

2009 South Dakota State University Combined Research and Extension Annual Report of Accomplishments and Results

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I. Report Overview

1. Executive Summary

This integrated Annual Report is a summary of activities for Federal Fiscal Year 2009 for the Agricultural Experiment Station and Cooperative Extension Service.

For generations, the SDSU College of Agriculture and Biological Sciences, through the Agricultural Experiment Station and Cooperative Extension Service, has helped South Dakotans earn a better living and improve the quality of their lives. Whether it was developing new tree varieties for the prairie, helping bring water to rural communities, fostering agricultural production and natural resource conservation, or showing families how to stretch their income to pay basic bills, South Dakotans have turned to SDSU for answers and a brighter future.

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 Education and Human Sciences was recently created through the combination of the former Colleges of Family and Consumer Sciences, and Education. The College of Education and Human Sciences is actively involved in programs conducted with AES and CES.

The population of South Dakota is estimated at 804,194 people (2008 Census Estimate). By 2010, the state population is projected to stand at 786,399. The state population is not projected to exceed 800,000 people until 2020. One-third of the population is found in the two largest counties, and 44 percent of the population is found in the five largest 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. The U.S. Census of 2000 classified South Dakota as 51.92 percent urban, 7.72 percent rural-farm, and 40.36 percent rural-non-farm.

South Dakotans are not immune to the current recession. According to a poll conducted by the National Area Foundation in St. Paul:

29% of South Dakotans said they have had problems paying their mortgage, rent, or heating bills.

44% say they have cut back on the amount they spend on food.

45% have cut back on saving for retirement.

16% say they or a family member living in their household have lost a job in the past 12 months.

In 2008, 13.2 percent of South Dakotans lived in poverty.

Even before this recession started, many South Dakotans struggled to make ends meet. A 2009 study by the SDSU Department of Rural Sociology compared the actual cost of living in each South Dakota County with the average income for 591 job categories. The results were stunning. Using Hughes County as an example, a single parent with two children must earn \$17.43 per hour to achieve self-sufficiency. A single parent with one child must earn \$13.45. The average hourly pay for 56% of South Dakota's job categories is below \$17.43. Of the 395,960 employees in South Dakota listed in the quarter ending June 2009, the average hourly wage was \$16.01.

Poverty rates in South Dakota are among the highest in the United States, occurring largely in counties with a high percentage of American Indians. Of South Dakota's 66 counties, the following ten have the highest poverty rates: Ziebach, Shannon, Todd, Corson, Buffalo, Bennett, Mellette, Jackson, Dewey and Charles Mix. A majority of the citizens in each of these ten counties is American Indian.

The American Indian population represents approximately eight percent of the total state population. Unemployment, alcoholism, poor diet, 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. South Dakota has a substantial American Indian population, and we place great value on education programs that serve this audience. While all Extension programs are available to the entire population of South Dakota, many of the programs that

target American Indian needs are funded through FRTEP. With a limited amount of space available for reporting on the Smith-Lever and Hatch programs, we chose to write less about FRTEP-funded programs for American Indians and focus more on the required Smith-Lever and Hatch reporting areas.

AGRICULTURAL EXPERIMENT STATION - SDSU is recognized by the Carnegie Foundation for the Advancement of Teaching as the state's only research university/high research activity institution. This prestigious ranking recognizes the growth of doctoral programs, degrees granted, and competitive funds obtained. The ABS College has identified five multidisciplinary areas of excellence, involving research, teaching and extension efforts. These areas extend beyond the ABS College to the Colleges of Engineering, and Education and Human Science. These include: 1) Biorenewable economic development Research in this area focuses on new technologies for processing plant-derived materials into biomaterials such as ethanol; 2) Applied genome technology solutions SDSU applies genome technology to crop variety development, helping plant scientists locate genes that express resistance or tolerance to various stresses, which ultimately impact yield; 3) Natural resource stewardship SDSU scientists work to promote biodiversity and sustainability of natural resources, assuring that South Dakota communities, businesses, agriculture and wildlife can co-exist; 4) Community innovation and leadership; and, 5) Enhancing economic development of grain/livestock/food systems.

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 West River Center 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 Dakota Lakes and diversification of corn/soybean rotations and livestock feeding being emphasized at the Southeast Farm. The SDSU Gerdes Cow Camp Research Station in east central South Dakota emphasizes livestock production and natural resource management. 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 Northwestern SD 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.

COOPERATIVE EXTENSION SERVICE - Extension offers educational programs in agriculture and natural resources, youth development/4-H, family and consumer sciences, and community innovation and leadership. This year, CES implemented new Native American Program, and appointed a program leader to with responsibilities that cross all program boundaries. The Native American program assures that Extension services are provided to this targeted, underserved population. Grant funds are used to augment state and federal funds in delivery of Native American programs.

The Cooperative Extension Service has offices located in 65 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.

Total Actual Amount of professional FTEs/SYs for this State

Year: 2009	Extension		Research	
	1862	1890	1862	1890
Plan	168.0	0.0	193.0	0.0
Actual	128.3	0.0	157.8	0.0

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

- 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 serve as the merit review team for the respective components of the plan of work. Department heads, specialists and educators conduct peer reviews of programs.

III. Stakeholder Input**1. Actions taken to seek stakeholder input that encouraged their participation**

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

Brief explanation.

The South Dakota State University College of Agriculture and Biological Sciences solicited formal stakeholder input in many forms, from many sources, and at many locations. Methods of inviting stakeholder input included 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 was 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; and from meetings with organizations that fund research 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 was 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.

In addition, stakeholder input was 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 was solicited during comprehensive CSREES Departmental and Institutional Reviews, which span teaching, research and Extension activities.

Input specifically for projects involving McIntire-Stennis funds was sought from the South Dakota Nurseryman's Association, the South Dakota Parks and Recreation Association, the U.S. Forest Service, and also from special project-oriented groups.

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

1. Method to identify individuals and groups

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

Brief explanation.

County Extension Advisory Boards are required by South Dakota law, and provide citizen input, guidance, and direction for county programming that target priority needs and issues, and are appointed by County Commissioners. 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.

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.

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

1. Methods for collecting Stakeholder Input

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

Brief explanation.

Stakeholder input is directed across the broad scope of the College of Agriculture and Biological Sciences and to activities supported by Smith Lever, Hatch, McIntire-Stennis, and other funds. Stakeholder input was not directed

exclusively to the Cooperative Extension Service or Agricultural Experiment Station. The multidisciplinary input system used a variety of techniques that included: direct input, brainstorming, surveys and questionnaires, nominal group technique and other appropriate methods.

3. A statement of how the input will be considered

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

Brief explanation.

Stakeholder input is reviewed, considered and used as a basis to create Extension programs and AES research projects. This happens at the state level, when CES program leaders consider developing new programs, or renew existing programs. It happens at the field education unit and county level when District Extension Directors and Extension Educators implement programs. For the Agricultural Experiment Station, it occurs when scientists and department administrators consider the allocation of resources and application of grant funds in support of research projects.

Brief Explanation of what you learned from your Stakeholders

Land grant universities have traditionally been known for rural development efforts. In response to stakeholder requests over the past decade, the South Dakota Cooperative Extension Service has offered an increasing amount of community and economic development programs. Cooperative Extension continues to enhance Community Innovation and Leadership as a formal educational program area.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
3419152	0	2713938	0

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	3039474	0	2713938	0
Actual Matching	3039474	0	2767374	0
Actual All Other	0	0	0	0
Total Actual Expended	6078948	0	5481312	0

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

V. Planned Program Table of Content

S. No.	PROGRAM NAME
1	Natural Resources and Environment
2	Plants and Their Systems
3	Animals and Their Systems
4	Agricultural, Natural Resource and Biological Engineering
5	Food and Non-food Products, Development, Processing, Quality and Delivery
6	Economics and Market Policy
7	Human Nutrition, Food Safety, and Human Health and Well-Being
8	Families, Youth and Communities

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Natural Resources and Environment

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 (Inputs)

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

Year: 2009	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	40.5	0.0
Actual	6.8	0.0	40.4	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
161396	0	398020	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
161396	0	519559	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

The SDSU Department of Wildlife and Fisheries Sciences has an established and respected research program, and offers a service component that is responsive to South Dakota issues. While no formal Extension funds are provided, the continuum of research and service offers information that starts at the identified need for research, extends through the exploration and development of new knowledge, followed by the transfer of information to stakeholders who expressed need and interest.

