketing efforts using tasting room sales, winery tours and wine festivals. Due to the diversified nature of the industry most of this money stays in the local economy and creates increased local economic activity through the multiplier effect.

As drought continues to persist in New Mexico, producers are searching for alternative hay crops that will produce large amounts of forage with minimal water in a short amount of time. Teff is one such grass that may meet this demand. Interest in Teff as hay for horses has grown in the southwestern USA where the predominant warm-season annual forages are sorghums, which are not suitable for horses. Teff, a warm-season annual grass used as high quality forage, is considered to be widely adapted and even heat and drought tolerant, as well as tolerant to waterlogged soils. Teff has very fine stems, is leafy, and forage quality when harvested at late boot to early heading is similar to full bloom alfalfa, making it acceptable as horse hay being preferred equally to timothy and orchard grass hay by horses. Teff is also a very suitable forage for cattle (beef and dairy) and sheep. Feeding studies have demonstrated the value of Teff for obese horses and others that require lower levels of digestible energy due to risk for metabolic disorders such as laminitis. Fast-growing summer annuals can be utilized to a great extent in New Mexico as emergency forage and can be planted late in much of the state with our long growing seasons. This year, because sorghum (e.g., hay grazers) seed supply is short and not suitable for horses anyway, Teff offers a great alternative that can fill the forage gap during dry periods or during alfalfa field rotations. Due to the higher price of seed, seeding costs for Teff can be as high as \$20-30/ac. As such, producers should assess their hay and livestock needs and also their potential market before determining which crop is best suited for their situation.

At the combined soil workshops attended by over 300 across the state about 85% of the respondents found information on soil health useful for their production practices. Over 60% of the respondents plan to engage in at least a specific method to build their soil health.

Soil compaction occurs when soil particles are compressed together--especially when the soil is wet--destroying soil structure, reducing porosity, and leading to a more dense soil that is hard for crop roots and water to penetrate. Changes in agricultural practices, such as increased number of field operations and larger equipment, have made soil compaction more common on many fields. Field operations, such as silage crop harvest when the soil is wet, can lead to severe soil compaction.

Proper weed identification and knowledge of effective weed management strategies is critical for development and implementation of effective, economical, and environmentally sound weed management practices. Quotes from weed workshop surveys: "Very logical presentation by knowledgeable professor." "I really enjoyed your class." "Very helpful; great discussion on herbicides and other methods of control." "Very effective speaker, made weed management interesting to me."

2. Brief description of the target audience

The target audience includes: ranchers, feedlot operators, dairy producers. small/medium/large-scale agricultural operations, business, associations, cooperatives, consulting firms and collectives that might or might not be defined as a farm under the USDA economic return criteria, but are land owners, managers, consultants, or students who wish to improve agricultural production and efficiency. Other audience participants include Extension agents, other agricultural specialists, pesticide applicators, Master Gardeners and garden clubs, youth (4H, Future Farmers of America and other groups) and the general public.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	100000	0	8677	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2013
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	5	5	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- The specific output measures will vary according to the specific project being monitored. The development of research procedures and technology, training of students, publishing research papers, and disseminating research results via educational workshops, conferences, and Extension media are important outputs for the various projects falling under this planned program.

Year	Actual
2013	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	# of trained professionals
2	# of improved animal varieties
3	# of research publications
4	# of methods, technology, and animal varieties adopted by public and private sectors
5	# Extension publications

Outcome #1

1. Outcome Measures

of trained professionals

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	21

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
201	Plant Genome, Genetics, and Genetic Mechanisms
202	Plant Genetic Resources
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
305	Animal Physiological Processes

Outcome #2

1. Outcome Measures

of improved animal varieties

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

of research publications

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	105

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
201	Plant Genome, Genetics, and Genetic Mechanisms
202	Plant Genetic Resources
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems

206	Basic Plant Biology
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
214	Vertebrates, Mollusks, and Other Pests Affecting Plants
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
305	Animal Physiological Processes
312	External Parasites and Pests of Animals

Outcome #4

1. Outcome Measures

of methods, technology, and animal varieties adopted by public and private sectors

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Extension publications

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	31

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Information is made available to producers.

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
305	Animal Physiological Processes

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The majority of adult program evaluations carried out by New Mexico Extension agents and specialists are pre-post and post-program knowledge gain instruments. The majority of youth (primarily 4-H club) program evaluations are demonstrations of knowledge gained and applied in teaching others, competitive events, and climbing 'youth career ladders'. Rarely, if at any time, does an agent or specialist report that participant knowledge attained/gained was less than satisfactory. One can only assume that knowledge gain survey questions are fairly worded, and that audience participation was not mandatory. The only exception to this is with Master Gardener and Integrated Pest Management qualification exams. But again, participation is initially by application and the desire to learn and apply what is learned.

Key Items of Evaluation

What is interesting to note is that most Extension faculty now use goal setting, program objectives, and evaluation instruments in their program plans (as opposed to 10 years ago, when there was a great degree of resistance). The next step in program evaluation is to assist Extension agents and specialists to develop precision evaluation instruments. On-going training, such as the Western Extension Cohort (Evaluation) Training (WECT), needs to be organizationally supported and participation needs to be encouraged by all Extension faculty.

Also, the American Evaluation Association has an Extension group section and should become a legitimate and heavily encouraged professional Extension association. The Association does more than any other organization to encourage evaluation 'best practices.'

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Agricultural Markets, Trade, and Economic/Business Development

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
601	Economics of Agricultural Production and Farm Management	16%		16%	
603	Market Economics	14%		14%	
604	Marketing and Distribution Practices	30%		30%	
605	Natural Resource and Environmental Economics	4%		4%	
608	Community Resource Planning and Development	20%		20%	
610	Domestic Policy Analysis	16%		16%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	4.9	0.0	7.0	0.0
Actual Paid Professional	4.9	0.0	3.5	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
485208	0	343483	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
485208	0	343483	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

New Mexico chile producers face difficult production conditions (e.g., limited hand labor, disease concerns, and increased costs of production) and market environments (e.g., increased, lower-priced foreign product). In order to remain viable, industry participants must find ways to increase market demand (and price) and reduce production costs. NMSU researchers examined opportunities to geographically brand New Mexico chile and chile products as one means of meeting the goal of increasing market demand and remaining economically viable. Using secondary and primary research methods, researchers explored: (a) consumer preferences for chile in general, (b) consumer preferences for chile grown and/or processed in New Mexico, and (c) potential to influence consumer preferences for chile with the use of point-of-selection information/education. Researchers identified consumers who were more likely to prefer (i.e., stated their preference for New Mexico chile, have some ties to the region [e.g., have friends of families living in the Southwest or have traveled to the Southwest]). Researchers also found that when consumers are educated via point-of-selection information about the importance of chile to the state's agricultural sector and its culture, consumers were willing to pay more for chile associated with the state.

