2013 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 College of Agriculture and Biological Sciences at South Dakota State University accomplishes its mission in part through many great partnerships. It starts with the South Dakota Agricultural Experiment Station and SDSU Extension, with research, teaching and outreach making life better for all South Dakotans. The partnerships with government entities, commodity organizations, 4-H, and private industry all contribute enormously to creating opportunity and to better serve the people of the state. SDSU's College of Agriculture and Biological Sciences and the College of Education and Human Sciences work closely together to provide important programs in food science and research.

SDSU Extension and the South Dakota Agricultural Experiment Station achieve their goals with researchers and state specialists located on the SDSU campus in Eastern South Dakota, eight regional centers operating across the state with field specialists, and six research field stations. Outreach is also achieved with three Federally Recognized Tribal Extension Program offices, and the West River Agricultural Center representing the Western part of South Dakota. 4-H Youth Development begins on campus with the South Dakota State 4-H Office and has 4-H field specialists in the regional centers and 4-H youth advisors in county owned offices. Additionally, iGrow is SDSU Extension's teaching platform to deliver valuable information to the online community.

October 24, 2011 was a monumental day. It was the start of something very new, yet very different. It was the launch of a new structure for SDSU Extension. The new system, marked by change from a place and person bound system to that of a regional, technology-based system, was implemented due to financial reasons as much as by the need to provide innovative and progressive outreach services demanded by a changing clientele base.

Two years later, SDSU Extension is still evolving as a vibrant and responsive organization, but the success that has been achieved to date is the product of investment - in time, opportunity, context and people.

The context of the reorganization was multi-dimensional:

- The reorganization included changes in professional staffing in which Field Specialists with a Master's Degree in a specialized area were hired to provide a greater level of expertise and leadership.
- The implementation of a regional center concept that features high-tech learning classrooms that utilize videoconferencing to connect learners to each other as well as topical experts in real time.
- The reorganization launched iGrow.org as our web-based learning platform that embraces a 24/7 "virtual extension office" for clientele to access at their convenience.
- And, the importance of youth programming was reinforced with the implementation of 4-H Advisors hired to focus solely on youth development education and volunteer development at the community level.

The staff has risen to the challenge. They have worked hard to engage communities of learners in vibrant and relevant programs. They have developed strong collaborations and partnerships that support the land-grant mission.

The regional centers are becoming "hubs of learning" as educational opportunities are initiated using technology that facilitates reduced time away from home and long distance travel.

The 4-H Advisors have strived to establish new working relationships with the youth they serve as well as parents, 4-H leaders and county commissions.

The iGrow.org virtual learning platform is used extensively for routine and critical needs. The site provides access to news articles, publications, video, webinars, weather, markets and a storefront that offers products for sale as well as access to online registration for conferences and seminars sponsored by SDSU Extension. From January to December in 2013, the site had 324,349 visits resulting in 698,514 page views. Compared to 2012, this reflects a 174.08% increase in site visits, a 224.87% increase in unique visitors and a 113.21% increase in page views.

There have been a few challenges, however. Of significance has been declining federal funding during the first two years of the reorganization. As a result, we have not fully implemented the original staffing plan of Field Specialist positions, filling 45 of the 65 positions. Fees and sponsorships have been applied to various program initiatives to support the costs of educational delivery, but it has been more challenging to implement cost recovery models for food and family, community development and youth development program areas.

The ability to provide quality educational outreach will be dependent upon the staff 's expertise and creative abilities, but it will also be dependent upon adequate financial resources that blend traditional funding streams with cost recovery strategies.

South Dakota State University uses the following Planned Programs in its Combined Research and Extension Annual Report of Accomplishments and Results. The Planned Programs are based on the USDA Knowledge Area Classification System.

Natural Resources and Environment

Activities in this Planned Program are driven by research and education. The research activities in this program are primarily supported by our Department of Natural Resource Management. Projects funded by Hatch include but are not limited to research studies in carbon sequestration, ecosystems, wildlife habitat, climate change, soil productivity, water quality, bioenergy, and pollution prevention. Activities being reported for SDSU Extension in this Planned Program include Grazing Schools and Concentrated Animal Feeding Operations.

Plants and Their Systems

Activities in this Planned Program are driven by research and education. The research activities in this program are primarily supported by our Department of Plant Science and our Department of Biology and Microbiology. Hatch funded projects include but are not limited to research involving disease management, wheat genetics and genomics, gene mapping for soybeans, drought tolerant seeds, wine grape cultivars, oat variety development, and sunflower germplasms. Activities being reported for SDSU Extension in this Planned Program include Backyard Biodiversity, Pesticide Applicator Training, Master Gardeners, and Integrated Pest Management.

Animals and Their Systems

Activities in this Planned Program are driven equally by research, education and SDSU Extension. The research activities in this program are primarily supported by our Department of Animal Science, Department of Dairy Science and our Veterinary and Biomedical Sciences. Hatch funded projects include but are not limited to research involving reproductive performance in animals, nutrient utilization in dairy cattle diets, diagnosis of viral diseases in swine, Bovine Respiratory Disease in cattle, and improved profitability in sheep and cattle. Activities being reported for SDSU Extension in this Planned Program include Growing South Dakota Beef, Calf Value Discovery, and Growing South Dakota Sheep.

