2008 South Dakota State University Combined Research and Extension Annual Report of Accomplishments and Results

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I. Report Overview

1. Executive Summary

The South Dakota State University (SDSU) College of Agriculture and Biological Sciences (ABS) is comprised of the South Dakota Agricultural Experiment Station (AES), South Dakota Cooperative Extension Service (CES), and AgBio Academic Programs (AP). The SDSU College of Family and Consumer Sciences (FCS) is actively involved in programs conducted with AES and CES. The SDSU College of Agriculture and Biological Sciences is investing in the research and educational infrastructure needed to assure a stronger future for South Dakota. Expand the reach of the university through engagement, technology and globalization.

A Strong Future for Crop Production Relying on sustainable agricultural practices such as cover crops, farming systems and efficient use of inputs combined with modern high-yielding varieties, SDSU has improved the profitability of crops.From 1990 to 2005, changes in agricultural practices meant an increase of $770 million for crop producers in the Central and North Central region of the state, based on 2008 prices.

SDSU is a regional leader in plant breeding and genetics, and works to develops crops that thrive in the harsh South Dakota climate.SDSU plant scientists specialize in winter and spring wheat, soybeans, oilseeds, forages and oats.In 2008, 65 percent of all spring wheat and 13 percent of all winter wheat acres in South Dakota were developed at SDSU.SDSU has also developed four percent of soybean genetics, five percent of the forages, and 75 percent of the oats varieties currently used in South Dakota.

- Ground breaking for the new $6.5 million Seed Technology Building is scheduled for spring 2009.Funded by South Dakota commodity and industry groups, the facility will provide additional laboratory and seed quality testing resources.
- SDSU's Drought Tolerance Center has been established to speed the delivery of genetics from the laboratory to the farm gate, and develop public and private partnerships with the goal of commercialization.
- New genomics/proteomics faculty from around the world are joining the SDSU scientific community, strengthening applied molecular linkages. Foster economic growth, vibrant communities, and a sustainable environment.Establish a sustainable financial resource base.
- Based on research growth, SDSU has identified the need to extend current greenhouse space to keep pace with research priorities. Enhance academic excellence and strengthen scholarship and artistic activities.
- SDSU scientists are working to establish baseline levels for carbon sequestration, with the goal of developing this into a profit center for South Dakota farmers.

A Strong Future for Beef Production SDSU is developing a $5 million Beef Innovation Complex that will be unique in the Midwest.As a multidisciplinary unit, it will facilitate production-oriented research and teaching in the areas of cow-calf, seedstock, and feedlot operations. Among the many unique features of the planned facility, will be the ability to test concepts on small groups of livestock, and then test the feasibility of the concept in a production-sized beef herd.This is much like the concept used by plant scientists who test theories on a small scale in a greenhouse before bringing it to an entire field. The SDSU Range and Livestock Research Station at Cottonwood has focused on cow-calf management and range research for more than 100 years.Now, as the research station begins its second century of service, SDSU will invest $500,000 in a new hoop barn, new shop and equipment storage building, new fences, additional pipeline for livestock water, and additional feed storage space.These improvements underscore SDSU's commitment to improving profitability for future generations of ranchers.

A Strong Future for Agricultural Landowners At the request of the 2008 Legislature, the SDSU Economics Department in cooperation with the South Dakota Department of Revenue initiated the Agricultural Land Assessment Implementation Project.For the past year, SDSU economists have explored methodologies that would make the state system of taxation of agricultural land more fair.The proposed taxation system would be based on the productivity of agricultural crop land and non-crop land.The role of SDSU is not to assess values, but rather to provide critical analysis to the Department of Revenue that will assist the State of South Dakota as it establishes productivity-based tax assessments.With this information, the 2009 Legislature is expected to consider and finalize the implementation process for a new agricultural tax assessment system.