2. Brief description of the target audience

Land managers

Wildlife and fisheries managers

State citizens

Urban stakeholders

V(E). Planned Program (Outputs)

1. Standard output measures

2009	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	200	2000	0	0
Actual	55	1900	0	100

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

Patent Applications Submitted

Year: 2009
 Plan: 0
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2009	Extension	Research	Total
Plan	0	0	
Actual	0	35	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Research projects in Wildlife, Fisheries Sciences and areas related to the Planned Program

Year	Target	Actual
2009	50	50

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Build on current research focus of Wildlife and Fisheries Science Department to address stakeholder issues
2	Conduct research on South Dakota issues to add to understanding and improving wildlife and fisheries resources
3	Consultations with land and resource managers in support of the overall protection of habitat in South Dakota.

Outcome #1

1. Outcome Measures

Build on current research focus of Wildlife and Fisheries Science Department to address stakeholder issues

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Conduct research on South Dakota issues to add to understanding and improving wildlife and fisheries resources

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	50	45

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The mountain lion population in South Dakota is increasingly visible, with media reports reaching across the state. It has traditionally been perceived to live only in the Black Hills. Increased sightings and media reports have led to a greater visibility of management and control issues.

What has been done

SDSU scientists have extensively studied this mountain lion population. Information on movements, behavior, life history, and population dynamics were all determined.

Results

This research has prevented a substantial amount of conflict among user groups with differing desires. While some groups wish to preserve the mountain lions, others want to remove them due to potential danger to humans, pets, and livestock. Because of SDSU research, more is known about this mountain lion population than any other population on the continent. As a result, the state conservation agency was able to institute a hunting season to reduce the population size, while not affecting the long-term viability of the population, creating a reasonable management compromise.

4. Associated Knowledge Areas

KA Code Knowledge Area

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
112	Watershed Protection and Management
121	Management of Range Resources
123	Management and Sustainability of Forest Resources
132	Weather and Climate
133	Pollution Prevention and Mitigation
135	Aquatic and Terrestrial Wildlife

Outcome #3

1. Outcome Measures

Consultations with land and resource managers in support of the overall protection of habitat in South Dakota.

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

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

1. Evaluation Studies Planned

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

Evaluation Results

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Plants and Their Systems

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	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 (Inputs)

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

Year: 2009	Extension		Research	
	1862	1890	1862	1890
Plan	28.6	0.0	48.3	0.0
Actual	20.5	0.0	43.8	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
485708	0	516418	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
485708	0	756863	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

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. 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. Brief description of the target audience

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

V(E). Planned Program (Outputs)

1. Standard output measures

2009	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	22870	20430	411	411
Actual	20300	18000	2500	600

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

Patent Applications Submitted

Year: 2009
 Plan: 0
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2009	Extension	Research	Total
Plan	0	0	
Actual	37	18	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

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

Year	Target	Actual
2009	10	14

Output #2

Output Measure

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

Year	Target	Actual
2009	1	2

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Number of farmers learning about new crops, varieties, crop management techniques, forages and biofuels.
2	Number of farmers learning new insect control and IPM management techniques
3	Number of farmers learning new plant disease control and IPM management techniques.
4	Number of farmers learning new chemical, biological, alternative weed control and IPM techniques and pesticide safety.

Outcome #1**1. Outcome Measures**

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	3550	0

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

{No Data Entered}

What has been done

{No Data Entered}

Results

{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
201	Plant Genome, Genetics, and Genetic Mechanisms
202	Plant Genetic Resources
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems

Outcome #2**1. Outcome Measures**

Number of farmers learning new insect control and IPM management techniques

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	3630	4200

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Profit margins for growers are dependent on accurate inputs into the operation. With the size of most operations and crop price fluctuations, being off 1-5% either too much or short for these inputs has a large effect on the profit or loss for the year. The professional agronomist advising the growers must have the best and most up-to-date information available.

What has been done

WHAT WAS DONE:

- * The South Dakota Cooperative Extension IPM (integrated pest management) program annually organizes two training events for agronomy professionals.
- * A workshop (the Crop Consultant Update Workshop) is held in March for the South Dakota Independent Crop Consultants organization to discuss current agronomy concerns with SDSU Plant Science specialists.
- * A field school for agronomy professionals is annually held in July at a research farm. Hands-on training sessions are conducted in the field by SDSU Plant Science specialists.

Results

- * The South Dakota Cooperative Extension Service provides training to nearly all independent crop consultants and to many professional agronomists in South Dakota.
- * The professional agronomists provide recommendations for growers on 2 million acres of crops. South Dakota independent consultants and agronomists look to SDSU for agronomic and economic training in the following areas: SCN (soybean cyst nematode), foliar and root-borne diseases in wheat and soybeans, timing for proper fungicide treatments, new and emerging corn insects, timing of treatment for soybean insects, herbicide timing and programs, resistance management, and fertility management.
- * Because of training provided by South Dakota Cooperative Extension plant science specialists, professional agronomists are better prepared to positively affect the profit margin for South Dakota's crop producers.

4. Associated Knowledge Areas

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants

- 215 Biological Control of Pests Affecting Plants
- 216 Integrated Pest Management Systems

Outcome #3

1. Outcome Measures

Number of farmers learning new plant disease control and IPM management techniques.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	2200	4200

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Insect pests rob plants of vital nutrients, decrease production and pose a major economic challenge for crop producers as they face increasing input costs and threats to their business. Insect pests need to be identified and monitored for economic thresholds and managed responsibly to maximize profitability in crop production.

What has been done

Extension hosted more than 30 producer meetings, scouting workshops and private pesticide applicator training sessions, which were attended by more than 1260 producers who collectively farmed more than 425,000 acres.

Results

Producers and crop consultants learned how to identify various insect pests, their life cycles, how to scout for them, economic thresholds and how to use them in various crops, and proper timing of insecticide treatments. One producer reported that techniques learned helped determine not to spray 5,140 acres of soybeans for aphids, saving \$102,800.

4. Associated Knowledge Areas

KA Code	Knowledge Area
212	Pathogens and Nematodes Affecting Plants
216	Integrated Pest Management Systems

Outcome #4**1. Outcome Measures**

Number of farmers learning new chemical, biological, alternative weed control and IPM techniques and pesticide safety.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	2250	2400

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Insects have significant impacts on crop production. Identification and control of insect pests is essential to modern agricultural production. Technology provides new tools for insect control, but the changes in control make resources available for different pests that remain uncontrolled by technology.

What has been done

Crops clinics, field tours, and meetings were used to present information to more than 1,600 producers on new insect control technologies and emerging insect pests .

One-on-one visits reported with 729 producers help identify pest problems and find some possible control methods. 88 press releases reached an estimated 43,000+ indirect contacts.

Results

Producers learned advantages and disadvantages of some of the new technologies for controlling insect pests. Producers learned to identify insects in crops and scout their fields for pests.

After scouting, producers made decisions to spray based on insects counts and thresholds from research studies. Many producers did not spray after finding aphids below threshold levels in soybean and corn fields.

More than 1,100 contacts were made with producers who found emerging insect pests in their crops. More than an estimated 320,000 acres were affected by emerging pests.

Emerging insect pests include a number of species: corn leaf aphids, sap beetles, spider mites, Hessian flies, sunflower bud moths, sunflower head maggots, black grass bugs, white grubs, thrips, pale-striped flea beetles, and *Dectes* longhorn beetles were identified as emerging pest species.

Corn leaf aphids affected more than 250,000 acres operated by more than 500 contacts.

4. Associated Knowledge Areas

KA Code	Knowledge Area
213	Weeds Affecting Plants
216	Integrated Pest Management Systems

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

The biggest external factor continues to be the high price of fuel and fertilizer.

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

1. Evaluation Studies Planned

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

Evaluation Results

Key Items of Evaluation

V(A). Planned Program (Summary)**Program # 3****1. Name of the Planned Program**

Animals and Their Systems

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 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 (Inputs)

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

Year: 2009	Extension		Research	
	1862	1890	1862	1890
Plan	25.2	0.0	46.3	0.0
Actual	16.5	0.0	33.8	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
389660	0	1009198	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
389660	0	514056	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Animal scientists will continue to interact with stakeholders and Extension personnel to determine in which areas research efforts should be focused. In a systems approach, SDSU researchers will then develop research trials to address the wide array

2009	10	9
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Output #2

Output Measure

- Number of research projects completed on dairy foods

Year	Target	Actual
2009	2	4

Output #3

Output Measure

- Number of research projects completed on dairy production

Year	Target	Actual
2009	2	3

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

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 Measures**

Number of ranchers learning new production techniques

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	1200	1300

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Agriculture is the backbone of South Dakota's economy, and manure produced in livestock operations provides a valuable resource for crop producers. By training producers and allied industry members on the proper application of manure, crop and livestock producers can optimize their profitability while assuring neighbors and other citizens that they are good stewards of the land, as well as good and contributing members to the local economies.