Through focus group presentations and discussions results described above, results were shared with industry participants. In conjunction with this research, industry leaders have applied for (and received) additional funding through the New Mexico Department of Agriculture to explore and develop a regional certification program that will assist producers and processors in geographically identifying and marketing New Mexico chile to U.S. consumers.

New Mexico pecan producers have enjoyed significant price increases associated with foreign exports (primarily exports to Asian countries). While the industry has benefited from increased exports, per capita domestic pecan consumption has remained relatively flat at the same time that consumption of other tree nuts (e.g., almonds) has increased significantly. While pecan exports are providing a significant economic benefit to producers, they must continue to develop domestic markets, in part as a risk diversification/management strategy against potential disruptions in foreign markets. New Mexico researchers, in conjunction with researchers in Georgia and Texas, are examining the potential to add value to U.S.-grown pecans with changes in production methods (e.g., increasing pecan antioxidant levels

through pruning methods that allow more sunlight into the tree canopy). Initial research has included interviews with pecan producers to better understand current production and marketing practices. An online panel survey exploring consumer tree nut nutrition knowledge and preferences for increased antioxidant levels in pecans has been developed and administered. Analysis of the results is currently underway.

The structure of irrigated agriculture in New Mexico is affecting water use efficiency, irrigation outcomes (i.e., crop yields), and regional hydrologic balances. An NMSU project has assessed these changes and published analytical papers that examine the effects of changing agricultural structure on irrigation and water resources in New Mexico. Impacts of changing agricultural structure on current water rights adjudication in New Mexico have been presented in publications. The research is relevant to other irrigated areas experiencing structural changes similar to those occurring in New Mexico. The failure of the U.S. National Animal Identification System was studied under this project, with publications produced outlining reasons for the NAIS failure in the U.S. cow-calf sector (primarily related to the structure of the sector). Rangeland livestock sector research under this project has examined the effects of impermanence syndrome and uncertainty on attitudes and practices of southern New Mexico ranchers. Research on vegetable sectors of importance to the U.S. and Mexico has been conducted and published (e.g., for potatoes, maize, tomatoes, cantaloupes). Results of this research are being used in sector-wide planning and policy formulation.

The majority of respondents who attended the 40th Renaissance ArtsFaire were female, married, repeat customers, residents of Doña Ana county, and earned \$49,999 or less annually. Most respondents were very satisfied or satisfied with their overall event experience, and the festival enjoys very strong customer loyalty. On average, attendees spent \$61.30 at the festival.

2. Brief description of the target audience

The target audiences include agricultural producers, business owners, and policy makers.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2013

Actual: {No Data Entered}

Patents listed

{No Data Entered}

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	2	2	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- The specific output measures will vary according to the specific project being monitored. The development of research procedures and technology, training of students, publishing research papers, and disseminating research results via educational workshops, conferences, and Extension media are important outputs for the various projects falling under this planned program.

Year	Actual
2013	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	# of research publications
2	# of Extension publications
3	# of trained professionals

Outcome #1

1. Outcome Measures

of research publications

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	9

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management
603	Market Economics
604	Marketing and Distribution Practices
608	Community Resource Planning and Development
610	Domestic Policy Analysis

Outcome #2

1. Outcome Measures

of Extension publications

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	12

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices
608	Community Resource Planning and Development

Outcome #3

1. Outcome Measures

of trained professionals

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	3

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management
603	Market Economics
604	Marketing and Distribution Practices

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The majority of adult program evaluations carried out by New Mexico Extension agents and specialists are pre-post and post-program knowledge gain instruments. The majority of youth (primarily 4-H club) program evaluations are demonstrations of knowledge gained and applied in teaching others, competitive events, and climbing 'youth career ladders'. Rarely, if at any time, does an agent or specialist report that participant knowledge attained/gained was less than satisfactory. One can only assume that knowledge gain survey questions are fairly worded, and that audience participation was not mandatory. The only exception to this is with Master Gardener and Integrated Pest Management qualification exams. But again, participation is initially by application and the desire to learn and apply what is learned.

Key Items of Evaluation

What is interesting to note is that most Extension faculty now use goal setting, program objectives, and evaluation instruments in their program plans (as opposed to 10 years ago, when there was a great degree of resistance). The next step in program evaluation is to assist Extension agents and specialists to develop precision evaluation instruments. On-going training, such as the Western Extension Cohort (Evaluation) Training (WECT), needs to be organizationally supported and participation needs to be encouraged by all Extension faculty.

Also, the American Evaluation Association has an Extension group section and should become a legitimate and heavily encouraged professional Extension association. The Association does more than any other organization to encourage evaluation 'best practices.'

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Sustainable Management of Natural Resources

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
101	Appraisal of Soil Resources	3%		3%	
102	Soil, Plant, Water, Nutrient Relationships	5%		5%	
103	Management of Saline and Sodic Soils and Salinity	5%		5%	
111	Conservation and Efficient Use of Water	18%		18%	
112	Watershed Protection and Management	9%		9%	
121	Management of Range Resources	12%		12%	
132	Weather and Climate	1%		1%	
133	Pollution Prevention and Mitigation	3%		3%	
135	Aquatic and Terrestrial Wildlife	24%		24%	
141	Air Resource Protection and Management	1%		1%	
205	Plant Management Systems	2%		2%	
305	Animal Physiological Processes	1%		1%	
307	Animal Management Systems	2%		2%	
403	Waste Disposal, Recycling, and Reuse	6%		6%	
405	Drainage and Irrigation Systems and Facilities	4%		4%	
605	Natural Resource and Environmental Economics	4%		4%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	7.3	0.0	14.3	0.0
Actual Paid Professional	4.5	0.0	14.4	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
393483	0	1403325	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
393483	0	1403325	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Claims for the right to use water in New Mexico's Rio Grande and other river basins exceed reliable supplies by a considerable amount. For example, in the Rio Grande Basin, demands for irrigation, urban use, the environment, and energy continue to grow, while supplies remain constrained by unsustainable use, drought and impacts of climate change. Policymakers in this basin face the challenge of designing plans for allocating the basin's water supplies efficiently and fairly to support current uses and current environments. Managers also seek to design and implement resilient institutions that can ensure adequate supplies for future generations. Ongoing work in New Mexico has addressed those challenges by designing and applying an integrated basin-scale framework that accounts for the basin's most important hydrologic, economic, and institutional constraints. We plan to use the knowledge gained in developing this analysis to gain insights into cost-effective water and agricultural conservation policies in New Mexico and other water-stressed regions of the world such as Iraq, Afghanistan, and Ethiopia. We are also looking for lessons learned that enable New Mexico water leaders to be better informed for the design of more resilient water institutions for the Rio Grande, Gila, and other critical basins in the face of potential drought and climate variability.

