2008 New Mexico State University Combined Research and Extension Annual Report of Accomplishments and Results

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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 down turns, 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 tri-cultural 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 over-consumption 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 by 2007 New Mexico State University Combined Research and Extension Annual Report 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:2008	Extension		Research	
	1862	1890	1862	1890
Plan	38.5	0.0	52.6	0.0
Actual	33.7	0.0	55.2	0.0

II. Merit Review Process

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

- Internal University Panel
- External Non-University Panel

2. Brief Explanation

We have met several times with our Extension and Research Support Council, made up of stakeholders from around the state, to get their input as to state needs. We also have met with the advisory boards of our off-campus agricultural science centers.

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 with invited selected individuals from the general public

Brief Explanation

See above.

3. A statement of how the input was 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.

Brief Explanation of what you learned from your Stakeholders

All comments pertained to state-level concerns.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
1828559	0	1681082	0

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	1793575	0	1716066	0
Actual Matching	1793575	0	1716066	0
Actual All Other	0	0	0	0
Total Actual Expended	3587150	0	3432132	0

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous years				
Carryover	0	0	0	0

V. Planned Program Table of Content

Program #1

V(A). Planned Program (Summary)

1. Name of the Planned Program

Animal Production

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
301	Reproductive Performance of Animals	20%		20%	
302	Nutrient Utilization in Animals	20%		20%	
303	Genetic Improvement of Animals	10%		10%	
304	Animal Genome	10%		10%	
305	Animal Physiological Processes	10%		10%	
306	Environmental Stress in Animals	10%		10%	
307	Animal Management Systems	20%		20%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	3.0	0.0	6.6	0.0
Actual	2.9	0.0	6.6	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
157354	0	193632	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
157354	0	193632	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

- Research procedures and technology •Papers, citations, patents •Train students •Dissemination of research results •Educational workshops •Conferences •Commercialization of techniques and products

Using Methylglyoxal (MG) has been shown by NMSU researcher to haves potential to provide a great tool to producers of cattle. The use of MG as a marker has application to all herds of ruminants around the world where protein availability is deficient and requires supplementation. In New Mexico alone there are estimated to be 1.5 million head of cattle making cattle production the number one agriculture commodity in the state. The majority of the cattle in New Mexico require protein supplementation for a portion of the year representing a large cost to the producer. Typically, New Mexico producer spend an average of $160/hd on protein supplementation, which represents approximately 80% of the cow cost for the year. By gaining a better understanding of cow protein requirements and how forage composition affects rumen fermentation and the rumen microbial population will lead to improvements and reduction of costs association with protein supplementation.

If plasma levels reflect ruminal levels this may represent the beginning of development of a producer friendly assay to assess protein supplementation effectiveness.

- Producers from Acoma, Ramah Navajo, Canoncito Navajo, and Laguna Pueblo sold approximately 40,000 pounds of graded and sorted wool. This method of marketing has shown an increase of up to 1000% over their previous sales.

- A bull selection program was conducted by the Ag Agent at San Juan Pueblo March 1, 2007. Approximately 30 Native American producers attended the meeting and gained an increased awareness for the importance of bull selection.

- This year two major crop production programs were conducted; Zia Reservation March 15, 2007, and Acoma Pueblo, August 23, 2007. A total of 20 producers attended the meetings and participated in a tour of the various fields.

- One major sheep shearing school was conducted at Chinle, Arizona on May 8-10, 2007. Fifteen students participated in the hands-on school for three days. A significant increase in skill was exhibited by the students.

- Four additional workshops were conducted at Farmington, New Mexico. Ramah, Navajo Reservation, Acoma Reservation, and Dini College Tsaile, Arizona. The workshops emphasized importance of proper shearing technique both with hand shears and electric shears; value added lamb and wool marketing and maximizing profits through cooperative wool marketing.

- The 2007 wool price for typical Native American Fine wool was in the .95¢ to $1.00 per pound range which was an increase of approximately 30% over 2006 prices.

- Producers from Acoma, Ramah Navajo, Canoncito Navajo, and Laguna Pueblo sold approximately 40,000 pounds of graded and sorted wool. This method of marketing has shown an increase of up to 1000% over their previous sales.

- The long term goal of the Profitable Livestock Program is to show the use of AI as on alternative management strategy on first calf heifers. The results of this program have shown that AI can reduce calving problems on first calf heifers as well as improve overall quality and marketability of the cow herd.

- County agents and two other officials with Utah State University to conduct a loco weed survey in Northeastern New Mexico. The agent was responsible for counting each plant in a specific plot that had been previously selected. As a result of prior spraying and replanting with cool weather grasses an increase in the grass production was evident with a 50% increase in the amount of grass that was grown.

- 2008 Livestock Producer Seminar. The agent worked with local NRCS office, the 4-H Council and several local and surrounding businesses to put together a livestock production seminar for local producers. Evaluations indicated that over 50% of participants rated most presentations as moderately useful in knowledge acquired and another 50% rated presentations very useful in knowledge acquired.

- 2008 Producer Newsletter. The agent produces a newsletter for agriculture producers on a bi-annual basis. The newsletter targets both livestock and crop producers with pertinent information on production strategies, industry and extension educational programs, research trial information, etc. Over 20% of producers who received newsletters merit the newsletter

useful as revealed to subject matter and information when surveyed one-on-one.

- Awareness was increased of novel management practices and knowledge of current issues by 20% for 10% of Eddy County New Mexico livestock producers through educational programs and direct communications. Bio security was increased by 100% of the dairies in Eddy County and awareness to 20% of the Beef producers.

- Agent hosted a private applicator training for region wide license holders. Forty-five producers and citizens learned about prairie dog control, brush management and the record keeping and inspection requirements of NMDA. 100% of participants will not have to participate again for at least 5 years. 75% of participants increased their knowledge of brush control on certain species by over 50% as measured by comments after the meeting.

- The North Eastern NM Livestock Association meets annually in Harding County. It is made up of about 5 counties and dues go to support a scholarship for a graduation senior in the area. Producers gained insight into the meat industry and learned about beef tenderness and quality and also enjoyed sampling different beef products. They also learned about carbon credits, livestock disease issues Ag emergency management, and were updated on current policies or legislative agendas affecting cattle producers. As a result, producers left the meeting knowing 75% more about the subject matter and can use the material presented to improve management of operations.

- Management of Cattle through periods of cold stress and winter feeding strategies program. Livestock producers in San Miguel and Mora counties will gain knowledge in feeding their cattle. 100% of producers learned how much feed they should be feeding. 20% of these producers will save on their winter feed because of this program.