Agricultural, Natural Resource, and Biological Engineering

There is minimal activity by research or SDSU Extension in this Planned Program. The research activities in this program are primarily supported by our Department of Agricultural and Biosystems Engineering. Hatch funded projects are limited to research involving developing a sustainable

nonfood/non-feed biomass for biodiesel. Activities being reported for SDSU Extension in this Planned Program include Subsurface Drainage Design and Water Management.

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

Activities in this Planned Program are driven by research and education. The research activities in this program are primarily supported by our Department of Agricultural and Biosystems Engineering, Department of Dairy Science, and our Department of Biology and Microbiology. Hatch funded projects include but are not limited to research involving milk and whey protein, methods to augment beef flavor and tenderness, the development of oilseed biofuels, processing co-products of corn and soybeans as valuable chemicals, and the advancement of technologies for improving food safety. Activities being reported for SDSU Extension in this Planned Program include Barbeque Bootcamp.

Economics, Markets, and Policy

Activities in this Planned Program are driven equally by research, education and SDSU Extension. The research activities in this program are supported by our Department of Economics. Hatch funded projects include but are not limited to research involving agricultural land market trends, economic impacts on wildlife and crop production from biofuel production, agricultural commodity prices, the enhancement of the value of U.S. beef, and policies regarding agriculture, energy and the environment. Activities being reported for SDSU Extension in this Planned Program include Ag CEO.

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

Activities in this Planned Program are driven SDSU Extension. The research activities in this program are supported by our partnership with the College of Education and Human Sciences. Hatch funded projects include but are not limited to research involving nutrition and physical activity education, induction of the death of fat cells - apoptotic, the understanding of nutrient-gene interaction, enhanced beef consumption, determining the impact of dietary components, and assessing factors that influence eating behavior of young adults. Activities being reported for SDSU Extension include Food Safety Certification and Recertification, Food Processing and Food Marketing, Gerontology, Tatanka's Healthy Tales, Healthy Living, and Smart Choices Grocery Store.

Families, Youth, and Communities

Activities in this Planned Program are driven by SDSU Extension, with little activity by research. The research activities in this program are supported by our partnership with College of Education and Human Sciences. Hatch funded projects include but are not limited to research involving financial literacy and management behavior, physical and mental health in diverse rural low-income families, and psychological and socio-cultural factors that impact the decision to save. Activities being reported for SDSU Extension include The Great American Book Read, Small Business Beginnings, Character Education, CYFAR, Native American Events, Youth Voices, Teens as Teachers, Ripple Effect Mapping, and Garden Development or Enhancement.

Total Actual Amount of professional FTEs/SYs for this State

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	106.9	0.0	190.8	0.0
Actual	120.3	0.0	200.2	0.0

II. Merit Review Process

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

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

2. Brief Explanation

All Hatch projects are subjected to peer review prior to implementation and require independent peer reviews from two scientists. The department head or a departmental executive committee identifies peer reviewers. The department head and the AES Director serve as merit reviewers. 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. SDSU Extension administrators serve as the merit review team for the plan of work. Department heads and program directors 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
- Survey of traditional stakeholder groups
- Survey of traditional stakeholder individuals
- Survey specifically with non-traditional groups
- Survey specifically with non-traditional individuals

Brief explanation.

Stakeholder participation is solicited from many sources and events, including agricultural check-off groups, commodity groups, funding organizations, governmental agencies, elected officials and boards, public events and meetings, news releases, and industry associations. SDSU Extension seeks stakeholder participation through Advisory Forums made up of Capstone Program Advisory Groups that provide discipline specific feedback. The capstone groups are:

- Competitive Livestock Systems
- Competitive Cropping Systems
- Urban/Rural Interface
- Food & Families
- 4-H Youth Development
- Community Development
- Native American

Stakeholders are highly encouraged to participate in and take an active interest SDSU Extension by providing direction, suggestions, and positive ideas. We ask stakeholders to share visionary strategies that meet the SDSU Extension mission, particularly in the capstone area they are representing. Stakeholders are encouraged to provide feedback and ideas for collaboration and partnership, and to help SDSU Extension reach and serve all demographic populations of the state. At the county level, County Commissioners are asked to maintain a county advisory structure that engages the local 4-H Promotion and Expansion Committee in the advisory role. This advisory structure predominantly gives guidance to county funded budgets and local 4-H expansion efforts.

Other Example Sources of Stakeholder Input:

- South Dakota Soybean Research and Promotion Council
- South Dakota Beef Industry Council
- South Dakota Corn Utilization Council
- South Dakota Oilseeds Council
- South Dakota Pork Producers Council
- South Dakota Wheat Commission Council
- South Dakota Department of Education and Cultural Affairs
- Department of Energy
- Environmental Protection Agency
- South Dakota Department of Agriculture
- Office of State Veterinarian
- South Dakota Game, Fish and Parks
- Natural Resources Conservation Service
- Bureau of Indian Affairs
- South Dakota Weed and Pest Commission

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.