Livestock production is a major contributor to South Dakota's economy, and as production systems have evolved they have tended to become larger and more concentrated, to the point that many are considered by state and federal regulations to be concentrated animal feeding operations (CAFOs). The larger the operation, the greater the volume of manure stored at one site. In order for the manure to be used as a valuable crop nutrient while minimizing odor emissions, it must be properly managed. Therefore, a multi-disciplinary, multi-agency collaboration between the SDSU Departments of Animal & Range Sciences, Agricultural & Biosystems Engineering, and Plant Science, and the South Dakota Department of Environment & Natural Resources and the Natural Resources Conservation Service was developed to teach producers and allied industry members how to properly manage their manure resources. With this training, producers should be able to capture the full economic value of manure, while also maintaining environmental integrity and good relationships with neighbors.

What has been done

*Two statewide environmental trainings for CAFOs were held in February and July (a third is scheduled for November) of 2009. 42 producers and allied industry members attended the daylong workshops. Collectively, these producers raise or own over 1 million head of livestock (i.e., poultry, swine, dairy cattle, beef cattle).

*Over 50 people, who raise over 5,000 head of cattle annually, attended a feedlot tour of 3 operations in northern Meade and southern Butte counties.

*One-on-one consultations were held with several producers.

Results

*Producers learned the South Dakota statutes pertaining to CAFOs and manure application, and how to properly comply with them. The exit surveys from the Environmental Training meetings indicated the level of understanding regarding the South Dakota Livestock Permit Program rose from 50%/64% to 82%/84% during the February and July 2009 meetings, respectively. Understanding this process allowed producers to build and

operate modern livestock operations by obtaining the general permit from the South Dakota Department of Environment and Natural Resources. It also allowed one commercial manure applicator to work in both South Dakota and Iowa.

*Producers learned how to apply manure for maximum economic benefit while maintaining environmentally acceptable application rates. Exit survey comments that described the most significant thing(s) learned through the training included: "over-spreading of manure"; "tools available to assist with management and decision-making"; "managing phosphorus levels as they relate to manure application"; and "how to come up with application rates."

*Producers learned how to minimize odor emissions from livestock operations and manure handling systems. In one example, a Hutterite colony in Kingsbury County was planning a new swine facility approximately 2 years ago, but the colony not able to meet setback distance requirements according to county ordinances. Through the Environmental Training Program, they learned about biofilters and afterward worked with Extension Specialist Nicolai on designing a biofilter for their proposed facility that met the approval of their neighbors and allowed them a variance.

*Dietary manipulation to alter manure nutrient content and odor production was another tool that producers learned.

*Over the past 4 years, the understanding level after trainings was more than 75% in all areas discussed, including water quality, permit process, land application rates, worksheets, conservation practices, nutrition, and air quality.

*Producers attending the 2009 trainings indicated that if they were not already using the latest technologies, the vast majority of producers (66-90%) were planning on adopting them.

*Cover crop and no-till practices have been implemented by producers. Producers use cover crops to recycle the nutrients from manure, provide economical forage for cattle, and reduce soil compaction.

4. Associated Knowledge Areas

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

Outcome #2

1. Outcome Measures

Number of farmers using new production techniques

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	350	1250

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Increased cow conception rates, changes in reproductive protocols, and improved utilization of bulls are all examples of skills and techniques that have helped livestock producers realize cost savings and increase profitability. South Dakota Cooperative Extension Service educators and specialists provided training through artificial insemination schools, bull selection clinics, and open forum discussions that helped producers achieve these changes. Beef cattle are a major contributor to the U.S. agriculture economy. In 2007, U.S. per capita beef consumption represented 30.1 % (67 lbs per person; 28.1 billion total pounds) of total U.S. meat consumption (USDA, 2007), and the retail value of beef production was \$74 billion (USDA, 2007). Age of calf at weaning is the single largest factor that affects weaning weight. Analysis of 3,700 animals at the USDA Meat Animal Research Center indicated that for each day of age after the beginning of the breeding season that a calf is born 2.42 lbs of weaning weight is lost (R. Cushman). Therefore, to improve the efficiency of production, it is important to have as many cows and heifers as possible be bred at the beginning of the breeding season. Furthermore, the use of genetically superior sires through artificial insemination is the fastest and most economical method to improve economically important traits in the beef industry.

What has been done

- *Artificial insemination (AI) schools, bull breeding soundness clinics, workshops on genetic defects and management, and using balanced mineral programs were held with over 250 producers.
- *40 stakeholders (20 at the school in Brookings, and 22 at the school in Canton) learned AI hands-on and are now capable of artificially inseminating cattle.
- *More than 140 stakeholders across the state were able to sit down at open forums to have open discussion on breeding protocols, reproductive management, and specifically what is occurring on their operation and how to improve reproduction on their operation.
- *Calving distributions were collected from 43 producers on over 7700 animals to aid in measures of production efficiencies.
- *An Extension Extra, "Increased Calf Crop," was developed by Dr. George Perry, Dr. Russ Daly, and Tyler Melroe, and a South Dakota Cooperative Extension Service bookmark about estrous synchronization with natural service was written by Dr. George Perry and Ann Price.
- *Over 50 news releases reaching over 4,000 producers were distributed.

Results

Examples of changes that individual producers made, based on Extension recommendations:

- *A change in synchronization protocol increased AI conception rate from 50% last year to 65% this year and decreased the need for 3 clean-up bulls to 1 clean-up bull.
- *Changing the estrous synchronization protocol resulted in being able to AI 60% of a herd's heifers before reproductive management products (specifically CIDRs) were used, thus decreasing the costs by \$15 per animal. Furthermore, AI conceptions were higher than previous years.
- *Through the use of fixed-time AI, a producer achieved 58% pregnancy success in a fall breeding herd, whereas bulls in the herd had only resulted in 24% pregnancy during previous years.
- *A producer that attended an AI training said he realized a cost savings of \$13 per cow by not having to hire someone to AI his herd. This equates to \$650 savings for a herd size of 50 heifers.
- *Two operations that had not used AI or estrous synchronization prior the Extension program incorporated AI and estrous synchronization into their management program with assistance from the Extension educator and area cattle producers.
- *All producers attending the pre-breeding discussion workshops appreciated the meeting because they were able to have specific questions about their operation answered instead of just hearing a formal presentation.
- *Incorporating breeding soundness exams into their beef cow herd management cycle is a change that producers stated they will make after seeing semen tests from different bulls, including one that had frost-bite damage to its

scrotum.

*Testing grass samples to help develop mineral packages that fit the grass livestock are grazing and optimize production efficiency is another change that some producers are making, resulting in reduced costs for mineral supplementation.

4. Associated Knowledge Areas

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

Outcome #3

1. Outcome Measures

Number of veterinarians and producers learning about animal disease.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	600	490

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Economic success and stability of South Dakota veterinary practices and ongoing professional development for veterinarians, especially for those in food- and mixed-animal practices, is critical in ensuring that livestock producers and animal caretakers have access to proper veterinary care for their animals.

What has been done

SDSU Extension Veterinarian hosts professional development opportunities for veterinarians including seminars and short-courses. 100% of attendees of 'Health of Your Veterinary Practice' rated usefulness of information as a 4 or 5 on a 5 point scale (87% chose #5).

Results

100% of participating veterinarians reported practice income similar or somewhat higher than previous year despite most mixed- and food-animal practices depending on livestock clients that are facing extraordinarily high feed and other input costs.

4. Associated Knowledge Areas

KA Code	Knowledge Area
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 Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	200	120

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Porcine Circovirus Associated Disease (PCVAD) has been an emerging disease of the swine industry over the past decade. Improved diagnostic tools were necessary to pinpoint outbreaks.

What has been done

Diagnosticians and researchers worked collaboratively to gain an improved understanding of the various syndromes associated with this disease in our service region. Diagnosticians collaborated with researchers to place useful diagnostic tests in the ADRDL in order to accurately identify affected animals and herds. This information can then be passed on to referring veterinarians and animal owners.