- A total of 12 workshops and demonstrations saw a participation rate of 80% of the county producers. Topics ranged from overall management, record keeping, nutritional requirements and feed alternatives as well as marketing strategies, reduction of overhead and financial alternatives. 75% of the producers stated that they were going to adopt some or all of the suggested management changes and 100% were receptive to change in standard supplemental feeding practices. 10% were receptive in addition to management practices to include agritourism and hunting enterprises.

- The Range Improvement Task Force (RITF) has been intricately involved in the Jarita Mesa range analysis since wild horses have been part of the mix of herbivores that graze on land year round. Conflict has existed since the horses have taken advantage of forage resources year round with no management by the USFS. In the past two years approximately 100 out 170 have been removed. Prelimary indications show that range conditions are improving.

- Presentations held for Jicarilla cattle producers covered marketing cattle, vaccination programs, record keeping, best management practices, agricultural statistics, USDA programs, range management and improvements, New Mexico tuberculosis status and budgeting. Over 100 producers have received instruction by attending these presentations.

2. Brief description of the target audience

The target audience includes: ranchers, feedlot operators, and dairy producers.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	**Target**	**Target**	**Target**	**Target**
Plan	0	0	0	0
2008	0	0	0	0

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

Patent Applications Submitted

Year **Target**
Plan: 0

2008 : 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan			
2008	2	23	25

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	Target	Actual
2008	0	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	Economic development increased
6	Successful animal agricultural enterprises
7	# Extension publicatons

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	Quantitative Target	Actual
2008	2	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
302	Nutrient Utilization in Animals
307	Animal Management Systems
305	Animal Physiological Processes
306	Environmental Stress in Animals
303	Genetic Improvement of Animals
301	Reproductive Performance of Animals
304	Animal Genome

Outcome #2

1. Outcome Measures

# of improved animal varieties

Not reporting on this Outcome for this Annual Report

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	Quantitative Target	Actual
2008	5	23

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals
306	Environmental Stress in Animals
307	Animal Management Systems
301	Reproductive Performance of Animals
305	Animal Physiological Processes
303	Genetic Improvement of Animals
304	Animal Genome

Outcome #4

1. Outcome Measures

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

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	2	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
302	Nutrient Utilization in Animals
306	Environmental Stress in Animals
305	Animal Physiological Processes
301	Reproductive Performance of Animals
307	Animal Management Systems

Outcome #5

1. Outcome Measures

Economic development increased

Not reporting on this Outcome for this Annual Report

Outcome #6

1. Outcome Measures

Successful animal agricultural enterprises

Not reporting on this Outcome for this Annual Report

Outcome #7

1. Outcome Measures

Extension publicatons

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	{No Data Entered}	19

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals
301	Reproductive Performance of Animals
306	Environmental Stress in Animals
307	Animal Management Systems

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

New Mexico continues in a drought, which affects the price of cattle. Priorities between between urban, industrial, and agricultural uses of water and land continue to create conflict. The state dairy industry continues to grow, putting pressure on our college to increase support for this sector.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- During (during program)
- Comparisons between program participants (individuals,group,organizations) and non-participants
- Comparison between locales where the program operates and sites without program intervention

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

Program #2

V(A). Planned Program (Summary)

1. Name of the Planned Program

Food Safety and Technology

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	5%		5%	
503	Quality Maintenance in Storing and Marketing Food Products	25%		25%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	20%		20%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	1.5	0.0	0.5	0.0
Actual	1.3	0.0	0.8	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**
70538	0	23471	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
70538	0	23471	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

- Research procedures and technology
- Papers, citations, patents
- Train students
- Dissemination of research results
- Educational workshops
- Conferences
- Commercialization of techniques and products

Traditional methods of detecting microorganisms in food are time consuming and labor intensive, rapid and automated methods that have been developed must be tested in various food products. Although these rapid methods still require confirmation, the VIDAS SLM procedure is a reliable screening procedure combined with BAM Salmonella selective enrichment broth to detect *Salmonella* in dried red chile pepper powder. Utilizing rapid methods developed by NMSU scientists will improve both food processor and health official response time in the event of a food-borne illness associated with dried red chile pepper powder.

2. Brief description of the target audience

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

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	**Target**	**Target**	**Target**	**Target**
Plan	0	0	0	0
2008	0	0	0	0

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan			
2008	0	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	Target	Actual
2008	0	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
5	Economic development increased

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	Quantitative Target	Actual
2008	2	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
503	Quality Maintenance in Storing and Marketing Food Products
501	New and Improved Food Processing Technologies
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
502	New and Improved Food Products

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	Quantitative Target	Actual
2008	1	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
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
502	New and Improved Food Products
501	New and Improved Food Processing Technologies
503	Quality Maintenance in Storing and Marketing Food Products

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	Quantitative Target	Actual
2008	1	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
503	Quality Maintenance in Storing and Marketing Food Products
501	New and Improved Food Processing Technologies
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
502	New and Improved Food Products

Outcome #4

1. Outcome Measures

% of food processors using NMSU for their food product development

Not reporting on this Outcome for this Annual Report

Outcome #5

1. Outcome Measures

Economic development increased

Not reporting on this Outcome for this Annual Report

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 and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- During (during program)
- Time series (multiple points before and after program)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

Program #3

V(A). Planned Program (Summary)

1. Name of the Planned Program

Plant and Animal Protection

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
211	Insects, Mites, and Other Arthropods Affecting Plants	10%		10%	
212	Pathogens and Nematodes Affecting Plants	25%		25%	
213	Weeds Affecting Plants	20%		20%	
215	Biological Control of Pests Affecting Plants	5%		5%	
216	Integrated Pest Management Systems	20%		20%	
312	External Parasites and Pests of Animals	5%		5%	
315	Animal Welfare/Well-Being and Protection	15%		15%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	1.8	0.0	11.2	0.0
Actual	4.6	0.0	10.7	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
249596	0	313919	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
249596	0	313919	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

- Research procedures and technology
- Papers, citations, patents
- Train students
- Dissemination of research results
- Educational workshops
- Conferences
- Commercialization of techniques and products

- Events began in mid winter with a Bovine Trichomoniasis meeting with 98 in attendance. Next were a series of workshops and a table top exercise on Agricultural Biosecurity.

An advisory council was formed to educate Quay commissioners on endangered species and the Grey wolf reintroduction program. Attendance reached more than 60% of Quay county producers with an average of 92% stating that they came away from the program with more information and knowledge than they had before the program.

- Field trials were conducted on commercial farms to determine how much impact alfalfa has on predation in pecan and cotton. The data in cotton suggests that our initial theory based on data from other states may not be appropriate for New Mexico. Data collected the last two years suggests that cotton in the Pecos Valley at least, depends on relatively constant immigration of predators from hay rather than periodic sudden influxes at cutting. If this holds true then hay is critically important for pest control in cotton and pecan in the Pecos Valley.