A Strong Future for Natural Resources Research conducted by the SDSU Wildlife and Fisheries Sciences Department is helping design natural resource management and economic development opportunities that grow fromSouth Dakota's natural habitat.From studying the behavior of mountain lions to evaluating the use of corn distillers dried grains with solubles as a possible food source for tilapia fish, the department playing a key role in the stewardship of fish and wildlife. Much of the research is geared toward quality of life issues for South Dakotans – helping to increase opportunities for hunting, fishing, and non-consumptive outdoor recreation helps maintain a workforce that wants to live in the state.

A Strong Future for BiofuelsSDSU has emerged as one of the leading land grant institutions in the nation for biofuel

research. Building on the success of the Sun Grant Initiative, SDSU and the South Dakota School of Mines are founding members of the Industry/University Cooperative Research Center in Bioenergy.This is the only biomass energy center funded by the National Science Foundation. Corporate partners in this effort include: Archer Daniels Midland, General Motors, Northrup Grumman Corporation, Poet Energy, Syngenta Biotechnology, the U.S. Department of Energy, and the U.S. Office of Naval Research.SDSU is also a partner in a $117 million grant from the U.S. Department of Energy to establish a demonstration scale biorefinery.South Dakota ethanol plants produce 726 million gallons of ethanol each year, or 8.5 percent of the nation's supply of ethanol. For each dollar of ethanol produced, the ethanol industry generates about 10 cents of new local income.

A Strong Future for the People of South Dakota South Dakota State University has implemented a five-year strategic plan to guide institutional decisions and growth through 2012."Achieving National Distinction, Strengthening Local Relevance" provides the roadmap for how SDSU will achieve its mission ofcreating a prosperous future for the people of South Dakota and their communitiesthrough excellence in education, innovation, new knowledge creation and application.The strategic plan for College of Agriculture and Biological Sciences supports the university goals to:

1. Enhance academic excellence and strenthen scholarship and artistic activities.
2. Foster economic growth, vibrant communities, and a sustainable environment.
3. Expand the reach of the university through engagement, technology and globalization.
4. Establish a sustainable financial resource base.

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.

Poverty rates in South Dakota are among the highest in the United States, occurring largely in counties with a high percentage of American Indians. Model-based estimates for 2007 indicate that 13.2% of the South Dakota population lives in poverty. The number increases to 16.2% in rural areas. 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.

South Dakota's unemployment rate has traditionally hovered around 3%, with 2007 at 3.0% These rates have increased as the national and international economy weakened, but not to the extend that other states have experienced. When combining poverty and unemployment data, it becomes clear that South Dakota is largely a state comprised of people who work in low-paying jobs, some holding more than one job.

The American Indian population represents approximately eight percent of the total state population. Three of the counties with reservations have been listed among the ten poorest counties in the United States. Five of the ten poorest counties in the nation are in South Dakota, meaning that poverty is not just a problem in reservation counties. Unemployment, alcoholism, poor diet, 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 grate 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.

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. A new research station is becoming established in east central South Dakota, with an emphasis on 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.

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.

Research and Extension programs provide the knowledge base for agricultural growth and economic development in South Dakota. Agriculture remains a major contributor to the economic health of the state, with a $19.2 billion in annual economic impact in 2007. This year, agriculture employed 150,459 people, and contributed $593,333,046 in tax revenues to the state. In addition, each dollar of revenue generated in the state creates another $1.099 in additional economic activity. Seventy-four percent of all farms earn less than $100,000 per year, while 24% earn between $100,000 and $499,999 each year. Two percent earned $500,000 or more. This indicates there are two types of agriculture being conducted in South Dakota: large-scale and small-scale agriculture. Currently, there are 31,600 farms with an average size of 1,386 acres.

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 Family and Consumer 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.

