# 2010 South Dakota State University Combined Research and Extension Plan of Work

**Status: Accepted**
**Date Accepted: 06/03/09**

## I. Plan Overview

### 1. Brief Summary about Plan Of Work

The South Dakota State University (SDSU) College of Agriculture and Biological Sciences (ABS) is comprised of the South Dakota Agricultural Experiment Station (AES), South Dakota Cooperative Extension Service (CES), and AgBio Academic Programs (AP). The SDSU College of Family and Consumer Sciences (FCS) is actively involved in programs conducted with AES and CES. This institution serves South Dakota and the Northern Great Plains, and through cooperative arrangements conducts programs that impact the nation and world.

This integrated Plan of Work is a statement of South Dakota's intended activities for the next five years, amended in 2007 to include FY 2012, as required by the Agriculture Research, Extension, and Education Reform Act of 1998 (AREERA). This plan incorporates national areas of emphasis established by the Cooperative State Research, Education and Extension Service (CSREES) of the U.S. Department of Agriculture with the integrated AES and CES Planned Programs at South Dakota State University.This plan will change as external factors evolve and stakeholder input identifies new needs and opportunities.

SDSU strives for a high degree of integration and cooperation among scientists, specialists and educators. This Plan of Work reflects an overview of eight planned programs. Implementation of each program will reflect a greater degree of integration than can be reflected in this brief summary. This Plan of Work reflects substantial stakeholder input from all segments of South Dakota.

The population of South Dakota is ranked 46th in the nation, with an estimated 775,933 people (2005 Census Estimate). One-third of the population is found in the two largest counties, and 44 percent of the population is found in the five most pupulated counties. The largest counties also have the most active growth in population, income and economic development. Minnehaha County alone has 20 percent of the state’s population. Lincoln County is ranked as the fifth fastest growing county in the nation. The remaining 60 counties have lower levels of population growth, and pervasive levels of poverty. Poverty is particularly high on the Native American reservations in the state.

Historically, between 12 and 16 percent of South Dakota’s population ranks below the poverty level, and in 2003 the number was estimated to be 12.3 percent. Fourteen percent of South Dakota children live in poverty. The U.S. Department of Agriculture's Economic Research Service reports that in 2003, the average annual income in South Dakota was $28,856. Statewide unemployment is consistently in the three to four percent range, and was at 3.5 percent in 2004. This indicates that most citizens are employed, but do not have high paying jobs. One result is that most families have two wage earners, in some cases each wage earner holds more than one job. A total of 60,000 people in South Dakota do not have health insurance; the largest percentage is in the 18-35 age group.

These factors set the stage for out-migration from South Dakota to other places that are perceived to have job opportunities with higher income. Recently, this out-migration has slowed, and reversed in the 30-40 year old category as they return to South Dakota. Quality of family life issues are listed as key reasons for these people to return to their home state.

South Dakota has five Native American reservations. The Native American population represents approximately eight percent of the total state population. Three of the counties with reservations have been listed among the ten poorest counties in the United States. Five of the ten poorest counties in the nation are in South Dakota, meaning that poverty is not just a problem in reservation counties. Unemployment, alcoholism, poor diet, drug addiction, obesity, diabetes and other health and social problems are prevalent in reservation areas with high poverty rates.

South Dakota State University has developed working agreements with the four 1994 Land Grant Institutions located in South Dakota, and is continuing to offer programs that address these social and economic needs.

Agriculture is the largest sector of the state’s economy, generating a total impact of $16.8 billion in 2002. Seventy-four percent of all farms have gross earnings of less than $100,000 per year, while 24% earn between $100,000 and $499,999 each year. Two percent earned $500,000 or more. This indicates there are two types of agriculture being conducted in South Dakota: large-scale and small-scale agriculture. Currently, there are 31,600 farms with an average size of 1,386 acres.

The South Dakota Agricultural Experiment Station has research facilities at eight primary locations within the state. Most of the scientists are located at the main campus in Brookings, but they conduct research throughout the state. Scientists, and Extension specialists, are also located at the SDSU West River Ag Center at Rapid City. The WestRiverCenter serves as the primary host for integrated CES and AES programs west of the Missouri River. Research project leaders are also located at the Dakota Lakes Research Farm near Pierre, in central South Dakota, and at the Southeast South Dakota Research Farm near Beresford. Both of these research farms also feature strong Extension educational components. Both farms focus on farming systems research, with no-till technology and irrigation being emphasized at DakotaLakes and diversification of corn/soybean rotations and livestock feeding being emphasized at the Southeast Farm.

There are four research farms that are continuously staffed with support personnel. The AES scientists from Brookings and Rapid City conduct research at these stations; however, project leaders are not permanently located there. Crop production research is conducted at the Northeast Research Station near Watertown and at the Central Crops and Soils Research Station near Highmore. Neither of these stations are irrigated. Beef, sheep, and range research is conducted at the Antelope Station near Buffalo in NorthwesternSD and at the Cottonwood Station in the West-Central part of the state. AES and CES staff work cooperatively to offer educational field days at each station.

There are also several locations where AES research is conducted on cooperating stakeholder property. These cooperative arrangements greatly augment our research capabilities and provide direct linkages with many of our rural stakeholders.

In addition to research conducted by AES scientists, the Cooperative Extension Service is also doing on-farm research across South Dakota. This takes the form of demonstration projects, interpretation of AES research, and helping to transfer information from the scientist to the agricultural user. Each year, more than 40,000 Extension field demonstration plots across South Dakota provide farmers with direct access to applied research data specific to their local conditions.

The Cooperative Extension Service has offices located in 63 South Dakota counties and two Native American Reservations. An individual Memorandum of Agreement with each county documents the relationships, and establishes County Extension Advisory Boards. At the Field Education Unit level, county representatives of these boards provide input on programming efforts. The combined presence of Agricultural Experiment Station Research Farms and County Extension Offices across the state means that the South Dakota State University College of Agriculture and Biological Sciences is uniquely able to deliver educational services and meet the needs of the people of South Dakota.

SDSU affirms its civil rights obligations for service to minorities and underserved populations.Relying on needs assessment tools, SDSU will: 1) ensure that educational benefits are provided to a diverse audience of the state on a non-discriminatory basis; 2) document the organization's intent to maintain compliance with equal opportunity non-discrimination rules and regulations; 3) state the organizational commitment to value diversity within its staff, volunteers and citizens; 4) describe how the organization will secure and utilize citizen input through lay committees and collaborative boards on program priorities and needs assessments.Lay committees will be diverse and reflect the diversity of communities being served; 5) include written policy and procedures for informing the public of teh university and Extension's responsibility for implementing the requirements of equal opportunity.

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

| Year | Extension | | Research | |
|---|---|---|---|---|
| | 1862 | 1890 | 1862 | 1890 |
| 2010 | 164.0 | 0.0 | 191.0 | 0.0 |
| 2011 | 160.0 | 0.0 | 187.0 | 0.0 |
| 2012 | 160.0 | 0.0 | 187.0 | 0.0 |
| 2013 | 160.0 | 0.0 | 187.0 | 0.0 |
| 2014 | 160.0 | 0.0 | 187.0 | 0.0 |

## II. Merit Review Process

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

- Internal University Panel
- External Non-University Panel
- Expert Peer Review

**2. Brief Explanation**

All AES research projects are subjected to peer and merit review prior to implementation. All Hatch and multi-state projects require independent peer reviews from two scientists that are knowledgeable in the respective subject area. The department head or a departmental executive committee identifies peer reviewers. The department head and the AES Director serve as merit reviewers.

A standard review instrument facilitates peer and merit reviews. Reviewers are required to comment on why the proposed research is needed, it's relevance to agriculture, the target audience, and how it compliments other research.

Proposals for research grants that are funded by stakeholder groups are subjected to review by the stakeholders themselves and by college administrators. Much like the CRIS system, stakeholder groups ask for annual progress reports on funded research.

Cooperative Extension Service administrators will serve as the merit review team for the respective components of the plan of work. Department heads, specialists and educators will conduct peer reviews of programs.

## 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 Planned Programs are based on input from traditional and non-traditional stakeholder groups who identified critical issues. For the purposes of program planning, South Dakota also considers the input of internal stakeholders, which includes Extension specialists and educators, and scientists. The resulting eight Planned Programs address critical needs and opportunities through integrated research and educational programs. This planning process results in regional Hatch-funded research projects: regional efforts to assess winter injury in new alfalfa varieties (MN, SD, WI); the multi-state exchange and testing of elite experimental lines or new varieties of wheat, oats, soybeans and other crops; regional air quality and manure management initiatives; sharing of common curricula – i.e. ServSafe; and common Extension program partnerships including poverty reduction and youth citizenship.

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

Great efforts are made to seek out and include under-served and under-represented populations in the initial planning of research and Extension programs. In some cases, this involves direct contact with under-served and/or under-represented audiences. In other cases, mass media announcements are used to invite all South Dakotans to participate in program planning. Two examples of how this early involvement has changed Planned Programs are: 1) the development of Spanish language translations of animal science publications for migrant workers at dairy farms; and 2) specific agreements between South Dakota State University and the 1994 institutions in South Dakota to provide educational and cultural exchanges, program delivery, and other opportunities.

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

The Planned Programs address specific outcomes that occur over the 5-year period of this plan. Some Planned Programs may deliver initial outcomes and impacts in the first year, but the overall impact of these programs will be felt beyond the 5-year planning cycle. Each of the eight South Dakota Planned Programs list specific outcomes that document progress.

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

South Dakota State University has a strong history of actively integrating research, teaching and Extension programs to deliver science-based information to all citizens. Stakeholder input, from Cooperative Extension Service five-year assessment planning data and other sources, is also used by scientists and classroom educations to gain a better understanding of current needs. Joint FTE appointments give individuals the opportunity to work in a combination of research, Extension and teaching functions, allowing the further integration and transfer of information within the system.

## IV. Stakeholder Input

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

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

**Brief explanation.**

South Dakota State University solicits formal stakeholder input in many forms, from many sources, and at many locations. Methods of inviting stakeholder input include meetings or other communication with: Agricultural Experiment Station Research Farm Advisory Boards; Research Review Meetings with agricultural check-off groups including the South Dakota Soybean Research and Promotion Council, South Dakota Corn Utilization Council, South Dakota Beef Industry Council, South Dakota Oilseeds Council, South Dakota Pork Producers Council, South Dakota Wheat Commission, and others.

Input is also sought from state agricultural commodity groups including Ag Unity, the South Dakota Pork Alliance, the South Dakota Stockgrowers/Cattlewomen, and the
South Dakota Veterinary Medical Association.