Results

Once producers were accurately identified with the disease, effective vaccination programs were implemented. The impact of PCVAD now appears to be subsiding.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

- 311 Animal Diseases
- 313 Internal Parasites in Animals

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

Volatile livestock feed prices are impacting livestock profitability

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

1. Evaluation Studies Planned

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

Evaluation Results

Key Items of Evaluation

V(A). Planned Program (Summary)**Program # 4****1. Name of the Planned Program**

Agricultural, Natural Resource and Biological Engineering

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 (Inputs)

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

Year: 2009	Extension		Research	
	1862	1890	1862	1890
Plan	5.0	0.0	3.9	0.0
Actual	3.5	0.0	4.3	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
83586	0	98100	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
83586	0	79791	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

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. Brief description of the target audience

All farm/ranch producers in the state

V(E). Planned Program (Outputs)

1. Standard output measures

2009	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	200	2000	0	0
Actual	250	2500	200	100

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

Year: 2009

Plan: 0

Actual: 0

Patents listed**3. Publications (Standard General Output Measure)****Number of Peer Reviewed Publications**

2009	Extension	Research	Total
Plan	0	0	
Actual	9	24	33

V(F). State Defined Outputs**Output Target****Output #1****Output Measure**

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

Year	Target	Actual
2009	4	2

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

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 Measures**

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	125	90

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Poor ventilation in swine units is detrimental to productivity and profitability the animals in these building

What has been done

Extension specialists from South Dakota, North Dakota, Iowa and Minnesota collaborated to present ventilation workshops to swine producers. A portable building that contained all of the ventilation features and equipment typical of large swine conferment building was taken to the workshop sites to allow producers to see the effects of various ventilation strategies.

Results

One hundred twenty swine producers representing more than 500,000 hogs attended the workshop. Surveys at the conclusion of the workshops indicated producers had a higher level of awareness of the causes of poor ventilation, and understood steps to correct problems. Swine producers attending the workshops each estimated an annual return of \$1000 to \$5000 per year per based on increased production efficiency and reduced energy consumption.

4. Associated Knowledge Areas

KA Code	Knowledge Area
401	Structures, Facilities, and General Purpose Farm Supplies
403	Waste Disposal, Recycling, and Reuse
404	Instrumentation and Control Systems

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

The biggest external factor that effected the outcome of this program is the tremendous shift in the economic paradigm as it relates to food and fuel.

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

1. Evaluation Studies Planned

- Time series (multiple points before and after program)

Evaluation Results

Key Items of Evaluation

V(A). Planned Program (Summary)**Program # 5****1. Name of the Planned Program**

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

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 (Inputs)

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

Year: 2009	Extension		Research	
	1862	1890	1862	1890
Plan	6.7	0.0	23.2	0.0
Actual	1.7	0.0	13.8	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
41945	0	212334	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
41945	0	334434	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

SDSU will develop a biofuels initiative that includes research, Extension and teaching programs.

Research processes using the latest technology to improve the utilization of by-products for food and non-food products.

Connect producers, processors, end users, regulatory officials, economic development professionals, marketing specialists, researchers and extension personnel to integrate the development and delivery of food and non-food products.

2. Brief description of the target 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(E). Planned Program (Outputs)

1. Standard output measures

2009	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	75	275	50	50
Actual	1500	20000	1500	5000

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

Patent Applications Submitted

Year: 2009
 Plan: 0
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2009	Extension	Research	Total
Plan	0	0	
Actual	10	16	26

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

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

Year	Target	Actual
2009	2	5

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

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 Measures**

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. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	15	20

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

A lifelong interest in food production often starts in elementary school. The 4-H program offers targeted learning opportunities to help young people learn about careers in food production.

What has been done

The 4-H Horticulture Judging program underwent major changes, leading to a program that challenges youth to increase their understanding of horticulture and to develop knowledge and skills that would prepare them to be anything from hobbyists to scientists.

Results

50% of youth participating in the State 4-H Horticulture Judging Contest say their interest in a horticultural career has increased because of what they have learned through 4-H horticulture judging activities

4. Associated Knowledge Areas

KA Code	Knowledge Area
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 Measures**

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. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	20	60

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Due to the national economic downturn, there has been a resurgence of interest in topics regarding practicality for and methods of home food preservation as a way of preserving food products and economizing food dollars. Information requests indicated the need for education regarding proper canning procedures.

What has been done

- *3 professional development food preservation workshops reached 26 Extension educators.
- *Updated and revised 6 food preservation fact sheets with an NDSU Extension food safety specialist.
- *33 food preservation programs and workshops were held statewide: Emphasis focused on use of updated preservation directions, times, drying and freezing, checking equipment for safety and reliability, proper storage of canned goods, and hands-on experience with boiling water bath and pressure canning.
- *Updated instructions were shared with 4-H food preservation and county fair open class judges.
- * 1,058 individuals participated in food preservation workshops and programs throughout South Dakota.
- * Educators partnered with local businesses (Ace Hardware, Hy-Vee) in workshop presentations.

Results

Food Preservation: Extension is the direct link to the consumer with accurate information for home food preservation:

- *Participants identified several food preservation techniques that had a direct effect on safety and quality:
 - oAcidification of tomatoes to reduce the risk of Clostridium botulinum growth:
 - Pressure canners must be vented for 10 minutes maintain the proper amount of pressure.
 - Importance of processing times of various food items.
 - Reducing product failure and maintaining safety with proper jar closure techniques.
 - No longer recommended to can low-acid foods in a boiling-water-bath canner.
 - One participant said: "I will change my method of canning so my food products given as gifts will be safe."
 - Function of different forms of pectin.
- *451 food preservation calls were answered by family and consumer sciences Extension educators and state staff.
- *1,192 food preservation timetables and fact sheets were distributed.
- *167 Pressure canners were tested with recommendations that 41 gauges be replaced.
- * 44 news columns and 1 newsletter were written addressing food preservation and food safety issues, reaching a potential of over 62,500 readers.

Farmers Market:

- *58 people participated in the "Local Foods: Food Safety and Marketing" self-study course. 75% successfully completed the program. Identifies the risks associated with food production that is direct-marketed primarily through farmers markets. Delivered online and via CD-ROM.
- *After completing "Local Foods: Food Safety and Marketing," all participants expressed a strong appreciation for an online self-study course. Participants identified the following as particularly useful topics:
 - oUsing proper produce-washing techniques and cleaning and sanitizing produce containers.

oFertilization and irrigation techniques.

*Knowledge was gained regarding the risks associated with adding value to a product by using food preservation techniques.

Hand Washing: According to the CDC, the single most important thing we can do to keep from getting sick and spreading illness to others is to clean our hands. Failure to wash, or insufficiently washing hands, contributes to almost 50% of all food-borne illness outbreaks.

Data collected from Food Safety/Fight BAC SOFY camp of 55 youth indicates the importance of knowledge gained:

o85% learned to wash hands often.

o91% know how to safely thaw meat.

o86% learned when meat is fully cooked and how to use thermometers.

o75% learned about the 2-hour rule.

o82% learned to use separate cutting boards for meat and vegetables.

o81% learned to use coolers when transporting food.

*1,705 youth received hand-washing instructional materials, a demonstration, and actual hand-washing sessions on proper hand-washing procedures. 50 hand-washing posters were distributed.

*Over 7,500 youth and adults received information on the importance of hand hygiene and personal hygiene practices around farm animals through posters and distribution of pamphlets and hand sanitizers at venues where farm animals are exhibited (i.e., Black Hills Livestock Show).

4. Associated Knowledge Areas

KA Code	Knowledge Area
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 Measures

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. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	1	14

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Adding value to a food product through a processing or preparation process requires working through a regulatory process and gaining knowledge on the risks and safe food handling practices that must be implemented to reduce the risk of foodborne illness or other related foodborne safety issues, such as food allergies.

What has been done

Each year, up to 15 specialty food processors/preparers utilized SDSU testing labs. SDSU Extension Food Safety Specialists has become a food processing authority for acidified foods. Extension Educators provide a direct contact in the field to link to expertise on the SDSU campus.

Results

Food entrepreneurs utilize the information provided to guide them through the process of meeting the regulation requirements through the state of SD and the FDA. This is a growing need. And future programs are being developed.

4. Associated Knowledge Areas

KA Code	Knowledge Area
501	New and Improved Food Processing Technologies
502	New and Improved Food Products
511	New and Improved Non-Food Products and Processes

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

The cost of raw product used in the development of new food and other products, and the cost of labor, is a major determinant in the overall viability of a product. In addition, rising food costs impact consumer decisions regarding the purchase of a new product, versus the purchase of an existing/known product.