COOPERATIVE EXTENSION SERVICE Extension offers educational programs in agriculture and natural resources, youth development/4-H, family and consumer sciences, and a new area – community innovation and leadership. SD 4-H Market Share Tops North Central Region – Participation in 4-H programming in South Dakota reflects the greatest market share growth of any state in the North Central Region. From 1992 to 2002, an additional 27% of 4-H age-youth participated in the program, bringing 4-H/youth market share to 41.1%. 4-H participation has continued to grow to the current level of 10,501. The percentage of South Dakota youth served by 4-H has increased 17.6 percent in 2006, the percentage of all state youth enrolled in 4-H or other similar programs offered by SDSU has increased 16.6 percent. In 2006, 70,473 young people participated in six hours or more of Cooperative Extension sponsored instruction. Across the state, 4-H members exhibit a spirit of volunteerism that holds great promise for South Dakota.

This integrated Annual Report is a summary of the College's activities for Federal Fiscal Year 2008. This annual report summarizes programs that are built on substantial stakeholder input from all segments of South Dakota.

Total Actual Amount of professional FTEs/SYs for this State

Year:2008	**Extension**		**Research**	
	1862	**1890**	**1862**	**1890**
Plan	172.0	0.0	197.0	0.0
Actual	126.3	0.0	132.0	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. During this reporting period, this included 36 Hatch-funded projects, and 8 Multi-State Hatch projects.

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 was considered

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

Brief Explanation

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

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
3209322	0	2553247	0

2. Totaled Actual dollars from Planned Programs Inputs

	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	2829283	0	2553247	0
Actual Matching	2829283	0	2553247	0
Actual All Other	0	0	0	0
Total Actual Expended	5658566	0	5106494	0

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

Carryover	422292	0	638312	0

V. Planned Program Table of Content

Program #1

V(A). Planned Program (Summary)

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: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	17.2	0.0	41.4	0.0
Actual	6.7	0.0	32.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
150235	0	382869	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
150235	0	427309	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. Our Plan of Work called for the establishment of additional Extension programs in this reporting period.However, changing priorities required resources to be refocused into more pressing priority areas.Therefore, the planned Extension programs in Wildlife and Fisheries Sciences did not occur.

Other academic departments, including Plant Science, Animal Science, and Horticulture, work with County Extension Educators provide extension programming in response to local needs.However, this program area is largely driven by research conducted by the Agricultural Experiment Station.

2. Brief description of the target audience

- Land managers
- Wildlife and fisheries managers
- Extension educators
- State citizens
- Urban stakeholders

V(E). Planned Program (Outputs)

1. Standard output measures

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	200	2000	0	0
2008	50	2000	0	200

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	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
2008	50	55

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O No.	OUTCOME NAME
1	Build on current focus of Wildlife and Fisheries Science Department to address related issues from County Extension Educators
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 focus of Wildlife and Fisheries Science Department to address related issues from County Extension Educators

Not reporting on this Outcome for this Annual Report

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
2008	50	46

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The mountain lion population is expanding beyond the Black Hills of western South Dakota, creating more interactions
between lions and humans.

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
135	Aquatic and Terrestrial Wildlife
111	Conservation and Efficient Use of Water
102	Soil, Plant, Water, Nutrient Relationships
132	Weather and Climate
112	Watershed Protection and Management
133	Pollution Prevention and Mitigation
121	Management of Range Resources
123	Management and Sustainability of Forest Resources
104	Protect Soil from Harmful Effects of Natural Elements
101	Appraisal of Soil Resources

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 for this Annual Report

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 (high fuel prices, changes in Cooperative Extension priorities)

Brief Explanation

The Extension component was not added to this program, as projected in the Plan of Work. SDSU continues to maintain a strong wildlife research program, and offers outreach as a service activity by scientists.

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

Program #2

V(A). Planned Program (Summary)

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: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	29.2	0.0	49.3	0.0
Actual	20.2	0.0	42.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
452120	0	546758	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
452120	0	682763	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.