NMSU scientists have constructed models of regional habitat quality and connectivity for pumas in the southwestern United States. This information is being used by both state resource agencies to assist in the management of their puma populations. As a follow up to the project, researchers have now amassed a microsatellite database of over 800 puma and will be conducting a landscape genetic analysis of these genotypes to assess the efficacy of the connectivity maps previously developed. NMSU scientists have begun developing a project using GPS telemetry collars recently developed by the team that allow an assessment of energetic expenditure during movement.

The strategy of adaptive management was successfully implemented in collaboration with the Middle Rio Grande Conservation District to construct refugial habitats for the endangered Rio Grande silvery minnow. This strategy for sharing agricultural water with the environment enables the conservancy district to "leak" water to the refugial habitats when irrigation diversions deplete river flows. The work was featured in the online "Partners Magazine" published by the USDA.

Genetic tools were developed for studying crustaceans that occur in natural ephemeral lakes, flood ponds, and livestock watering ponds throughout the arid regions of southwestern United States. The tadpole shrimp are an important component of carbon flux in isolated watersheds of rangelands. The

results show that development of livestock watering facilities broadly provides habitat for these interesting and enigmatic animals. Two of the three species identified in the Chihuahuan Desert thrive in livestock ponds.

NMSU scientists tested effects of salinity on growth and lipid accumulation of biofuel microalga *Nannochloropsis salina* and invading organisms. They found that growing algae at 22 PSU salinity and increasing the salt concentration to 34 PSU upon reaching stationary phase maximizes algae productivity, while minimizing undesired invading organisms. Additionally, a bibliometric evaluation of research output in the biofuel fields revealed that the biofuel had received most attention during the last decade. The U.S.A. is leading the biofuel research and mainly collaborating with other productive countries like China, United Kingdom, Germany, Canada, and South Korea.

As a result of NMSU research, we will be better able to sustainably manage our native vertebrate fauna and desert and plains grasslands. This broad project will result in recommendations for grazing management that will incorporate measures of native biological diversity and ecological factors that influence diversity.

The Great Plains Burrowing Owl project (New Mexico, Texas, Colorado, South Dakota, North Dakota and Chihuahua Mexico), is the largest standardized monitoring effort for burrowing owls. In this project we examined daily nest survival across 1500 nest over three years, examined nest predators and predation rates, and conducted stable isotope analysis to examine burrowing owl movements across years. Contrary to expectations, habitat fragmentation appeared to have little effect on nest survival or productivity. Instead, factors at the nest and colony scale, including nearest neighbor fledging success, distance from colony edge, prairie dog colony size, and active prairie dog burrow density had the greatest influence on nest survival and productivity suggesting owls benefit from prairie dog presence and a buffer from colony edges. Nest predation rates were substantially higher in the southern plains compared to northern Great Plains. Badgers were a major predator across all sites and snakes were suspected to be a major predator at southern sites. An NMSU AES scientist is working with the USDA ARS to develop management recommendations for livestock grazing across plains grasslands with black-tailed prairie dogs and burrowing owls. We also are quantifying prey deliveries to nests from remote cameras to determine what factors influence the percentage of quality (vertebrate) prey items delivered to nests. We found that precipitation followed by owl density had the strongest impact on the delivery of vertebrate prey items; sites with higher precipitation and lower owl density had greater delivery of vertebrate prey items. This suggests that precipitation was the main driving force in terms of prey quality but intraspecific competition for prey also likely had a role.

NMSU's urban burrowing owl project just finished its 4th year of data collection on nest survival and productivity and second and final year of juvenile survival and dispersal through the use of radio telemetry. Analysis of daily nest survival and productivity indicates that daily nest survival is most strongly influenced by year and the number of habitat patches, with lower survival in more fragmented habitats. Interestingly measures of owl density, to a lesser degree, also influenced daily nest survival. Productivity, however, was most strongly and negatively influenced by measures of owl density. This data suggests that while owls may benefit from the presence of other nesting pairs, there is a negative impact of the number of young they are able to raise when they are forced to nest too close

In south central New Mexico, researchers examined measures of avian condition along a gradient of mesquite encroachment for winter sage sparrows (*Amphispiza belli*). We used traditional measures of avian condition and stress hormones (corticosterone) as indirect measures of fitness to correlate with habitat condition. Data suggest year had a greater influence on condition than levels of shrub encroachment. However, birds in the most desertified habitats were in poorer condition in years of low resource availability suggesting desertified habitats may be particularly poor for this species in years of low food production.

Approximately 90% of all participants of the Master Gardener program in New Mexico considered training in turfgrass maintenance important and 95% of the participants reported that turfgrass training increased their knowledge of turf maintenance issues to either a great or a fair extent (immediately following a 3 hour training program). Approximately 75% of all participants that have attended 3 or more years in the Master Gardener Program reported that repeated training in turfgrass maintenance has helped them greatly in their career as a Master Gardener, and 90% reported that repeated training changed and enriched their understanding of turfgrass management differently than one time training would have. More than 70% of all turfgrass maintenance professionals who attended the annual Southwest Turfgrass Conference rated the knowledge they gained with either 4 or 5 on a scale of 0 (no useful knowledge) to 5 (knowledge provided extremely helpful). More than 90% of the participants of the Rio Grande Golf Course Superintendents Meeting rated the knowledge they gained with either 4 or 5 (on a scale of 0 = none to 5 = a lot), more than 95% rated the usefulness of information with either 4 or 5 (0 = not at all to 5 = very), and nearly 70% rated the quality of the training with either 4 or 5 (0 = poor to 5 = excellent). The webinar that was presented in conjunction with the USGA (United States Golf Association) is considered one of the most popular one the USGA has ever done. Total registration was 338, with 224 attending the live webcast. Average attendance duration was 73 minutes.

AES scientists expanded their soil chemistry research to include native and bioenergy plants and their responses to saline and poor quality water sources. Research on soil quality continues to affect local and regional agricultural practices and potential remediation of contaminated soils. The work on salinity and contaminants, such as arsenic, should impact land application practices at wastewater facilities.

Composted biosolids may provide a beneficial use of what may otherwise have been waste. Biosolids may help improve tree nutrition and growth in initial stand establishment. This may be an important source of fertility as the price of manufactured inputs continues to rise.