Input is sought from funding organizations such as the National Institutes of Health, U.S. Department of Energy, National Science Foundation, NASA, Environmental Protection Agency, and the National Centers for Disease Control and Prevention. In addition, stakeholder input is solicited from governmental agencies, including: the Office of the Governor, the South Dakota Department of Agriculture, South Dakota Department of Environment and Natural Resources, South Dakota Game, Fish and

Parks, South Dakota Department of Education and Cultural Affairs, Office of the State Veterinarian, Social Services, Job Service, National Agricultural Statistics Service, 1994 Institutions, and others.

Stakeholder input is sought at SDSU field day tours; SDSU agricultural meetings; Community Leader Meetings throughout the state; meetings with the South Dakota Board of Regents, South Dakota Legislature, and other elected officials and boards; and events open to the public such as the South Dakota State Fair and DakotaFest.

Additional input is solicited during comprehensive CSREES Departmental and Institutional Reviews, which span teaching, research and Extension activities.

Stakeholder input specifically for projects involving McIntire-Stennis funds is sought from the South Dakota Nurseryman's Association, the South Dakota Parks and Recreation Association, the South Dakota Department of Game, Fish and Parks, the U.S. Forest Service, and also from special project-oriented groups like the Mortensen Group. This group works specifically on the Mortensen Ranch project, and includes NRCS, local RC&D groups, and other local entities.

**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**

- Needs Assessments
- Use Advisory Committees
- Use Surveys
- Open Listening Sessions

**Brief explanation.**

Under the last Plan of Work, South Dakota established 13 Field Education Units representing all parts of South Dakota. Each unit is comprised of 1 to 9 counties. Stakeholders from each Field Education Unit across the entire state are identified, giving care to include any group or audience that may be or previously have been underrepresented or underserved. Invitations are issued to representatives from each of the identified stakeholder groups to participate in the program review and development planning session. A series of general news releases are issued inviting all citizens to participate in the process, even though they may not have been directly contacted.

Under our integrated system, there are four types of advisory boards, including:

Field Education Unit Advisory Boards – Required by South Dakota law, these advisory boards provide citizen input, guidance and direction at the county level for programming that targets priority needs and issues. Membership on this board is required by state statute to represent the racial population mix of the county and of the various interest groups served by Extension.

State Extension Advisory Board – This board provides guidance and input regarding statewide educational programs. The State Extension Advisory Board provides guidance and direction to the Cooperative Extension Service, and informally to the Agricultural Experiment Station. Members of this board are elected from each County Extension Advisory Board, and the 1994 land grant institutions.

Unit-Specific Advisory Boards – these include: Agricultural Experiment Station advisory groups for each research farm, departmental advisory boards such as the Animal Disease Research and Diagnostic Laboratory Advisory Board, and others.

On-going Stakeholder Input is often solicited by college leadership during special forums.For example, the SDSU College of Agriculture and Biological Sciences participates in a series of Community Leader Forums each November.Elected leaders and community stakeholders are invited to attend a series of meetings to discuss the impact of current programs on their communities. These dialog sessions are important opportunities for a candid, two-way discussion of needs, programs, and future plans with local and state elected leaders.

In the spring of 2009, the South Dakota Cooperative Extension Service will host a series of special forums in communities across the state.The purpose is to invite public content regarding future programs and structure.

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

**Brief explanation**

SDSU has established several formal opportunities for stakeholders to offer input regarding quality of programs, and current and future needs, as described earlier in this report.Because stakeholders are most often current clients, SDSU also actively works to identify individuals who have not previously participated.One component of the college civil rights compliance effort is focused on identifying new or underserved audiences, some of whom are minorities, and documenting efforts to invite their participation in program planning and in educational programs.

**3. A statement of how the input will be considered**

- Redirect Extension Programs
- Redirect Research Programs
- To Set Priorities
- In the Budget Process
- To Identify Emerging Issues

**Brief explanation.**

Administrators evaluate all input, requests and comments from stakeholders to determine if patterns of need exist, and if resources can be directed to the client requests. CES educators, specialists, and AES scientists actively seek out input to insure that research and education programs are fine-tuned to the current needs of stakeholders.

# V. Planned Program Table of Content

## V(A). Planned Program (Summary)

**Program #1**

**1. Name of the Planned Program**

Natural Resources and Environment

**2. Brief summary about Planned Program**

The planned program will conduct research and provide Extension information regarding the management of soil, land and animals.Proper management of the soil and natural resources is critical for the success of the small farm, and can increase farm profitability, and minimize harmful effects on the environment brought on by inappropriate management practices, such as overgrazing, overtillage and over application of soil nutrients.

**3. Program existence :** Intermediate (One to five years)

**4. Program duration :** Long-Term (More than 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 |
|---|---|---|---|---|---|
| 101 | Appraisal of Soil Resources | 11% | | 11% | |
| 102 | Soil, Plant, Water, Nutrient Relationships | 40% | | 40% | |
| 104 | Protect Soil from Harmful Effects of Natural Elements | 4% | | 4% | |
| 111 | Conservation and Efficient Use of Water | 4% | | 4% | |
| 112 | Watershed Protection and Management | 4% | | 4% | |
| 121 | Management of Range Resources | 11% | | 11% | |
| 123 | Management and Sustainability of Forest Resources | 4% | | 4% | |
| 132 | Weather and Climate | 4% | | 4% | |
| 133 | Pollution Prevention and Mitigation | 7% | | 7% | |
| 135 | Aquatic and Terrestrial Wildlife | 11% | | 11% | |
| | **Total** | 100% | | 100% | |

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

### 1. Situation and priorities

Land in small farms in South Dakota has increased approximately 8.5 percent from 1997 to 2002, and 6.2 percent from 2002 to 2007.Extension educators have noted that, even though this growing sector may be well intentioned, attention to careful management and resource conservation practices is leff evident that among traditional producters.

Programs in this area will focus on soil testing to determine the amount of nutrients needed for specific crops; best management practices to improve net farm incomes with sensitivity to the environment; and stewardship of land resources in small parcels as it applies to raising horses, goats and cattle.Small farms and ranches in South Dakota are most likely to raise just a few head of livestock, compared with traditional farms and ranches that may have hundreds of head of livestock.Small producers will learn how to optimize yields, and to manage animal nutrition, reproduction, health, and waste management.

### 2. Scope of the Program

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

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

**1. Assumptions made for the Program**

Soils

a. Crop nutrient and soil research at SDSU is unbiased and initiated to help give answers to problems and questions that crop producers are currently confronted with.

b. Services are tailored to provide for local (within South Dakota) needs and control for making pertinent crop nutrient and soil management decisions.

Small Acreage - As an emerging programming area, we are uncertain about a variety of issues and thus have to make some assumptions.

a. The increase in small acreages is resulting from the immigration of non-traditional agriculturists that have a primary income in another occupational field.

b. That we will be able to identify and engage a clientele of small-acreage owners and users. This audience will be different than our traditional ag producer clientele

c. That we will understand their existing knowledge base so that we target programming to not be either too simple or too advanced.

d. Programming would need to be scheduled around traditional working hours to help reach an audience that has a full-time occupation.

**2. Ultimate goal(s) of this Program**

Soils

Research and education will increase the number of crop producers adopting environmentally and economically sensitive crop nutrient and soil management recommendations.

Small Acreage

The goals of small acreage programming include development of seminars and popular press articles in the following areas:

A. Grazing/weed management

B. Managing water wells and run-off

C. Making improved feed purchasing decisions

D. Equine nutrition, reproduction, and health

E. Management of the equine for minimal impact on the environment

Development of goals A, B, and C began in 2008 and implementation will begin in 2009. Seminars and workshops have already been scheduled to present programming addressed for those three goals. Developing seminar material for goal D is underway and will continue. Similar information is being developed in the state concerning meat goat management principles, and youth meat goat showing and fitting. A meat goat handbook is currently being compiled along with research being conducted throughout the state involving multi-species grazing and fencing in relation to meat goats. Development of this information will continue in 2009 and be available to the public in 2010.

Targeted impacts of the programming include more efficient utilization and management of small acreages in South Dakota with an emphasis on animal production. Impacts will be measured by improved stewardship of land in small acreages and husbandry of animals.

## 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 | 15.0 | 0.0 | 3.0 | 0.0 |
| 2011 | 15.0 | 0.0 | 3.0 | 0.0 |
| 2012 | 15.0 | 0.0 | 3.0 | 0.0 |
| 2013 | 15.0 | 0.0 | 3.0 | 0.0 |
| 2014 | 15.0 | 0.0 | 3.0 | 0.0 |

## V(F). Planned Program (Activity)

**1. Activity for the Program**

Soils

Crop nutrient and soil management recommendations will be maintained and adapted to reflect environmentally and economically sensitive issues. This process includes unbiased in-field research pertinent to crop nutrient and soil management issues in South Dakota. Educational efforts will include direct and indirect crop producer contacts, crop clinics, field days and demonstrations.

Small Acreage

Seminars, clinics, and popular press articles will be the primary vectors for educating the public. We also intend to increase public awareness of SDSU extension activities and expertise so that more people know they can solicit information.

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

| Extension | |
|---|---|
| **Direct Methods** | **Indirect Methods** |
| • Education Class<br>• One-on-One Intervention<br>• Group Discussion<br>• Workshop | • Newsletters<br>• Web sites |

**3. Description of targeted audience**

- Crop Producers - (landlords, tenants), crop consultants/advisors, fertilizer managers, commodity groups, homeowners

- Owners and users of any small acreage, or otherwise interested persons or groups both inside and outside of the state of South Dakota.

## 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 | 2000 | 20000 | 100 | 500 |
| 2011 | 2100 | 20000 | 150 | 600 |
| 2012 | 2200 | 20000 | 200 | 650 |
| 2013 | 2300 | 20000 | 225 | 675 |
| 2014 | 2300 | 20000 | 250 | 700 |

**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 | 1 | 2 | 3 |
| 2011 | 1 | 2 | 3 |
| 2012 | 1 | 2 | 3 |
| 2013 | 1 | 2 | 3 |
| 2014 | 1 | 2 | 3 |

## V(H). State Defined Outputs

### 1. Output Target

- Producer clinics, workshops, field days and other direct training opportunities.

| 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|
| 7 | 7 | 7 | 7 | 7 |

## V(I). State Defined Outcome

| O. No | Outcome Name |
|---|---|
| 1 | Research to address appropriate management of wildlife populaion. |
| 2 | Increase in number of crop producers that use environmentally and economically sensitive crop nutrient and soil management recommendations. |
| 3 | Number of small acreages that increase land stewardship of practices, including weed controlled and improved grazing. |

**Outcome #1**

**1. Outcome Target**

Research to address appropriate management of wildlife populaion.