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

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

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	22243	19440	390	415
2008	21540	18000	2700	550

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	35	16	51

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
2008	10	12

Output #2

Output Measure

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

Year	Target	Actual
2008	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
2008	3470	72500

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Annually, crop producers select crop varieties or hybrids for their farm. Unless they are purchasing unique seed, variety or hybrid selection is a management input that generally does not cost producers additional money.

What has been done

To help producers become aware of proper variety and hybrid selection techniques, * 26 group meetings which reached approximately 700 producers, where they learned about variety characteristics, variety performance, and plot results from local plots. * Numerous producers were reached through the media, including 29 newspaper articles and/or radio programs. * 23 test and demo plots, comparing 10 different crops for yield and quality were conducted by Extension Educators in various locations across the state.

Results

Between 2005 and 2008, South Dakota producers increased their use of recommended varieties of spring wheat by over 35%.By using a recommended variety, producers realize an average increase of 5.8 bushel per acre. Using a price of $7.25 per bushel for spring wheat, South Dakota producers gained approximately $42 per acre by using a recommended variety instead of another variety.

4. Associated Knowledge Areas

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

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
2008	3300	4100

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Economically sound plant disease management has become essential to maintain profit margins and optimize production systems in agriculture today

What has been done

10 Crops Clinics and/or crops tours with over 300 producers attending. * 17 Plant Disease/Scouting Clinics with over 200 producers attending who cumulatively farmed at least 15,000 acres. * Monitored 16 sentinel plots statewide for Asian soybean rust and soybean aphid. * Monitored spread of disease in an on-farm research project in soybeans.

Results

* 50% yield increase was observed in seed treated wheat fields. * 1,500 acres were not sprayed with a fungicide for scab control due to information provided by the SDSU Scab Risk Advisory, resulting in a $30,000 savings. * One educator estimated 70% of winter wheat acres in the county were treated once with fungicide, 20% were treated a second time for scab.

4. Associated Knowledge Areas

KA Code	Knowledge Area
216	Integrated Pest Management Systems
215	Biological Control of Pests Affecting Plants
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
205	Plant 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
2008	2100	4000

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
216	Integrated Pest Management Systems
212	Pathogens and Nematodes Affecting Plants

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
2008	2025	2450

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

A commercial agronomist, hired by a local grower, asked an educator to confirm that a wheat field should be sprayed for aphids. However, the educator thought the problem was disease; therefore, he collected samples and sent them to the SDSU Plant Diagnostic Clinic where it was confirmed the problem was indeed a disease not insects.

What has been done

A total of 515 producers attended the crop clinics, workshops and other educational programs conducted in the Central District and improved their ability to identify pests and take proper management steps.

Results

The actions of one educator and the disease confirmation by the SDSU Plant Diagnostic Clinic saved the producer from applying $11,000 worth of insecticide that would not have done anything to control the isease problem.

4. Associated Knowledge Areas

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

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 facing agronomic plant production and profitability is the skyrocketing 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

Program #3

V(A). Planned Program (Summary)

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: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	25.8	0.0	47.3	0.0
Actual	16.2	0.0	27.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
362714	0	897964	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
362714	0	694836	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 of challenges our producers face. Once the research is completed, the researchers will work with the Extension personnel in developing a variety of programs to get the information to producers. SDSU will work jointly with other agencies like South Dakota Department of Agriculture, Animal Industry Board, Department of Environment and Natural Resources, and federal agencies including Natural Resource Conservation Service and others in coordinated effort to get the message out in a variety of methods. Extension Veterinary Science activities include outreach to veterinary practitioners and food animal producers and other animal owners. This includes one to one meetings, animal health conferences, participation in professional continuing educations efforts of the South Dakota Veterinary Medical Association and Extension newsletters and websites. Dairy Scientists will conduct research in dairy cattle nutrition to develop efficient methods for the utilization of by-products. Dairy Foods research will be conducted to develop newer healthier products via novel processes. Extension Dairy programs will conduct informational seminars and interactive learning opportunities on dairy profitability and nutrition for appropriate producer groups.