- Hay: Assuming conservatively just 1 application on 50% on the Pecos Valley acres and that we could reduce applications by only 75% (less than other states have accomplished), we would save over $600,000 in the Pecos Valley alone. Similar results in other counties in NM would easily put savings over 1 Million per year.

- Cotton: Our data suggests that insecticide applications for square injury by bollworm could be almost eliminated in southern New Mexico. A 50% reduction of insecticide applications on non transgenic cotton is ambitious but achievable. Reducing inputs will help in retention of cotton as a rotation crop in the Pecos Valley, and would be the most important impact.

- Pecan: Our primary impact on pecan will be to avoid losses in yield from insect pests particularly as the landscape changes to a more monoculture environment favoring more insect pest outbreaks. Our strategy is to determine how to use smaller acreage of alfalfa to maintain populations of beneficial arthropods in pecan orchards.

- This year, the diagnostic clinic identified 5 new diseases previously not known to occur in NM – 2 fungal leaf diseases in Pistachio (Septoria leaf spot and Alternaria Late Blight), 1 bacterial disease in Catalpa (Xylella fastidiosa), 1 virus disease in Hops (Apple Mosaic Virus), and 1 virus disease in cowpea (Tomato Spotted Wilt Virus). Data on disease occurrence in the state is uploaded to the National Plant Diagnostic Network as part of our role as a state support lab for the Network.

- Participated in the National Legume IPM PIPE Survey. This project surveyed sentinel bean plots for viruses, foliar and soil-borne diseases. In New Mexico, we planted and maintained 5 sentinel plots (2 at the Clovis Ag Science Center and 3 at Leyendecker Plant Science Center). This project involved weekly plant status reports on growth and development as well as disease status. Twice during the growing season, 150 plant samples were collected and processed for 2 specific rust diseases (soybean rust and common rust) and 3 specific virus diseases (alfalfa mosaic virus, bean common mosaic virus and beet curly top virus). Data was uploaded on a weekly basis to the National IPM PIPE database which provided real time disease assessment for researchers and growers. Results from this year's survey found a new virus disease in cowpea.

- Plant pests and diseases are responsible for substantial economic losses every year in New Mexico and across the Southwest. First Detector Training Courses are designed to teach people the importance of early detection and mitigation of plant pest problems. Three First Detector Training Courses were conducted in this reporting period 9October 2007 – September 2008. Pre- and post-training exams were administered at the trainings. The overall score on the pre-tests was 80% and the overall score on the post-tests was 95% indicating a 15% increase in knowledge gained through the training. 86% of the participants indicated that the training gave them a considerable amount of new information and 11% indicated that the training

gave them some new information. 100% of the participants said the training provided enough information to help them understand crop biosecurity issues. 100% of the participants indicated that as a result of the training they know who to contact if they think they have found an exotic or "high risk" pest.

- Grower Conference and Workshops: Educational programs on various subjects related to plant health management. 87 percent of the people in attendance at these conferences felt that they had increased their knowledge of the subject matter either "to a great extent" or "to a good extent.". A majority (over 81%) of the people in attendance indicated that they would attend other workshops on related subject matter as available.

- Additionally 86% of trainees indicated that they would change some aspect of their basic plant management practices based on knowledge gained in the training.

A predictive model for curly top in southern New Mexico developed by NMSU scientists has given growers information on the disease so that they can make informed choices on which management methods they will need to use to handle the disease pressure.

A better understanding of the role that the fungal endophytes of locoweed play in locoism, the genetics of the fungi, and the factors that influence toxin production will lead to new options to mitigate the disease locoism and its impact.Information generated thus far by NMSU researchers has changed knowledge significantly, in that fungal endophytes were not previously been known to be involved in locoism, much less responsible for the problem. Locoism is estimated to cost the NM livestock industry about $2 million per year.

Information generated by NMSU scientiests regarding the effect of the pecan root-knot nematode on growth and nitrogen partitioning in pecan will aid producers in understanding the effects of this emerging nematode pest on infected trees.Such information is likely to be useful to producers interested in modifying orchard management strategies to reduce the impact of the nematode on pecan production.

2. Brief description of the target audience

Attention will be given to commodity organizations in or serving New Mexico producers as well as pesticide applicators, Master Gardeners and garden clubs, youth (4H, Future Farmers of America and other groups and conferences) and the general public.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	0	0	0	0
2008	0	0	0	0

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan			
2008	0	32	32

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	Target	Actual
2008	0	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	% producers adopting NMSU recommendations to protect plants and animals
5	Successful agricultural enterprises

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	Quantitative Target	Actual
2008	2	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
213	Weeds Affecting Plants
315	Animal Welfare/Well-Being and Protection
312	External Parasites and Pests of Animals
212	Pathogens and Nematodes Affecting Plants
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants

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	Quantitative Target	Actual
2008	3	32

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
216	Integrated Pest Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
312	External Parasites and Pests of Animals
212	Pathogens and Nematodes Affecting Plants
215	Biological Control of Pests Affecting Plants
213	Weeds Affecting Plants
315	Animal Welfare/Well-Being and Protection

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	Quantitative Target	Actual
2008	2	14

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
212	Pathogens and Nematodes Affecting Plants
216	Integrated Pest Management Systems
312	External Parasites and Pests of Animals
213	Weeds Affecting Plants
215	Biological Control of Pests Affecting Plants
315	Animal Welfare/Well-Being and Protection
211	Insects, Mites, and Other Arthropods Affecting Plants

Outcome #4

1. Outcome Measures

% producers adopting NMSU recommendations to protect plants and animals

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	30	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
216	Integrated Pest Management Systems
215	Biological Control of Pests Affecting Plants
213	Weeds Affecting Plants
212	Pathogens and Nematodes Affecting Plants
312	External Parasites and Pests of Animals
211	Insects, Mites, and Other Arthropods Affecting Plants
315	Animal Welfare/Well-Being and Protection

Outcome #5

1. Outcome Measures
Successful agricultural enterprises

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	0	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
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems

211	Insects, Mites, and Other Arthropods Affecting Plants
315	Animal Welfare/Well-Being and Protection
213	Weeds Affecting Plants
312	External Parasites and Pests of Animals
212	Pathogens and Nematodes Affecting Plants

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

New Mexico continues in a serious drought. Land use disputes exacerbate tensions between industry, agriculture, urban and domestic users.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- During (during program)
- Time series (multiple points before and after program)
- Case Study
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- Comparison between locales where the program operates and sites without program intervention

