

2010 University of Nevada Research Plan of Work

Status: Accepted
Date Accepted: 05/15/09

I. Plan Overview

1. Brief Summary about Plan Of Work

The research programs of the NAES are integral to the College of Agriculture, Biotechnology and Natural Resources and are associated with the College of Human and Community Sciences, and the School of Medicine. Central to the mission is the protection, utilization and management of soil water, air, plant and animal resources, the economic vitality of the agriculture industry, and the quality of the environment. Of equal importance is the utilization of food in health promoting human diets and the social and economic well being of individuals and families. Research is conducted in the laboratories of the Max C. Fleischmann College of Agriculture, Knudsen Resource Center, Howard Medical Sciences, Bureau of Mines building, and the Sarah Fleischmann College of Human and Community Sciences. Six field laboratory sites are also utilized for research, including: Main Station Field Laboratory, which houses the large animal surgical facility and laboratory and the meats laboratory; Valley Road Field Laboratory, which houses the new state of the art NAES Greenhouse Complex and algae ponds; Newlands Research and Extension Center; Gund Ranch Rangeland Research Center; S Bar S Ranch, and the Jay Dow Sr. Wetlands Research Laboratory.

Estimated Number of Professional FTEs/SYs total in the State.

Year	Extension		Research	
	1862	1890	1862	1890
2010	0.0	0.0	26.0	0.0
2011	0.0	0.0	27.5	0.0
2012	0.0	0.0	28.0	0.0
2013	0.0	0.0	28.5	0.0
2014	0.0	0.0	30.0	0.0

II. Merit Review Process

1. The Merit Review Process that will be Employed during the 5-Year POW Cycle

- Expert Peer Review

2. Brief Explanation

Scientific peer review drives the initial selection of research projects that comprise the NAES research portfolio. NAES solicits applications from CABNR/NAES scientists in a general call for proposals that identifies the priority areas. Faculty submit the proposals through an NAES web based application process and the individual contributing departments are responsible for obtaining scientific peer review. We have initiated a web based peer review process for department peer review and Experiment Station administrative use for evaluating the proposed research for the Nevada Agricultural Experiment Station. The department will submit their ranked evaluation of the research proposals for that respective department, and the Director, in consultation with the Associate Director, will approve the research projects based on the departmental recommendations, peer review rankings and comments and stakeholder input.

III. Evaluation of Multis & Joint Activities

1. How will the planned programs address the critical issues of strategic importance, including those identified by the stakeholders?

The RFP (Request for Proposal) solicitation sent to faculty and listed on our website identifies the research priorities as identified by NAES strategic planning which includes stakeholder input. The individual projects are approved based on the project's contribution to critical issues of importance to Nevada and to the educational programs of UNR.

2. How will the planned programs address the needs of under-served and under-represented populations of the State(s)?

Underserved and under-represented populations interests are included in the Nevada Agricultural Experiment Station and College of Agriculture, Biotechnology and Natural Resources research priorities that were established by a college and university wide strategic planning process. The University of Nevada is an equal opportunity university and aggressively pursues recruiting underserved students. In the past 10 years, the number of minority students attending UNR has doubled.

3. How will the planned programs describe the expected outcomes and impacts?

On an annual basis, selected research projects are identified to prepare impact statements for submission into the CSREES annual report and for consideration for University and College publications. In addition, every year each NAES funded research project is required to submit an annual progress report to CRIS an AD421 which features outcomes and impacts. These annual reports are reviewed by an NAES administrative team and are evaluated for outcomes and impact. On multi-year projects, continued funding requires good progress towards accomplishing the research goals and providing impact.

4. How will the planned programs result in improved program effectiveness and/or efficiency?

The web based NAES priority grant submission and peer review process is designed to improve faculty efficiency in soliciting research funding from NAES. NAES strategic planning has identified priority research areas that are stakeholder driven and designed to enhance our stakeholders effectiveness. The effectiveness and efficiency of our programs is rated according to stakeholder feedback.

IV. Stakeholder Input

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

- Targeted invitation to non-traditional stakeholder individuals
- Use of media to announce public meetings and listening sessions
- Targeted invitation to non-traditional stakeholder groups
- Targeted invitation to selected individuals from general public
- Targeted invitation to traditional stakeholder individuals
- Targeted invitation to traditional stakeholder groups
- Other (Conduct Field Lab Days at our Field Stations)

Brief explanation.

We have and will continue to conduct tours throughout the state for the purpose of obtaining stakeholder input. During these tours we invite participants to town hall meetings through general press coverage in the local newspapers, and we invite stakeholder groups and individuals through personal contact, i.e., email, telephone, etc., to attend. We hold an annual "Field Lab Day" at our Main Station Field Laboratory and the Gund Range Research Station where there is an excellent dialog between stakeholders and NAES faculty and administrators.

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

1. Method to identify individuals and groups

- Other (Informal discussions with key stakeholders)
- Use Advisory Committees
- Needs Assessments
- Open Listening Sessions

Brief explanation.

We currently have a broadly based CABNR/NAES advisory committee that meets and provides advice 1-3 times per year. In addition, we have an associate dean for outreach and his office schedules and coordinates town hall meetings throughout the state with the purpose of obtaining direct input to the NAES research portfolio. The primary responsibility of the associate dean for outreach is to connect the CABNR/NAES teaching and research programs to the citizens of Nevada. Our partnership with Nevada Cooperative Extension provides assistance and access to stakeholders. Informal discussions with key stakeholders provides important input into our programs.