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010 :** 20 **2011 :** 20 **2012 :** 20 **2013 :** 20 **2014 :** 0

**3. Associated Institute Type(s)**

•1862 Extension
•1862 Research

**4. Associated Knowledge Area(s)**

- 135 - Aquatic and Terrestrial Wildlife

**Outcome #2**

**1. Outcome Target**

Increase in number of crop producers that use environmentally and economically sensitive crop nutrient and soil management recommendations.

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010 :** 50 **2011 :** 50 **2012 :** 50 **2013 :** 50 **2014 :** 50

**3. Associated Institute Type(s)**

•1862 Extension
•1862 Research

**4. Associated Knowledge Area(s)**

- 102 - Soil, Plant, Water, Nutrient Relationships
- 104 - Protect Soil from Harmful Effects of Natural Elements

**Outcome #3**

**1. Outcome Target**

Number of small acreages that increase land stewardship of practices, including weed controlled and improved grazing.

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010 :** 10 **2011 :** 15 **2012 :** 20 **2013 :** 20 **2014 :** 20

**3. Associated Institute Type(s)**

•1862 Extension
•1862 Research

**4. Associated Knowledge Area(s)**

- 101 - Appraisal of Soil Resources
- 102 - Soil, Plant, Water, Nutrient Relationships
- 104 - Protect Soil from Harmful Effects of Natural Elements
- 111 - Conservation and Efficient Use of Water
- 121 - Management of Range Resources

## V(J). Planned Program (External Factors)

### 1. External Factors which may affect Outcomes

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

**Description**

resource management.

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

### 1. Evaluation Studies Planned

- Case Study
- Before-After (before and after program)
- After Only (post program)

**Description**

Research projects will be peer reviewed, and published in appropriate scientific journals and lay publications. Research information will also be provided in oral presentations at a variety of meetings.

Extension programs are in planning stages. Evaluation of these programs has not yet been determined.

### 2. Data Collection Methods

- Observation
- Sampling
- On-Site
- Case Study

**Description**

Each research project will identify appropriate data colletion methods.

## V(A). Planned Program (Summary)

**Program #2**

**1. Name of the Planned Program**

Plants and Their Systems

**2. Brief summary about Planned Program**

The goal of the AES research and CES educational programs on plants and their systems is to promote the long-term sustainability of food, feed, fiber, and renewable fuel production systems that are profitable for the farmer, friendly to the environment and society, and is sustainable for the future. Research and Extension programs are delivering new crop varieties for farmers that are superior in field performance, are tolerant or resistant to new disease races or crop insects, and have unique crop traits that are sought by the crop processing industry. Research and Extension programs are also working to bring the benefits of global positioning science and information management to production agriculture; offering the promise of increased efficiency, increased accuracy of targeted chemical and fertilizer applications, leading to increased yields. This effort also includes minimizing production costs through proper use of scouting, thresholds, biological and chemical control.

This program addresses: cover crops, crop rotations, cost-efficient variety selection and alternative crops, nutrient management, residue management, soil/water/nutrient/ carbon conservation, and integration with livestock production. It also addresses environmental stewardship in the design, installation and maintenance of landscapes, yards, and gardens.

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

**4. Program duration :** Long-Term (More than 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 |
|---|---|---|---|---|---|
| 201 | Plant Genome, Genetics, and Genetic Mechanisms | 14% | | 14% | |
| 202 | Plant Genetic Resources and Biodiversity | 17% | | 17% | |
| 203 | Plant Biological Efficiency and Abiotic Stresses Affecting Plants | 21% | | 21% | |
| 204 | Plant Product Quality and Utility (Preharvest) | 3% | | 3% | |
| 205 | Plant Management Systems | 17% | | 17% | |
| 211 | Insects, Mites, and Other Arthropods Affecting Plants | 6% | | 6% | |
| 212 | Pathogens and Nematodes Affecting Plants | 10% | | 10% | |
| 213 | Weeds Affecting Plants | 6% | | 6% | |
| 215 | Biological Control of Pests Affecting Plants | 3% | | 3% | |
| 216 | Integrated Pest Management Systems | 3% | | 3% | |
| | **Total** | 100% | | 100% | |

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

### 1. Situation and priorities

Agronomy is at the forefront of the greatest state of transition faced by our society since the move from horse power to the internal combustion engine. The transition is occurring in three areas: 1) movement into biotechnology; 2) movement into information management; and, 3) transition of agriculture as a producer of feed, food and fiber, to feed, food, fiber, and energy.

South Dakota crop producers/growers can reduce their inputs and costs through the use of field scouting and following recommended thresholds and control.

Priorities include:

1. Pest Detection/Identification – is a large part of what the Plant Science Diagnostic Lab and CES field staff does each year. Impacts may be contacts or cases where people avoid incorrect pesticide applications or control pests before they cause devastating losses.

2. Proper Pesticide Use – product selection, thresholds, timing, application technology, rates, and bio-control education and implementation.

3. Variety Selection/Resistance Management: Introductions of new disease tolerant and herbicide resistant crops will make variety selection more important and challenging. Many people plant crops with pest tolerance traits they don't need or in some cases spray fungicides when disease-resistant varieties are available. Impacts include the promotion/adoption of proper variety selection for specific pest scenarios. All pest disciplines need to continue to promote diversified pest management (or integrated pest management) systems.

South Dakota crop producers need to maintain both –profitability and sustainability. In order to do so, they need to utilize cost effective crop rotations, utilize higher yielding crop varieties, incorporate alternative crops, conquer marketing issues, utilize creative means of pest control, and maintain good soil health.

Resources for production agronomics must greatly increase to meet the new demands for food and energy. Annually, crop producers must cope with abiotic and biological factors that impact crop production.In this state. South Dakota farmers are very vocal in demanding that research and extension resources be used to solve their production problems. Delivery of programs to meet these needs are of the highest priority in this program.

Consumers show a great interest in becoming "green", but feedback suggests a lack of knowledge among consumers in how gardens, landscape decisions, and management practices are affecting the local ecosystems.

**2. Scope of the Program**

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

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

**1. Assumptions made for the Program**

- Alternative crops are not currently being used to the extent possible. Newer, higher yielding, disease-resistant varieties are not being used as extensively as possible. Alternative crops will help improve crop rotations, both of which can increase profitability. Crop diversity will increase sustainability & profitability of agriculture. Marketing alternative crops can be challenging.

- SDCES is committed to helping consumers be sustainable, via educational outreach and facilitation of networking with other agencies.

- Current interest in environmentalism will remain at current levels or increase in local communities.

- Behavioral changes will only happen if individuals understand their role in sustainability; that all consumers have an effect on the environment.

- Many horticultural consumers are currently making non-sustainable decisions in their design, installation, and maintenance of their yards, gardens, and landscapes.

- Proper thresholds and pest control recommendations will improve or reduce costs and pounds of pesticides applied per

acre while increasing profit per acre and be more ecologically friendly by reducing pesticide residues.

**2. Ultimate goal(s) of this Program**

Sustainable and profitable farming and consumer horticulture operations.

## 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 | 52.0 | 0.0 | 46.0 | 0.0 |
| 2011 | 52.0 | 0.0 | 46.0 | 0.0 |
| 2012 | 52.0 | 0.0 | 46.0 | 0.0 |
| 2013 | 52.0 | 0.0 | 46.0 | 0.0 |
| 2014 | 52.0 | 0.0 | 46.0 | 0.0 |

## V(F). Planned Program (Activity)

**1. Activity for the Program**

Plant breeders, entomologists, and plant pathologists will develop superior varieties with tolerance or resistance to insects and new disease races. Agronomists will evaluate crop management systems and forage systems that are best adapted to South Dakota, including areas with a history of limited growing season moisture. Soil scientists will develop more effective and cost efficient strategies for conserving soils and reducing fertilizer inputs in cropping systems. Entomologists, plant pathologists, and weed scientists will develop more effective and cost efficient means to safely control plant pests while reducing chemical inputs; including IPM and alternative methods. Horticulturalists will develop appropriate varieties for home gardeners and landscapers, and will teach cost effective production methods.

Hands-on Field Scouting School, crop tours, producer/grower meetings will be held. Provide one-on-one individual consultations. Research and timely information will be provided in news columns, current and up-to-date county and state websites, and Extension publications.

Extension will deliver the resulting research and extension program impacts to the SD Department of Agriculture, SD Crop Improvement Association, SD Corn Utilization Council, SD Soybean Research & Promotion Council, SD Wheat Commission, SD Oilseeds Council, SD Association of County Weed & Pest Boards, SD Weed Commission, and Master Gardeners Association.

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

| Extension | |
|---|---|
| **Direct Methods** | **Indirect Methods** |
| • Education Class<br>• Other 1 (On-farm research plots)<br>• One-on-One Intervention<br>• Other 2 (County Extension research)<br>• Workshop<br>• Demonstrations | • Newsletters<br>• Web sites<br>• Other 1 (Radio)<br>• TV Media Programs |

**3. Description of targeted audience**

All farm producers, agricultural land owners, hobby gardeners, homeowners, and Master Gardeners

## 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 | 8000 | 16000 | 3000 | 900 |
| 2011 | 9000 | 18000 | 3000 | 900 |
| 2012 | 10000 | 19000 | 3000 | 900 |
| 2013 | 10000 | 20000 | 3000 | 900 |
| 2014 | 10000 | 20000 | 3000 | 900 |

### 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 | 8 | 10 | 0 |
| 2011 | 8 | 10 | 0 |
| 2012 | 8 | 10 | 0 |
| 2013 | 8 | 10 | 0 |
| 2014 | 8 | 10 | 0 |

## V(H). State Defined Outputs

### 1. Output Target

- Number of research projects completed in SDSU Planned Program Two - Plants and Their Systems

  **2010 :** 10 **2011 :** 10 **2012 :** 10 **2013 :** 10 **2014 :** 10

- Number of Plant Variety Protection (PVP) varieties - Title V registration

  **2010 :** 1 **2011 :** 1 **2012 :** 1 **2013 :** 1 **2014 :** 1

- Number of acres scouted

  **2010 :** 2000 **2011 :** 3000 **2012 :** 4000 **2013 :** 5000 **2014 :** 6000

- Number of resistant varieties or improved technologies utilized

  **2010 :** 1 **2011 :** 2 **2012 :** 2 **2013 :** 3 **2014 :** 3

- Statewide savings due to scouting, applying thresholds, and avoiding unnecessary pesticide applications.

| | | | | |
|---|---|---|---|---|
| **2010** :500000 | **2011** 500000 | **2012** :500000 | **2013** :500000 | **2014** :500000 |

## V(I). State Defined Outcome

| O. No | Outcome Name |
|---|---|
| 1 | Number of farmers learning about new crops, varieties, crop management techniques, forages and biofuels. |
| 2 | Percent increase in number of acres seeded t minor grain, oilseed, legume, brassicas and warm-cool-season formage crops |
| 3 | Percent increase in consumer knowledge of plant selection and growing techniques for sustainable landscaping. |

**Outcome #1**

**1. Outcome Target**

Number of farmers learning about new crops, varieties, crop management techniques, forages and biofuels.