Individuals and groups are identified through networking, attending conferences, public meetings, the internet, programming efforts, field tours, emails,and face-to-face arrangements. The Capstone Program Advisory Groups preferably consists of 8-12 individuals that are representative of the demographic composition of South Dakota in regards to race, ethnicity, gender, and age. SDSU Extension strives for balance in the groups by reaching out to private citizens, public agencies, discipline related industries, non-profit organizations and civic groups.

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.

The SDSU Extension Advisory Forum is held once a year. During the course of the annual advisory forum, all capstone program advisory groups will be convened on the same date and in the same location. All capstone program advisory group members will meet together for a brief period of time to receive information regarding SDSU Extension. Specific capstone program advisory groups will then meet to discuss issues/concerns relative to the discipline. SDSU Extension writes summaries of the discussions held by each capstone program advisory group during the Forum. South Dakota State 4-H meets with the Leader's Association and County Commissioners to receive input for 4-H promotion and expansion.

3. A statement of how the input will be 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 evaluate all input, requests and comments from stakeholders. SDSU Extension writes summaries of the discussions held by each capstone program group during the Advisory Forums. Program Directors share the Advisory Forum summaries specific to the capstone program area with department heads, faculty and specialists during program planning meetings. Stakeholder input is reviewed, considered and used as a basis to create SDSU Extension programs and AES research projects.

Brief Explanation of what you learned from your Stakeholders

Stakeholder input is very important to the Agricultural Experiment Station and to SDSU Extension. By soliciting input, we learn what the challenges are that they are facing and what they would like to see us do to address their challenges. We also learn what they believe the future of South Dakota looks like, what they see as opportunities, and what they think we can do to support those opportunities.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
3290943	0	2860529	0

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	4641420	0	2860529	0
Actual Matching	4641420	0	2920440	0
Actual All Other	0	0	0	0
Total Actual Expended	9282840	0	5780969	0

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous				
Carryover	1027882	0	0	0

V. Planned Program Table of Content

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Natural Resources and Environment

☑ Reporting on this Program

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	5%		8%	
102	Soil, Plant, Water, Nutrient Relationships	15%		22%	
103	Management of Saline and Sodic Soils and Salinity	0%		1%	
104	Protect Soil from Harmful Effects of Natural Elements	0%		4%	
111	Conservation and Efficient Use of Water	0%		7%	
112	Watershed Protection and Management	0%		6%	
121	Management of Range Resources	80%		11%	
131	Alternative Uses of Land	0%		2%	
132	Weather and Climate	0%		3%	
133	Pollution Prevention and Mitigation	0%		4%	
134	Outdoor Recreation	0%		5%	
135	Aquatic and Terrestrial Wildlife	0%		20%	
136	Conservation of Biological Diversity	0%		5%	
141	Air Resource Protection and Management	0%		2%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Actual Paid Professional	4.3	0.0	49.1	0.0
Actual Volunteer	0.0	0.0	0.0	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**
232071	0	597397	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
232071	0	510255	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 Field and Lab Research
- Collaborate with Other States
- Partner with South Dakota Game, Fish and Parks
- Partner with the South Dakota Grassland Coalition
- Partner with Business Organizations
- Collaborate with Non-profit Organizations
- Participate with the South Dakota State Climate Office
- Participate with the United States Army Corps of Engineers
- Conduct Training for Concentrated Animal Feeding Operations
- Partner with the South Dakota Department of Environment and Natural Resources
- Partner with the Natural Resources Conservation Service

2. Brief description of the target audience

- Wildlife and Fisheries Managers
- Scientists
- Environmentalists
- Outdoor Enthusiasts
- Farmers, Ranchers and Producers
- General Public
- Operators of Concentrated Animal Feeding Operations

3. How was eXtension used?

eXtension is not part of this Planned Program.

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	2522	930155	382	2722

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

Patent Applications Submitted

Year:	2013
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	1	26	27

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Percentage of all Hatch Research Projects in Natural Resources and Environment

Year	Actual
2013	20

Output #2

Output Measure

- Conducted Field Experiments to Determine the Impact of Adaptive Management Techniques on Carbon Sequestration and Energy Efficiency

Year	Actual
2013	0

Output #3

Output Measure

- Increase Rancher's Knowledge of Grazing Techniques and Grassland Management

Year	Actual
2013	0

Output #4

Output Measure

- Number of CAFOs Participants

Year	Actual
2013	57

Output #5

Output Measure

- Number of Publications Posted on iGrow Website

Year	Actual
2013	26

Output #6

Output Measure

- Number of Articles Posted on iGrow Website

Year	Actual
2013	167

Output #7

Output Measure

- Number of Podcasts Posted on iGrow Website

Year	Actual
2013	1

Output #8

Output Measure

- Number of Radio Programs Posted on iGrow Website

Year	Actual
2013	47

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

Outcome #1

1. Outcome Measures

Number of Natural Resources and Environment Hatch Research Projects

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	26

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
South Dakota has a wide diversity of natural resources that depend on maintenance and good stewardship of the land. Too much grazing, urban sprawl, the creation of reservoirs, plant invasion, feedlot runoff, global warming, as well as the growing world economy all contribute to the degradation of our natural resources.