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

Program #4

V(A). Planned Program (Summary)

1. Name of the Planned Program

Plant Production

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
201	Plant Genome, Genetics, and Genetic Mechanisms	40%		40%	
202	Plant Genetic Resources	5%		5%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plant	10%		10%	
204	Plant Product Quality and Utility (Preharvest)	15%		15%	
205	Plant Management Systems	30%		30%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	7.5	0.0	11.6	0.0
Actual	6.1	0.0	21.3	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
330985	0	624905	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
330985	0	624905	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

- Research procedures and technology
- Papers, citations, patents
- Train students
- Dissemination of research results
- Educational workshops
- Conferences
- Commercialization of techniques and products

The NMSU experimental NM0307 was approved for cultivar release, as NuMex Melton, by the NMSU Agricultural Experiment Station in 2008. This cultivar exhibits improved performance under both optimum and deficit levels of irrigation and appears widely adapted throughout New Mexico. This cultivar should benefit alfalfa growers in New Mexico, and perhaps adjacent regions, by providing a high quality forage with enhanced yield potential across diverse production environments.

The integration of DNA marker linkage data with field performance of genetically defined alfalfa research population families under varying soil moisture conditions, has identified markers that can be used to select against alleles that reduce forage and root biomass yield under drought stress. Results suggest that selection for specific marker combinations can potentially improve yield performance by 3 to 14% under drought stress. Marker assisted selection programs are currently being implemented to evaluate their effectiveness at improving the drought tolerance trait in commercial populations.

Chile peppers are an important part of New Mexico's heritage and economic development. New Mexico State University has the longest continuous program of chile pepper improvement in the world. All New Mexican (Anaheim) green and red chile pepper types grown today gained their genetic base from cultivars first developed at New Mexico State University. According to the New Mexico Department of Agriculture statistics, chile peppers were worth $32 million at farm gate in 2007. With the majority of chile peppers processed, the chile pepper crop is worth much more. The new improved 'NuMex Heritage 6-4' and 'NuMex Heritage Big Jim' are important for the continued success of the industry. Having high yielding open-pollinated cultivars with lower seed cost will aid in keeping growers competitive in the world arena.

- Of all participants in the 2008 Master Gardener Program that have attended turf maintenance courses for 3 or more years, 94% reported that repeated training changed and enriched their understanding of turfgrass management more greatly than did one time training would have and 69% admitted that repeated training changed their attitude towards turfgrass.

- A total of 54% of the participants in the statewide Master Gardener program believed that traditional turf areas waste great amounts of water that could be better used elsewhere. After a 3 month period of seminar series, the opinion that turf wastes water dropped to 19% among all surveyed Master Gardeners. A total of 64% of all participants in the statewide program requested additional training in the area of turfgrass irrigation. "unnecessary and water-guzzling" ground cover is widespread and prevalent and 60% of all participants in the Master Gardener program considered this statement to be true prior to the training seminar. A total of 48% of all participants reconsidered their opinion and only 12% of the participants believed that turf wastes water after the training.

- When surveyed, 98% of the 157 participants of the Master Gardener turfgrass training program in New Mexico report that the turfgrass training course changed and enriched their understanding of turf maintenance issues to either a great extent or to a fair extent

- The "Pecanigator" is an irrigation scheduling device designed by a team of NMSU researchers and extension personnel. The original design was a cardboard "slide rule", but now is available online. It is designed specifically for increasing pecan profitability per acre-foot of irrigation water applied under the conditions of Dona Ana county (where 70% of New Mexico’s pecan acreage is found), but may also be used in most of New Mexico’s other pecan producing counties.
- Pecan nut case bear scouting and reporting took place for crop year 2008. Producers were advised of appropriate actions via e-mail, news paper articles, and newsletters. The impact of PNC was minimal with less than a 1% loss to PNC compared with a 12 to 23% loss when control measures are not implemented. This increase the gross revenue to the county producers by about 4 million dollars.

- Agents presented a lecture on urban arboriculture to both the Albuquerque Area Extension Master Gardeners (AAEMG): 12 filled out evaluation forms. 100% stated they had learned new information; 58% felt the new information would be "quite a bit" useful to them, while 42% felt it would be "very much" useful to them.

- Programming efforts about Africanized Bees for emergency responders in the county: Over 80% of those in attendance said that they had learned something new that they didn't know before and they would change their habits of how they approach a potentially dangerous situation.

2. Brief description of the target audience

The target audience is both small as well as medium and large scale agricultural operations, businesses, associations, cooperatives, consulting firms and collectives that may or may not be defined as a farm under the USDA economic return criteria, but rather are land owners, managers, consultants, or students that wish to improve agronomic production and efficiency as do and are other audience participants such as Extension agents, farmers, ranchers, other agricultural specialists, private-tribal-state-federal and even nonprofit organizations.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	0	0	0	0
2008	0	0	0	0

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan			
2008	2	26	28

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	Target	Actual
2008	0	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 producers, growers, homeowners adopting NMSU recommendations
5	# of improved plant varieties released
6	Successful plant agricultural enterprises

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	Quantitative Target	Actual
2008	2	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
205	Plant Management Systems
202	Plant Genetic Resources
201	Plant Genome, Genetics, and Genetic Mechanisms
204	Plant Product Quality and Utility (Preharvest)
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plant

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	Quantitative Target	Actual
2008	3	26

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
205	Plant Management Systems
204	Plant Product Quality and Utility (Preharvest)
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plant

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	Quantitative Target	Actual
2008	2	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
205	Plant Management Systems
204	Plant Product Quality and Utility (Preharvest)

Outcome #4

1. Outcome Measures

% of producers, growers, homeowners adopting NMSU recommendations

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	40	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
205	Plant Management Systems

Outcome #5

1. Outcome Measures
# of improved plant varieties released

2. Associated Institution Types

•1862 Research

3a. Outcome Type:
Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	1	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
204	Plant Product Quality and Utility (Preharvest)
201	Plant Genome, Genetics, and Genetic Mechanisms
202	Plant Genetic Resources
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plant

Outcome #6

1. Outcome Measures

Successful plant agricultural enterprises

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	0	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
205	Plant Management Systems

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

New Mexico continues in a serious drought, which affects the amount of water available to farmers. Water availability also exacerbates tensions between industry, agriculture, urban and domestic users. Until all water rights have been adjudicated, users remain in a "use or lose" situation regarding their water amounts.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- During (during program)
- Case Study
- Comparisons between program participants (individuals,group,organizations) and non-participants
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- Comparison between locales where the program operates and sites without program intervention

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

Program #5

V(A). Planned Program (Summary)

1. Name of the Planned Program

4-H and Youth Development

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
806	Youth Development	100%		100%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	5.5	0.0	0.3	0.0
Actual	5.0	0.0	0.5	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
271300	0	14669	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
271300	0	14669	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

• Research procedures and technology

- Papers, citations, patents
- Train students
- Dissemination of research results
- Educational workshops
- Conferences
- Commercialization of techniques and products

- A 4-H agent has promoted the Leader Screening Process to adults wishing to become volunteers and has achieved more and more success since its inception. To date 90% of volunteers have participated in the process.