NMSU researchers have developed efficient irrigation scheduling recommendations for drip-irrigated vegetable crops such as tomatoes, peppers, and sweet corn. Used by irrigators, these recommendations will result in high production while minimizing water waste. The project has also identified drip irrigation emitters (outlets) that function efficiently under low pressures such as those provided by elevated tanks in rainwater catchment systems or from trailer or truck beds. Use of the recommended emitters as prescribed will ensure adequate flow rate and water application uniformity when irrigating gardens or landscapes at pressures lower than recommended by the emitter manufacturer. Relationships between drip irrigation level and establishment and growth of various drought tolerant plant species that can be used in soil stabilization and wind erosion abatement have also been identified during this project.

Water used by agriculture is under intense scrutiny as supplies are tight and demand increases from non-agricultural sectors. Hydrologic research is increasing our understanding of how water diverted into community irrigation systems (acequias) of northern New Mexico can seep from ditches and percolate below fields and then reside in shallow groundwater for a time before returning to the river. This storage and release function provides water to the river in times of low flow and may actually save water on a regional basis by reducing evapotranspiration losses.

Researchers developed a method to quantitatively classify urban landscapes in New Mexico. This classification method will allow landscape planners to craft landscape-specific water conservation plans. This information also will help planners prepare better landscape drought mitigation plans.

Extension workshops attendees were shown that the following mixture-comprised of several quick-growing garden annuals-can significantly increase populations of several groups of important predatory and parasitic insects, and can therefore be a valuable component of an IPM approach. Seeds of the

suggested plants are all readily available, relatively cheap, and easy to grow. In demonstrations, this mixture survived well in both sandy and clay soils and provided continuity of bloom from late June to early October with minimal care (i.e., regular watering and weeding during establishment). This mixture can also be used as a starting point to develop more complex blends by adding additional species (with appropriate adjustment of seeding rates). Within reason, the more species the better, since a greater diversity of plants will benefit more species of insects. If additional species are added to the core mixture, however, it is best to select single-flowered varieties rather than the more ornamental "double" ones since the nectar and pollen in the latter are often difficult for insects to access. It is also sensible to avoid species that are in the same botanical family as your crops. Normally, this is rarely a problem, but sweet alyssum, for example, is part of the cabbage family (Brassicaceae) and may attract pests of such crops (e.g., flea beetles, harlequin bugs [*Murgantia histrionica*], and Bagrada bugs [*Bagrada hilaris*]); hence, this species should be omitted if brassica crops, such as arugula, mustard greens, kale, Chinese cabbage, etc., are being grown.

Fish kills caused by diseases usually occur when fish are already stressed by environmental factors such as poor water quality or overcrowding. Because the fish are already stressed, they are more susceptible to diseases. In most situations, there is little that can be done once the fish are affected by the disease other than to let it run its course. However, disease-related fish kills can be prevented by taking simple steps, such as fishing the pond properly to prevent overcrowding, maintaining good water quality in your pond, and watching for signs of problems, such as poor fish growth, thin fish, and excessive numbers of small fish.

Dry land wheat production in Eastern New Mexico serves two purposes. The first is for winter grazing for livestock and the second is grain for marketing in the spring. Harvest in spring brought about the "Wheat Field Day and Variety Evaluation" educational program. Wheat producers in attendance were intrigued by the visual differences and noted on evaluations they would consider such varieties come planting time next year.

New Mexico's Extension Service has taught gardeners to adapt to challenges offered by soil, climate, insects and drought. These efforts must continue applying new technology and science to gardening challenges. The agent was able to answer some questions through first-hand knowledge while others required extra research, either by phone, email, or internet. Over 70% of clientele reported back that they had learned something from the information the agent provided. Evidence of successful Extension Horticulture teaching will result in gardeners changing their landscapes without loss of beauty or livability. Individual landscape water use is decreasing according to clientele reporting on their monthly water bills.

Master Gardeners provide an invaluable resource in volunteerism at many of our larger events, including the Chile and Pecan Conferences. Master Gardeners also provide a huge service through our office by way of the Master Gardener hotline to answer community questions about gardening. Their contribution allows the agent time to meet other obligations while still directing the Master Gardeners activities. This past year 2013, Doña Ana County Master Gardeners contributed over 6,857 volunteer hours towards helping the people of Dona Ana County. Based on the national volunteer hourly wage rate from the Bureau of Labor Statistics of \$21.79, these volunteer hours translate into \$149,414.03. Dona Ana County brings into this economy over 128 million dollars worth of direct revenues. Representatives of the Southern NM Correctional Facility are attending the fall 2013 Master Gardener Classes to gain an understanding of our program. The program will educate prisoners on gardening principles. The prisoners who finish this program will then be allowed to work in a prison garden where they will produce vegetables to help feed the homeless of Las Cruces and thus learn to give back to society.

Agents collaborated with surrounding Northeastern NM county Agents to develop a monthly series of rotating Ranch Management workshops focusing on pertinent area issues affecting livestock production. A panel of experts was solicited for each top and the workshop was presented two times per month in two

different geographical locations in the NE district area. The Guadalupe County Agent help prepare and design workshops related to range pasture management during drought; Weed Id and Herd Management in drought. The Agent held program evaluations that indicated that 100% of program participants received information in at least two topic area at each program that benefited their production practices or made them more capable to make decisions that would affect their profitability and sustainability.

2. Brief description of the target audience

Target audiences include:ranchers, farmers, urban landscapers, park departments, state and federal agencies, private homeowners, and recreational users of parks, forests, and waters.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2013

Actual: {No Data Entered}

Patents listed

{No Data Entered}

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	3	5	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- The specific output measures will vary according to the specific project being monitored. The development of research procedures and technology, training of students, publishing research

papers, and disseminating research results via educational workshops, conferences, and Extension media are important outputs for the various projects falling under this planned program.

Year	Actual
2013	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	# of trained professionals
2	# of research publications
3	# of Extension publications
4	% of people adopting NMSU recommendations

Outcome #1

1. Outcome Measures

of trained professionals

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	11

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
103	Management of Saline and Sodic Soils and Salinity
121	Management of Range Resources
135	Aquatic and Terrestrial Wildlife
405	Drainage and Irrigation Systems and Facilities
605	Natural Resource and Environmental Economics

Outcome #2

1. Outcome Measures

of research publications

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	57

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
103	Management of Saline and Sodic Soils and Salinity
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
121	Management of Range Resources
132	Weather and Climate
133	Pollution Prevention and Mitigation
135	Aquatic and Terrestrial Wildlife
141	Air Resource Protection and Management
205	Plant Management Systems
305	Animal Physiological Processes
307	Animal Management Systems
403	Waste Disposal, Recycling, and Reuse
405	Drainage and Irrigation Systems and Facilities
605	Natural Resource and Environmental Economics