What has been done
Within the College of Agriculture and Biological Sciences, there are 26 Hatch projects that are categorized in the Planned Program of Natural Resources and Environment. The research activities in this program are primarily supported by our Department of Natural Resource Management. Projects include but are not limited to research studies in carbon sequestration, ecosystems, wildlife habitat, climate change, soil productivity, water quality, bioenergy, and pollution prevention.

Results
Through research, our Department of Natural Resource Management continues to build a scientific knowledge base to improve and understand the management of natural resources in South Dakota. In addition, graduate students gain valuable knowledge and skills while collaborating on research projects. Notes of interest on results:
Rehabilitated soil plots show a 10-50 percent yield increase; US Army Corps of Engineers adopted change in managing Missouri River; Choice between greater short-term grain yields or longer-term carbon storage potential; Loss of CRP grasslands influence the ecology of White-Tailed deer fawns; Grasslands ecology enhanced with patch grazing and patch-burn grazing; Updated index values for rangeland plants in soil productivity calculations; Better understanding of weather condition changes impacting agricultural productivity.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
103	Management of Saline and Sodic Soils and Salinity
104	Protect Soil from Harmful Effects of Natural Elements
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
121	Management of Range Resources
131	Alternative Uses of Land
132	Weather and Climate
133	Pollution Prevention and Mitigation
134	Outdoor Recreation
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity
141	Air Resource Protection and Management

Outcome #2

1. Outcome Measures

Increased Knowledge Relative to Carbon and Residue Management

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Feeding the world's population in 2050 will require 70% more food than is produced today. This is complicated by the projected decrease in available key resources, which means producing more for less. Failing to meet the world's food needs will have catastrophic implications. The agricultural community must address the situation immediately.

What has been done

During this reporting period, training was provided to under-graduate and graduate students, faculty, and farmers. Accomplishments include: assessment of factors contributing to gradual yield increases, the development of educational materials to help producers overcome production barriers, data sets were designed to quantify the impacts of management on carbon turnover, draft documents were developed that identify production benchmarks, and field research designed to reduce the impact of agriculture on environmental quality and improve profitability was successfully completed. Research findings were shared with farmers and results have been distributed to the general public through news releases, radio interviews, the development of educational materials, the development of scientific papers, organized meetings, and informal discussions.

Results

As this research project continues, the long-term goals will help farmers and ranchers improve energy efficiencies, increase resilience, sustainability and adaptability of agricultural systems, provide information to document carbon and energy footprints, and increase yield potential and overcome production barriers. The results of the project are critical to helping the world adapt to a changing environment while maintaining and increasing productivity of Northern Great Plains agriculture.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships

Outcome #3

1. Outcome Measures

Number of Grazing School Participants

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	30

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Grazing lands of the Northern Plains are recognized as one of the most threatened ecosystems globally. As these lands are predominantly privately owned and managed, principally for livestock production, secure and profitable ranching is vital to conserving this vital resource. A stated objective of the SD Grazing School is successful and profitable grazing based enterprises maintained with excellent resource management.

What has been done
In cooperation with the South Dakota Grasslands Coalition and several other entities, SDSU Extension has partnered in grasslands management training to more than 265 ranchers for the last 10 years. An additional 30 participants were trained in 2013. Ranchers participated in classroom presentations as well as hands-on activities in the field.

Results
The SD Grazing School enabled SDSU Extension to reach new participants and increase their knowledge with many topics, including managing diversity on rangelands, pasture allocation, holistic management, soil health and infiltration, and concepts of grazing. Other topics also include planning your own place and planning for a forage shortage.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
121	Management of Range Resources

Outcome #4

1. Outcome Measures

Number of CAFOs Training Sessions

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	3

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Large-scale livestock producers, known as Concentrated Animal Feeding Operations (CAFOs),

create potential water and air quality conflicts for rural communities in South Dakota. There is a need for the development of these operations, but environmental laws must be followed and good will with neighbors is imperative for the sustainability of large operations. Any CAFO that is applying for a General Permit must attend the course.

What has been done
SDSU Extension, the South Dakota Department of Environment and Natural Resources, and the Natural Resources Conservation Service provide training three times a year for federal and state water pollution and control programs. The training sessions included topics on livestock production, manure management and land application practices. In addition, SDSU Extension Specialists discuss the management of nitrogen and phosphorus content of manure and air quality and odor.

Results
Approximately half of the participants were required to be at the training sessions and about half of them attended for the learning experience. We had a contingent of students from a local technical school also attend one of the session. The sessions represented approximately 17,945 animals in the beef industry, 6,260 animals in the dairy industry, and 157,700 animals in the swine industry. Survey results show a 17% to 35% increase in the overall understanding of the topics and an 82% overall satisfaction rate with the program. Seventy-seven percent of the participants who had not already adopted some of the practices demonstrated said they plan to adopt certain practices they learned.