- The major part of Bernalillo County 4-H agent's time was spent working with the Bernalillo County 4-H Rodeo Committee and financial sponsors throughout the year. The result was that Bernalillo County's Open Youth Rodeo had 50% more contestants than the sanctioned rodeos. The Rodeo was well attended with about 2,000 people and 78 contestants State wide. The final impact was 31.5% fewer contestants than in 2007, but 56% more participation than the sanctioned rodeos.

- The Memorial Middle School Agricultural Science Center in Las Vegas, NM, delivered six major programs and 3 minor programs to students; 100% of students (N=450) were engaged by programmatic efforts; 88% (8 of 9) of science teachers collaborated with the program.

- Transform the Memorial Middle School campus into an Agricultural Science Center. Roughly 2,000 linear feet of trails have been installed on approximately two and one-half acres of the campus that connect the greenhouse with the rest of the physical campus landscape for teaching purposes; 640 sq feet of raised beds have been installed and are in vegetable production; roughly one-third of an acre is in agricultural production; 40 fruit trees were planted by 65 students on Arbor Day to establish a one acre campus orchard. 100% of students have been involved in the producing fresh produce on the campus. About 25% of electrical energy needs for greenhouse supplied by solar power and will increase to more than 50% with addition of wind turbine

- Memorial Middle School Agricultural Science Center (MMS ASC) was one of five schools in the state to receive a 750 watt photovoltaic solar panel.

- Specialist piloted National 4-H SET curriculum on The Power of the Wind. This curriculum introduced our youth to the engineering behind the utilization of wind turbines in order to produce alternative energy.

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.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	0	0	0	0
2008	0	0	0	0

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

Patent Applications Submitted

Year	Target
Plan:	0

2008 : 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan			
2008	2	1	3

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	Target	Actual
2008	0	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

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	Quantitative Target	Actual
2008	1	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	Quantitative Target	Actual
2008	2	4

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	Quantitative Target	Actual
2008	30	750

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

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

In the funding arena, 4-H and Youth Development encounters difficulty with competing programs for a limited budget. The challenge is set our programs apart from other worthy programs, and be seen for the public benefit they provide.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- During (during program)
- Time series (multiple points before and after program)
- Comparisons between program participants (individuals,group,organizations) and non-participants
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- Comparison between locales where the program operates and sites without program intervention

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

Program #6

V(A). Planned Program (Summary)

1. Name of the Planned Program

Agricultural Markets, Trade, and Economic/Business Development

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
511	New and Improved Non-Food Products and Processes	5%		5%	
601	Economics of Agricultural Production and Farm Management	25%		25%	
602	Business Management, Finance, and Taxation	20%		20%	
603	Market Economics	10%		10%	
604	Marketing and Distribution Practices	10%		10%	
606	International Trade and Development	5%		5%	
608	Community Resource Planning and Development	10%		10%	
609	Economic Theory and Methods	5%		5%	
610	Domestic Policy Analysis	5%		5%	
611	Foreign Policy and Programs	5%		5%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	4.9	0.0	7.0	0.0
Actual	3.4	0.0	7.8	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
184484	0	228838	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
184484	0	228838	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

- Research procedures and technology
- Papers, citations, patents
- Train students
- Dissemination of research results
- Educational workshops
- Conferences
- Commercialization of techniques and products

NMSU researchers have developed an integrated basin-wide model of the hydrology, economics, and institutions for the Rio Grande Basin. The model's current scale ranges from the headwaters in southern Colorado, to the bottom of the upper basin just downstream of El Paso, Texas. Findings provide a general framework for formulating water pricing programs that promote economically and environmentally efficient water use programs while also addressing other policy goals. Development and use of this basin policy has permitted successful funding of a $20 million research proposal to the US Agency for International Development addressed at training Afghan nationals to rebuild the Afghan agricultural and water sector. We plan to use the knowledge gained in developing these basin scale models to identify insights into cost-effective water and agricultural development policies in Afghanistan and in other water-stressed regions of the world.

The goal Agricultural Economic Development seminars to supply information that improves daily lives or makes a positive economic impact on agricultural operations. 50% of the people that attended educational seminars said it would make a direct impact on how they make business decisions.

2. Brief description of the target audience

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

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	0	0	0	0
2008	0	0	0	0

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan			
2008	10	27	37

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	Target	Actual
2008	0	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 people adopting NMSU policy, economic, or business development recommendations
4	Economic development increased
5	# 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	Quantitative Target	Actual
2008	2	27

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
606	International Trade and Development
602	Business Management, Finance, and Taxation
608	Community Resource Planning and Development
609	Economic Theory and Methods
511	New and Improved Non-Food Products and Processes
611	Foreign Policy and Programs
603	Market Economics
610	Domestic Policy Analysis
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

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	Quantitative Target	Actual
2008	2	10

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
602	Business Management, Finance, and Taxation
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices
608	Community Resource Planning and Development
511	New and Improved Non-Food Products and Processes

Outcome #3

1. Outcome Measures

% of people adopting NMSU policy, economic, or business development recommendations

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	50	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
608	Community Resource Planning and Development
604	Marketing and Distribution Practices
511	New and Improved Non-Food Products and Processes
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation

Outcome #4

1. Outcome Measures

Economic development increased

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	0	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
609	Economic Theory and Methods
603	Market Economics
604	Marketing and Distribution Practices
601	Economics of Agricultural Production and Farm Management
606	International Trade and Development
611	Foreign Policy and Programs
608	Community Resource Planning and Development
610	Domestic Policy Analysis
602	Business Management, Finance, and Taxation
511	New and Improved Non-Food Products and Processes

Outcome #5

1. Outcome Measures
# of trained professionals

2. Associated Institution Types

•1862 Research

3a. Outcome Type:
Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	{No Data Entered}	16

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
609	Economic Theory and Methods
602	Business Management, Finance, and Taxation
604	Marketing and Distribution Practices
608	Community Resource Planning and Development
603	Market Economics
601	Economics of Agricultural Production and Farm Management
606	International Trade and Development
610	Domestic Policy Analysis

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 and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- During (during program)
- Time series (multiple points before and after program)
- Case Study
- Comparisons between program participants (individuals,group,organizations) and non-participants
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- Comparison between locales where the program operates and sites without program intervention