2. Brief description of the target audience

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

V(E). Planned Program (Outputs)

1. Standard output measures

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	1660	5440	310	280
2008	3000	6400	500	600

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	2	30	32

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of research projects completed on enhancing sustainable production.

Year	Target	Actual
2008	8	6

Output #2

Output Measure

- Number of research projects completed on dairy foods

Year	Target	Actual
2008	1	2

Output #3

Output Measure

- Number of research projects completed on dairy production

Year	Target	Actual
2008	1	5

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
2008	1000	1200

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

With an annual calf crop of approximately 1.7 million calves, beef cattle are a major contributor to South Dakota's economy. 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. FuArtificial insemination (AI) is the faster and most economical method to improve economically important traits in the beef industry.

What has been done

The 31st annual Ranchers forum in Faith, bull development clinics (2), prebreeding discussion workshops (2), and cattle AI schools (2) included presentations, informal discussions, and hands-on training and reached a community of interest of producers, future producers and private industry interested in improving beef cow reproductive management

Results

Over 40 producers now have the skills to do their own artificial insemination, saving them nearly $1500 each in direct costs.

4. Associated Knowledge Areas

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

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
2008	300	1200

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Alternative feeds, including various co-products from the ethanol industry, soy hulls, and other forages are providing lower cost options for beef, sheep, swine and dairy producers.

What has been done

Educational programs covering use of alternative feeds including distillers grains, syrups and other co-products, soy hulls and lesser-known types of forages in rations for beef cows, stocker calves, feedlots, ewes, feeder lambs, sows, feeder pigs, milking and dry dairy cows and dairy heifers.

Results

Many producers were in situations where the feedstuffs they had used traditionally had become quite expensive; but in many cases, so were the alternatives. These producers benefited from learning how to price feeds per unit of protein or energy. The producers are now armed with the tools they will need to make the determination on which feed is the best bargain now and in the future. One pork producer learned to use DDG, and saved $75,000 in feed costs.

4. Associated Knowledge Areas

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

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
2008	500	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
311	Animal Diseases
302	Nutrient Utilization in Animals
313	Internal Parasites in Animals
305	Animal Physiological Processes

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
2008	100	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

Rising 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

Program #4

V(A). Planned Program (Summary)

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: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	5.2	0.0	3.9	0.0
Actual	3.5	0.0	1.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
77805	0	47014	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
77805	0	27346	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

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	200	2000	0	0
2008	250	2500	200	100

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	0	25	0

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
2008	3	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
2008	100	85

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Poor ventilation in swine units is detremental to productivity and profitability the animals in these building. What has

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
404	Instrumentation and Control Systems
403	Waste Disposal, Recycling, and Reuse

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. Higher input costs for swine production are having a direct inpact on production decisions, and rofitabilty.

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

Program #5

V(A). Planned Program (Summary)

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: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	6.9	0.0	23.6	0.0
Actual	1.7	0.0	13.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
39044	0	264422	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
39044	0	248702	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 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

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	**Target**	**Target**	**Target**	**Target**
Plan	60	250	50	50
2008	1600	32000	1500	5000

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	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
2008	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
2008	15	35

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
2008	20	40

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Those preparing and processing food for the general public must be knowledgeable about safe food handling risks in order to identify the food handling practices that they must change to reduce the risk of foodborne illness.

What has been done

The SDSU Cooperative Extension Service taught Foodservice Manager Sanitation Certification and Recertification courses to 425 foodservice managers/workers/owners/food processors. Courses were also taught to 110 volunteers
that serve food at community events. This involves working with schools, nursing homes, hospitals, food processing facilities, and rural areas if the state. One certification course was specifically for Spanish speaking individuals that process and/or prepare food - 25 people participated in this course.