4. Associated Knowledge Areas

KA Code	Knowledge Area
133	Pollution Prevention and Mitigation

V(H). Planned Program (External Factors)

External factors which affected outcomes
- Economy
- Competing Programmatic Challenges

Brief Explanation

SDSU Extension and the SDSU Ag Experiment Station have met or exceeded its goals despite a decrease in state and federal resources. The reduction in funds however, has created challenges across the board with research and outreach. There are fewer faces to greet the customer, there are fewer hands-on projects, and cost recovery has taken the word free out of some programs. But while these challenges may initially seem troublesome, paradoxically they improve service to our stakeholders. Smart classrooms provide video conferencing, web-based learning is available all hours of the day, and new sponsorships create new partnerships. There will be more challenges, but SDSU Extension and the SDSU Ag Experiment Station continue their commitment to excellence and success.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Grazing Schools

Success of the SD Grazing School led SD NRCS administrators to require attendance at the school by livestock producers qualifying for Conservation Stewardship Program contracts for grazing lands they manage. Success of the SD Grazing School is also reflected in the inquiries received from other states by the SD Grasslands Coalition Board about how to conduct similar training events. As a result of the SD Grazing School over the last ten years, nearly 300 ranchers and managers have been trained, representing management influence on more than approaching one million acres of grazing land.

Concentrated Animal Feeding Operations

Pre and Post Surveys
43 of 57 Participant Responses
82% - Overall Participant Satisfaction with the Program

Understanding of the Topic before Program
62% - Water Quality 50% - Permit 59% - Land Application 54% - Worksheets 61% - Conservation
85% - Nutrition 54% - Air Quality
Understanding of the Topic after Program
85% - Water Quality 84% - Permit 88% - Land Application 82% - Worksheets 87% - Conservation
85% - Nutrition 84% - Air Quality

Participants that Have Already Adopted Practices
38% - Land Application 27% - Conservation 20% - Nutrition 17% - Air Quality
Percentage of Remaining Participants that Plan to Adopt Practices
87% - Land Application 85% - Conservation 69% - Nutrition 68% - Air Quality

Key Items of Evaluation

Grazing Schools

As a result of the South Dakota Grazing School, nearly 300 ranchers and managers during the last ten years have received training in grassland management, representing approximately one million acres.

Concentrated Animal Feeding Operations

In a before and after survey, the 43 participants that completed the survey had an average knowledge gain of 40%.

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Plants and Their Systems

☑ Reporting on this Program

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	0%		19%	
202	Plant Genetic Resources	0%		13%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	0%		25%	
204	Plant Product Quality and Utility (Preharvest)	10%		5%	
205	Plant Management Systems	15%		12%	
206	Basic Plant Biology	0%		2%	
211	Insects, Mites, and Other Arthropods Affecting Plants	38%		9%	
212	Pathogens and Nematodes Affecting Plants	0%		10%	
213	Weeds Affecting Plants	0%		1%	
214	Vertebrates, Mollusks, and Other Pests Affecting Plants	0%		1%	
215	Biological Control of Pests Affecting Plants	0%		2%	
216	Integrated Pest Management Systems	37%		1%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Actual Paid Professional	10.2	0.0	65.7	0.0
Actual Volunteer	8.0	0.0	0.0	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**
556970	0	459812	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
556970	0	622911	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

- Collaborate with Master Gardeners
- Develop Improved Wheat Cultivars
- Conduct Research on Economic Impacts of Fungal Diseases
- Develop Superior Sunflower Germplasms
- Develop New Cultivars of Prairie Cordgrass for Bioenergy Production
- Analyze and Map Genes for Soybean Resistance of Aphids
- Develop New Multi-Purpose Oat Varieties
- Conduct Pesticide Applicator Training Sessions
- Deliver Integrated Pest Management Resources
- Partner with the South Dakota Agri-Business Association

2. Brief description of the target audience

- Home Gardeners
- Research Community
- Soybean Growers
- Wheat Growers
- Corn Growers
- Biofuels Crop Industry
- Producers
- Graduate Students
- Private and Commercial Pesticide Applicators
- Specialty Crop Growers
- Agronomy Professionals

3. How was eXtension used?

Ask an Expert is linked to the Gardening section of SDSU Extension's iGrow online teaching platform.

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	15739	3300764	1238	10891

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

Patent Applications Submitted

Year:	2013
Actual:	3

Patents listed
Variety: Advance, Crop - Wheat
Variety: Goliath, Crop - Oat
Variety: Horsepower, Crop - Oat

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	4	33	37

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Percentage of all Hatch Research Projects in Plants and Their Systems

Year	Actual
2013	30

Output #2

Output Measure

- Identified Proteins in Corn and Wheat

Year	Actual
2013	0

Output #3

Output Measure

- Number of Pesticide Applicator Training Sessions

Year	Actual
2013	110

Output #4

Output Measure

- Number of Master Gardener Training Sessions

Year	Actual
2013	35

Output #5

Output Measure

- Number of IPM Training Events Conducted

Year	Actual
2013	79

Output #6

Output Measure

- Increase Pollinator and Pollinator Habitat Knowledge

Year	Actual
2013	0

Output #7

Output Measure

- Number of Publications Posted on iGrow Website

Year	Actual
2013	129

Output #8

Output Measure

- Number of Articles Posted on iGrow Website

Year	Actual
2013	241

Output #9

Output Measure

- Number of Podcasts Posted on iGrow Website

Year	Actual
2013	34

Output #10

Output Measure

- Number of Radio Programs Posted on iGrow Website

Year	Actual
2013	102

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of Plants and Their Systems Hatch Research Projects
2	Enhanced the Understanding of Biotic and Abiotic Stress Resistance in Crop Plants
3	Number of Pesticide Applicator Training Participants
4	Number of Participants Completing Master Gardener Training
5	Number of IPM Participants
6	Number of Citizen Science Volunteers

Outcome #1

1. Outcome Measures

Number of Plants and Their Systems Hatch Research Projects

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	38

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Crop diseases, insect pests, drought, changing climatic conditions, soil erosion, and fewer acres of land available for farming are all serious production constraints for all crops produced in South Dakota.