Outcome #3

1. Outcome Measures

of Extension publications

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	3

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
103	Management of Saline and Sodic Soils and Salinity
121	Management of Range Resources
135	Aquatic and Terrestrial Wildlife
405	Drainage and Irrigation Systems and Facilities
605	Natural Resource and Environmental Economics

Outcome #4

1. Outcome Measures

% of people adopting NMSU recommendations

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

{No Data Entered}

What has been done

{No Data Entered}

Results

{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
103	Management of Saline and Sodic Soils and Salinity
121	Management of Range Resources
135	Aquatic and Terrestrial Wildlife
405	Drainage and Irrigation Systems and Facilities
605	Natural Resource and Environmental Economics

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The majority of adult program evaluations carried out by New Mexico Extension agents and specialists are pre-post and post-program knowledge gain instruments. The majority of youth (primarily 4-H club) program evaluations are demonstrations of knowledge gained and applied in teaching others, competitive events, and climbing 'youth career ladders'. Rarely, if at any time, does an agent or specialist report that participant knowledge attained/gained was less than satisfactory. One can only assume that knowledge gain survey questions are fairly worded, and that audience participation was not mandatory. The only exception to this is with Master Gardener and Integrated Pest Management qualification exams. But again, participation is initially by application and the desire to learn and apply what is learned.

Key Items of Evaluation

What is interesting to note is that most Extension faculty now use goal setting, program objectives, and evaluation instruments in their program plans (as opposed to 10 years ago, when there was a great degree of resistance). The next step in program evaluation is to assist Extension agents and specialists to develop precision evaluation instruments. On-going training, such as the Western Extension Cohort (Evaluation) Training (WECT), needs to be organizationally supported and participation needs to be encouraged by all Extension faculty.

Also, the American Evaluation Association has an Extension group section and should become a legitimate and heavily encouraged professional Extension association. The Association does more than any other organization to encourage evaluation 'best practices.'

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Food Safety

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
501	New and Improved Food Processing Technologies	50%		50%	
502	New and Improved Food Products	17%		17%	
503	Quality Maintenance in Storing and Marketing Food Products	8%		8%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	8%		8%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	17%		17%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	1.5	0.0	0.5	0.0
Actual Paid Professional	1.7	0.0	0.8	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
136000	0	78055	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
136000	0	78055	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

The Southwest Border Food Safety and Defense Center, housed at New Mexico State University is designated as the organization in New Mexico to coordinate the establishment the state food task force. At the first state-wide meeting of 100 representatives it was decided this organization would be called the New Mexico Food Safety Alliance. The Alliance is open to any agency in the state that is interested in food safety or security, with representatives primarily from the state's department of health and environmental improvement division, as well as food producers and food processors. The Center took the directive one step further and established County Food Protection Alliances to better strengthen partnerships and communications between local and state agencies. New Mexico was the first state to create this additional step. County Extension offices provide educational materials, workshops, and training designed to promote County Food Protection Alliance groups, as well as promote safe food handling practices at home, work, and play. At the state level participation has increased to 160 individuals who are directly involved in the Food Protection Alliance. The majority of these individuals (110) represent state and local government agencies. Nineteen represent federal agencies including the U.S. Department of Agriculture, the Food and Drug Administration, Indian Health Services, the Federal Bureau of investigation, and U.S. Attorney's Office. An additional 50 participants are from private industry ranging from producers, retail and consultants including the Sandia National Labs and Navajo Agricultural Products Industry.

During annual conferences networking between agency representatives establishes contacts to be used during emergency situations. Conferences also provide awareness training of issues facing the food industry regarding providing a safe food chain from producer to consumer. County Extension home economists who have received specialized training in 18 of the state's 33 counties provide leadership for their county alliance food safety/protection programs. Programs or events include presentations at the Indian Livestock Days, health fairs, school programs, fall festivals, farm safety days, farmers' markets, child and elderly daycare facilities, 4-H youth and leader trainings, and assorted other community events. In 2012 a total of 19,660 people were involved in some kind of information gathering session.

The Alliance annually distributes approximately 20,000 backpacks annually following presentations containing food safety publications, food/appliance thermometers and emergency preparedness guides. The message communicated through the backpack project includes proper hand washing, cooking with meat thermometers, use of refrigerator thermometers, prevention of food cross contamination, and proper handling of food products.

In collaboration with Texas A&M University, NMSU Dairy Extension has facilitated a series of projects looking at how certain management practices influence the prevalence and outbreak patterns of

Salmonella in dairy cattle. Salmonella is an opportunistic bacterium and seems to strike when stress levels are high in individual animals or a group of animals.

An agent partnered with the State Specialist to help provide a food business workshop for local residents interested in starting their own food related businesses. The workshop was designed to give residents the needed information for applying for and obtaining permits as well as maintaining healthy conditions and a safe product. Agent continues to work with county residents helping to smooth over relations with government regulatory officials.

2. Brief description of the target audience

Target audience is food processors in Arizona, Colorado New Mexico, Texas, and Utah.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2013

Actual: {No Data Entered}

Patents listed

{No Data Entered}

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	1	1	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- The specific output measures will vary according to the specific project being monitored. The development of research procedures and technology, training of students, publishing research papers, and disseminating research results via educational workshops, conferences, and Extension media are important outputs for the various projects falling under this planned program.

Year	Actual
2013	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	# of trained professionals
2	# of research publications
3	# of Extension publications
4	% of food processors using NMSU for their food product development

Outcome #1

1. Outcome Measures

of trained professionals

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

of research publications

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
501	New and Improved Food Processing Technologies
502	New and Improved Food Products
503	Quality Maintenance in Storing and Marketing Food Products
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #3

1. Outcome Measures

of Extension publications

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
501	New and Improved Food Processing Technologies
502	New and Improved Food Products
503	Quality Maintenance in Storing and Marketing Food Products
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #4

1. Outcome Measures

% of food processors using NMSU for their food product development

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Public Policy changes
- Government Regulations

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The majority of adult program evaluations carried out by New Mexico Extension agents and specialists are pre-post and post-program knowledge gain instruments. The majority of youth (primarily 4-H club) program evaluations are demonstrations of knowledge gained and applied in teaching others, competitive events, and climbing 'youth career ladders'. Rarely, if at any time, does an agent or specialist report that participant knowledge attained/gained was less than satisfactory. One can only assume that knowledge gain survey questions are fairly worded, and that audience participation was not mandatory. The only exception to this is with Master Gardener and Integrated Pest Management qualification exams. But again, participation is initially by application and the desire to learn and apply what is learned.