Results

When Foodservice Manager certification classes are taught to all levels of food prepares, over 80% pass the exam with a score of 75% or higher. 100% of participants identify at least one safe food handling practice they intend to change.

4. Associated Knowledge Areas

KA Code	Knowledge Area
502	New and Improved Food Products
501	New and Improved Food Processing Technologies
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
2008	1	15

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

Fifteen 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

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

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

urchase 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

Program #6

V(A). Planned Program (Summary)

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: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	10.3	0.0	17.7	0.0
Actual	8.4	0.0	9.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
188147	0	158448	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
188147	0	216519	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

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	1500	10000	100	500
2008	1450	8000	100	400

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	9	14	23

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Extension Educations Trained

Year	Target	Actual
2008	50	72

Output #2

Output Measure

- One-on-One Management Consultations

Year	Target	Actual
2008	40	40

Output #3

Output Measure

- Completed Research Projects

Year	Target	Actual
2008	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
2008	250	200

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

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
2008	250	300

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Crop insurance provisions related to mycotoxins

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
604	Marketing and Distribution Practices
602	Business Management, Finance, and Taxation

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
2008	50	55

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Estate planning has been a major educational emphasis, allowing farm assets to be distributed in a planned manner to the next generation.

What has been done

SDSU conducted multiple workshops on intergenerational business transfer.

Results

30 farm families developed transition plans which will transfer business property to the next generation with minimal tax and transfer fees.

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
2008	40	70

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The highly unstable economy, high commodity and input prices, combined with the aility 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
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
2008	15	6

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The highly unstable economy has reduced agribusiness profit margins, and in some cases, led to employee layoffs and agribusiness closings.

What has been done

SDSU has worked with entrepreneurs and communities to provide educational management workshops, and help identify new business opportunities dispite the economic downturn.

Results

As this reporting year draws to a close, the economy continues to spiral downward. State sales tax revenue has dropped substantially, reflecting lower sales and the worsening economic climate.

4. Associated Knowledge Areas

KA Code	Knowledge Area
610	Domestic Policy Analysis

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

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 2008, 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

Program #7

V(A). Planned Program (Summary)

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: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	18.9	0.0	3.9	0.0
Actual	24.5	0.0	6.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
548598	0	178650	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
548598	0	178650	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

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

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	**Target**	**Target**	**Target**	**Target**
Plan	2550	7000	3050	7000
2008	23000	20000	7000	10000

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	6	8	14

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of research projects

Year	Target	Actual
2008	1	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
2008	1	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 20-24% in 2006. 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
703	Nutrition Education and Behavior
702	Requirements and Function of Nutrients and Other Food Components

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
2008	1	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 20-24% in 2006. 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
703	Nutrition Education and Behavior
702	Requirements and Function of Nutrients and Other Food Components

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 Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	1	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 20-24% in 2006. 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

Community Health Challenge over 3 months; Health & Wellness Lessons 10 Week Series; CYFAR Programming at McLaughlin & Brookings

Results

Health & Wellness Series results: 80% of participants now exercising at least 3-5 times a week; 70% of participants are eating more fruits & vegetables; 50% of the participants families are eating more fruits, vegetables and including more fiber in their diets.

4. Associated Knowledge Areas

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

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
2008	800	3560

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 20-24% in 2006. 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
702	Requirements and Function of Nutrients and Other Food Components

Outcome #5

1. Outcome Measures

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

2. Associated Institution Types

•1862 Extension
•1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	800	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 20-24% in 2006. 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

Educational programs for child care providers, parents, and senior citens emphasized nutrition combined with physical exercise.

Results

o 13 Senior Citizens have formed a health club and are increasing their physical activity as a result; o 60% of seniors reported exercising 30 minutes a day prior ot the series, and 74% reported exercising 30 minutes a day after the heart health series; o Increase Children's Physical Activity while in Day Care Facilities o 80% Health & Wellness participants are doing physical activity 3-5 times a week following the programming.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

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
2008	75	30

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 20-24% in 2006. 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

Educators worked with more than 30 businesses to establish worksite wellness programs.