What has been done
Within the College of Agriculture and Biological Sciences, there are 38 Hatch projects that are categorized in the Planned Program of Plants and Their Systems. The research activities in this program are primarily supported by our Department of Plant Science and our Department of Biology and Microbiology. Projects include but are not limited to research studies in disease management, wheat genetics and genomics, gene mapping for soybeans, drought tolerant seeds, wine grape cultivars, oat variety development, and sunflower germplasms.

Results
Through research, we continue to build a scientific knowledge base to improve and understand plant varieties, increased agricultural productivity, plant diseases, impacts of tillage on soil carbon levels, and the genomic basis of grape quality. In addition, graduate students gain valuable knowledge and skills while collaborating on research projects.

4. Associated Knowledge Areas

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

205	Plant Management Systems
206	Basic Plant Biology
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
213	Weeds Affecting Plants
214	Vertebrates, Mollusks, and Other Pests Affecting Plants
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems

Outcome #2

1. Outcome Measures

Enhanced the Understanding of Biotic and Abiotic Stress Resistance in Crop Plants

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Stress is a major factor in limiting plant growth, development and crop productivity. The discovery of unique proteins in resistant cultivars is important for plant breeders to develop better crop plants. Improved crop tolerance plants are necessary to keep pace with future food demands.

What has been done
Proteins involved in lignin biosynthesis were identified in corn and 90 proteins in wheat were identified that are differentially expressed as a result of drought and heat stress. An interesting discovery was made for Fusarium attack on wheat plant. A set of six genes (proteins) were found to be responsible for providing scab resistance to wheat. Out of six genes, two were revalidated by an independent technique and by an independent lab.

Results
Results have been disseminated in formal class teaching, seminars, poster presentations, peer reviewed journal articles, book chapters and visiting scientists. The results of the proteins identified in corn were published in the Journal of Proteomics. The discovery made for Fusarium attack on wheat was presented at a national forum for scab. The project provides excellent

professional development opportunities for graduate and undergraduate students. Research is ongoing with this project.

4. Associated Knowledge Areas

KA Code	Knowledge Area
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
206	Basic Plant Biology

Outcome #3

1. Outcome Measures

Number of Pesticide Applicator Training Participants

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	3500

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Producers planning to apply any pesticide to a commodity worth $1,000 or more must be certified as a private applicator. Anyone that applies pesticides for hire must be certified and licensed as a commercial applicator.

What has been done
SDSU Extension organized and participated in 74 commercial applicator sessions and 36 private applicator training sessions across the state. Fifteen commercial categories were covered. Speakers at the sessions included SDSU Extension Specialists, State Department of Agriculture representatives, and State Department of Environment and Natural Resources.

Results
Participants enhanced their knowledge and understanding of safe and sustainable methods to apply pesticides. Topics covered during these trainings include proper selection of personal protective equipment, understanding and comprehension of label languages, resistance development on weeds and insects and ways to prevent its development, proper technique to measure pesticides and calibrate pesticide application equipment.

4. Associated Knowledge Areas

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

Outcome #4

1. Outcome Measures

Number of Participants Completing Master Gardener Training

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	73

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
High food costs and lack of ability in small rural communities to obtain high quality fresh fruits and vegetables has led to the need for increased garden education. Schools, community groups, the elderly, and service groups are requesting information on basic gardening skills, assistance with starting gardens, and having basic garden questions answered.

What has been done
The Master Gardener program provides horticulture training to individuals who then volunteer in their communities ? teaching neighbors, friends and others valuable gardening skills. In South Dakota and in many other states across the country, there is a movement to offer Master Gardener training utilizing online learning with hands-on learning, albeit less hands-on than in previous years. There is some skepticism to this new approach, but the training is more accessible to more people ? people in remote locations, younger people, and people that are not able to take time during daytime hours. In the first year of this approach, 73 Master Gardeners completed the training and are now engaged in the volunteer service in their communities. Additionally, more than 60 Master Gardeners received optional hands-on training through workshops or other training sessions.

Results
Through the close partnership of SDSU Extension and Master Gardeners, citizens across South Dakota have access to public education that enables them to improve their health and lifestyle by growing nutritious foods. Adults and youth have gained confidence that their gardening skills are based on accurate, research-based information. By growing their own food, gardeners are saving

money, eating fresher produce, and making their own decisions about pesticide use. During this reporting period, Master Gardeners volunteered nearly 11,000 hours, a value of approximately $175,000.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems

Outcome #5

1. Outcome Measures

Number of IPM Participants

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1910

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In the past decade, new invasive pests have been identified through the work of the SDSU Plant Diagnostic Lab, SDSU Extension Specialists, and the SDSU IPM program. And there is evidence that several common pests are becoming pesticide resistant. The proper identification of pests and the pest control measures used have a direct influence on the profitability of the farm operation. Without the improved knowledge of pest biology, unacceptable levels of pest damage can occur and pose risks to people, property and the environment.