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

1. Evaluation Studies Planned

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

Evaluation Results

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Economics and Market Policy

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 (Inputs)

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

Year: 2009	Extension		Research	
	1862	1890	1862	1890
Plan	10.1	0.0	17.4	0.0
Actual	8.5	0.0	11.4	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
202125	0	223406	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
202125	0	349736	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Research 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. Brief description of the target 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(E). Planned Program (Outputs)

1. Standard output measures

2009	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	1500	10000	100	500
Actual	1400	8000	150	0

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

Patent Applications Submitted

Year: 2009
 Plan: 0
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2009	Extension	Research	Total
Plan	0	0	
Actual	12	13	25

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Extension Educations Trained

Year	Target	Actual
2009	50	60

Output #2

Output Measure

- One-on-One Management Consultations

Year	Target	Actual
2009	50	50

Output #3

Output Measure

- Completed Research Projects

Year	Target	Actual
2009	5	5

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

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 improved profitability.

Outcome #1

1. Outcome Measures

Number of farmers calculating production costs and returns to storage.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	300	250

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Commodity price increases, the plunging economy, and food-fuel trade-off concerns contribute to food price increases.

What has been done

Assess market effects of commodity prices increases and CRP land conversions; teach risk management tools and strategies; and assess policy alternatives

Results

Increased knowledge among agricultural and rural decision makers on a broad set of issues, policy aspects, and opportunities related to commodity price increases.

4. Associated Knowledge Areas

KA Code	Knowledge Area
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 Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	300	300

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Crop insurance provisions related to mycotoxins, delayed harvest and wet weather.

What has been done

Created awareness

Results

Producers did not compromise their crop insurance coverage.

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation
604	Marketing and Distribution Practices

Outcome #3

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
------	---------------------	--------

2009

75

75

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

As the average age of South Dakota's producers climbs, so does their land value and potential tax consequences. Family operations need to begin making decisions about asset distribution and transfers in order to accomplish the goals of the operation. Knowing and understanding the financial side of their operations, family relationships, and dynamics are all major factors to consider during this often-difficult time of transition.

What has been done

A series of workshops on estate planning were held in Sioux Falls, Watertown, Mobridge, and Winner. One hundred and five individuals (69 families) attended these workshops. Thirteen bi-weekly mailings provided follow-up communication.

Results

Six-month follow-up evaluations from over 25% of the participating families showed:

• All of the respondents had completed more than 25% of their business estate plan. (One third of the respondents had completed 100% of their business plan.)

• 94% completed more than one-fourth of their personal transfer plan. (One-third considered their plan 100% completed.)

• Many participants made changes to their personal estate plan and to their farm business transfer plan

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation
607	Consumer Economics

Outcome #4**1. Outcome Measures**

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	70	70

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Producers continue to struggle with the quickly changing prices and new extremes that prices have reached. Producers have to use many tools in today's world to remain viable in the global economy.

What has been done

Winning the Game marketing programs were held in the communities of Mitchell, Pierre, and Onida. A monthly South Dakota dairy and milk marketing report was written and posted on the SDSU Economics Department website.

Results

Highlights of responses from the approximately one-third of the 135 Winning the Game attendees include:

*100% reported that they will develop and implement a post-harvest marketing plan:

o86% said they were better prepared to write a post-harvest marketing plan.

o66% said that they would no longer hold unpriced grain in the bin past July 1.

*Approximately 75% of attending producers reported having a margin account and indicated they used them with both futures and options.

*One of the programs represented 3,600 acres of mostly corn and soybeans.

*Additional comments about what attendees found especially helpful:

o"Hands-on examples."

o"Use of put and calls can make a big difference."

o"Explaining options advantage."

4. Associated Knowledge Areas

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

Outcome #5

1. Outcome Measures

Number of agri-businesses with improved profitability.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	35	70

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The highly unstable economy, high commodity and input prices, combined with the ability to market farther into the future have created new management opportunities for farm and ranch families.

What has been done

SDSU conducted producer and agribusiness workshops which focused on costs and benefits of employing marketing strategies with the long term.

Results

Producers weighed their crop insurance coverage and input price risks against higher price levels.

4. Associated Knowledge Areas

KA Code	Knowledge Area
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(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

In 2009, South Dakota's economy followed the downward spiral of the US and global economies.

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

1. Evaluation Studies Planned

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

Evaluation Results

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 7

1. Name of the Planned Program

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

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 (Inputs)

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

Year: 2009	Extension		Research	
	1862	1890	1862	1890
Plan	18.5	0.0	3.9	0.0
Actual	24.9	0.0	9.7	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
589354	0	222260	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
589354	0	192865	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Meat science research will be conducted on short preparation times, products with healthy nutritional profiles, soy phytochemicals from the state point of how consumption of soy contributions to reduced health risks. Research will also be conducted on aspects of obesity prevention including changing eating behavior (targeting fruits and vegetables). Research will be both laboratory (bench science) and social science in nature.

Extension will conduct informational seminars, interactive learning opportunities, group classes and provide printed curriculum to youth audiences (4-H, schools, after school programs, head start and child care centers) and adult audiences (worksites, pre-formed groups, teachers, parents, senior citizens) as well as community based groups (licensed food service

establishments, temporary food stands, mobile food units and community based organizations/agencies/churches). Educational programs will include farm food safety on salmonella in varied beef production systems.

2. Brief description of the target audience

All consumers in the state or region. For some studies, a more targeted audience such as young adults. Small children and youth Adults and senior citizens Low income citizens Targeted business owners School personnel Extension field educators Health care professionals Educators and other professionals who work in nutrition education, foodservice, etc. Tribal colleges in S.D. and youth who attend reservation schools

V(E). Planned Program (Outputs)

1. Standard output measures

2009	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	4050	8000	4050	9000
Actual	23000	20000	7000	10000

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

Patent Applications Submitted

Year: 2009
 Plan: 0
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2009	Extension	Research	Total
Plan	0	0	
Actual	7	8	15

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of research projects

Year	Target	Actual
2009	2	2

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Increase in soy foods production and consumption by South Dakota citizens, by percentage of the population.
2	Increase in fruit and vegetable consumption, by percentage of the population.
3	Decrease in obesity rates by percentage of the population.
4	Number of participants demonstrating ability to choose or prepare food with reduced fat and/or calories.
5	Number of participants increasing the number of minutes spent daily in physical activity.
6	Number of businesses engaged in a worksite wellness program.
7	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).
8	Increased number of food safety programs for volunteers cooking for large groups and temporary food stands.

Outcome #1

1. Outcome Measures

Increase in soy foods production and consumption by South Dakota citizens, by percentage of the population.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	2	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Healthy behaviors influence a healthy wellbeing. South Dakota's prevalence of obesity increased from 10-14% of the population in 1987 to nearly 25% in this reporting period. These increasing rates raise concern because of their implications for Americans' health. Being overweight or obese increases the risk of many diseases and health conditions, including the following: Hypertension (high blood pressure), Osteoarthritis, Dyslipidemia, Type 2 diabetes, Coronary heart disease, Stroke, Gallbladder disease, Sleep apnea and respiratory problems, and some cancers (endometrial, breast, and colon).

What has been done

Lessons as part of programming with families at school educational programs, Healthy Foods programs with farm families

Results

Participating families are being exposed to new healthy food choices and as a result to the new foods the local grocery store has been asked to change what they sell and to include the healthier food choices.

4. Associated Knowledge Areas

KA Code	Knowledge Area
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior

Outcome #2**1. Outcome Measures**

Increase in fruit and vegetable consumption, by percentage of the population.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	2	1

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Healthy behaviors influence a healthy wellbeing. South Dakota's prevalence of obesity increased from 10-14% of the population in 1987 to nearly 25% in this reporting period. These increasing rates raise concern because of their implications for Americans' health. Being overweight or obese increases the risk of many diseases and health conditions, including the following: Hypertension (high blood pressure), Osteoarthritis, Dyslipidemia, Type 2 diabetes, Coronary heart disease, Stroke, Gallbladder disease, Sleep apnea and respiratory problems, and some cancers (endometrial, breast, and colon)

What has been done

Extension educational programs including: Child Care Providers Feeding Children, Basics of Nutrition; Education on Portion Sizes, Ways to Increase Fruit & Vegetables in the Diet; Fit From the Start Programs at Grocery Stores; Month Long Fruit & Vegetable Increase Consumption Community Campaigns.