2(B). A brief statement of the process that will be 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 specifically with non-traditional groups
- Meeting with traditional Stakeholder groups
- Meeting with traditional Stakeholder individuals
- Other (Conduct Field Lab Day for stakeholders)
- Meeting with the general public (open meeting advertised to all)

Brief explanation

Stakeholders include all federal, state and county agencies and non-governmental organizations that are involved in agricultural production and environmental stewardship. Individual stakeholders are identified through personal contact with producers, town hall meetings, attendees at field lab days, and connections with extension and college outreach personnel. Input is received verbally or written.

3. A statement of how the input will be considered

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

Brief explanation.

The stakeholder input is relied upon to establish the research portfolio for NAES, and that includes identification of priority areas, identifying important new issues and the actual approval and funding of new and continuing projects.

V. Planned Program Table of Content

S. NO.	PROGRAM NAME
1	Agricultural Production in a Semi-Arid Environment
2	Economic Development with Emphasis in Rural Areas
3	Natural Resource Management and Environmental Sciences in the Great Basin and Sierran Ecosystems
4	Nutrition and Health

V(A). Planned Program (Summary)

Program #1

1. Name of the Planned Program

Agricultural Production in a Semi-Arid Environment

2. Brief summary about Planned Program

Our Plan of Work (POW) goals are to increase the overall quality and health of Nevada livestock through research and outreach, to understand the biology of plants through basic research, develop potential alternative crops, and to evaluate and promote improved marketing of Nevada products.

NAES research programs are continuing to focus on developing alternative crops that require less water including evaluating the potential to establish wine grape and native seed industries in Nevada. Future research on alternative crops will be directed at developing sources for biomaterial and bio-fuel production in Nevada. In addition, research continues on abiotic stress in plants and the genetic basis for resistance to stress. NAES scientists are using genomic analysis to select for production traits in livestock that will be optimized for the Nevada Arid Rangelands and improving the health of livestock in increased production. Research on our field laboratories is directed to improved livestock/range management, the use of livestock to control noxious weeds and decrease threats of fire, improved forage production and the development of livestock models for human diseases.

3. Program existence : Mature (More than five years)

4. Program duration : Medium Term (One to five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
121	Management of Range Resources			4%	
201	Plant Genome, Genetics, and Genetic Mechanisms			10%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants			15%	
206	Basic Plant Biology			10%	
301	Reproductive Performance of Animals			5%	
303	Genetic Improvement of Animals			15%	
304	Animal Genome			5%	
305	Animal Physiological Processes			2%	
307	Animal Production Management Systems			5%	
308	Improved Animal Products (Before Harvest)			5%	
311	Animal Diseases			5%	
312	External Parasites and Pests of Animals			5%	
315	Animal Welfare, Well-Being and Protection			2%	
511	New and Improved Non-Food Products and Processes			10%	
601	Economics of Agricultural Production and Farm Management			2%	

	Total			100%	
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V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Nevada’s landscape is largely arid to semi-arid desert rangelands, with croplands adjacent to the limited number of rivers and streams. The state includes over 70 million acres of land, approximately 87% public land and 13% privately owned. Of the 13% in private farms and ranches, 87% is considered rangeland, 8% cropland, and 5% woodland and other uses. Over 90% of the land in Nevada is considered rangeland, with approximately 80% available for livestock grazing at certain times of the year.

Livestock, particularly cow-calf operations are the primary agricultural enterprises in Nevada. For the past several years, the cattle producers have experienced a fluctuation of prices. To support ranching as a viable business enterprise in Nevada, NAES has focused its attention on research designed to help producers market as high quality and healthy animals as possible. The foundation of all of these efforts is a three tiered marketing strategy whereby producers separate their cattle and strategically time their marketing. In an effort to meet the increasingly pressing education need of alternative marketing strategies, the principles of the University of Nebraska’s agriculture marketing and risk management course have also been adopted. Approximately 20% of most ranches annual income is realized in cull cow sales. In January, 1997, USDA implemented rule changes which made "B" maturity cattle ineligible for Choice grading. These rule changes reduce the value of culled cows by as much as \$150 per carcass. In an effort to minimize this loss, UNCE developed a marketing alternative education program.

The alternative marketing strategies identified above are successful only if the animals arrive at the feed lot or other grazing areas in a healthy condition. Thus preconditioning management, enhancing the immune system, and overall stress reduction, is a major focus of all research and educational programming for livestock producers.

The 8% private land considered cropland includes 66% as harvested crops, 26% as pasture, and 8% as idle acres or other uses. Specific crops harvested include 235,000 acres of irrigated alfalfa for hay, 270,000 acres meadow and other hay production, 17,000 acres wheat and barley, 10,000 acres alfalfa for seed production, 8,000 acres for potatoes, and 5,000 acres in garlic, onions and other crops. These figures show that 92% of the cropland produce hay for livestock.

Priorities include increasing overall quality and health of livestock production in Nevada and the west through research and education programming. To develop an understanding of plant biology through basic research and evaluate potential new plant industries for Nevada. To conduct research and education programming directed at marketing Nevada generated products.

2. Scope of the Program

- Multistate Integrated Research and Extension
- In-State Research
- Multistate Research
- Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Internal linkages include the Nevada Cattlemen’s Association, local veterinarians, Nevada Farm Bureau and other agricultural organizations. Multi-state research and integrated extension programs will be administered through the NAES and CABNR outreach offices in collaboration with UNCE.

Multi-state research programs will be governed through the Western Association of Agricultural Experiment Station Directors (WAAESD), involving peer and program review and subsequent decisions by the Regional Coordination and Implementation Committee (RCIC), a sub-committee of WAAESD.