What has been done

The SDSU IPM Program organized or was part of more than 79 training events during this reporting period. A crop consultants? update was held for the South Dakota Independent Crop Consultants and an IPM Field School was co-hosted with and for the SD Agri-Business Association. Extension outreach was conducted for research farm tours, organic field tours, commercial pesticide meetings, county weed and pest control meetings and the Natural Resources Conservation Service. In addition, more than 7,000 people visited SDSU Extension's traveling displays at the state fair, ag shows and conventions. Participants were trained in agronomic and economic areas including, soil fertility, soybean cyst nematode management, disease identification of foliar and root borne diseases, timing for proper fungicide applications, new and emerging corn insects, thresholds and timing of treatment for soybean insects, herbicide

timing and weed control programs, pesticide resistance management, and fertility management and agronomic/climate interactions. The SDSU Extension IPM Program has also been involved with the development of Best Management Practices guides for South Dakota, newsletters, radio programs and the iGrow online teaching platform.

Results
Participants of the SDSU IPM Program have increased their knowledge of pest biology, pesticide label interpretation, pesticide handling, and environmental factors. This leads to increased use of IPM practices and objective, science-based decision-making on reducing risks from pests and preventing unacceptable levels of pest damage in both agricultural and residential settings. Increased use of IPM practices results in better pest management decisions which address the economic aspects of pest management while posing the least possible risk to people, property, resources and the environment. Through this program, SDSU Extension has given professional agronomists the best up-to-date information available to advise their clientele. Producers are then able to make sound crop pest management decisions that are economically beneficial to their operations.

4. Associated Knowledge Areas

KA Code	Knowledge Area
216	Integrated Pest Management Systems

Outcome #6

1. Outcome Measures

Number of Citizen Science Volunteers

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	19

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Pollinators are necessary for fruit production and seed set in many home garden and agricultural crops. Bees are great pollinators, but there has been a decline in their population during the last half century. The disappearance of large numbers of honey bees, called colony collapse disorder, has many people in the industry concerned. Community engagement is needed to help increase local pollinator population and diversity.

What has been done

The Backyard Biodiversity program uses citizen science (active involvement from everyday people) to improve awareness of pollinators, and create and conserve pollinator habitat. An observation protocol and data sheet was developed for participants. Photos of insects could also be submitted to a Project Noah mission created for Backyard Biodiversity. Training was provided on the data collection methods and basic insect identification through a webinar and live training session. The protocol focused on identifying broad groups of insects like butterflies, flies, beetles and some more specific groups of bees (honey bees, bumble bees, metallic bees, and small bees). Each volunteer completed at least 4, weekly, 20 minute observations of the flowering plants in their yard. Some volunteers also set up bee bowls (small traps of soapy water) to collect insects that might be missed during their regular observations.

Results

Nineteen volunteers submitted data for the project totaling more than 500 insect observations. The volunteers were mostly Master Gardeners. The bee bowl collections were completed at 9 sites and resulted in more than 400 pinned insects that are awaiting identification. The most common bee bowl catches were flies and bees, with a few small butterflies and the occasional beetle. Due to the volume of specimens collected, the final identification data will be available in 2014.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Competing Programmatic Challenges

Brief Explanation

SDSU Extension and the SDSU Ag Experiment Station have met or exceeded its goals despite a decrease in state and federal resources. The reduction in funds however, has created challenges across the board with research and outreach. There are fewer faces to greet the customer, there are fewer hands-on projects, and cost recovery has taken the word free out of some programs. But while these challenges may initially seem troublesome, paradoxically they improve service to our stakeholders. Smart classrooms provide video conferencing, web-based learning is available all hours of the day, and new sponsorships create new partnerships. There will be more challenges, but SDSU Extension and the SDSU Ag Experiment Station continue their commitment to excellence and success.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Pesticide Applicator Training

Evaluation was conducted on the change of knowledge using pre- and post-tests at

three Agricultural Commercial Pesticide Applicator Trainings (n=507 people):

On the topic of insecticide class recognition (i.e. which product acts in which way), there was an average of 30% increase in correct answers between post- and pre-test.

On the topic of insecticide resistance management (e.g. the practical ways to slow down insecticide resistance development), there was an average of 7% increase in correct answers between post- and pre-test.

This is the second year in a row that the topic of insecticide resistance management is emphasized in these trainings.

Key Items of Evaluation

Pesticide Applicator Training

In the before and after test, there was 30% increase in correct answers on the topic of insecticide class recognition.