Results

33% of Head Start Parents report that their children are eating more fruits & vegetables. 25% of parents & children are selecting healthier food choices when eating on the run including fruits & vegetables. 30% of EFNEP Adult Participants are eating more Fruit and Vegetables. 55% of EFNEP Youth participants now eat a variety of foods, including fruit and vegetables.

4. Associated Knowledge Areas

KA Code	Knowledge Area
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior

Outcome #3

1. Outcome Measures

Decrease in obesity rates by percentage of the population.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	0	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The increase of obesity across the lifespan has encouraged families to explore options to maintain and promote a healthy lifestyle. Worksites and schools also provide information to ensure employees and/or their families achieve success for a longer and healthy life. According to the Centers for Disease Control, 20-24% of South Dakota's citizens are obese, and 56.5% are overweight. The low level of physical activity among South Dakota citizens is also of concern, with over 70% of the population exercising only 1 day a month. Daily fruit and vegetable consumption is also low, with only 17.2% of South Dakotans meeting the recommendation for vegetables and only 27% meeting the recommendation for fruits.

What has been done

*Families Eating Smart & Moving More Presentations:

- oEating Smart at Home
- oMoving More, Everyday, Everywhere
- oEating Smart on the Run
- oMoving More, Watching Less

*Displays:

- oImportance of Family Mealtime
- oHealthy Aging
- oImportance of Incorporating Fiber in Daily Diet

*Newsletters and News Columns with Family Friendly Recipe Ideas:

- oChild & Family Nutrition
- oImportance of Family Nutrition
- oPhysical Activity
- oFamily Mealtime
- oLifestyle Choices

*Nutrition Presentations:

- oHealthy Grilling
- oFrom the Garden to the Table Healthy Vegetable Dishes
- oEating Healthy Using My Pyramid
- oCreative Ways to Get Whole Grains
- oObesity in a Bottle
- oEating Right When Money's Tight

- oSupermarket Food Cent\$
- oTruth About Fad Diets
- oStarting a Vegetable Garden
- oStrong Women
- *Policy Teams:
 - oCoordinated school health school district policy teams
 - oWellness policy committees for various school districts
 - oCounty wellness teams

Results

*During the Families Eating Smart & Moving More presentations, of the 50 males and 243 females that attended the sessions, 89% learned new knowledge or skills that will help them and their family, 86% are planning to make changes based on what they learned, 36% plan to increase physical activity in a month, 31% plan to try meal planning, 28% plan to order small portion sizes or share meals.

*At least 275 participants were reached through unique nutrition displays. For instance, participants sampling a blueberry muffin made with kidney beans for extra fiber found the muffin to be very acceptable in taste and texture and indicated that they could not taste the kidney beans. Participants walked away with the recipe and new knowledge on how to increase fiber in their diets.

*Newsletters and news columns had a potential impact on over 75,000 readers. These newsletters and columns continue to be used by cooperating agencies across South Dakota. For instance, the Watertown Boys and Girls Club asked to feature the one of the newsletters on their website after a staff member received the newsletter from her child's classroom. The healthy recipes always receive positive feedback from readers.

*Numerous nutrition presentations on a variety of topics were made throughout this past year and reached over 450 participants. Three months after the presentation titled "Eating Healthy When Using MyPyramid" was given to Annie's Project participants, 40% had improved their eating habits, 55% were eating more vegetables, 60% were using less sugar, and 62% were trying to eat and exercise in proportion.

*The wide variety of nutrition presentations allowed participants to learn ideas such as the importance of reading ingredient labels on beverage containers to serving more vegetables in their daily diet.

4. Associated Knowledge Areas

KA Code	Knowledge Area
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior

Outcome #4

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	1200	3000

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Healthy behaviors influence a healthy wellbeing. South Dakota's prevalence of obesity increased from 10-14% of the population in 1987 to nearly 25% in this reporting year. These increasing rates raise concern because of their implications for Americans' health. Being overweight or obese increases the risk of many diseases and health conditions, including the following: Hypertension (high blood pressure), Osteoarthritis, Dyslipidemia, Type 2 diabetes, Coronary heart disease, Stroke, Gallbladder disease, Sleep apnea and respiratory problems, and some cancers (endometrial, breast, and colon)

What has been done

Programs focusing on eating healthy, selecting healthier food choices, snacking healthy, My Pyramid, Reducing Fat in Diet, Understanding Food Labels Portion Size. Workshops/Hands on Lessons to Senior Citizens, Youth, Habitat Home Buyers, Youth on Indian Reservations, Parents, Child Care Providers Head start Parents and others.

Results

Participants of the Family Meal Programming reported that by increasing the number of family meals they eat at home they were able to control the amount of fat their families consumed. Head Start Parents reported that 30% of kids are eating healthier snacks & 25% of parents reported that children select healthier low fat foods when eating on the run.

4. Associated Knowledge Areas

KA Code	Knowledge Area
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior

Outcome #5**1. Outcome Measures**

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

Not Reporting on this Outcome Measure

Outcome #6**1. Outcome Measures**

Number of businesses engaged in a worksite wellness program.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	150	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Healthy behaviors influence a healthy wellbeing. South Dakota's prevalence of obesity increased from 10-14% of the population in 1987 to nearly 25% in this reporting year. These increasing rates raise concern because of their implications for Americans' health. Being overweight or obese increases the risk of many diseases and health conditions, including the following: Hypertension (high blood pressure), Osteoarthritis, Dyslipidemia, Type 2 diabetes, Coronary heart disease, Stroke, Gallbladder disease, Sleep apnea and respiratory problems, and some cancers (endometrial, breast, and colon)

What has been done

Programs focusing on eating healthy, selecting healthier food choices, snacking healthy, My Pyramid, Reducing Fat in Diet, Understanding Food Labels Portion Size. Workshops/Hands on Lessons to Senior Citizens, Youth, Habitat Home Buyers, Youth on Indian Reservations, Parents, Child Care Providers Head start Parents and others

Results

Participants of the Family Meal Programming reported that by increasing the number of family meals they eat at home they were able to control the amount of fat their families consumed. Head Start Parents reported that 30% of kids are eating healthier snacks & 25% of parents reported that children select healthier low fat foods when eating on the run.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

Outcome #7

1. Outcome Measures

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. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	125	400

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Gaining knowledge is critical to identifying and implementing safe food handling practices that reduce the risk of foodborne illness from foodservice settings. In SD over 200,000 people suffer from foodborne illness. SD also ranks above the national average per 100,000 population in foodborne illnesses incidences. Reducing the risk, reduces the incidence

What has been done

Over 150 School Lunch Program personal participated in ServSafe Certification training taught by Cooperative Extension Staff.230 Foodservice staff and managers were certified through ServSafe or maintained their SD Foodservice License through a recertification course. These courses are taught in rural areas of South Dakota to underserved audiences.

Results

From follow-up evaluations, 75% of ServeSafe participants implemented a safe food handling practice. Examples of safe food handling practices adopted: * Implementation of a staff training program to train staff, Using recommended cooking, cooling, holding, reheating temperatures; and , more vigilance with hand washing.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

Outcome #8

1. Outcome Measures

Increased number of food safety programs for volunteers cooking for large groups and temporary food stands.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
------	---------------------	--------

2009

100

400

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Preparing and serving food to large groups requires safe food handling practices that are different from what is often used when preparing for a family. Gaining knowledge critical to safe food handling reduces the risk of foodborne illness.

What has been done

Food Safety Training for Community Volunteers working at local Concession Stands

Results

Participants reported a better understanding of the department of health regulations; changes in how crock pots are used; increased use of sanitizing solutions; and greater attention to cooking temperatures.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
722	Zoonotic Diseases and Parasites Affecting Humans

V(H). Planned Program (External Factors)**External factors which affected outcomes**

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

Brief Explanation**V(I). Planned Program (Evaluation Studies and Data Collection)****1. Evaluation Studies Planned**

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

Evaluation Results**Key Items of Evaluation**

V(A). Planned Program (Summary)

Program # 8

1. Name of the Planned Program

Families, Youth and Communities

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 (Inputs)

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

Year: 2009	Extension		Research	
	1862	1890	1862	1890
Plan	57.1	0.0	9.7	0.0
Actual	45.9	0.0	0.6	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
1085700	0	34202	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
1085700	0	20070	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Research 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. Brief description of the target 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(E). Planned Program (Outputs)

1. Standard output measures

2009	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	5000	8000	4000	7000
Actual	8000	22000	2900	11000

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

Patent Applications Submitted

Year: 2009

Plan: 0

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2009	Extension	Research	Total
Plan	0	0	
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of research projects completed

Year	Target	Actual
2009	2	0

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Number of participants who have reduced their debt
2	Number of participants who have increased their personal savings
3	Number of child care professionals who provide more stimulating environments and/or activities for the children they care for.
4	Number of participants reporting improved parent-child communication
5	Number of families who report making changes in family elder care as a result of participating in an Extension program.
6	Number of youth participating in math, engineering or science related activities to further develop workforce preparation skills.
7	Number of youth that were engaged as partners in community civic activities with an adult.
8	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.
9	Decrease in divorce or domestic violence among South Dakota couples who received premarital education, by percentage of the population.
10	Increase in low-income family self-sufficiency, by percentage of the population.
11	Number of communities reporting an increase in rural community vitality (population stability, economic indicators)

Outcome #1

1. Outcome Measures

Number of participants who have reduced their debt

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	1000	200

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

As the economy continues to worsen, families are carrying more debt load now than ever before & with rising cost of goods the debit keeps increasing. Bankruptcies and foreclosures continue to climb.