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

Program #7

V(A). Planned Program (Summary)

1. Name of the Planned Program

Health and Wellbeing

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
702	Requirements and Function of Nutrients and Other Food Components	5%		5%	
703	Nutrition Education and Behavior	20%		20%	
704	Nutrition and Hunger in the Population	20%		20%	
724	Healthy Lifestyle	20%		20%	
801	Individual and Family Resource Management	20%		20%	
802	Human Development and Family Well-Being	10%		10%	
803	Sociological and Technological Change Affecting Individuals, Fam	5%		5%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	**Extension**		**Research**	
	1862	**1890**	**1862**	**1890**
Plan	7.0	0.0	1.1	0.0
Actual	5.7	0.0	2.1	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**
309281	0	61610	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
309281	0	61610	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

• Research procedures and technology

- Papers, citations, patents
- Train students
- Dissemination of research results
- Educational workshops
- Conferences

- The Union County Health Fair was organized and presented by the Union County Extension Association of New Mexico, the Union County Public Health Department, Union County General Hospital. A savings of over $150,000.00 was estimated from the screeners and exhibitors. Over 700 people attend the Health Fair and another 300 are reached through Community Outreach by the Hospital.

- Quay County Community Wellness Fair: There were approximately 550 participants and 120 volunteers that participated. $40,000.00 worth of free health screenings were provided.

- 92% of participants indicated they had the knowledge to continue their own strength training program and 88% indicated they had the confidence to continue their own strength training program.

- As an addition to the walking program, participants' blood pressure and weight were monitored through a collaborative effort with the public health office. At least 1/2 of the participants in each walking program took advantage of the service and public health indicated a healthy overall drop in blood pressure and participant weight.

- "Moving for Better Health": 75% of participants increased their walking steps by 25% or more.

- 43 participants completed the child development pretest and posttest. Of the 43 participants who took the pretest, 41 scored higher on the posttest. A comparison of pretest and posttest scores showed that 95% of the child care providers improved their understanding of child development by a 39% gain in understanding.

- Knowledge gain for students attending one-day field trips: 454 students from 11 schools in the 3 counties of Rio Arriba, Santa Fe and Los Alamos participated. Pre and post knowledge tests for the day long program were administered and showed a 23-27% (depending on the county) knowledge gain for the students.

- Extension Agents from Los Alamos, Rio Arriba and Santa Fe Counties conducted Just Be It! Healthy and Fit (JBI), a regional nutrition and fitness school enrichment field trip experience offered to fifth graders from the three counties. At all three sites the average percentage point increase from pre to post test was 24 percentage points of knowledge gained. Pre and Post test results for the Los Alamos County schools indicated an average increase from pre to post test of 27 percentage points increase of knowledge gained.

- Students increased their nutrition knowledge as a result of receiving nutrition classes during the school year. 138 students received classroom instruction and 108 of them completed both the pre and post tests on nutrition knowledge. The pre-survey average score was 8.83 and the post test average score was 14.88 (out of a possible 16 points) showing a 6.05 point gain.

- Educational programs on MyPyramid and Physical Activity were presented. Seventeen parents showed an increase in knowledge as a result of attending the program. The pretest score average was 67% and the post test score average was 94% (out of 100%). There was a 27% knowledge gain for parents.

- Students increased their nutrition knowledge as a result of receiving nutrition classes during the school year. In Santa Fe County, 41 students were in the program and 30 of them completed both the pre and post tests on nutrition knowledge. The pre-survey average score was 8.9 (56%) and the post test average score was 15.5 (97%) showing a 6.6 point (41%) gain.

- In Santa Fe County, 23 parents showed an increase in knowledge as a result of receiving eight newsletters at home. The pretest score average was 68% and the post test score average was 82% (out of 100%). There was a 14% knowledge gain for parents.

- Over 530 participants gained personal finance concepts through money management programs, which resulted in knowledge gained and increased savings throughout the year.

- A total of 510 participants responded to the check off list.

"How has participating in Kitchen Creations helped you manage your Diabetes?"
47% (239) I use the Diabetes Food Guide Pyramid to plan a day's meals.
45% (230) I measure food portions.
59% (302) I use the 50/50 plate method to control the amount of carbohydrates in a meal.
84% (429) I read the labels to find the amount of carbohydrate in a serving.
52% (264) I eat at least 2 servings of whole grains a day.
51% (261) I eat at least 2 servings of non-starchy vegetables at dinner.
62% (316) I use more herbs and spices to flavor food instead of salt and fat.

- During 2008 FSNEP reached 35,427 adults (White 25.1%, African American 2.1%, Native American 14.4%, Asian 0.9%, Hawaiian/Pacific Islander 0.3%, Hispanic 57.2%) and 32,498 youth (White 16.1%, African American 2.3%, Native American 12.3%, Asian 0.3%, Hawaiian/Pacific Islander 0.1%, Hispanic 58.9%) in 411 sites in New Mexico, including the Zuni Reservation with the following results:
  - Increase the consumption of fruits and vegetables among adults and youth participants by 30% statewide (actual 60%)
  - Increase the consumption of whole grains among adult and youth participants by 20% statewide (actual 49%)
  - Increase the consumption of dairy products among adult and youth participants by 20% statewide (actual 48%)
  - Increase the number of adult participants who maintain a balance between calorie Intake and calorie expenditure by 20% statewide (actual 56%)
  - Increase the number of adult participants who use shopping lists by 20% statewide (actual 42%)
  - Increase the number of adult and youth participants who compare food prices by 20% statewide (actual 31%)
  - Increase the number of adult participants who prepare a food budget by 20% statewide (actual 54%)
  - Increase the number of adult and youth participants who wash their hands immediately after handling raw meat or poultry by 20% statewide (actual 11%)
  - Increase the number of adult and youth participants who keep perishable foods at room temperature for less than two hours by 20% statewide (actual 36%)
  - Increase the number of adult participants who keep food in the house to make last minute meals by 20% statewide (actual 31%)
  - Increase the number of adult participants who cook extra food to use for lunches or meals on busy days by 30% statewide (actual 44%)
  - Increase the number of youth participants who cook at home by 40% statewide (actual 52%)

- During 2008 EFNEP reached 882 adults and 2,175 youth in Bernalillo and Dona Ana counties. Fifteen educators provided 15,392 hours of education to graduate 801 adults (White 8%, African American 1%, Native American 2%, Hispanic 83%) and 2,175 youth (White 16%, African American 3%, Native American 1%, Hispanic 79%) .
  - 15.5% increase in intake of grains

16.6% increase in intake of fruits

36.4% increase in intake of vegetables

28.6% increase in intake of milk

15.3% increase in Intake of meats & beans

45% improved in the area of planning meals

45% improved in the area of comparing prices

42% improved in having food for the month

45% improved in using a grocery list

40% improved in following recommended guidelines for letting foods sit out

58% improved in thawing foods properly

38% improved in providing healthy food choices for their families

38% improved in prepared foods without adding salt

51% improved in using Nutrition Facts to make food choices

45% improved in providing breakfast for their children

- CATCH is the largest evidence-based coordinated school health program in the United States, teaching children to identify, practice, and adopt healthy eating and physical activity behaviors. In 2008 13,028 students (White 37.7%, African American 3.5%, Native American 3.9%, Hispanic 55.4%) received CATCH programming through one of the 44 participating elementary schools during the school day, 1,218 students (ethnicity information not collected) received CATCH programming during after school through the YMCA, and another 110 students (ethnicity information not collected) received CATCH programming.