Key Items of Evaluation

What is interesting to note is that most Extension faculty now use goal setting, program objectives, and evaluation instruments in their program plans (as opposed to 10 years ago, when there was a great degree of resistance). The next step in program evaluation is to assist Extension agents and specialists to develop precision evaluation instruments. On-going training, such as the Western Extension Cohort (Evaluation) Training (WECT), needs to be organizationally supported and participation needs to be encouraged by all Extension faculty.

Also, the American Evaluation Association has an Extension group section and should become a legitimate and heavily encouraged professional Extension association. The Association does more than any other organization to encourage evaluation 'best practices.'

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Health and Wellbeing

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
703	Nutrition Education and Behavior	20%		20%	
721	Insects and Other Pests Affecting Humans	6%		6%	
722	Zoonotic Diseases and Parasites Affecting Humans	4%		4%	
723	Hazards to Human Health and Safety	10%		10%	
802	Human Development and Family Well-Being	40%		40%	
805	Community Institutions, Health, and Social Services	20%		20%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	7.0	0.0	1.1	0.0
Actual Paid Professional	2.5	0.0	1.4	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
216119	0	122343	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
216119	0	122343	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Parents who completed Family Wellness classes and provided complete data showed significant improvements from pre-test to post-test in parenting skills, discipline skills, communication and conflict resolution skills, and dealing with stress and change.

AES researchers developed a new healthy extruded snack with high protein content based on the highest amount of glandless cotton seed meal as possible and maseca as source of starch needed for extrusion. This product has the competitive advantage over other typical snack foods in that it will be high in protein and fiber, low fat, gluten-free, low glycemic value and utilizing novel ingredients of GCS flour and chile that would otherwise be low value by-products for both commodities.

Our Extension agents teach citizens cost saving methods to prevent chronic disease with a healthy diet and physical activity, identify quality childcare, make positive parenting decisions, handle food safely, spend money wisely, manage finances successfully, prepare for and cope with disasters, and prepare healthful meals.

Improving the financial literacy of Curry County citizens through better money and time management has increased savings, promoted wise use of credit, and generally enhanced consumerism. This program has been a favorite for people in Curry County as well as the surrounding area for the past 35 years.

The per capita income in Quay County is less than \$25,000.00. Participants have been learning basic budgeting tips, how to increase their savings, and tips for reducing their spending.

Personal finance covers an array of topics including budgeting, saving, spending, investment, retirement planning, credit, mortgage, financing, frauds, scams, and taxes. Many of our young adults do not know how to manage their finances and even those fortunate enough to attend college often graduate with a high debt load due to student loans and overuse of credit cards. Thirty percent of young adults (N=211) who participated in Extension personal finance programs reported they plan to have increased their savings within two years of taking the classes. Twenty percent reported they now have the knowledge to employ a solid retirement planning process within three years of employment.

Keep It Safe Programs have been popular among clientele (N=78). Key take-home points participants reported learning to include keeping sales receipts as evidence of ownership and that receipts are important in establishing value for unappraised items. Participants reported planning to keep file boxes of receipts for major items and use a safety deposit box for unappraised items. Participants were also advised

to get appraisals for valuable items. A popular question asked at programs was, 'what to do about items purchased online.' Participants were advised to: a) print out receipts if items were purchased online; b) send yourself the receipts to your email; and c) log on to the merchant's site to access and print receipts. Of participants who took this workshop, 56% of post participants reported they were going to follow the inventory instructions. In a one year follow-up, 18% of participants reported they have actually completed the entire household inventory process. Technology will undoubtedly make this process less cumbersome in the years ahead.

In New Mexico, suicide is the second leading cause of death for youths ages 15 to 24. Nationally, suicide is the third leading cause of death among those in this age group. Data from the New Mexico Office of the Medical Investigator (2010) show there were 26 suicides in the state among youth ages 15 to 19. In 2010, New Mexico ranked among the states with the highest suicide rates for young adults ages 15 to 24 (19.9 per 100,000). Suicide deaths in 2010 were more common among young males (69%) than females (31%). Data from the years 2005 to 2009 showed the New Mexico suicide rate averaged the highest among American Indian youths ages 15 to 24 (29.7 per 100,000) with Hispanics following closely with a rate of 19.2 per 100,000. The New Mexico Youth Resiliency & Risk Survey (2011) found that 8.6% of high school students reported they had seriously considered attempting suicide in the previous 12 months.

In 2010, County College evolved into NM EDGE, which stands for Education Designed to Generate Excellence in the public sector. Encouraging better government through education is the purpose of the NM EDGE. NM EDGE currently operates County College, New Mexico Certified Public Manager, the New Mexico Certified Advocate in Public Ethics and several public sector specialization programs. County College certifications include County Commissioner, County Clerk, County Treasurer and Public Assessment Officer. In addition NM EDGE works in collaboration with strategic partners to develop customized certifications, such as Detention Specialist, Information Technology and Public Purchasing Official. NM EDGE has more than 500 active students participating in four 'Honing Your NM EDGE' weeks held each year. During these weeks 8-12 sessions are offered containing up to 8 classes each or 50 different classes in total. There are three tiers of certification within the Certified Public Manager program. Since 2008, 150 public officials have earned the first-tier Certified Public Official designation by completing 18 three-hour classes and completing a written essay. Thirty have received the second-tier Certified Public Supervisor designation after completing 30 three-hour classes and developing a portfolio. Six have received the highest level Certified Public Manager designation after completing 300 hours of work including 60 three-hour classes and the Capstone Project that focuses on some aspect of their role in their governmental organization. One example of a Capstone Project was the development of a frequently asked question brochure and website for a county road department after the Certified Public Manager participant discovered her co-workers were asked questions by the county residents that they were unable to answer. Six county commissioners have earned the designation of New Mexico Certified County Commissioner. Three individuals have earned the Certified Advocate for Public Ethics. From the Public Sector Specialization Programs, 13 have graduated as Certified Treasury Official and nine with Certified County Clerk designations. In the customized certification programs, seven have received the Certified GIS Specialist and three have earned the Certified Jail Specialist designation. To earn these designations the public officials had to complete 18 to 28 three-hour classes specific to the specialization certification.