Coordination of multi-state extension, research and integrated research and extension activities will be governed by the Western Extension Directors (WED) and WAAESD. A peer and program review committee with broad based multi-functional representation entitled The Regional Coordination and Implementation Committee (RCIC) will conduct the initial review and make recommendations to WED and WAAESD.

2. Ultimate goal(s) of this Program

There are three primary outcomes expected of the research aspect of this goal. The first is to increase the overall quality and health of the livestock produced through research and education. Secondly, it is to understand and improve the quality of plants through basic research. Additionally, marketing will continue to be a major focus of research and education. All educational programming and research is multi-faceted and will be detailed in annual reports.

Much of the work to achieve the goal identified above is in the basic research program of the NAES.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2010	0.0	0.0	10.5	0.0
2011	0.0	0.0	10.5	0.0
2012	0.0	0.0	11.0	0.0
2013	0.0	0.0	11.0	0.0
2014	0.0	0.0	11.5	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Conduct research to enhance agricultural production in Nevada, publish the research findings in peer reviewed journals, educate our stakeholders through outreach by conducting rural tours and participating in town hall meetings, holding field lab open houses to demonstrate our research findings, submit news releases on new findings, publish an online semi-annual research and education successes as news from the College of Agriculture, Biotechnology and Natural Resources and the Nevada Agricultural Experiment Station, mail a quarterly postcard entitled "Research with Impact" featuring a specific research accomplishment of the Nevada Agricultural Experiment Station(this outreach piece received an award from the Association for Communications Excellence), include publications on the CABNR/NAES web page, report impacts through the CABNR/NAES web page, and share results with extension faculty for inclusion in the extension outreach programs.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> ● Other 2 (field lab open houses) ● One-on-One Intervention ● Education Class ● Other 1 (town hall meeting) 	<ul style="list-style-type: none"> ● Public Service Announcement ● Newsletters ● Web sites ● TV Media Programs

3. Description of targeted audience

The target audience for research and educational programming is agriculture and livestock producers, veterinarians, agency personnel and local governmental organizations as well as students taking classes or participating in research activities.

V(G). Planned Program (Outputs)

1. Standard output measures

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	1750	4000000	400	500000
2011	2500	4000000	500	500000
2012	2500	4000000	500	500000
2013	2500	4000000	500	500000
2014	2500	4000000	500	500000

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

Expected Patent Applications

2010 :0 2011 :1 2012 :0 2013 :0 2014 :0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	65	0	65
2011	70	0	70
2012	70	0	70
2013	75	0	75
2014	75	0	75

V(H). State Defined Outputs

1. Output Target

- Peer reviewed journal articles, publications in commodity group publications, presentations at scientific meetings, presentations at stakeholder, Native American and agency meetings.

2010 65 2011 70 2012 :70 2013 :75 2014 :75

V(I). State Defined Outcome

O. No	Outcome Name
1	peer reviewed journal articles, publications, in trade journals, presentations at scientific meetings, stakeholder, Native American and agency presentations

Outcome #1**1. Outcome Target**

peer reviewed journal articles, publications, in trade journals, presentations at scientific meetings, stakeholder, Native American and agency presentations

2. Outcome Type : Change in Knowledge Outcome Measure

2010 :65

2011 : 70

2012 : 70

2013 :75

2014 :75

3. Associated Institute Type(s)

- 1862 Research

4. Associated Knowledge Area(s)

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 301 - Reproductive Performance of Animals
- 303 - Genetic Improvement of Animals
- 308 - Improved Animal Products (Before Harvest)
- 311 - Animal Diseases
- 601 - Economics of Agricultural Production and Farm Management

V(J). Planned Program (External Factors)**1. External Factors which may affect Outcomes**

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

Description

Over the past five years, we have endured catastrophic fires at one of our remote field labs, and we had a flood in Reno that flooded our Main Station Field Lab in Reno, both of which directly impacted our research productivity, financial status, and available resources. A decrease in appropriations could directly impact our ability to address all of our research priorities as would public policy changes.

V(K). Planned Program (Evaluation Studies and Data Collection)**1. Evaluation Studies Planned**

- Before-After (before and after program)
- During (during program)

Description

The research programs of NAES are evaluated through peer and stakeholder review, and only those projects that pass both reviews are funded. In addition, annual evaluations are conducted on each funded project and continuation of a multi-year project is contingent on appropriate accomplishments the previous year. Stakeholder input is obtained through involving stakeholders on review panels, presenting accomplishments at town hall meetings, field lab open houses, meetings with agency personnel and by personal contact with stakeholders.

2. Data Collection Methods

- Unstructured
- Portfolio Reviews
- Sampling
- Journals
- Observation

Description

The impact of various research projects of NAES are determined annually for submission into the NAES web page database. Collecting impacts are the responsibility of the project PI's and developed in coordination with the office of the Associate Director of NAES. They estimate economic, environmental, social impacts and the impact of the research results on the scientific discipline is monitored by evaluating publication both peer reviewed and others, and a review of the publications portfolio generated for that specific project. Stakeholder input is obtained through town hall meetings, field lab open houses, stakeholder review panels, obtaining input from extension and individual contacts.

V(A). Planned Program (Summary)

Program #2

1. Name of the Planned Program

Economic Development with Emphasis in Rural Areas

2. Brief summary about Planned Program

Nevada scientists will continue to conduct economic analysis of various rural labor and public policy issues, research improving childcare and youth development in Nevada. Research will continue in economic development through the economic development center and analysis and development of rural healthcare.