**2. Outcome Type :** Change in Knowledge Outcome Measure

| **2010 :** 3900 | **2011 :** 4040 | **2012 :** 4100 | **2013 :** 4000 | **2014 :** 4000 |
|---|---|---|---|---|

**3. Associated Institute Type(s)**

•1862 Extension
•1862 Research

**4. Associated Knowledge Area(s)**

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources and Biodiversity
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 213 - Weeds Affecting Plants
- 215 - Biological Control of Pests Affecting Plants
- 216 - Integrated Pest Management Systems

**Outcome #2**

**1. Outcome Target**

Percent increase in number of acres seeded t minor grain, oilseed, legume, brassicas and warm-cool-season formage crops

**2. Outcome Type :** Change in Action Outcome Measure

| **2010 :** 1000 | **2011 :** 1000 | **2012 :** 1500 | **2013 :** 1500 | **2014 :** 2000 |
|---|---|---|---|---|

**3. Associated Institute Type(s)**

•1862 Extension
•1862 Research

**4. Associated Knowledge Area(s)**

- 202 - Plant Genetic Resources and Biodiversity
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 213 - Weeds Affecting Plants
- 215 - Biological Control of Pests Affecting Plants
- 216 - Integrated Pest Management Systems

**Outcome #3**

**1. Outcome Target**

Percent increase in consumer knowledge of plant selection and growing techniques for sustainable landscaping.

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010 :**1 **2011 :** 1 **2012 :** 1 **2013 :**1 **2014 :**1

**3. Associated Institute Type(s)**

•1862 Extension
•1862 Research

**4. Associated Knowledge Area(s)**

- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 213 - Weeds Affecting Plants
- 215 - Biological Control of Pests Affecting Plants
- 216 - Integrated Pest Management Systems

## V(J). Planned Program (External Factors)

**1. External Factors which may affect Outcomes**

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

**Description**

Drought, early or late frosts, storm damage to crops, and changes in plant pests will all have immediate impact on annual cropping patterns and practices. These elements are beyond the control of farmers and ultimately place a greater emphasis on management practices to overcome pests and natural disasters.

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

**1. Evaluation Studies Planned**

- Other (Increase in biofuel production)
- Before-After (before and after program)

**Description**

General:
Pre and post-program surveys

Grower testimonials

Crops:
Crop variety surveys from the SD Agricultural Reporting Service when available

Entomology & IPM:

Increased acres managed using new insect control strategies

Changes in corn acreage devoted to ethanol and managed with new technologies

Plant Pathology & IPM:

Increase in number of registered First Detectors

Number of samples sent to plant diagnostic laboratory

Soils:

Number of soil samples submitted to soil testing laboratory

Frequency of soil sampling any given field

Measure frequency of nutrient deficiency symptoms
Document nitrate concentration in rural water and frequency of algae bloom in lakes

Document number of producers using manure that soil test to determine fertilizer rates

Weeds & IPM:

Herbicide survey

County surveys of noxious weed acres

Number of bio-control agents released, number of farmers using bio-control

**2. Data Collection Methods**

- Observation
- Structured
- Tests
- Journals
- Sampling
- Unstructured

**Description**

Each project will identify appropriate data collection methods.

## V(A). Planned Program (Summary)

**Program #3**

**1. Name of the Planned Program**

Animals and Their Systems

**2. Brief summary about Planned Program**

AES research and CES educational programs in the Departments of Animal and Range Sciences, Dairy Science and Veterinary Science focus on an integrated approach to sustainable and responsible utilization of our animal and range resources, promotion and advancement of the local dairy industry, and the transfer information and provide educational opportunities to veterinarians, producers, county educators, and other interested individuals regarding animal health.

As cost of production continues to increase, producers need to improve the efficiencies of their operation in order to remain profitable and sustainable. Production efficiency takes into consideration mature animal size, method of replacement development, reproductive management decisions, genetic selection, animal health decisions, as well as herd/flock management decisions and how these practices effect the sustainability of individual operations.

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

**4. Program duration :** Long-Term (More than 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 |
|---|---|---|---|---|---|
| 301 | Reproductive Performance of Animals | 18% | | 18% | |
| 302 | Nutrient Utilization in Animals | 21% | | 21% | |
| 303 | Genetic Improvement of Animals | 3% | | 3% | |
| 305 | Animal Physiological Processes | 7% | | 7% | |
| 307 | Animal Production Management Systems | 3% | | 3% | |
| 308 | Improved Animal Products (Before Harvest) | 7% | | 7% | |
| 311 | Animal Diseases | 38% | | 38% | |
| 313 | Internal Parasites in Animals | 3% | | 3% | |
| | **Total** | 100% | | 100% | |

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

### 1. Situation and priorities

Livestock production is the single largest contributor to agricultural cash receipts in South Dakota, and a large portion of South Dakota is rangeland. Weather, markets, public perception, and a variety of other factors create challenges for the largest industry in South Dakota. If our producers and ranchers are to remain economically viable and a core part of their local communities, research and Extension must continue to focus on addressing their unique situations in a very timely manner.

Operations use the economics of scale to decrease unit cost of production and increase profitability. Therefore, to be competitive farms need to be able to increase their productivity efficiency and supply a more uniform and higher quality product, which can be marketed for a premium. Therefore, the priorities of the program are to teach producers how new and advancing technologies can be utilized to increase their production efficiency.

### 2. Scope of the Program

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

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

### 1. Assumptions made for the Program

We assume that the cost of production will continue to change and that individual operations will have the flexibility to make management decisions that will increase the production efficiency of their operation without increasing the cost of production.

### 2. Ultimate goal(s) of this Program

The ultimate goal of this program is to make production agriculture more sustainable by making individual operations more cost effective at producing their product (Beef, pork, Milk, wool, lambs, etc.)

## 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 | 24.6 | 0.0 | 45.8 | 0.0 |
| 2011 | 24.0 | 0.0 | 44.9 | 0.0 |
| 2012 | 24.0 | 0.0 | 45.0 | 0.0 |
| 2013 | 24.0 | 0.0 | 45.0 | 0.0 |
| 2014 | 24.0 | 0.0 | 45.0 | 0.0 |

## V(F). Planned Program (Activity)

### 1. Activity for the Program

Producer meetings will be held at county beef days, as well as Rancher forums, and specialized meetings, webaries, WebPages, and list servers will be used to get information to producers who cannot attend these meetings. In addition, learning communities where producers can share ideas and management decision that effect production efficiency will be established. Pre-breeding workshops, AI clinics, bull clinics, as well as other clinics, will be held to allow producers to learn hands-on advancing technologies and the benefit of these technologies. SDSU CES cooperating with industries, feed companies, auctions, pharmaceutical companies, and other ag industries. Research projects that incorporate advancing technologies will be conducted to show producers that these technologies do benefit production efficiency in the environment that they are in.

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

| Extension | |
|---|---|
| **Direct Methods** | **Indirect Methods** |
| • Demonstrations<br>• Workshop<br>• Other 1 (Dairy Advisory Teams)<br>• Education Class<br>• One-on-One Intervention<br>• Other 2 (Focus Groups) | • Other 2 (radio, print media)<br>• Web sites<br>• Other 1 (E-newsletters)<br>• TV Media Programs<br>• Newsletters |

### 3. Description of targeted audience

All ranchers, livestock producers, dairy producers and processors, and veterinarians in the state, as well as concerned citizens and policy makers. In addition, other state and federal agencies including the SD Department of Agriculture, Animal Industry Board, Department of Environment, and Natural Resources, Natural Resource Conservation Service.

## 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 | 2400 | 6100 | 360 | 300 |
| 2011 | 3100 | 6720 | 400 | 310 |
| 2012 | 3100 | 6700 | 400 | 300 |
| 2013 | 3100 | 6700 | 400 | 300 |
| 2014 | 3100 | 6700 | 400 | 300 |

### 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 | 2 | 6 | 0 |
| 2011 | 2 | 6 | 0 |
| 2012 | 2 | 6 | 0 |
| 2013 | 2 | 6 | 0 |
| 2014 | 2 | 6 | 0 |

## V(H). State Defined Outputs

### 1. Output Target

- Number of research projects completed on enhancing sustainable production.

  **2010 :** 10 **2011 :** 10 **2012 :** 10 **2013 :** 10 **2014 :** 10

- Number of research projects completed on dairy foods

  **2010 :** 3 **2011 :** 4 **2012 :** 4 **2013 :** 4 **2014 :** 4

- Number of research projects completed on dairy production

  **2010 :** 3 **2011 :** 4 **2012 :** 4 **2013 :** 4 **2014 :** 4

## V(I). State Defined Outcome

| O. No | Outcome Name |
|---|---|
| 1 | Number of ranchers learning new production techniques |
| 2 | Number of farmers using new production techniques |
| 3 | Number of veterinarians and producers learning about animal disease. |
| 4 | Number of veterinarians and producers changing behaviors to improve the control of animal disease |

**Outcome #1**

**1. Outcome Target**

Number of ranchers learning new production techniques

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010 :** 1200 **2011 :** 1500 **2012 :** 1500 **2013 :** 1400 **2014 :** 1400

**3. Associated Institute Type(s)**

•1862 Extension
•1862 Research

**4. Associated Knowledge Area(s)**

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 305 - Animal Physiological Processes
- 307 - Animal Production Management Systems
- 308 - Improved Animal Products (Before Harvest)
- 311 - Animal Diseases
- 313 - Internal Parasites in Animals

**Outcome #2**

**1. Outcome Target**

Number of farmers using new production techniques

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010 :** 450 **2011 :** 600 **2012 :** 600 **2013 :** 600 **2014 :** 600

**3. Associated Institute Type(s)**

•1862 Extension
•1862 Research

**4. Associated Knowledge Area(s)**

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 305 - Animal Physiological Processes
- 307 - Animal Production Management Systems
- 308 - Improved Animal Products (Before Harvest)
- 311 - Animal Diseases
- 313 - Internal Parasites in Animals

**Outcome #3**

**1. Outcome Target**

Number of veterinarians and producers learning about animal disease.