NMSU home economists in three counties - Los Alamos, Rio Arriba and Santa Fe - developed an in-class school enrichment educational program, Just Be It! Healthy and Fit, to help decrease the risk factors for childhood obesity by promoting regular physical activity and providing nutrition education to fifth-grade students, teachers, and parents. The program is delivered through three avenues: a nutrition and fitness field trip, classroom instruction, and parent outreach with 11 newsletters and a parents' night program. Following the nutrition and fitness field trip at the beginning of the school year, the program conducts 10 to

12 classroom sessions from October through April-May. The home economist provides nutrition education, which is aligned with the New Mexico Public Education Department's Standards and Benchmarks. During the sessions, students learn to make nutritious food choices, promoting appropriate decision-making, setting goals to increase fruit and vegetable intake, and choosing appropriate serving sizes as well as increasing the time spent in physical exercise. These activities affected changes in the home and school environment to support healthy food choices for children. Program data shows that students gained knowledge on nutrition from the beginning of the school year to the end of the school year. There was a 44 percent average knowledge gain from the field trip activities. Classroom instruction results in an increase in nutrition knowledge on the average 61 percent. Parents reported knowing more about nutrition after they read the 10 take-home newsletters. Their knowledge gain was on the average 25 percent. Just Be It! Healthy and Fit Program recently received national recognition through receiving a first place award in the Family Health and Wellness category at the National Association of Family and Consumer Sciences Conference in Columbus, OH.

Generating Rural Options for Weight-Healthy Kids and Communities is a five-year, multi-level research project that seeks to inspire children, families, schools and communities to create opportunities to eat healthfully and be physically active most every day. The program was developed by Oregon State University and is now being conducted in Washington, Nevada, Colorado, Arizona and New Mexico. GROW Healthy Kids and Community is funded by a \$4.87 million grant from U.S. Department of Agriculture's National Institute of Food and Agriculture.

GROW Healthy Kids and Communities is obesity prevention focusing on the environmental conditions that exist in rural communities, conditions that make it easy or hard for people who live in those communities to develop and maintain healthy eating and physical activity habits and lifestyles. Students increased their nutrition knowledge after receiving nutrition classes during the school year. In Santa Fe County, 109 students were in the program and completed both the pre and post tests on nutrition knowledge. The pre-survey average score was 8.67 (54%) and the posttest average score was 15.02 (94%) showing a 6.35 point (40%) gain. The difference in scores was statistically significant (p<le.0001).

2. Brief description of the target audience

The target audience includes: teenage mothers, low-income families, families suffering social stress, mal- or undernourished families, diabetics.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

2. Number of Patent Applications Submitted (Standard Research Output)
Patent Applications Submitted

Year: 2013
 Actual: {No Data Entered}

Patents listed
 {No Data Entered}

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	3	1	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- The specific output measures will vary according to the specific project being monitored. The development of research procedures and technology, training of students, publishing research papers, and disseminating research results via educational workshops, conferences, and Extension media are important outputs for the various projects falling under this planned program.

Year	Actual
2013	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	# of research papers
2	# of Extension publications
3	# of trained professionals
4	% diabetics adopting NMSU recommendations regarding nutrition

Outcome #1

1. Outcome Measures

of research papers

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	9

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
721	Insects and Other Pests Affecting Humans
722	Zoonotic Diseases and Parasites Affecting Humans
723	Hazards to Human Health and Safety
802	Human Development and Family Well-Being
805	Community Institutions, Health, and Social Services

Outcome #2

1. Outcome Measures

of Extension publications

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	7

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
802	Human Development and Family Well-Being

Outcome #3

1. Outcome Measures

of trained professionals

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	12

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
802	Human Development and Family Well-Being

Outcome #4

1. Outcome Measures

% diabetics adopting NMSU recommendations regarding nutrition

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The majority of adult program evaluations carried out by New Mexico Extension agents and specialists are pre-post and post-program knowledge gain instruments. The majority of youth (primarily 4-H club) program evaluations are demonstrations of knowledge gained and applied in teaching others, competitive events, and climbing 'youth career ladders'. Rarely, if at any time, does an agent or specialist report that participant knowledge attained/gained was less than satisfactory. One can only assume that knowledge gain survey questions are fairly worded, and that audience participation was not mandatory. The only exception to this is with Master Gardener and Integrated Pest Management

qualification exams. But again, participation is initially by application and the desire to learn and apply what is learned.

Key Items of Evaluation

What is interesting to note is that most Extension faculty now use goal setting, program objectives, and evaluation instruments in their program plans (as opposed to 10 years ago, when there was a great degree of resistance). The next step in program evaluation is to assist Extension agents and specialists to develop precision evaluation instruments. On-going training, such as the Western Extension Cohort (Evaluation) Training (WECT), needs to be organizationally supported and participation needs to be encouraged by all Extension faculty.

Also, the American Evaluation Association has an Extension group section and should become a legitimate and heavily encouraged professional Extension association. The Association does more than any other organization to encourage evaluation 'best practices.'

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

4-H and Youth Development

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
805	Community Institutions, Health, and Social Services	0%		14%	
806	Youth Development	100%		20%	
901	Program and Project Design, and Statistics	0%		20%	
903	Communication, Education, and Information Delivery	0%		46%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	5.5	0.0	0.3	0.0
Actual Paid Professional	4.0	0.0	0.5	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
300040	0	136646	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
300040	0	136646	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

An AES Hatch project extends research on the learning impacts of integrating science and agriculture in the secondary curriculum into middle schools. The Memorial Middle School Agricultural Extension and Education Center (MMSAEEC) also has a youth leadership development component arising from the students' involvement in experiential team learning activities, like working in research teams that must be assessed. Through their involvement in the Center, Memorial Middle School students are exposed in compelling ways to STEM careers, including those in agricultural and natural resources sciences, creating another needed area of assessment. Therefore, MMSAEEC's impacts on basic and agricultural and natural resource science learning; youth leadership life skills development; and STEM (including agriculture and natural resource) career interests within this unique population of youth is needed to determine whether this learning model is worthy of diffusion and adoption at other middle schools with similar demographics. The results will also be used to improve the model to further enhance the outcome variables of interest.

The statistical resources project has provided opportunities to attend conferences and training in most years. Training has included SAS Institute live web courses on multivariate statistical methods and statistical graphics with ODS, as well as attendance at short courses and conferences. In addition, the project has provided funds to purchase materials (books and manuals) that have been used for extensive self-study of several topics including mixed models, generalized linear mixed models (GLMMs) and resource selection by livestock and wildlife. As a consulting/collaborating statistician in ACES and the Agricultural Experiment Station (AES) having reference material readily available has been an invaluable resource.

The NM Beef Industries Initiative educational component developed a plan and program to address the fact that nationally, the average age in the ranching community continues to increase as more young people are opting to leave the ranch for other careers outside of production agriculture. As a result, the fabric of rural economies, as well as our ranching tradition and cultures, stand to be lost. In a rural state like New Mexico, these are significant implications. In effort to answer the call to this rising concern we developed the New Mexico Youth Ranch Management Camp, held in June 2011. Twenty-nine teens from family-owned New Mexico ranches, an enthusiastic group of instructors from New Mexico State University's Cooperative Extension Service, and the picturesque landscape of the Valles Caldera National Preserve in northern New Mexico created a unique event for the future ranch managers. During the week-long camp, participants were challenged 12 hours a day with a college-level curriculum of hands-on activities and lectures. "When you capture this much positive energy into a single event, great things happen," said Manny Encinias, New Mexico State University Extension beef cattle specialist and a member of the camp's organizing task force.