What has been done

Money management/budgeting education efforts for rural families and consumers.

Results

Participants learned ways to save for what they wanted rather than to borrow money, 58% of the youth participating in the Money Matters program have started to track their expense & 56% are now using a budget with 72% now taking steps to reduce their debt

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #2

1. Outcome Measures

Number of participants who have increased their personal savings

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	1000	2200

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Families who have their finances in order are able to withstand emergencies

What has been done

- o Learned what was needed to put financial papers in order for personal use and in emergency situations
- o Medicare Part D - Consumer Education so Seniors can save money

Results

- o 1128 people participated in the Extension Medicare Part D Planning, reporting a total savings of \$231,688.
- o 93% of 1,100 participants learned what was needed to get their financial papers in order - of those 12% completed the task & organized their personal papers, 27% are updating their papers and organizing and 62% are in the beginning stages of getting papers in order.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #3

1. Outcome Measures

Number of child care professionals who provide more stimulating environments and/or activities for the children they care for.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	1000	205

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

On average South Dakota children spend 45 - 50 hours in child care each week. Many of the child care providers are certified however many are not and ensuring the quality of the care that children receive is very important for working parents

What has been done

o Child Care Conference in Mitchell & Yankton -Trained providers on Social & Emotional World for Children how to support in child care - Preparing center & children for emergencies, Feeding Healthy & Active Children

Results

81.7 % of the 205 providers said they would use the new tools they learned to help children express their emotions.
 89% of the 205 providers became more comfortable with how to incorporate physical activity into their daily routine for children in their care. 96% of the 205 child care providers learned new ideas to teach Character Education to the youth in their care.

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being
805	Community Institutions, Health, and Social Services

Outcome #4

1. Outcome Measures

Number of participants reporting improved parent-child communication

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	600	20000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Parenting is one of the biggest challenges that families face. Communication is key to a good parent child relationship.

What has been done

- o parents participated in parenting classes where they learned skills to be better parents including communication skills.
- o Bright Start Newsletter & Family Evaluation - Evaluation of families receiving the newsletter.

Results

71% of parents feel they are a more knowledgeable parent, 51% are reading to their children now and or more, 42% have more confidence in their parenting skills as a result of the education.
 o 37% of the Parents & participants are aware of the link between people & things in conflict resolution
 o 42% of the participants/parents understand that communication skills are taught & that how youth respond to conflict depends on how they have been taught communication skills.

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being

Outcome #5

1. Outcome Measures

Number of families who report making changes in family elder care as a result of participating in an Extension program.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	250	190

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

South Dakota has an increasing number of seniors and family members who provide various levels of care for them.

What has been done

Aging Healthy Happy & Wise - Program/conference targeted to seniors & their care givers. - The conference focused on geriatric strengthening, hearing loss, available senior services/resources, mind aerobics, organizing important financial papers, & basic estate planning along with many educational booths including - medical screenings, educational resources for families & information on issues facing seniors & their families.

Results

- o 80% of the persons attending will use the stretch bands to for low impact exercises & to improve bone & joint health for better mobility.
- o 62% of the persons will use the information to help keep their brain or family members brain sharp.

4. Associated Knowledge Areas

KA Code	Knowledge Area
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 #6

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	500	1900

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

A declining percentage of science-, engineering-, and technology-related professionals has led to a national initiative to create more opportunities for youth to be engaged in enriching Science, Engineering, and Technology (SET) Programs and related educational activities in an effort to spark interest and further study in SET.

What has been done

*Crow Creek Afterschool Program - 110 students, activities included K'NEX, natural science experiments, and a Character Counts! carnival.

*A variety of SET activities were held in Ft. Thompson.

*Mindstorms Robotics - 65 students participated in 6 sessions, as well as in 1 follow-up session, during science classes at Crow Creek Middle School (6th-8th grades).

*2 classroom visits at Lower Brule Jr. High School - the first was to survey students' attitudes toward science, and the second was a LEGO Mindstorms activity.

*Robotics Program at White River High School for 89 students.

*Educational robotics workshops - lessons during school, after school, and at 4-H meetings for around 100 youth, grades 4-6.

Results

- *46 youth enrolled in the 4-H program and 7 parents signed up to be volunteers.
- *Youth learned ways to build with K'NEX and learned how hyperbolas work.
- *Students learned how to build a roller coaster using K'NEX.
- *Over 100 students learned a variety of science and engineering concepts, such as construction techniques of amusement rides, motorized cars, how mass affects speed, and, using batteries, the relationship of electric currents.
- *Youth learned how to use computer programming to make the robots perform specific maneuvers in response to challenges.
- *Youth and their communities gained interest in science and new technologies and helping the students learn.
- *Overall scores of surveys measuring students' interest in science revealed increased interest after students participated in the robotics school enrichment program.

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being
805	Community Institutions, Health, and Social Services

Outcome #7

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	250	823

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The health and vitality of the communities in which we live depends upon the interaction or engagement of its citizens in the daily functioning of the community. This civic engagement is measured in a variety of ways--serving on decision-making bodies like advisory boards, holding elected office, membership in associations and civic clubs, volunteering, voting, attending community events, advocating on social or political issues, and keeping abreast of local issues by attending council meetings or reading the community newspaper. Research indicates that civic involvement by local citizens has been declining at an alarming rate over the past 50 years. As a result, the ability of a community to maintain its vitality and positive growth is negatively impacted.

The focus of this issue-based program is to implement strategies designed to strengthen the re-commitment of citizens to their civic engagement in community functions, leadership, and participation. These actions will result in citizens (both youth and adults) who more fully embrace and take responsibility for building the community in which they live.

What has been done

The objectives for the Civic Engagement Issue Team this past year were to focus on leadership development opportunities for youth and adults. The following occurred:

- *Community Counts: Engaging Youth in Their Future - State 4-H Leaders Association Conference (25 adults)
- *Teen camp-counselor training - Camp Lakodia (9 teens; ages 16-21)
- *Youth camp - Camp Lakodia (260 youth; ages 8-12)
- *Step Up to Leadership training - Edmunds County (52 youth)
- *Personal mission statement training - Southeast Regional Career Fair (337 youth)
- *4-H educator professional development training (23 Educators)
- *Extension Advisory Board training (151 adults)

Results

"Community Counts: Engaging Youth in Their Future" trained 4-H club leaders on reframing their personal concepts of how youth members and/or 4-H clubs can become civically engaged. Step Up to Leadership is a national youth leadership curriculum. Participants learned the importance of trust, defined their own personal leadership strengths/weaknesses, and created a leadership journal. In addition, the skills of personal confidence and identifying potential leadership roles were learned by youth participants. Personal mission statement training was conducted at the 2009 Southeast Regional Career Fair. High school students from 12 school districts received training on the importance and value of creating a personal mission statement when determining a future career. The objective of the training was to encourage young adults to stay in South Dakota and become actively engaged in their local community. In a written post-evaluation conducted a short time after the educational session: Extension Advisory Board members received leadership training focused on clarifying and defining their roles and responsibilities in this civic framework. Skill strategies were also emphasized regarding the importance of civic networking, advocating for issues, and communicating with key stakeholders and elected officials. Meeting-management skills, conflict resolution, the importance of engaging new citizens in the advisory board role, and strengthening personal leadership skills were also emphasized.

4. Associated Knowledge Areas

KA Code	Knowledge Area
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 #8

1. Outcome Measures

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. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	30	57

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Rural communities are declining and poverty rates are increasing - with leadership & poverty education citizens in these rural communities gain skills to equip them to motivate the grater community to take action to reduce poverty and grow their community for the future.