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010 :** 600 **2011 :** 750 **2012 :** 750 **2013 :** 700 **2014 :** 700

**3. Associated Institute Type(s)**

•1862 Extension
•1862 Research

**4. Associated Knowledge Area(s)**

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 305 - Animal Physiological Processes
- 311 - Animal Diseases
- 313 - Internal Parasites in Animals

**Outcome #4**

**1. Outcome Target**

Number of veterinarians and producers changing behaviors to improve the control of animal disease

**2. Outcome Type :** Change in Action Outcome Measure

**2010 :** 200 **2011 :** 250 **2012 :** 250 **2013 :** 200 **2014 :** 200

**3. Associated Institute Type(s)**

•1862 Extension
•1862 Research

**4. Associated Knowledge Area(s)**

- 307 - Animal Production Management Systems
- 311 - Animal Diseases
- 313 - Internal Parasites in Animals

## V(J). Planned Program (External Factors)

**1. External Factors which may affect Outcomes**

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

**Description**

Further description:

- Farm economy (changes in feed cost and availability)
- Natural Disasters (drought, weather extremes, etc.)
- Competing public priorities

- International and/or livestock health factors (BSE, avian flu, antibiotic residue)
  - Foreign animal disease outbreaks (accidental)
  - Malicious introduction of new diseases (Ag bioterrorism)
  - New spontaneous diseases

- Reduction in funds available

- Change is research focus/expectation at the university

- Competing public priorities

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

### 1. Evaluation Studies Planned

- Case Study
- After Only (post program)
- Before-After (before and after program)
- Time series (multiple points before and after program)

**Description**

Extension Educators will keep a log of successfully implemented Animal Science programs. Surveys will be given at commodity group meetings on their needs and how well our efforts have been in addressing those needs.

- Evaluate new products from the ethanol and soybean industries as feeds for dairy cattle.

- Continue evaluation of methods to modify the composition of milk that may increase the healthfulness and marketability of milk.

- Conduct research intended to minimize environmental pollution by animal waste products.

- Evaluate new industrial byproducts and feed additives in nutritional management of dairy cattle.

- Continue evaluation of the use of glucose precursors and fermentation modifications for prevention of health disorders in transition dairy cows.

- Conduct research intended to improve cow comfort and herd health.

- Continue research on the development of membrane processes, microfiltration in particular, for dairy processing applications. A project is being developed to evaluate the application of microbial cultures for growth of other undesirable bacteria in fermented products.

- Continue research on exopolysaccharides from lactic acid bacteria.

- Identify and evaluate milk processing techniques that will inhibit or remove light-induced oxidized off-flavor in fluid milk.

- Develop recommendations for producing frozen desserts with improved texture and nutrition.

### 2. Data Collection Methods

- Tests
- Structured
- Sampling
- Unstructured
- Journals
- Observation
- On-Site
- Case Study

**Description**

Each project will identify appropriate data collection methods

## V(A). Planned Program (Summary)

**Program #4**

**1. Name of the Planned Program**

Agricultural, Natural Resource and Biological Engineering

**2. Brief summary about Planned Program**

AES research and CES educational programs in Agricultural, Natural Resource and Biological Engineering promotes economically viable technology for crop and livestock producers maintaining quality environment for all citizens:

- To provide education and technology to SD citizens and specifically livestock producers to maintain environmentally sound water and air quality.

• To develop sustainable livestock production and improved efficiencies by improving the understanding of environmental control systems and reducing energy inputs

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

**4. Program duration :** Long-Term (More than 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 |
|---|---|---|---|---|---|
| 401 | Structures, Facilities, and General Purpose Farm Supplies | 34% | | 34% | |
| 403 | Waste Disposal, Recycling, and Reuse | 33% | | 33% | |
| 404 | Instrumentation and Control Systems | 33% | | 33% | |
| | **Total** | 100% | | 100% | |

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

**1. Situation and priorities**

- Livestock growth in SD depends on maintaining a good air quality environment

• Improve water quality/quantity education for agriculture, home and urban use

• Livestock production will need to be more productive and sustainable. Efforts will be placed on energy efficiencies and environmental control systems.

**2. Scope of the Program**

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

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

**1. Assumptions made for the Program**

Funding will remain constant or increase. Environmental issues can be effectively addressed

**2. Ultimate goal(s) of this Program**

- That there exist extension educators that are interested in working in the area of natural resources

• Funding is available to conduct issue-based programs

## 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 | 4.9 | 0.0 | 3.8 | 0.0 |
| 2011 | 4.8 | 0.0 | 3.7 | 0.0 |
| 2012 | 4.5 | 0.0 | 3.5 | 0.0 |
| 2013 | 4.0 | 0.0 | 3.0 | 0.0 |
| 2014 | 4.0 | 0.0 | 3.0 | 0.0 |

## V(F). Planned Program (Activity)

**1. Activity for the Program**

Conduct research on livestock facilities, water management and climatic impacts on crop and livestock producers. Extension will conduct informational seminars and interactive learning opportunities for producer groups across South Dakota.

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

| Extension | |
|---|---|
| **Direct Methods** | **Indirect Methods** |
| • Workshop<br>• Education Class<br>• Demonstrations | • Web sites<br>• TV Media Programs<br>• Other 1 (Radio and print media)<br>• Newsletters |

**3. Description of targeted audience**

- Urban areas, surveys of urban water users

• Livestock producers

• Consulting engineers with livestock boards and association contacts for input.

## 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 | 200 | 2000 | 0 | 0 |
| 2011 | 200 | 2000 | 0 | 0 |
| 2012 | 200 | 2000 | 0 | 0 |
| 2013 | 200 | 2000 | 0 | 0 |
| 2014 | 200 | 2000 | 0 | 0 |

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

**Expected Patent Applications**

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

### 3. Expected Peer Review Publications

| Year | Research Target | Extension Target | Total |
|---|---|---|---|
| 2010 | 4 | 8 | 12 |
| 2011 | 4 | 8 | 12 |
| 2012 | 4 | 8 | 12 |
| 2013 | 4 | 8 | 12 |
| 2014 | 4 | 8 | 12 |

## V(H). State Defined Outputs

### 1. Output Target

- Number of research projects completed on livestock facilities, water management or climatic impacts on crop and livestock producers

**2010 :**4 **2011 :**4 **2012 :**4 **2013 :**4 **2014 :**4

## V(I). State Defined Outcome

| O. No | Outcome Name |
|---|---|
| 1 | Number of farmers learning about improved livestock facilities, water management or climatic impact on crops and livestock. |

**Outcome #1**

**1. Outcome Target**

Number of farmers learning about improved livestock facilities, water management or climatic impact on crops and livestock.

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010 :**150 **2011 :** 175 **2012 :** 190 **2013** 200 **2014 :**200

**3. Associated Institute Type(s)**

•1862 Extension
•1862 Research

**4. Associated Knowledge Area(s)**

- 401 - Structures, Facilities, and General Purpose Farm Supplies
- 403 - Waste Disposal, Recycling, and Reuse
- 404 - Instrumentation and Control Systems

## V(J). Planned Program (External Factors)

**1. External Factors which may affect Outcomes**

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

**Description**

Natural disasters, animal disease, and increasing fuel prices, represent the most likely external factors which may affect outcomes.

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

**1. Evaluation Studies Planned**

- Time series (multiple points before and after program)

**Description**

Time series evaluations are planned, but additional studies may be conducted as deemed appropriate by the scientists and/or Extension professional.

**2. Data Collection Methods**

- Observation
- Sampling
- Structured
- On-Site
- Tests
- Unstructured
- Case Study

**Description**

Each project will identify appropriate data collection methods

## V(A). Planned Program (Summary)

**Program #5**

**1. Name of the Planned Program**

Food and Non-food Products, Development, Processing, Quality and Delivery

**2. Brief summary about Planned Program**

Agricultural Experiment Station (AES) research and Cooperative Extension Educational programs address the need for an integrated approach to meeting the development, processing, quality and delivery of food and non-food products in South Dakota and beyond our borders. The integrated research approach at South Dakota State University addresses quality, safety and final impact in the following areas: environment, economics/marketing, regulations, technology, and the end user. Addressing the needs of the industry by working with the producer, processor or end user requires networking within the university system and those outside the university that affect the overall process of a food or nonfood product. The research that is driven by this demand is often applied, looking at the potential use of the product and what impacts its development and delivery. The research is integrated with the delivery component through the SDSU Cooperative Extension Service (CES).

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

**4. Program duration :** Long-Term (More than 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 |
|---|---|---|---|---|---|
| 501 | New and Improved Food Processing Technologies | 40% | | 40% | |
| 502 | New and Improved Food Products | 33% | | 33% | |
| 511 | New and Improved Non-Food Products and Processes | 27% | | 27% | |
| | **Total** | 100% | | 100% | |

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

**1. Situation and priorities**

With consolidation of small farms into larger operations training employees has become a high priority in the U.S. Local workers are sometimes hard to come by, and hiring migrant labor has become critical. Some of these employees have limited experience working with animals which can oftentimes be an asset as they don't come with preconceived notions on how things should be done. They start with a clean slate and the new farm owner has the opportunity to train them according to his/her own best management practices. This can oftentimes represent an asset as they don't come with preconceived notions of how things should be done. Time and money invested in training pays dividends to the employer. Training employees on hygienic milk production practices helps reduce microbial counts in milk, increase production, and obtain a premium price per hundredweight. Also, training workers and producers on

Producers can also add value to their milk by processing and marketing their own dairy products, such as cheeses, and yogurt. Due to the volume needed to be profitable, and the equipment cost involved on farm-bottled milk will not be considered an

alternative. Beef and swine producers have the ability to add value to their product through quality assurance programs to ensure they are producing a safe high quality product. Producers participating in these programs often receive greater value at the sale of these animals due the standard treatment (vaccinations) and background of these animals. Oftentimes consumers are willing to pay a premium for locally produced, high-quality, meat and dairy products, and organic certification may further enhance this market potential. The growing demand for organic beef and dairy products is a result of the belief by the end consumers of their higher quality and safety, aspects related to animal welfare, and impacts of agricultural practices on the environment. Extension programs will address these aspects in order to increase the awareness of the public on these production issues and increase the demand and price for these products.

**2. Scope of the Program**

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

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

**1. Assumptions made for the Program**

Extension focus will be primarily on improving beef, dairy, and pork product quality and safeness. Our assumptions are that this approach will result in a premium price paid for the products, and increased demand by the end consumer. Other assumptions are that cost of production will be maintained within reason. The milk-feed price ratio or the feed-buying power of milk hit an all-time low in February 2009, at just 1.44. It is assumed this ratio will have to increase although it is highly dependent on average prices for baled alfalfa hay, corn and soybeans. One other assumption is that milk prices will be within reason (above $13 per CWT).