Results

One business eliminated the candy jar and saved 300.00 per month as well as decreasing the sugar consumption of employees and customers.

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
2008	75	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
2008	50	450

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Preapring 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
722	Zoonotic Diseases and Parasites Affecting Humans
703	Nutrition Education and Behavior

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

Program #8

V(A). Planned Program (Summary)

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: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	58.5	0.0	9.9	0.0
Actual	45.1	0.0	2.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
1010620	0	77122	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
1010620	0	77122	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

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

Year	Direct Contacts Adults Target	Indirect Contacts Adults Target	Direct Contacts Youth Target	Indirect Contacts Youth Target
Plan	3500	7000	3000	5000
2008	8000	22000	2900	11000

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

Patent Applications Submitted

Year	Target
Plan:	0
2008 :	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan	0	0	
2008	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of research projects completed

Year	Target	Actual
2008	1	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
2008	500	300

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

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

What has been done

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

Results

o Participants learned ways to save for what they wanted rather than to borrow money, o 58% of the 36 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
2008	500	1100

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Families who have their financial papers in order are able to withstand emergencies and save finances because they have their financial papers in order as well as having a set to grab and go if they need to leave their home in an emergency situation.

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 Total $ saved by those using consumer skills and changing Medicare Part D Plans - 1128 persons helped and 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
2008	500	650

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

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
2008	400	2300

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 21 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 310 Parents & participants are aware of the link between people & things in conflict resolution
o 42% of the 310 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
2008	150	175

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

o 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 75 persons attending will use the stretch bands to for low impact exercises & to improve bone & joint health for better mobility.
o 62% of the 75 persons will use the information to help keep their brain or family members brain sharp.

4. Associated Knowledge Areas

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

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
2008	250	725

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Hands-on engineering projects help develop math skills and help youth experience how math can be used to create challenging projects they can share with friends.

What has been done

Science projects for youth explored basic building and engineering concepts, and explored engineering careers.

Results

Young people became involved in science, and often wanted to continue their projects after the formal teaching effort concluded. One 4-H'er modified his design and made a three engine plane with propellers and wheels without any design or plans.

4. Associated Knowledge Areas

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

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
2008	150	800

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Community service is a pillar of citizenship.

What has been done

Many community service projects across South Dakota - examples - planting trees & flowers, Keeping SD Clean,Leadership - Toy Drives, Homeless Shelter Supply Drives, Food Pantry Drives, Christmas presents for children & families in need, Military donations for solders & their families, blankets for the homeless,caps & coats for children & families in need, Toy drives for needy, community clean up days, work with seniors in nursing homes,

Results

Youth gain live skills & increase their self worth because of the ability to help others and the interaction with caring adults.

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
2008	25	40

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

o Creating Value Added Community 10 series workshop with 7 communities - created strategic plans to address issues communities are facing.
o 24 Horizons II Communities - working on creating strategic plans for the future

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.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2008	1	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Families provide the emotional fabric for communities.

What has been done

Continued character training via Character Counts!

Results

Young people learn communications and social skills issues that lead to stronger relationships.

4. Associated Knowledge Areas

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

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
2008	1	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The worsenign economy, increasing food and energy costs represent increasing personal budget components. Managing food costs through
safe and effective preparation and storage help control costs of low-income families.

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

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
2008	2	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The worsening economy is providing a growing challenge to rural communities. Commuters are faced with $4.00/gallon gas prices, causing them to consider moving out of rural bedroom communities to be closer to urban work areas.

What has been done

Creating Value Added Community series workshop created strategic plans to address issues communities are facing.

Results

As the economy continues to fail, rural communities are experiencing greater difficulties.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management
805	Community Institutions, Health, and Social Services

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 2008, 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

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.