What has been done

A new Extension program emphasis is changing small communities, each with poverty rates of 10% or higher. The Horizons program works with individuals and groups to build strategic plans and bring together new leaders.

Results

Communities are changing and growing for the future - community residents have hope - Poverty issues are discussed and worked on by community members where they were ignored prior to this work. Grants are being obtained to help community residents work on poverty reduction & to help the community grow and prosper for the future.

4. Associated Knowledge Areas

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

Outcome #9

1. Outcome Measures

Decrease in divorce or domestic violence among South Dakota couples who received premarital education, by percentage of the population.

Not Reporting on this Outcome Measure

Outcome #10

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	0	45000

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Today, some South Dakotans face difficulties in feeding their families. Parents with limited financial resources shared the challenges they experience trying to provide their children with a healthy and adequate diet. Regardless of gender, family size, employment status, or geographic residence (i.e., urban, rural, or reservation area), participants identified a need for food preparation and food resource management skills. They wanted to know how they could better stretch their food dollars.

"It's like we are in a hurry and we don't have time to cook a regular kind of meal. So we do the fast food thing or we will just flip some grilled cheese or something... If you are running from one job to the next, you don't have time to cook the same way as someone [who is] at home full time… Now, it's like get it done on Saturday or don't get it done." [an urban mother]

National studies show that for every \$1 spent to implement programs such as the Expanded Food and Nutrition Education Program (EFNEP) and the Family Nutrition Program (FNP), up to \$10.64 is saved in health care costs and \$2.48 in food expenditures. For South Dakotans, that could mean an average health care cost savings of \$9 million dollars and a \$2 million dollar savings in food expenditures.

What has been done

The South Dakota Cooperative Extension Service provides two educational programs to help people with limited financial resources gain knowledge and skills to stretch their food dollars and have a healthier, more adequate diet. These educational programs are EFNEP and FNP.

EFNEP has been available to South Dakota families since 1969. Its primary audience includes youth and children, pregnant teens, and parents or other adult caregivers of young children.

FNP was introduced in 1995 as an additional way to reach South Dakotans with limited financial resources. It represents a partnership between the USDA Food and Nutrition Service, the South Dakota Department of Social Services Supplemental Nutrition Assistance Program (SNAP), and the South Dakota Cooperative Extension Service. EFNEP and FNP are available in 19 county/reservation areas, including both urban and rural sites. Those counties include Beadle, Brookings, Brown, Codington, Davison, Dewey, Grant, Hanson, Kingsbury, Mellette, Minnehaha, Moody, Lake, Pennington, Sanborn, Todd, Tripp, Yankton, and Ziebach.

Results

In federal fiscal year 2008, more than 45,000 EFNEP and FNP educational contacts were made. Participation included small group and individual classes, walk-by and grocery store demonstrations, newsletters, and handout distribution. More than 80% of participants who completed pre/post-assessment measures reported improved diet quality and variety; more than 25% reported improved food resource management, food preparation, and food safety skills to core competency levels. Individual reactions to the program further demonstrate these programs' impact, as shown by the following examples:

Diet Quality - A regular participant in FNP walk-by demonstrations at a local WIC office described her recent efforts to make healthy food choices. She said, "I have really tried to provide better snacks for my children. They eat more fruits and vegetables as snacks, and I'm saving money on my food bill. I didn't realize how simple it was to make snacks that look and taste good too!"

Food Preparation - A male EFNEP participant indicated during one of the adult group sessions that he was not going to try the stir-fry recipe. When it was time to try the stir-fry recipe, the EFNEP nutrition assistant encourage

him to try one small bite; the small bite lead to the entire plate being eaten! At class the next week, the father stated, "I tried out the recipe with my children and now they have a new way to enjoy vegetables!"

Food Safety - After attending a class on kitchen food safety, one woman noted, "I have started using bleach to disinfect counters and surfaces, thawing meat in the refrigerator, and checking to make sure I am using containers that are safe to reheat leftovers in the microwave."

Food Budgeting - A young mother, who is struggling to raise a large family with a limited income, observed, "I have really used the information the nutrition assistant gives me each month. I've learned to make a shopping list and check store ads before I shop. All the hard work paid off! I have money left over in my food budget for the first time."

Food Security - Following a class on meal planning and budgeting, a young man told the nutrition assistant that he was having trouble making his food stamps last to the end of the month. She helped him to identify meal-planning and food-shopping strategies for a more nutritious diet that will still stay within his food budget. The next month, the nutrition assistant reported, "The meal planning helped him out so much to see where his food dollar was going, and this month he was able to stay on budget. He mentioned that the noticed he needed to make changes in the way he was spending his food dollars and was having success in making it to the end of the month with his money."

Physical Activity - Both EFNEP and FNP nutrition assistants encourage physical activity throughout their sessions with participants. One nutrition assistant indicated, "Stretching activities are the highlights of my lessons for some participants. I keep getting more and more feedback about how simple activities such as stretching have helped them to feel better and gotten them to be more active."

Children's Choices - Following a series of EFNEP classes at a school, one teacher observed, "I heard some of the girls planning to cut some sweets out of their diets." Other teachers commented that the lunches and snacks the students brought had improved. Parents wrote that their children were trying new foods, selecting healthier choices--including more fruits and vegetables--and cutting down on sugars and fat at home. The children were excited to try the recipes that they brought home from class.

4. Associated Knowledge Areas

KA Code	Knowledge Area
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 #11

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	2	40

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

Rural communities have not only a place in the hearts of South Dakotans but also a place at the table for creating a vibrant future in this state. The Horizons project provides the vehicle, but people in communities must step up to the plate and take action to ensure a better quality of life for themselves and future generations.

A continually changing economy and migration to urban areas for jobs have taken their toll in rural communities. Faced with economic decline and demographic change, they are acknowledging the fact that they own their fate and must work on complex issues from within. The Horizons project challenged community members to build their human capacity to address issues around poverty and leadership development. It helped them form a collective vision for their future.

What has been done

*From 2003 to the present, the Northwest Area Foundation in St. Paul, Minn., has contracted with the Extension Service to deliver Horizons in South Dakota. Communities with a population of less than 5,000 people and an individual poverty rate of greater than 10% in the 2000 Census are recruited for the program. To date, over 40 communities have applied, been accepted, and continue to use services provided by Horizons Extension staff. Seven staff serve as coaches to the Horizons communities.

*In 2008-09, 15 new Horizons communities were selected to begin Horizons. 114 community members completed training to facilitate Study Circles groups on the topic of "Thriving Communities." Over 600 people participated in the 6 sessions that promoted discussion leading to community action on issues directed at reducing poverty in each community.

Results

*10 community-operated thrift stores have opened - Presho moved into a bigger space this year.

*6 food pantries created or expanded - Leola even delivers.

*12 individuals opened businesses influenced by Horizons involvement:

oFrederick - convenience store and Frederick Café; Oldham - convenience store and bed & breakfast; Bison - bakery; Eureka - call center; Whitewood - paving company, credit union, and photography business; Armour - cabins; Philip - consignment store; and Conde - gift shop in former school building

*5 family nights where families regularly joined together to enjoy food, games and movies.

*7 community gardens and 6 farmers markets established - Porcupine also sells Native crafts.

*3 health and fitness sites started - one in the Sanborn Central School.

*2 wellness programs - 50% of school students in Armour saw their first dentist with a Delta Dental mobile unit, and SDSU nursing students assessed the health of elementary students there, finding 7 conditions that needed further monitoring.

*5 housing initiatives are taking inventory, clearing lots, and offering remodeled homes to new families.

*3 transportation programs have been initiated - Hyde County involves a countywide system

*4 day cares, 3 youth centers, and 2 afterschool youth programs provide youth services with Hot Springs Boys & Girls Club serving large numbers of school-age young people.

*2 community areas on reservation land have begun Study Circles addressing racism - Wagner has conducted 5 rounds of dialogue and is presenting a workshop at a regional conference.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

As the economy grew continually worse in 2009, families, youth and communities faced greater economic struggles.

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

1. Evaluation Studies Planned

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

Evaluation Results

When South Dakota prepared the initial five year Plan of Work, we were very conservative in our target audience estimates. The numbers reported in this Annual Report reflect actual program accomplishments and contacts in the areas of youth programs.

Key Items of Evaluation

When South Dakota prepared the initial five year Plan of Work, we were very conservative in our target audience estimates. The numbers reported in this Annual Report reflect actual program accomplishments and contacts in the areas of youth programs.