**2. Ultimate goal(s) of this Program**

Our ultimate goal would be to improve the price obtained by products, increase productivity, and increase product safety as a result of reduced incidence of mastitis in dairy herds, reduced incidence of hazards in food products, and increased participation in beef and pork quality assurance programs. Any combination of these or all will result in improved income over feed costs. For 2009 the main focus of dairy extension would be to train dairy employees on production of hygienic milk. Measurable impacts would be a reduction in somatic cell counts and/or bacteria counts as well as reduced costs for mastitis treatment, and/or increased production. Producer and/or employee surveys will be used to determine the change in knowledge before and after the extension intervention. For the beef and pork quality assurance programs and HACCP programs the main focus of extension would be to train producers/processor or their employees on quality assurance program criteria and implementation.

## 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 | 6.6 | 0.0 | 22.9 | 0.0 |
| 2011 | 6.4 | 0.0 | 22.4 | 0.0 |
| 2012 | 7.0 | 0.0 | 23.0 | 0.0 |
| 2013 | 7.0 | 0.0 | 23.0 | 0.0 |
| 2014 | 7.0 | 0.0 | 23.0 | 0.0 |

## V(F). Planned Program (Activity)

### 1. Activity for the Program

A series of milk quality training sessions in a minimum of 5 dairy farms are proposed. At least one HACCP workshop will be held in South Dakota for small meat and food processors to educate them on HACCP requirements, plans, and documentation. Also, Beef and Pork Quality Assurance trainings will be held as well as a state wide 4-H meat animal quality assurance program developed. At least two publications (one in Spanish one in English) addressing milk quality issues will be published through Ag Bio communications in 2009.

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

| Extension | |
|---|---|
| **Direct Methods** | **Indirect Methods** |
| • Education Class<br>• Demonstrations<br>• Workshop<br>• Group Discussion | • Newsletters<br>• TV Media Programs<br>• Other 1 (Radio and print media)<br>• Web sites |

### 3. Description of targeted audience

Biofuels producers
Producers – all types of agriculture.
Youth Organizations
Gardeners
Cottage Industry
Processors – use products produced in both South Dakota, and neighboring states.
End Users (includes retail and consumers)

## 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 | 100 | 300 | 50 | 50 |
| 2011 | 100 | 300 | 50 | 50 |
| 2012 | 150 | 400 | 50 | 50 |
| 2013 | 125 | 375 | 50 | 50 |
| 2014 | 125 | 375 | 50 | 50 |

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

**Expected Patent Applications**

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

### 3. Expected Peer Review Publications

| Year | Research Target | Extension Target | Total |
|---|---|---|---|
| 2010 | 4 | 4 | 0 |
| 2011 | 4 | 4 | 0 |
| 2012 | 4 | 4 | 0 |
| 2013 | 4 | 4 | 0 |
| 2014 | 4 | 4 | 0 |

## V(H). State Defined Outputs

### 1. Output Target

- Number of research projects completed on food/non-food products

**2010** 2 **2011** 2 **2012** 2 **2013** 2 **2014** 2

## V(I). State Defined Outcome

| O. No | Outcome Name |
|---|---|
| 1 | Number of producers/processors/end users working with SDSU for research and/or Extension programs related to the development, processing, quality and/or delivery of food or non-food products. |
| 2 | Number of producers/processors/end users using the research and educational tools developed by SDSU and their collaborators to make decisions related to the development and delivery of the identified food or non-food item. |
| 3 | Number of producers/processors/end users that have developed and are delivering a product impacts the economic/quality of life for the people of South Dakota. |

**Outcome #1**

**1. Outcome Target**

Number of producers/processors/end users working with SDSU for research and/or Extension programs related to the development, processing, quality and/or delivery of food or non-food products.

**2. Outcome Type :** Change in Knowledge Outcome Measure

| **2010** :20 | **2011 :** 20 | **2012 :** 20 | **2013** :20 | **2014 :**20 |
|---|---|---|---|---|

**3. Associated Institute Type(s)**

•1862 Extension
•1862 Research

**4. Associated Knowledge Area(s)**

- 501 - New and Improved Food Processing Technologies
- 502 - New and Improved Food Products
- 511 - New and Improved Non-Food Products and Processes

**Outcome #2**

**1. Outcome Target**

Number of producers/processors/end users using the research and educational tools developed by SDSU and their collaborators to make decisions related to the development and delivery of the identified food or non-food item.

**2. Outcome Type :** Change in Knowledge Outcome Measure

| **2010** :25 | **2011 :** 25 | **2012 :** 25 | **2013** :25 | **2014 :**20 |
|---|---|---|---|---|

**3. Associated Institute Type(s)**

•1862 Extension
•1862 Research

**4. Associated Knowledge Area(s)**

- 501 - New and Improved Food Processing Technologies
- 502 - New and Improved Food Products
- 511 - New and Improved Non-Food Products and Processes

**Outcome #3**

**1. Outcome Target**

Number of producers/processors/end users that have developed and are delivering a product impacts the economic/quality of life for the people of South Dakota.

**2. Outcome Type :** Change in Knowledge Outcome Measure

| **2010** :1 | **2011 :** 1 | **2012 :** 1 | **2013** :2 | **2014 :**2 |
|---|---|---|---|---|

**3. Associated Institute Type(s)**

•1862 Extension
•1862 Research

**4. Associated Knowledge Area(s)**

- 501 - New and Improved Food Processing Technologies
- 502 - New and Improved Food Products
- 511 - New and Improved Non-Food Products and Processes

## V(J). Planned Program (External Factors)

### 1. External Factors which may affect Outcomes

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

**Description**

Cost and availability of energy is an important factor which may affect outcomes.Additional factors include weather and climate, competitive developments of other products that may come on the market, available labor, and changes in the local business climate which impact new and developing processors.

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

### 1. Evaluation Studies Planned

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

**Description**

The evaluation plan will primarily focus on garnering needs of target audiences and identifying impacts. The evaluation plan will also address the outcomes identified.

### 2. Data Collection Methods

- Portfolio Reviews
- Structured
- Case Study
- Sampling
- Mail
- Observation
- On-Site

**Description**

Each project will identify appropriate data collection methods.

## V(A). Planned Program (Summary)

**Program #6**

**1. Name of the Planned Program**

Economics and Market Policy

**2. Brief summary about Planned Program**

Economics, business, and market policy research and Extension programs of the Department of Economics are driven by the requirement to allocate scarce resources to competing entities which seek to maximize profitability in an ever changing social, political, and economic environment. Business management is the principal area of emphasis with programs and projects aimed at providing information and answering questions in production economics, financial analysis, marketing management, human resources, and agricultural policy analysis. Because of increasing competition from producers around the globe, attention to domestic policy analysis, world trade organization, and economic development are essential program areas for enhanced effort. American and World Farm Policy makers have increased the focus on "green" agriculture. Projects to evaluate the impacts of changes in environmental policy on profitability and rural communities are needed to develop information for enhanced management decision making. Recent announcements by President Bush concerning U.S. energy self sufficiency and renewable fuel production from biomass necessitate stronger collaboration among professionals from multiple academic disciplines and industry. The economist's role is to determine economic/financial feasibility of new energy processes and to estimate environmental and economic impacts of the industry. Unintended external consequences from changes will be identified and economists must stand ready to value these impacts—negative and positive.

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

**4. Program duration :** Long-Term (More than 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 |
|---|---|---|---|---|---|
| 601 | Economics of Agricultural Production and Farm Management | 37% | | 37% | |
| 602 | Business Management, Finance, and Taxation | 9% | | 9% | |
| 604 | Marketing and Distribution Practices | 9% | | 9% | |
| 606 | International Trade and Development | 9% | | 9% | |
| 607 | Consumer Economics | 9% | | 9% | |
| 608 | Community Resource Planning and Development | 9% | | 9% | |
| 610 | Domestic Policy Analysis | 18% | | 18% | |
| | **Total** | 100% | | 100% | |

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

### 1. Situation and priorities

Consumers, agricultural producers and agribusinesses are all struggling the global recession. High crop prices from just a year ago caused the collapse of VeraSun, the second largest ethanol producer in the United States, a company that was headquartered in South Dakota. The economic upheaval is sending ripples through all segments of South Dakota's economy. The on-going uncertainty of agriculture is now compounded by instability faced by other sectors of the economy.

### 2. Scope of the Program

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

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

### 1. Assumptions made for the Program

Internal resources may not be constant.
External resources will be sought for program enhancements.
Collaboration with professionals from other disciplines will be strongly encouraged.
Managers will continue to request information and decision tools.

**2. Ultimate goal(s) of this Program**

Improved profitability, reduced risk, and enhanced rural well being.

## 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 | 9.8 | 0.0 | 17.2 | 0.0 |
| 2011 | 9.6 | 0.0 | 16.8 | 0.0 |
| 2012 | 9.6 | 0.0 | 16.0 | 0.0 |
| 2013 | 9.0 | 0.0 | 16.0 | 0.0 |
| 2014 | 9.0 | 0.0 | 16.0 | 0.0 |

## V(F). Planned Program (Activity)

**1. Activity for the Program**

Research will be conducted in priority areas of resource allocation and economic development, policy analysis, financial analysis, renewable and value-added agriculture, and marketing alternatives. Extension will provide training in formal and informal venues. Research findings will be extended to the appropriate audiences.

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

| Extension | |
|---|---|
| **Direct Methods** | **Indirect Methods** |
| • Education Class<br>• Workshop<br>• One-on-One Intervention | • TV Media Programs<br>• Other 1 (Radio and print media)<br>• Newsletters<br>• Web sites |

**3. Description of targeted audience**

Agri-business persons in South Dakota and the Northern Plains Region. Managers, extension educators and professional colleagues will all benefit from the program 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 | 1500 | 10000 | 100 | 500 |
| 2011 | 1500 | 10000 | 100 | 500 |
| 2012 | 1500 | 10000 | 100 | 500 |
| 2013 | 1500 | 10000 | 100 | 500 |
| 2014 | 1500 | 10000 | 100 | 500 |

**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 | 6 | 6 | 0 |
| 2011 | 6 | 6 | 0 |
| 2012 | 6 | 6 | 0 |
| 2013 | 6 | 6 | 0 |
| 2014 | 6 | 6 | 0 |

## V(H). State Defined Outputs

**1. Output Target**

- Extension Educators Trained

**2010 :**50 **2011 :**50 **2012 :**50 **2013 :**50 **2014 :**50

- One-on-One Management Consultations

**2010 :**50 **2011 :**50 **2012 :**50 **2013 :**50 **2014 :**50

- Completed Research Projects

**2010 :**5 **2011 :**5 **2012 :**5 **2013 :**5 **2014 :**5

## V(I). State Defined Outcome

| O. No | Outcome Name |
|---|---|
| 1 | Number of farmers calculating production costs and returns to storage. |
| 2 | Number of agri-business persons aware of marketing strategies and crop insurance and farm program alternatives. |
| 3 | Number of agri-business persons aware of their financial positions and farm business plan components. |
| 4 | Number of farmers employing marketing strategies and allocating scarce resources effectively. |
| 5 | Number of agri-businesses with stable or improved profitability. |

**Outcome #1**

**1. Outcome Target**

Number of farmers calculating production costs and returns to storage.