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.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	0	0	0	0
2008	0	0	0	0

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	{No Data Entered}

Patents listed

{No Data Entered}

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan			
2008	{No Data Entered}	{No Data Entered}	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	Target	Actual
2008	0	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
5	Improved nutrition among New Mexicans
6	decrease in child abuse
7	decrease in juvinile deliquency

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	Quantitative Target	Actual
2008	1	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
802	Human Development and Family Well-Being
702	Requirements and Function of Nutrients and Other Food Components
803	Sociological and Technological Change Affecting Individuals, Fam
801	Individual and Family Resource Management
724	Healthy Lifestyle
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population

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	Quantitative Target	Actual
2008	3	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
801	Individual and Family Resource Management
724	Healthy Lifestyle
704	Nutrition and Hunger in the Population
802	Human Development and Family Well-Being
703	Nutrition Education and Behavior

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	Quantitative Target	Actual
2008	2	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
803	Sociological and Technological Change Affecting Individuals, Fam
802	Human Development and Family Well-Being
703	Nutrition Education and Behavior
702	Requirements and Function of Nutrients and Other Food Components
724	Healthy Lifestyle
704	Nutrition and Hunger in the Population
801	Individual and Family Resource Management

Outcome #4

1. Outcome Measures

% diabetics adopting NMSU recommendations regarding nutrition

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	50	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
703	Nutrition Education and Behavior
724	Healthy Lifestyle

Outcome #5

1. Outcome Measures
Improved nutrition among New Mexicans

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:
Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	0	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
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #6

1. Outcome Measures

decrease in child abuse

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	0	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
802	Human Development and Family Well-Being
803	Sociological and Technological Change Affecting Individuals, Fam

Outcome #7

1. Outcome Measures

decrease in juvinile deliquency

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	0	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

803	Sociological and Technological Change Affecting Individuals, Fam
802	Human Development and Family Well-Being

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 and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- During (during program)
- Time series (multiple points before and after program)
- Case Study
- Comparisons between program participants (individuals,group,organizations) and non-participants
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- Comparison between locales where the program operates and sites without program intervention

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

Program #8

V(A). Planned Program (Summary)

1. Name of the Planned Program

Sustainable Management of Natural Resources

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	10%		10%	
103	Management of Saline and Sodic Soils and Salinity	5%		5%	
121	Management of Range Resources	20%		20%	
123	Management and Sustainability of Forest Resources	10%		10%	
124	Urban Forestry	5%		5%	
135	Aquatic and Terrestrial Wildlife	10%		10%	
136	Conservation of Biological Diversity	5%		5%	
403	Waste Disposal, Recycling, and Reuse	10%		10%	
405	Drainage and Irrigation Systems and Facilities	10%		10%	
605	Natural Resource and Environmental Economics	15%		15%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	**Extension**		**Research**	
	1862	**1890**	**1862**	**1890**
Plan	7.3	0.0	14.3	0.0
Actual	4.7	0.0	7.5	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**
220037	0	255022	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
220037	0	255022	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

- Research procedures and technology •Papers, citations, patents •Train students •Dissemination of research results •Educational workshops •Conferences •Commercialization of techniques and products

NMSU research on prairie dogs will contribute to the debate regarding conflicts between conservation of this keystone species, preservation of endangered species and livestock ranching. Researchers believe that these goals are not incompatible and that all can be achieved with wise use of available resources. Likewise research on banner-tail kangaroo rats may yield an approach to prioritize desert grasslands for conservation. Research on carnivore movement patterns and connectivity among protected lands will aid the National Park Service and the New Mexico Game and Fish in the development of management plans for conserving their lands and ensuring connectivity among wildlife populations within the region, as well as potentially informing harvest strategies for both puma and black bear.

NMSu scientists are providing information that will help managers of rangelands in their efforts to increase forage, though water benefits may not justify tree clearing. Increased understanding of surface water-groundwater interactions is an important addition to the knowledge of water budgets in arid region irrigated valleys. Water is diverted from the river into the irrigation system during spring snowmelt. The water seeps from ditches and flooded fields to recharge groundwater, returning to the river after 1-3 months storage underground. At a regional scale, water is saved by underground storage and reduced evapotranspiration losses.

NMSUresearch has the potential to reduce the adverse impacts of livestock grazing on rangeland soils, vegetation and wildlife. Light stocking leaves more residual vegetation for protection of soils, watershed, and wildlife habitat. Light grazing may allow forage plants to maximize their productivity and it may be more beneficial than grazing exclusion. Light grazing lowers rancher risks and may increase monetary returns over conservative grazing based on preliminary results. This research has the potential to reduce rancher/environmentalist conflicts by providing better technology to maintain and improve vegetation and wildlife habitat. Increased rancher income could reduce rangeland losses to subdivisions and other development. In previous research from this project, we found conservative grazing was advantageous over moderate grazing in terms of maintaining forage production, drought, reducing rancher risk and providing higher net profits.

An economical disposal method for the woody trimmings of pecans is needed because burning causes air pollution problems. Shredding of woody trimmings and incorporation into the orchard is an alternative method of disposal that appears to have no negative impact on soil properties. Amendment with wood chips has shown that the chemical and physical properties of soil are only affected at high rates of application and then only with repeated applications. Many pecan farmers are now chipping their trimming debris instead of burning it after research confirmed how to handle these materials.