3. Program existence : Mature (More than five years)

4. Program duration : Medium Term (One to five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
307	Animal Production Management Systems			15%	
601	Economics of Agricultural Production and Farm Management			15%	
602	Business Management, Finance, and Taxation			15%	
605	Natural Resource and Environmental Economics			15%	
608	Community Resource Planning and Development			30%	
803	Sociological and Technological Change Affecting Individuals, Families and Communities			5%	
805	Community Institutions, Health, and Social Services			5%	
	Total			100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

In 2000, the population of Nevada was 1,998,257 persons, representing a 66 percent increase from 1990. From April 1, 2000 to July 1, 2006 Nevada's population grew another 24.9% compare to the national average of 6.4%. The states' growth is the result of international migration with nearly a third of new residents coming from California. The statewide population density

is 18.2 persons per square mile (the national average is 79.6 persons per square mile). The majority of the population resides in Clark County (69%) and Washoe County (17%) and these figures are expected to increase. The remainder of the state is sparsely populated with 11 counties considered frontier (less than 6 person/square mile), and four counties considered rural (more than 6 persons but less than 10/square mile). With nearly 90 percent of the states' population located in two metropolitan areas, Nevada is the tenth most urbanized state in the country.

The economic environment in which the Nevada economy operates will remain challenging in the near term as Nevada state government has experienced a \$1 billion projected revenue shortfall due to the economic down turn in 2008-2009 budget years. Additional revenue shortfalls of 34% or more are expected in budget years 2010-2011. These shortfalls will translate into dramatic reductions in government services and programs throughout the state, both in the short and long terms.

Nationally, US housing is down 45% and car sales down 37.6% from a year ago levels. Big ticket sales are down. Essential things, such as gasoline, are also down. These declines occurred even after gasoline prices returned to previous levels.

We may still see future declines, but the economy may start to bottom out if national spending returns with increased fiscal stimulus, monetary and financial reforms and a return to healthier credit markets.

Economic impact studies and subsequent education and community leadership efforts will continue to be undertaken to help Nevada communities cope with their specific economic situations.

According to the 2000 U.S. Census Bureau, 11.1 percent of Nevadans live in poverty. The fastest growing segment of the population living in poverty is single women with dependent children. According to the 2000 U.S. Census Bureau, 34.7% of Nevadans were less than 20 years of age and 11.1% of Nevadans were older than 65 years of age.

Public education remains an important issue due to crowded classrooms and high dropout rates. The Nevada Literacy Coalition estimates that over a quarter of a million Nevada adults and youth lack adequate literacy skills. The coalition defines literacy as a person's possession of the essential skills and knowledge in speaking, reading, writing English and performing arithmetic operations, at levels which allow competent functioning. Among at-risk students, reading skills have been shown to be the best predictor of later successful adult adjustment. Nevada employers identify a lack of basic literacy skills as impacting the productivity of their companies.

Teens that drop out of high school face enormous odds for achieving financial success in life. Over their lifetime, high school dropouts will earn only about 75% as much as high school graduates, and less than half of what college graduates are likely to make during their life.

2. Scope of the Program

- Integrated Research and Extension
- In-State Research
- Multistate Research

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Because all of the educational efforts are both collaborative and community-based, internal and external linkages are extensive. Economic development efforts always include local formal and informal decision-makers, local government, state government, and frequently federal agencies, such as the Small Business Development Center. Most children, youth and family efforts involve NCE and NAES faculty, local school districts, state agencies, juvenile justice system, parks and recreation departments, non-profit youth serving organizations and frequently local businesses.

Multi-state research programs will be governed through the Western Association of Agricultural Experiment Station Directors (WAAESD), involving peer and program review and subsequent recommendations by the Research Implementation Committee (RIC), a sub-committee of WAAESD.

Coordination of multi-state extension, research and integrated research and extension activities will be governed by the Western Extension Directors (WED) and WAAESD. A peer and program review committee with broad based multi-functional representation entitled The Regional Coordination and Implementation Committee (RCIC) will conduct the initial review and make recommendations to WED and WAAESD.

2. Ultimate goal(s) of this Program

Strategies and potential action and approaches to achieve the goal include:

- Research and subsequent education for decision-makers on the changing economic dynamics and their implications for their communities.
- Leadership development opportunities for community decision-makers.
- The creation, implementation and evaluation of community decision-making models.

- Education and evaluation research targeting the most vulnerable youth to increase their capacity related to life skills.
- Research and education on literacy.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2010	0.0	0.0	6.0	0.0
2011	0.0	0.0	6.5	0.0
2012	0.0	0.0	6.5	0.0
2013	0.0	0.0	6.5	0.0
2014	0.0	0.0	7.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Nevada scientists will continue to conduct economic analysis of various rural labor and public policy issues, research improving childcare and diverse needs of custodial grandparents in Nevada. Research will continue in economic development through the economic development center and analysis and development of rural healthcare.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> ● One-on-One Intervention ● Education Class ● Other 2 (field lab open houses) ● Other 1 (town hall meetings) 	<ul style="list-style-type: none"> ● Web sites ● Newsletters ● TV Media Programs ● Public Service Announcement

3. Description of targeted audience

Educators, community leaders, decision-makers, parents, native american organizations and health care organizations.

V(G). Planned Program (Outputs)

1. Standard output measures

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	1750	4000000	400	500000
2011	2500	4000000	500	500000
2012	2750	4000000	550	500000
2013	2750	4000000	550	500000
2014	2750	4000000	550	500000

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

Expected Patent Applications

2010 :0 2011 :0 2012 :0 2013 :0 2014 :0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	26	0	26
2011	28	0	28
2012	30	0	30
2013	30	0	30
2014	30	0	30

V(H). State Defined Outputs

1. Output Target

- Peer reviewed scientific journal articles, publications on economic development , presentations at scientific meetings, presentations at stakeholder, Native American, health care organizations, agency and local government meetings.