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010 :**300 **2011 :** 300 **2012 :** 300 **2013 :**300 **2014 :**300

**3. Associated Institute Type(s)**

•1862 Extension
•1862 Research

**4. Associated Knowledge Area(s)**

- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 604 - Marketing and Distribution Practices
- 607 - Consumer Economics

**Outcome #2**

**1. Outcome Target**

Number of agri-business persons aware of marketing strategies and crop insurance and farm program alternatives.

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010 :**300 **2011 :** 300 **2012 :** 300 **2013 :**300 **2014 :**300

**3. Associated Institute Type(s)**

•1862 Extension
•1862 Research

**4. Associated Knowledge Area(s)**

- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 604 - Marketing and Distribution Practices

**Outcome #3**

**1. Outcome Target**

Number of agri-business persons aware of their financial positions and farm business plan components.

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010 :**100 **2011 :** 100 **2012 :** 100 **2013 :**100 **2014 :**100

**3. Associated Institute Type(s)**

•1862 Extension
•1862 Research

**4. Associated Knowledge Area(s)**

- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 607 - Consumer Economics

**Outcome #4**

**1. Outcome Target**

Number of farmers employing marketing strategies and allocating scarce resources effectively.

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010 :**100 **2011 :** 130 **2012 :** 150 **2013 :**175 **2014 :**200

**3. Associated Institute Type(s)**

•1862 Extension
•1862 Research

**4. Associated Knowledge Area(s)**

- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 604 - Marketing and Distribution Practices

**Outcome #5**

**1. Outcome Target**

Number of agri-businesses with stable or improved profitability.

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010 :**55 **2011 :** 75 **2012 :** 75 **2013 :**75 **2014 :**75

**3. Associated Institute Type(s)**

•1862 Extension
•1862 Research

**4. Associated Knowledge Area(s)**

- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 606 - International Trade and Development
- 607 - Consumer Economics
- 608 - Community Resource Planning and Development
- 610 - Domestic Policy Analysis

## V(J). Planned Program (External Factors)

**1. External Factors which may affect Outcomes**

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

**Description**

In addition, the following factors may affect outcomes:
Domestic and world trade and agricultural policies
Economic conditions in importing countries
Production disasters—drought, disease, flood

Budget decisions from Federal, state and local level

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

### 1. Evaluation Studies Planned

- During (during program)
- Case Study
- After Only (post program)

**Description**

Survey of participants to determine use of information and impact on success
Monitoring usage levels of all awareness activities

### 2. Data Collection Methods

- On-Site
- Telephone
- Portfolio Reviews
- Unstructured
- Sampling
- Structured
- Case Study
- Observation
- Mail

**Description**

Each project will determine appropriate data collection methods.

## V(A). Planned Program (Summary)

**Program #7**

**1. Name of the Planned Program**

Human Nutrition, Food Safety, and Human Health and Well-Being

**2. Brief summary about Planned Program**

The SDSU CES Extension Service is working to empower people to improve their lives and strengthen the family through the following two issue based approaches:

1. Promoting a healthy weight to reduce the risk factors associated with chronic disease.

2. Improving access to healthy, affordable, and safe food supplies.

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

**4. Program duration :** Long-Term (More than 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 |
|---|---|---|---|---|---|
| 702 | Requirements and Function of Nutrients and Other Food Components | 33% | | 33% | |
| 703 | Nutrition Education and Behavior | 34% | | 34% | |
| 722 | Zoonotic Diseases and Parasites Affecting Humans | 33% | | 33% | |
| | **Total** | 100% | | 100% | |

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

**1. Situation and priorities**

The state of South Dakota has 14% of its citizens living in poverty, according to the US 2005 Census Bureau. Our children living in poverty was over 18%. South Dakota is also a very rural state with limited access to affordable food in several remote areas. Nearly one-half (31 out of 66) counties are considered a food desert. And, food costs continue to rise. Therefore a need has been identified to enhance the sustainability of communities through alternative food supplies such as producing their own, establishing direct marketing opportunities, and promoting preservation of food.

According to the Centers for Disease Control, 2006, 20-24% of South Dakota's citizens are obese, and 56.5% are overweight. The USDA reports the following that the level of physical activity is also of concern with over 70% of the population exercising only one day a month and 38.8% four days a week. Following are some of the healthy eating patterns that are of concern for South Dakotans:

• 17.2% meeting vegetable recommendations

• 43.6% consume greater than 10% of their fat from saturated fats.

• 27% meeting fruit recommendations

• 29% meet dairy recommendations

• 77% have a cholesterol intake greater than 300mg

**2. Scope of the Program**

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

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

**1. Assumptions made for the Program**

The following trends were used as the basis for our assumptions:

• Continued rising trends in overweight and obesity

• Eating and physical activity patterns well below recommendations

• Rising food and fuel prices

• Diseases linked to obesity continue to increase (diabetes, heart disease, metabolic syndrome)

• Reducing health disparities

• SD estimated cost of obesity $195 million/year

• Increased number of families growing and processing foods.

• Increased number of communities establishing farmer's markets and growers direct marketing their product.

**2. Ultimate goal(s) of this Program**

- To promote a healthy weight to reduce risk factors for chronic disease (Persons of all ages across SD)
- To improve access to healthy, affordable and safe food supplies (Persons living in food deserts across SD and persons living in poverty)
- Strengthen and enhance the partnership between the Expanded Food and Nutrition Education Program (EFNEP) and Family Nutrition Program (FNP) in order to expand the reach of low-income audiences served across SD. (Low income families)

## 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 | 18.0 | 0.0 | 3.8 | 0.0 |
| 2011 | 17.6 | 0.0 | 3.7 | 0.0 |
| 2012 | 17.0 | 0.0 | 3.5 | 0.0 |
| 2013 | 17.0 | 0.0 | 3.5 | 0.0 |
| 2014 | 17.0 | 0.0 | 3.0 | 0.0 |

## V(F). Planned Program (Activity)

**1. Activity for the Program**

- May 2009- Dec. 2013 - Extension Educators will provide a variety of training opportunities to individuals and families across South Dakota & Pre/Post surveys will be given to measure participant knowledge & behavior change.

• May 2009 – December 2013 - Extension Educators and Specialists will write and distribute a variety of nutrition, health & wellbeing and food access educational materials, newsletters & other mass media.

• May 2009-December 2013 - Educators will receive ongoing training through Elluminate and periodic face to face area of emphasis trainings.

• 2013 A signature program will be utilized and evaluated to collect research data and impacts.

• 2013 Develop and deliver a Master Food Preserver Program across South Dakota

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

| Extension | |
|---|---|
| **Direct Methods** | **Indirect Methods** |
| • Other 1 (Scholarly publications)<br>• Education Class<br>• Workshop | • TV Media Programs<br>• Web sites<br>• Newsletters<br>• Other 1 (Radio and print media) |

**3. Description of targeted audience**

Adults

Youth

Partner agencies

Persons with health issues

Individuals/families with low incomes/ living in poverty

Community residents who have limited access to healthy affordable foods

• Stakeholder input will be collected through: Focus Groups, Pre & Post Surveys, County & Field Education Unit Needs Assessments, Educator Observation, Emerging Issues in community and collaboration with other community service agencies.

S.D. and youth who attend reservation schools

## 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 | 4050 | 8000 | 4550 | 9000 |
| 2011 | 4050 | 8000 | 5050 | 9000 |
| 2012 | 4050 | 8000 | 5050 | 9000 |
| 2013 | 4000 | 8000 | 5000 | 7000 |
| 2014 | 4000 | 8000 | 5000 | 7000 |

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

**Expected Patent Applications**

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

### 3. Expected Peer Review Publications

| Year | Research Target | Extension Target | Total |
|---|---|---|---|
| 2010 | 4 | 9 | 0 |
| 2011 | 4 | 9 | 0 |
| 2012 | 4 | 9 | 0 |
| 2013 | 4 | 9 | 0 |
| 2014 | 4 | 9 | 0 |

## V(H). State Defined Outputs

### 1. Output Target

- Number of research projects

**2010 :** 3 **2011 :** 4 **2012 :** 4 **2013 :** 4 **2014 :** 4

## V(I). State Defined Outcome

| O. No | Outcome Name |
|---|---|
| 1 | Decrease in obesity rates by percentage of the population. |
| 2 | Number of participants demonstrating ability to choose or prepare food with reduced fat and/or calories. |
| 3 | Number of participants increasing the number of minutes spent daily in physical activity. |
| 4 | Number of food service managers implementing a safe food handling training program for employees, thus increasing the retention rate of training participants in the food service industry (workforce). |

**Outcome #1**

**1. Outcome Target**

Decrease in obesity rates by percentage of the population.

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010 :** 2 **2011 :** 1 **2012 :** 1 **2013 :** 1 **2014 :** 1

**3. Associated Institute Type(s)**

•1862 Extension
•1862 Research

**4. Associated Knowledge Area(s)**

- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior

**Outcome #2**

**1. Outcome Target**

Number of participants demonstrating ability to choose or prepare food with reduced fat and/or calories.

**2. Outcome Type :** Change in Action Outcome Measure

**2010 :** 1500 **2011 :** 2000 **2012 :** 2000 **2013 :** 2000 **2014 :** 2000

**3. Associated Institute Type(s)**

•1862 Extension
•1862 Research

**4. Associated Knowledge Area(s)**

- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior

**Outcome #3**

**1. Outcome Target**

Number of participants increasing the number of minutes spent daily in physical activity.

**2. Outcome Type :** Change in Action Outcome Measure

**2010 :** 1500 **2011 :** 2000 **2012 :** 2000 **2013 :** 2000 **2014 :** 2000

**3. Associated Institute Type(s)**

•1862 Extension
•1862 Research

**4. Associated Knowledge Area(s)**

- 703 - Nutrition Education and Behavior

**Outcome #4**

**1. Outcome Target**

Number of food service managers implementing a safe food handling training program for employees, thus increasing the retention rate of training participants in the food service industry (workforce).