After attending a state 4-H leadership training conference, it was reported that 89.7% of attendees felt confident in replicating and delivering workshops for their counties and clubs, 65.9% of attendees reported elevated levels of confidence with concern to public speaking with 27% reporting the highest level of confidence, 92.5% of attendees reported a substantially elevated level of confidence in their ability to perform leadership responsibilities.

A major impact that both Agents have observed over the past nine years is an increase in leader's skills and abilities in planning/organizing, communication, teamwork, and confidence to provide leadership to their clubs and the activities in which the club conducts. Our clubs are providing more educational

programs, committing to more community service projects, and have stronger presence in their immediate communities than ever before. 95% of youth involved in 4-H project work reported increased knowledge in at least one project area, competitive event, real-life situation or career exploration opportunity due to 4-H programming.

The Home Economics Bowl Team placed 1st and won a trip to the National Competition. They were very excited, because they won this contest last year and were not able to compete because they were too young. The same team also placed third in Home Ec Skill-a-thon. The Entomology team placed 1st and the Horticulture Team placed 2nd.

2. Brief description of the target audience

Youth ages 5 to 19 are targeted to learn life, leadership and citizenship skills through: Project Work, Special Interest Groups, School Enrichment, Competitive Events, Fairs, Clinics, Workshops, Record Books, Camps, Community Service, Public Speaking, Elected/Appointed Offices, etc.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2013

Actual: {No Data Entered}

Patents listed

{No Data Entered}

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	2	1	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- The specific output measures will vary according to the specific project being monitored. The development of research procedures and technology, training of students, publishing research papers, and disseminating research results via educational workshops, conferences, and Extension media are important outputs for the various projects falling under this planned program. Numbers of students involved in 4-H programs also will be outputs.

Year	Actual
2013	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	# of Research publications
2	# of Extension publications
3	% volunteers trained
4	# of trained professionals

Outcome #1

1. Outcome Measures

of Research publications

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #2

1. Outcome Measures

of Extension publications

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #3

1. Outcome Measures

% volunteers trained

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	3239

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #4

1. Outcome Measures

of trained professionals

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	15

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development
903	Communication, Education, and Information Delivery

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Appropriations changes
- Public Policy changes
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

See above.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The majority of adult program evaluations carried out by New Mexico Extension agents and specialists are pre-post and post-program knowledge gain instruments. The majority of youth (primarily 4-H club) program evaluations are demonstrations of knowledge gained and applied in teaching others, competitive events, and climbing 'youth career ladders'. Rarely, if at any time, does an agent or specialist report that participant knowledge attained/gained was less than satisfactory. One can only assume that knowledge gain survey questions are fairly worded, and that audience participation was not mandatory. The only exception to this is with Master Gardener and Integrated Pest Management qualification exams. But again, participation is initially by application and the desire to learn and apply what is learned.

Key Items of Evaluation

What is interesting to note is that most Extension faculty now use goal setting, program objectives, and evaluation instruments in their program plans (as opposed to 10 years ago, when there was a great degree of resistance). The next step in program evaluation is to assist Extension agents and specialists to develop precision evaluation instruments. On-going training, such as the Western Extension Cohort (Evaluation) Training (WECT), needs to be organizationally supported and participation needs to be encouraged by all Extension faculty.

Also, the American Evaluation Association has an Extension group section and should become a legitimate and heavily encouraged professional Extension association. The Association does more than any other organization to encourage evaluation 'best practices.'

V(A). Planned Program (Summary)

Program # 7

1. Name of the Planned Program

Climate Change

- Reporting on this Program
 - Reason for not reporting
 - NMSU does not have a program in this area.

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	0.5	0.0
Actual Paid Professional	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
Actual Volunteer	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 Matching	1890 Matching	1862 Matching	1890 Matching
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 All Other	1890 All Other	1862 All Other	1890 All Other
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

V(D). Planned Program (Activity)

1. Brief description of the Activity

See the section on the Sustainable Management of Natural Resources Planned Program.

2. Brief description of the target audience

Undergraduate and graduate students are the target audience.

3. How was eXtension used?

{No Data Entered}

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2013

Actual: {No Data Entered}

Patents listed

{No Data Entered}

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Conduct classes on climate change.

Year	Actual
2013	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of students trained.

Outcome #1

1. Outcome Measures

Number of students trained.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

{No Data Entered}

What has been done

{No Data Entered}

Results

{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Competing Programmatic Challenges

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 8

1. Name of the Planned Program

Sustainable Energy

- Reporting on this Program
Reason for not reporting

We do not have a program in this area using Capacity Funds.

V(B). Program Knowledge Area(s)

- 1. Program Knowledge Areas and Percentage

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	0.0	0.0
Actual Paid Professional	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
Actual Volunteer	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 Matching	1890 Matching	1862 Matching	1890 Matching
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 All Other	1890 All Other	1862 All Other	1890 All Other
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

V(D). Planned Program (Activity)

1. Brief description of the Activity

See the section on the Sustainable Management of Natural Resources Planned Program.

2. Brief description of the target audience

Students and producers are the target audiences.

3. How was eXtension used?

{No Data Entered}

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2013

Actual: {No Data Entered}

Patents listed

{No Data Entered}

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of students trained.

Year	Actual
2013	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	# students trained.

Outcome #1

1. Outcome Measures

students trained.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

{No Data Entered}

What has been done

{No Data Entered}

Results

{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Government Regulations
- Competing Programmatic Challenges

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 9

1. Name of the Planned Program

Childhood Obesity

Reporting on this Program

Reason for not reporting

We do not have a separate program for childhood obesity. Our obesity programs are part of our Health and Wellness program.

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	0.0	0.0
Actual Paid Professional	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
Actual Volunteer	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 Matching	1890 Matching	1862 Matching	1890 Matching
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 All Other	1890 All Other	1862 All Other	1890 All Other
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

V(D). Planned Program (Activity)

1. Brief description of the Activity

See the section on the Health and Wellbeing Planned Program.

2. Brief description of the target audience

Children, youth, and families are the target audiences.

3. How was eXtension used?

{No Data Entered}

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2013

Actual: {No Data Entered}

Patents listed

{No Data Entered}

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Conduct workshops and classes on healthy food choices.

Year	Actual
2013	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	# of youth adopting healthy food choices

Outcome #1

1. Outcome Measures

of youth adopting healthy food choices

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

{No Data Entered}

What has been done

{No Data Entered}

Results

{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}