2010 26 2011 28 2012 :30 2013 30 2014 30

V(I). State Defined Outcome

O. No	Outcome Name
1	Peer reviewed scientific journal articles, publications on economic development, presentations at scientific meetings, presentations at stakeholder, Native American, health care, agency and local government meetings,

Outcome #1**1. Outcome Target**

Peer reviewed scientific journal articles, publications on economic development, presentations at scientific meetings, presentations at stakeholder, Native American, health care, agency and local government meetings,

2. Outcome Type : Change in Action Outcome Measure

2010 :26

2011 :28

2012 :30

2013 :30

2014 :30

3. Associated Institute Type(s)

- 1862 Research

4. Associated Knowledge Area(s)

- 307 - Animal Production Management Systems
- 601 - Economics of Agricultural Production and Farm Management
- 605 - Natural Resource and Environmental Economics

V(J). Planned Program (External Factors)**1. External Factors which may affect Outcomes**

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

Description

Over the past five years, we have endured catastrophic fires at one of our remote field labs, and we had a flood in Reno that flooded our Main Station Field Lab in Reno, both of which directly effected our research productivity, financial status, and available resources. A decrease in appropriations could directly impact our ability to address all of our research priorities as would public policy changes.

V(K). Planned Program (Evaluation Studies and Data Collection)**1. Evaluation Studies Planned**

- Before-After (before and after program)
- During (during program)

Description

The research programs of NAES are evaluated through peer and stakeholder review, and only those projects that pass both reviews are funded. In addition, annual evaluations are conducted on each funded project and continuation of a multi-year project is contingent on progress in previous years.

Stakeholder input is obtained through town hall meetings, field lab open houses, meetings with agency personnel, local governmental officials and by personal contact with stakeholders.

2. Data Collection Methods

- Sampling
- Observation
- Unstructured
- Portfolio Reviews
- Journals

Description

The impact of various research projects of NAES are determined annually for preparation of NAES publications. Collecting impacts are the responsibility of the project PI's and developed in coordination with the office of the Associate Director of NAES. They estimate economic, environmental, social impacts and the impact of the research results on the scientific discipline is

monitored by evaluating publication both peer reviewed and others, and a review of the publication portfolio generated for that specific project. Impacts are reported on the NAES web page.

V(A). Planned Program (Summary)

Program #3

1. Name of the Planned Program

Natural Resource Management and Environmental Sciences in the Great Basin and Sierran Ecosystems

2. Brief summary about Planned Program

To address these critical issues, NAES research is focused on evaluating long term vegetation changes in the Great Basin, measuring heavy metal contamination in Nevada's waterways, pheromone protection of forests, evaluating livestock grazing for noxious weed management, compatibility of wildlife and livestock grazing, evaluating post wildland fire restoration and grazing systems, evaluating forest wildfires and ecosystems recovery, studying the role of soil chemistry in natural production of perchlorate and soil transport properties using NAES field labs to conserve water and improve water quality and evaluating sage grouse and pygmy rabbit habitats and developing a conservation plan compatible with Nevada agriculture.

3. Program existence : Mature (More than five years)

4. Program duration : Medium Term (One to five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
111	Conservation and Efficient Use of Water			5%	
112	Watershed Protection and Management			15%	
121	Management of Range Resources			20%	
123	Management and Sustainability of Forest Resources			10%	
131	Alternative Uses of Land			3%	
133	Pollution Prevention and Mitigation			2%	
134	Outdoor Recreation			3%	
135	Aquatic and Terrestrial Wildlife			15%	
136	Conservation of Biological Diversity			2%	
206	Basic Plant Biology			5%	
213	Weeds Affecting Plants			2%	
301	Reproductive Performance of Animals			2%	
302	Nutrient Utilization in Animals			2%	
304	Animal Genome			2%	
305	Animal Physiological Processes			2%	

306	Environmental Stress in Animals			2%	
307	Animal Production Management Systems			1%	
311	Animal Diseases			5%	
605	Natural Resource and Environmental Economics			2%	
Total				100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Nevada's landscape is largely arid to semi-arid desert rangelands, with croplands adjacent to the limited number of rivers and streams. The state includes over 70 million acres of land, approximately 87% public land and 13% privately owned. The two primary government land management agencies, BLM and USFS, are responsible for management of approximately 76% of Nevada's land. Of the 13% in private farms and ranches, 87% is considered rangeland, 8% cropland, and 5% woodland and other uses. Over 90% of the land in Nevada is considered rangeland, with approximately 80% available for livestock grazing at certain times of the year.

Nevada has a population of approximately 1.3 million. Over 94% of the people live in cities larger than 25,000 population. Approximately 5,500 people, or less than 1% live on Nevada's 2,700 farms and ranches. Nevada's population, therefore is simultaneously one of the most urbanized of all states and is also considered frontier, with less than 6 persons/square mile. Further, less than 25% of the state's citizens are native born.

Decisions about the utilization of natural resources, particularly public lands and water, have major impacts on ecosystem sustainability as well as the socioeconomic wellbeing of current and future generations. Yet views of what constitute appropriate land and natural resource use are increasingly polarized. Federal initiatives for natural resource management often shift with the latest election.

2. Scope of the Program

- Multistate Integrated Research and Extension
- In-State Research
- Integrated Research and Extension
- Multistate Research

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

An extensive review of scientific work show that the Great Basin rangeland resource has changed significantly over the past 150 years. The change has resulted in a reduction in plant species diversity and a movement toward extensive monocultures of pinion juniper and larger scrub species rather than mosaics of grassland savannas and shrubs. In addition, alien plant species that can form extensive monoculture plant communities are becoming ever-larger components of the Great Basin environment. The effect of this trend is a reduction of forages for a diverse population of wildlife and domestic livestock. In turn, this change is reducing the economic sustainability of the Great Basin livestock industry and the continued sustainability of recreational activities developed around wildlife.