**2. Outcome Type :** Change in Action Outcome Measure

**2010 :**150 **2011 :** 200 **2012 :** 200 **2013 :**225 **2014 :**225

**3. Associated Institute Type(s)**

•1862 Extension
•1862 Research

**4. Associated Knowledge Area(s)**

- 703 - Nutrition Education and Behavior

## V(J). Planned Program (External Factors)

**1. External Factors which may affect Outcomes**

- Economy
- Appropriations changes
- Public Policy changes
- Competing Public priorities
- Government Regulations

**Description**

Additional factors also include:
•New health-related findings about soy or obesity •Cure for cancer of heart diseases which circumvents diet •Drugs which can prevent or cure obesity (regardless of diet) •Competing public priorities

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

**1. Evaluation Studies Planned**

- Time series (multiple points before and after program)
- Case Study
- During (during program)
- After Only (post program)
- Comparisons between program participants (individuals,group,organizations) and non-participants
- Before-After (before and after program)

**Description**

- Control/treatment studies to show impact of behavior change intervention
- Qualitative studies to learn about obesity
- Trials with mice (research design)
- Pre/post tests
- Dietary recall

**2. Data Collection Methods**

- Observation
- Structured
- Sampling
- On-Site
- Case Study

**Description**

Each project will determine appropriate data collection methods.

## V(A). Planned Program (Summary)

**Program #8**

**1. Name of the Planned Program**

Families, Youth and Communities

**2. Brief summary about Planned Program**

This Planned Program represents the largest percent of time dedicated to educational efforts by the Cooperative Extension Service. Planned research will focus on rural families and quality of life issues. The combined AES and CES efforts will strengthen families and communities.

As the nature of American society moves toward a knowledge and skills based economy, the importance of human capitol and its development/enhancement is being recognized. Social challenges, threats to the family and urban/rural poverty continue to challenge or reduce the capacity of many Americans to reach their full potential. Family Consumer Science and Youth Development/4-H educational outreach programs provide a foundation in which South Dakota families can gain critical help in strengthening their family structure. This includes addressing specific family challenges – saving for retirement, parenting, child care and empowering the aged.

Increased training in science & technology, work force preparation, and strengthening opportunities for young people to be civically engaged in their community are critical youth development/4-H priorities in the next five years. This is closely linked to the emerging need to provide educational programs in Community Development. Rural communities throughout South Dakota are seeking assistance in leadership development, poverty reduction, civic engagement and improved economic capacity.

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

**4. Program duration :** Long-Term (More than 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 |
|---|---|---|---|---|---|
| 801 | Individual and Family Resource Management | 33% | | 33% | |
| 802 | Human Development and Family Well-Being | 17% | | 17% | |
| 803 | Sociological and Technological Change Affecting Individuals, Families and Communities | 33% | | 33% | |
| 805 | Community Institutions, Health, and Social Services | 17% | | 17% | |
| | **Total** | 100% | | 100% | |

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

**1. Situation and priorities**

Rural life is challenging. In South Dakota, most rural communities find themselves struggling to hang on. Population loss,

economic limitations, aging populations, and out-migration of young people highlight the most significant challenges. Because South Dakota is essentially 100% rural with just two larger population centers on the eastern and western borders, sustaining rural life is critical. The priority for rural quality of life studies will investigate these challenges from multiple perspectives. Understanding demographic changes, low-income families ability to adapt, family relationships, and financial well-being are at the center of future research. The priority will be to translate research findings into information and programming which will be useful to rural families and communities.

Family and Consumer Science Extension programs will focus on retirement planning, parenting education, child care education and successful aging. Youth Development/4-H programs will focus on science, engineering & technology, citizenship and work force preparation. Community development programs will focus on poverty reduction, leadership development, civic engagement & expanded economic capacity building.

**2. Scope of the Program**

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

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

**1. Assumptions made for the Program**

We assume that rural communities will continue to be challenged with loss in population and economic struggles. We also assume that current demographic trends will continue into the next five years which include lower income, aging population, and loss of youth to more urban areas. We also assume that strong community leadership is important to the success of rural communities such as economic development, access to family and social services, and education to build strong relationships and financial wellbeing. We also assume that funding will remain constant or increase. Availability of grants to address community development or youth programs in science & technology will potentially be available to provide additional funding.

**2. Ultimate goal(s) of this Program**

- To sustain a rural quality of life for families.
- To build strong families who experience healthy marriages and are financially secure by strengthening relationships and increasing capacity for financial planning and saving
- To assist rural communities so as to remain viable.
- To increase the human and social capitol in South Dakota communities by improving leadership development, addressing poverty and seeking solutions for improved economic capacities. Strong family units build strong communities.

## 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 | 55.8 | 0.0 | 9.6 | 0.0 |
| 2011 | 54.4 | 0.0 | 9.4 | 0.0 |
| 2012 | 54.0 | 0.0 | 9.0 | 0.0 |
| 2013 | 54.0 | 0.0 | 9.0 | 0.0 |
| 2014 | 54.0 | 0.0 | 9.0 | 0.0 |

## V(F). Planned Program (Activity)

### 1. Activity for the Program

Research will be conducted on rural low income families, rural communities, premarital education with longitudinal follow ups, and financial saving behavior. Research will be social science in nature. Census data will also be available to communities.

Extension will conduct informational seminars, interactive learning opportunities, group classes, and provide printed curriculum to youth audiences (4-H, schools, afterschool programs, head start and child care centers) and adult audiences (senior citizens, community organizations, parents, teachers, others) while also working with community based groups (city councils, community development groups, city councils).

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

| Extension | |
|---|---|
| **Direct Methods** | **Indirect Methods** |
| • Education Class<br>• Workshop | • TV Media Programs<br>• Newsletters<br>• Web sites |

### 3. Description of targeted audience

- Rural communities in South Dakota.
- Extension educators
- Community planners and developers
- Educators and other professionals who work in social services including welfare programs targeting low-income audiences.
- Tribal colleges in S.D. and families who reside on the reservations
- Youth
- Adults
- Senior citizens

- Targeted business owners
- Low income citizens

## 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 | 5000 | 8000 | 4500 | 7000 |
| 2011 | 5000 | 8000 | 5000 | 7000 |
| 2012 | 5000 | 8000 | 5000 | 7000 |
| 2013 | 5000 | 8000 | 5000 | 7000 |
| 2014 | 5000 | 8000 | 5000 | 7000 |

### 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 | 5 | 7 | 0 |
| 2011 | 5 | 7 | 0 |
| 2012 | 5 | 7 | 0 |
| 2013 | 5 | 7 | 0 |
| 2014 | 5 | 7 | 0 |

## V(H). State Defined Outputs

### 1. Output Target

- Number of research projects completed

**2010 :** 3 **2011 :** 5 **2012 :** 5 **2013 :** 5 **2014 :** 5

## V(I). State Defined Outcome

| O. No | Outcome Name |
|---|---|
| 1 | Number of youth participating in math, engineering or science related activities to further develop workforce preparation skills. |
| 2 | Number of youth that were engaged as partners in community civic activities with an adult. |
| 3 | Number of communities that were engaged in poverty reduction and/or leadership development activities that lead to the development of a strategic plan for action. |
| 4 | Increase in low-income family self-sufficiency, by percentage of the population. |
| 5 | Number of communities reporting an increase in rural community vitality (population stability, economic indicators) |

**Outcome #1**

**1. Outcome Target**

Number of youth participating in math, engineering or science related activities to further develop workforce preparation skills.

**2. Outcome Type :** Change in Knowledge Outcome Measure

| | | | | |
|---|---|---|---|---|
| **2010 :** 800 | **2011 :** 1000 | **2012 :** 1000 | **2013 :** 1000 | **2014 :** 1000 |

**3. Associated Institute Type(s)**

•1862 Extension
•1862 Research

**4. Associated Knowledge Area(s)**

- 802 - Human Development and Family Well-Being
- 805 - Community Institutions, Health, and Social Services

**Outcome #2**

**1. Outcome Target**

Number of youth that were engaged as partners in community civic activities with an adult.

**2. Outcome Type :** Change in Action Outcome Measure

| | | | | |
|---|---|---|---|---|
| **2010 :** 400 | **2011 :** 750 | **2012 :** 750 | **2013 :** 750 | **2014 :** 750 |

**3. Associated Institute Type(s)**

•1862 Extension
•1862 Research

**4. Associated Knowledge Area(s)**

- 802 - Human Development and Family Well-Being
- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities
- 805 - Community Institutions, Health, and Social Services

**Outcome #3**

**1. Outcome Target**

Number of communities that were engaged in poverty reduction and/or leadership development activities that lead to the development of a strategic plan for action.

**2. Outcome Type :** Change in Knowledge Outcome Measure

| | | | | |
|---|---|---|---|---|
| **2010 :** 30 | **2011 :** 30 | **2012 :** 30 | **2013 :** 50 | **2014 :** 50 |

**3. Associated Institute Type(s)**

•1862 Extension
•1862 Research

**4. Associated Knowledge Area(s)**

- 801 - Individual and Family Resource Management
- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities
- 805 - Community Institutions, Health, and Social Services

**Outcome #4**

**1. Outcome Target**

Increase in low-income family self-sufficiency, by percentage of the population.

**2. Outcome Type :** Change in Action Outcome Measure

**2010** :2 **2011 :** 1 **2012 :** 1 **2013** :1 **2014 :**1

**3. Associated Institute Type(s)**

•1862 Extension
•1862 Research

**4. Associated Knowledge Area(s)**

- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities
- 805 - Community Institutions, Health, and Social Services

**Outcome #5**

**1. Outcome Target**

Number of communities reporting an increase in rural community vitality (population stability, economic indicators)

**2. Outcome Type :** Change in Action Outcome Measure

**2010** :3 **2011 :** 3 **2012 :** 3 **2013** :5 **2014 :**5

**3. Associated Institute Type(s)**

•1862 Extension
•1862 Research

**4. Associated Knowledge Area(s)**

- 801 - Individual and Family Resource Management
- 805 - Community Institutions, Health, and Social Services

## V(J). Planned Program (External Factors)

**1. External Factors which may affect Outcomes**

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

**Description**

Specific factors include rate of inflation and resulting impact on overall economy, and community specific disasters such as tornados or ice storms.

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

**1. Evaluation Studies Planned**

- Before-After (before and after program)
- Case Study
- After Only (post program)
- Retrospective (post program)

**Description**

Evaluations may include studies that document behavior change, and qualitative studies to learn about communities.

**2. Data Collection Methods**

- Whole population
- Mail
- Structured
- Sampling
- Telephone
- Unstructured
- Case Study
- On-Site
- Observation

**Description**

Each project will determine appropriate data collection methods.