Progress has been made on developing effective propagation protocols for many native woody plant species which can be used in disturbed land or riparian restoration/rehabilitation. Also, the previously initiated projects on carbon distribution in pinon-juniper woodlands are being completed and presentation and publication of the results is ongoing. This information will be used to parameterize and assess carbon cycling models developed for other, related ecosystems. The environmental impacts of this research are several fold including developing more efficient reclamation/restoration/revegetation practices and providing the necessary tools (plants) and techniques to improve reclamation success. The increasing occurrence of stand replacing fires in southwestern forests, further emphasizes the need to have both the plant material and technologies to mitigates fire effects and rehabilitate these sites. In terms of the pinon-juniper ecology research, the work performed here will assist land managers in their land management activities by reducing environmental impacts. In terms of the horticultural nursery industry, the use of native plants is a well known aspect of a water conserving landscape.

- Efforts to secure federal funding for irrigation efficiency have been successful for several years. These efforts have complimented research funding for study of efficient irrigation practices. Basic practices of scheduling and metering of irrigation water have expanded significantly statewide. Ag water users have developed broader understanding of basic and technical details of sound practices. Adoption has led to increased productive value of water, lower costs, environmental protection, and conservation.

- Educational programs on various subjects related to field crop and biofuel feedstock production were presented at two producer conferences or field day events. Surveys indicated that 95.5% of attendees had significantly increased in knowledge and that the program was useful. Only 4.5% indicated that they had only 'some' increase in knowledge. 95.0%

indicated that they had an improved level of understanding with respect to water conservation as it related to corn and sorghum silage production. Only 5% indicated that they had no improvement in understanding of water conservation. No one indicated that they did not learn anything or that the program was not useful.

- Five workshop/demonstration projects were presented with approximately 30% of the affected producers participating. Of the participants, 75% adopted a brush control program. 25% completed an active brush control project with 10% completing a long term plan for brush control. In the area of salt cedar control, 100% of participants have completed chemical application with 20% involved in the NRCS EQIP program and 80% participation is solely producer financed. Loco weed participation was slight with the onset of a drought and the appearance of the striped loco bug. However, 90% of the involved producers practiced stringent monitoring and kept preparations in place for control. 75% of producers were given the opportunity to participate in workshops and up-date meetings concerning loco weed. 100% of these participants indicated that they would up-date their long range plans to include new ideas.

- Agent along with the County Noxious Weed coordinator presented a workshop on "Noxious Weed and Poisonous Plant Management in Sierra County". 95% of those who attended were satisfied with the program and all agreed that they gained knowledge on the topics that were presented.

- 80% of area land managers and owners became very aware of and adopted monitoring systems.

- Two major presentations given during the FY2008 season were, "Compost Quality Measurements / Salts." New Mexico Environment Department Solid Waste Bureau Compost Operators Certification Course on April 16, 2008, and "Soil Salinity and Sodium Issues". 88% said they would probably have their soil tested. 100% said they would change the way they fertilize/use amendments. 72% said they may change the way that they use organic products. 72% said they have a better understanding of New Mexico soil. All respondents said that they learned at least one thing about NM soil.

- The NMSU soil testing lab submitted 892 soils for interpretation. This was approximately 28% more samples than was submitted for the same time period in 2007. All of these soil tests received suggestions on how to manage nutrients for plant production. The evaluation by the participants had the following results:

88% said they would probably have their soil tested.

100% said they would change the way they fertilize/use amendments

72% said they may change the way that they use organic products

72% said they have a better understanding of New Mexico soil

All respondents said that they learned at least one thing about NM soil

- Progress was made toward improving the soil test interpratation software. Certified Crop Advisers who use the software have found that they accurately account for nitrogen and have been able to lower soil test nitrate levels to acceptable levels when farmers follow the plan.

- Several CoCoRaHS trainings were given in various locations. The training sessions have allowed us to increase the rain gauge network by 15% and increase monitoring drought conditions through participation in an existing state-wide precipitation monitoring network.

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 ofparks, forests, and waters.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	0	0	0	0
2008	0	0	0	0

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan			
2008	0	54	54

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	Target	Actual
2008	0	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
5	Successful natural resource management policies implemented

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	Quantitative Target	Actual
2008	3	23

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
136	Conservation of Biological Diversity
135	Aquatic and Terrestrial Wildlife
605	Natural Resource and Environmental Economics
103	Management of Saline and Sodic Soils and Salinity
102	Soil, Plant, Water, Nutrient Relationships
403	Waste Disposal, Recycling, and Reuse
405	Drainage and Irrigation Systems and Facilities
124	Urban Forestry
121	Management of Range Resources
123	Management and Sustainability of Forest Resources

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	Quantitative Target	Actual
2008	5	54

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
103	Management of Saline and Sodic Soils and Salinity
135	Aquatic and Terrestrial Wildlife
605	Natural Resource and Environmental Economics
136	Conservation of Biological Diversity
121	Management of Range Resources
123	Management and Sustainability of Forest Resources
403	Waste Disposal, Recycling, and Reuse
102	Soil, Plant, Water, Nutrient Relationships
405	Drainage and Irrigation Systems and Facilities
124	Urban Forestry

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	Quantitative Target	Actual
2008	3	20

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
405	Drainage and Irrigation Systems and Facilities
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity
124	Urban Forestry
102	Soil, Plant, Water, Nutrient Relationships
605	Natural Resource and Environmental Economics
103	Management of Saline and Sodic Soils and Salinity
403	Waste Disposal, Recycling, and Reuse
123	Management and Sustainability of Forest Resources
121	Management of Range Resources

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	Quantitative Target	Actual
2008	50	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
135	Aquatic and Terrestrial Wildlife
103	Management of Saline and Sodic Soils and Salinity
403	Waste Disposal, Recycling, and Reuse
121	Management of Range Resources
136	Conservation of Biological Diversity
124	Urban Forestry
405	Drainage and Irrigation Systems and Facilities
123	Management and Sustainability of Forest Resources
102	Soil, Plant, Water, Nutrient Relationships
605	Natural Resource and Environmental Economics

Outcome #5

1. Outcome Measures

Successful natural resource management policies implemented

2. Associated Institution Types

•1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	0	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
135	Aquatic and Terrestrial Wildlife
405	Drainage and Irrigation Systems and Facilities
124	Urban Forestry
403	Waste Disposal, Recycling, and Reuse
136	Conservation of Biological Diversity
605	Natural Resource and Environmental Economics
121	Management of Range Resources
103	Management of Saline and Sodic Soils and Salinity
123	Management and Sustainability of Forest Resources

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

New Mexico continues in a serious drought, which affects the amount of water available to farmers. Water availability also exacerbates tensions between industry, agriculture, urban and domestic users. Until all water rights have been adjudicated, users remain in a "use or lose" situation regarding their water amounts.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Retrospective (post program)
- Before-After (before and after program)
- During (during program)
- Time series (multiple points before and after program)
- Case Study
- Comparisons between program participants (individuals,group,organizations) and non-participants
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- Comparison between locales where the program operates and sites without program intervention

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}