The Nevada Agricultural Experiment Station will continue to coordinate the activities of the Federal and State agencies to address the highest priority issues and concerns relating to the management and protection of our public lands and natural resources, and the rural families and communities most dependent on them. The Initiative will be a coordinated mix of research, education and action programs. The leadership of the agencies will establish program priorities and commit resources. Other public and private organizations with expertise or a stake in the Initiative programs have been invited to participate in planning and implementation.

2. Ultimate goal(s) of this Program

Our Vision: Healthy rangelands that meet the needs and values of multiple users and are managed to meet the needs of future generations. A vital part of our vision is thriving rural communities and families that are partners in the stewardship of our rangelands.

Goals: Develop research and education programs that will provide the science-based knowledge and skills required to manage for healthy and productive rangelands, provide abundant renewable natural resources, and support the economic and value-based sustainability of our rural communities and families and our urban stakeholders.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2010	0.0	0.0	7.0	0.0
2011	0.0	0.0	7.5	0.0
2012	0.0	0.0	7.5	0.0
2013	0.0	0.0	8.0	0.0
2014	0.0	0.0	8.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

To address these critical issues, NAES research will be conducted on evaluating long term vegetation changes in the Great Basin, measuring heavy metal contamination in Nevada’s waterways, pheromone protection of forests, evaluating livestock grazing for noxious weed management, compatibility of wildlife and livestock grazing, evaluating post wildland fire restoration and grazing systems, evaluating forest wildfires and ecosystems recovery, studying the role of soil chemistry in natural production of perchlorate and soil transport properties using NAES field labs to conserve water and improve water quality and evaluating sage grouse and pygmy rabbit habitats and developing a conservation plan compatible with Nevada agriculture.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> ● Education Class ● Other 2 (field lab open houses) ● Other 1 (town hall meetings) ● One-on-One Intervention 	<ul style="list-style-type: none"> ● Public Service Announcement ● Web sites ● Newsletters ● TV Media Programs

3. Description of targeted audience

The target audiences for research and educational programming are livestock producers, veterinarians, environmentalists, local governments, native american groups and agency personnel.

V(G). Planned Program (Outputs)

1. Standard output measures

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	1750	4000000	400	500000
2011	2500	4000000	500	500000
2012	2750	4000000	550	500000
2013	2750	4000000	550	500000
2014	3000	4000000	550	500000

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

Expected Patent Applications

2010 :1 2011 :0 2012 :0 2013 :0 2014 :0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	28	0	28
2011	30	0	30
2012	32	0	32
2013	35	0	35
2014	35	0	35

V(H). State Defined Outputs

1. Output Target

- Peer reviewed scientific publications, publications in natural resource and environmental organization publications, presentations at scientific meetings, presentations at stakeholder, Native American and agency meetings.

2010 28 2011 30 2012 :32 2013 35 2014 35

V(I). State Defined Outcome

O. No	Outcome Name
1	Peer reviewed journal articles, presentations at scientific meetings, articles in natural resource and environmental science magazines, presentations at stakeholder, Native American and agency meetings.

Outcome #1**1. Outcome Target**

Peer reviewed journal articles, presentations at scientific meetings, articles in natural resource and environmental science magazines, presentations at stakeholder, Native American and agency meetings.

2. Outcome Type : Change in Action Outcome Measure

2010 28

2011 : 30

2012 : 32

2013 35

2014 :35

3. Associated Institute Type(s)

- 1862 Research

4. Associated Knowledge Area(s)

- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 121 - Management of Range Resources
- 131 - Alternative Uses of Land
- 133 - Pollution Prevention and Mitigation
- 311 - Animal Diseases

V(J). Planned Program (External Factors)**1. External Factors which may affect Outcomes**

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

Description

Over the past five years, we have endured catastrophic fires at one of our remote field labs, and we had a flood in Reno that flooded our Main Station Field Lab in Reno, both of which directly our research productivity, financial status, and available resources. A decrease in appropriations could directly impact our ability to address all of our research priorities as would public policy changes.

V(K). Planned Program (Evaluation Studies and Data Collection)**1. Evaluation Studies Planned**

- Before-After (before and after program)
- During (during program)

Description

The research programs of NAES are evaluated through peer and stakeholder review, and only those projects that pass both reviews are funded. In addition, annual evaluations are conducted on each funded project and continuation of a multi-year project is contingent on appropriate accomplishments the previous year. Stakeholder input is obtained through involving stakeholders on review panels, presenting accomplishments at town hall meetings, field lab open houses, meetings with agency personnel and by personal contact with stakeholders.

2. Data Collection Methods

- Unstructured
- Sampling
- Journals
- Observation
- Portfolio Reviews

Description

The impact of various research projects of NAES are determined annually for submission into the NAES web page database. Collecting impacts are the responsibility of the project PI's and developed in coordination with the office of the Associate Director of NAES. They estimate economic, environmental, social impacts and the impact of the research results on the scientific discipline is monitored by evaluating publication both peer reviewed and others, and a review of the publication portfolio generated for that specific project. Stakeholder input is obtained through town hall meetings, field lab open houses, stakeholder review panels, obtaining input from extension and individual contacts.

V(A). Planned Program (Summary)

Program #4

1. Name of the Planned Program

Nutrition and Health

2. Brief summary about Planned Program

Our POW goal is to conduct research to better understand healthy life style habits, and educational programs that focuses on healthy life style habits.

NAES research is focusing on stem cell transplantation to treat human disease, nutritional intervention in the treatment of cancer, nutritional protection from side stream cigarette smoke, evaluating the beneficial effect of functional foods, studying school education programs on children’s nutrition, and studying youth development.

3. Program existence : Mature (More then five years)

4. Program duration : Medium Term (One to five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : No

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%	
133	Pollution Prevention and Mitigation			20%	
134	Outdoor Recreation			5%	
703	Nutrition Education and Behavior			10%	
724	Healthy Lifestyle			5%	
802	Human Development and Family Well-Being			40%	
803	Sociological and Technological Change Affecting Individuals, Families and Communities			5%	
901	Program and Project Design, and Statistics			5%	
	Total			100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

According to the Nevada Hospital Association, over 60 percent of hospital costs in Nevada are directly attributable to lifestyle or behavioral choices such as smoking, chronic drinking, poor diet, poor weight management, and lack of exercise. The leading cause of death in Nevada is heart disease, followed by cancer, respiratory disease, stroke, and motor vehicle accidents. Further, deaths from liver disease, lung cancer, and pulmonary disease are among the highest in the country. This is a reflection of the higher number of smokers and the high rate of chronic drinking.

The Behavioral Risk Factor Survey (BRFS) provides estimates of high-risk behaviors among the adult population in the U.S. The Center for Disease Control has coordinated the survey since 1982. Since 1991, Nevada has participated in this survey. Obesity is associated with a number of chronic diseases including coronary heart disease, diabetes, and cancer. 20 to 25 percent of Nevadans are at risk for being overweight. Males, older adults and those with lower education levels are more likely to be overweight. Hypertension or high blood pressure affects 21 percent of Nevadans. Since obesity and hypertension are related, it is not surprising that the groups at higher risk are similar. Increasing age and lower education levels are positively related to high blood pressure.

Dietary characteristics, including dietary fat and fruit and vegetable intake were assessed also. Dietary fat was assessed using a series of questions regarding the frequency of eating certain types of high-fat foods. This information was then used to identify those at the highest risk with regard to total fat intake. Those with the highest intake, defined here as those who fell above the 75th percentile, include males, younger adults, and those with less education. Residents in the rural counties reported a slightly higher intake as well; 29 percent of rural respondents fall above the 75th percentile compared to 20 percent in Washoe County and 27 percent in Clark County. Further, it is estimated that 76 percent of Nevadans do not meet the National Cancer Institute recommendation of five servings of fruits and vegetables each day. Those with an income less than \$20,000 and young adults are least likely to meet this goal.

Ongoing programming to address lifestyle and behavioral choices have focused on prevention of heart disease and diabetes. The diabetes prevention program assists members of the minority population at risk for diabetes mellitus make appropriate lifestyle modifications to prevent or delay the onset of the disease and/or its complications through education and awareness. The faith community and physicians are used to reach populations at risk for heart disease.

Although most data is derived from adults, food habits are established early in life. Needs assessment data indicate that families with limited resources are at high risk for poor nutrition that may put them at immediate risk to the cognitive and physical development of their children, and long-term risk for chronic diseases such as heart disease, diabetes, and cancer. While many agencies/organizations provide nutrition education to this clientele, there is no statewide mechanism to facilitate programs for families with limited resources. Thus the Nevada Nutrition Network, including representatives from all Nevada agencies/organizations that provide nutrition education, was formed to develop a statewide Food Stamp Nutrition Education Plan to increase the consumption of low-fat, calcium-rich foods by school-age children, initially focusing on adolescent girls (12-15 years) since they appear to be at greater risk. Focus groups have helped shape the educational program, which is currently being designed for implementation and evaluation.

Nevada's senior population has increased nearly twice as fast as the state's population over the past ten years, with 61 percent of senior citizens residing in Clark County. Health concerns largely relate to the high cost of health care providers, medication and health insurance. Other health concerns include availability and quality of health care, including the availability of program and services which are prevention oriented.

It is estimated that 20 percent of males, 17 percent of females, and 25 percent of children in Nevada are medically uninsured. These children are less likely to receive routine or preventive medical care. Further, when a family member is ill, an inability to pay often prevents them from seeking care until the illness has become very serious. Nine out of every ten pediatricians surveyed indicated that children from low-income families have difficulty accessing primary health care, citing inability to pay as the most important reason. To improve health care, almost half were in favor of school-based clinics.

Early and high quality prenatal care is an effective means of improving pregnancy outcome. It is estimated that for every dollar spent on prenatal care, ten dollars are saved on infant care. In Nevada, unfortunately, only 71 percent of pregnant women receive adequate prenatal care. According to the American Public Health Association, this is among the worst rates in the country (44th), although the proportion of women receiving care during their first trimester has increased from 24.7 percent in 1984 to 28 percent in 1990. Household income is believed to be the single most significant barrier to receiving early and effective prenatal care.

Low birth weight is defined as a birth weight of less than 2500 gm. Mothers most likely to have low-birth weight infants are also more likely to live in poverty, receive little or no prenatal care, have a low level of education, be unmarried, and be a member of a racial minority.

2. Scope of the Program

- Multistate Research
- In-State Research
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

One of the primary internal linkage is the Nevada Nutrition Network, which includes representatives from NCE, NAES, NV Bureau of Family Health Services, NV Dept of Education, Dairy Council of Utah/Nevada, NV Dept of Human Resources, Clark County School District, Washoe Health System, NV Dept of Human Resources, WIC, Inter-Tribal Council of Nevada, Inc., Clark County Health District, Community Food Bank of Clark County, and Sierra Health Services. This group has been formed to conduct nutrition education in middle schools. These same groups are included in other nutrition education programs.

Multi-state research programs will be governed through the Western Association of Agricultural Experiment Station Directors (WAAESD), involving peer and program review and subsequent recommendations by the Research Implementation Committee (RIC), a sub-committee of WAAESD.

Coordination of multi-state extension, research and integrated research and extension activities will be governed by the Western Extension Directors (WED) and WAAESD. A peer and program review committee with broad based multi-functional representation entitled The Regional Coordination and Implementation Committee (RCIC) will conduct the initial review and make recommendations to WED and WAAESD.

2. Ultimate goal(s) of this Program

Examples of strategies and potential action and approaches to achieve the goal:

- Research to better understand and education that focuses on establishing healthy lifestyle habits, including diet, exercise and prevention of smoking among the following groups: Biochemical and behavioral research to elucidate factors relating to chronic diseases, including but not limited to obesity, diabetes, heart disease, pulmonary disease and cancer, coupled with education to reduce the burden of the disease among populations displaying their greatest incidence. First-time parents gain an understanding of vital pre- and postnatal needs of mothers and their infants through behavior-focused education.

Elementary and middle school-aged children
Adolescents
Adults at worksite settings
Seniors

- Biochemical and behavioral research to elucidate factors relating to chronic diseases, including but not limited to obesity, diabetes, heart disease, pulmonary disease and cancer, coupled with education to reduce the burden of the disease among populations displaying their greatest incidence.

- First-time parents gain an understanding of vital pre- and postnatal needs of mothers and their infants through behavior-focused education.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2010	0.0	0.0	2.5	0.0
2011	0.0	0.0	3.0	0.0
2012	0.0	0.0	3.0	0.0
2013	0.0	0.0	3.5	0.0
2014	0.0	0.0	3.5	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Our POW goal is to conduct research to better understand healthy life style habits, and educational programs that focuses on healthy life style habits.

NAES research is focusing on stem cell transplantation to treat human disease, nutritional intervention in the treatment of cancer, nutritional protection from side stream cigarette smoke, evaluating the beneficial effect of functional foods, studying school education programs on children’s nutrition, and studying parameters that prevent obesity in high risk families.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> ● Other 1 (town hall meetings) ● Other 2 (field lab open houses) ● One-on-One Intervention ● Education Class 	<ul style="list-style-type: none"> ● Newsletters ● TV Media Programs ● Web sites ● Public Service Announcement

3. Description of targeted audience

The target audience for educational programming is consumers, health care personnel, agency personnel, local school boards, and nutrition support groups.

V(G). Planned Program (Outputs)

1. Standard output measures

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	1750	4000000	400	500000
2011	2500	4000000	500	500000
2012	2750	4000000	550	500000
2013	2750	4000000	550	500000
2014	2750	4000000	550	500000

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

Expected Patent Applications

2010 :0 2011 :1 2012 :0 2013 :0 2014 :0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2010	29	0	29
2011	29	0	29
2012	30	0	30
2013	30	0	30
2014	30	0	30

V(H). State Defined Outputs

1. Output Target

- Peer reviewed scientific publications, publications in health and nutrition organization publications, presentations at scientific meetings, presentations at stakeholder, agency, school board, Native American, and local governmental meetings.

2010 29 2011 29 2012 :30 2013 32 2014 32

V(I). State Defined Outcome

O. No	Outcome Name
1	Peer reviewed scientific publications, publications in health and nutrition organization publications, presentations at scientific meetings, presentations at stakeholder, nutrition and health, school board, local governmental and Federal and State agency meetings.

Outcome #1**1. Outcome Target**

Peer reviewed scientific publications, publications in health and nutrition organization publications, presentations at scientific meetings, presentations at stakeholder, nutrition and health, school board, local governmental and Federal and State agency meetings.

2. Outcome Type : Change in Action Outcome Measure

2010 :29

2011 : 29

2012 : 30

2013 :32

2014 :32

3. Associated Institute Type(s)

- 1862 Research

4. Associated Knowledge Area(s)

- 133 - Pollution Prevention and Mitigation
- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle
- 802 - Human Development and Family Well-Being
- 901 - Program and Project Design, and Statistics

V(J). Planned Program (External Factors)**1. External Factors which may affect Outcomes**

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

Description

Over the past 5 years, we have endured catastrophic fires at one of our remote field labs, and we had a flood in Reno that flooded our Main Station Field Lab in Reno, both of which directly our research productivity, financial status, and available resources. A decrease in appropriations could directly impact our ability to address all of our research priorities as would public policy changes.

V(K). Planned Program (Evaluation Studies and Data Collection)**1. Evaluation Studies Planned**

- Before-After (before and after program)
- During (during program)

Description

The research programs of NAES are evaluated through peer and stakeholder review, and only those projects that pass both reviews are funded. In addition, annual evaluations are conducted on each funded project and continuation of a multi-year project is contingent on appropriate accomplishments the previous years. Progress is monitored from annual reports and verbal presentations from the PI of each project.

Stakeholder input is obtained through town hall meetings, field lab open houses, meetings with agency personell , local school boards, local government personnel, health care organizations and by personal contact with stakeholders.

2. Data Collection Methods

- Journals
- Unstructured
- Sampling
- Portfolio Reviews
- Observation

Description

The impact of various research projects of NAES are determined annually for inclusion in NAES publications and reports. Collecting impacts are the responsibility of the project PI's and developed in coordination with the office of the Associate Director of NAES. They estimate economic, environmental, social impacts and the impact of the research results on the scientific discipline is monitored by evaluating publication both peer reviewed and others, and a review of the publication portfolio generated for that specific projec. In addition, impacts are included on the NAES web page.