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Animals and Their Systems

☑ Reporting on this Program

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	0%		10%	
302	Nutrient Utilization in Animals	0%		29%	
303	Genetic Improvement of Animals	0%		2%	
304	Animal Genome	0%		6%	
305	Animal Physiological Processes	0%		5%	
306	Environmental Stress in Animals	0%		1%	
307	Animal Management Systems	60%		9%	
308	Improved Animal Products (Before Harvest)	15%		3%	
311	Animal Diseases	0%		29%	
313	Internal Parasites in Animals	0%		4%	
315	Animal Welfare/Well-Being and Protection	25%		2%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Actual Paid Professional	12.8	0.0	37.8	0.0
Actual Volunteer	0.5	0.0	0.0	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**
696213	0	1069092	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
696213	0	956601	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

- Develop Vaccine Technologies
- Research Methodologies to Increase Reproductive Performance in Animals
- Conduct Research that Leads to Muscle Growth Augmentation
- Determine the Effects of Co-product Based Lamb Finishing Diets
- Increased Sheep Production Knowledge
- Coordinate Value-Based Marketing System for Cow-calf Operations
- Increased Beef Production Knowledge
- Conduct Ranch Visits

2. Brief description of the target audience

- Veterinarians
- Dairy Producers
- Producers of Ethanol Co-products
- Cattle Producers
- Swine Producers
- Muscle Biologists
- Livestock Nutritionists
- Sheep Industry
- Cow-calf Producers

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	7625	2841429	1741	2584

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

Patent Applications Submitted

Year:	2013
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	24	88	112

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Percentage of all Hatch Research Projects in Animals and Their Systems

Year	Actual
2013	19

Output #2

Output Measure

- Published and Disseminated Results of Nutritional Studies in Sheep Diets

Year	Actual
2013	0

Output #3

Output Measure

- Number of Learning Activities for Sheep Producers or Consumers

Year	Actual

2013	5

Output #4

Output Measure

- Demonstrate Value-Based Marketing to Cow-calf Producers

Year	Actual
2013	0

Output #5

Output Measure

- Create Learning Opportunities in the Beef Industry

Year	Actual
2013	0

Output #6

Output Measure

- Number of Publications Posted on iGrow Website

Year	Actual
2013	34

Output #7

Output Measure

- Number of Articles Posted on iGrow Website

Year	Actual
2013	329

Output #8

Output Measure

- Number of Podcasts Posted on iGrow Website

Year	Actual
2013	13

Output #9

Output Measure

- Number of Radio Programs Posted on iGrow Website

Year	Actual
2013	121

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

Outcome #1

1. Outcome Measures

Number of Animals and Their Systems Hatch Research Projects

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	24

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Production costs are the determining factor in livestock producer profitability. High feed costs, poor reproductive performance, and disease are primary concerns for producers and scientists.

What has been done
Within the College of Agriculture and Biological Sciences, there are 24 Hatch projects that are categorized in the Planned Program of Animals and Their Systems. The research activities in this program are primarily supported by our Department of Animal Science, Department of Dairy Science and our Veterinary and Biomedical Sciences. Projects include but are not limited to research studies in reproductive performance in animals, nutrient utilization in dairy cattle diets, diagnosis of viral diseases in swine, Bovine Respiratory Disease in cattle, and improved profitability in sheep and cattle.

Results
Through research, we continue to build a scientific knowledge base to improve and understand the profound effects of steroids and estrogens on reproduction, the use of biofuel co-products as feedstock, the efficiency in tracking animal infections, enhance vaccine responses for disease prevention, and improve the efficiency of muscle growth in poultry. In addition, graduate students gain valuable knowledge and skills while collaborating on research projects.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals

303	Genetic Improvement of Animals
304	Animal Genome
305	Animal Physiological Processes
306	Environmental Stress in Animals
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)
311	Animal Diseases
313	Internal Parasites in Animals
315	Animal Welfare/Well-Being and Protection

Outcome #2

1. Outcome Measures

Enabled Further Research to Explore Diet Formulation Strategies for Feeding Ruminant Livestock

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The rapidly expanding biofuels industry has increased the availability of co-product feeds for sheep. Co-product feeds such as soybean hulls, dried distillers grains, and glycerol are often more favorably priced than traditional feeds, but further evaluation is needed to determine the impact on performance, profitability, and efficiency of co-product based diets.

What has been done
Since the beginning of this research project, nutritional studies were conducted to explore the effect of supplemental fat sources on sheep diets. The studies evaluated the effect of fat source (raw corn oil or dried distillers grains) and the effect of supplemental fat source on total tract nutrient digestibility. In this reporting period, a summary of the sheep studies was published in a Master of Science thesis. The summary results have been disseminated via Extension outreach programs to producers, feed manufacturers, veterinarians, scientists and to the private industry.

Results
The results demonstrate that supplemental fat supplied by DDG or raw corn oil has similar effects on diet digestibility, rumen characteristics and carcass merits. Yet lamb growing diets formulated with DDG resulted in greater final body weight and improved growth efficiency compared to raw corn oil supplemented diets. Investigators conclude that DDG can be used as the sole source of supplemental fat in lamb growing diets. The studies show that DDG is an excellent source of energy with positive benefits on growth efficiency and no detrimental effects on rumen characteristics.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

Outcome #3

1. Outcome Measures

Number of Individuals Participating in Sheep Production Learning Activities

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	177

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Sheep and lamb inventory in the United States has been declining over the last few decades. Producers nationwide need to grow their flocks to meet the demands of wool and high quality lamb meat and at the same time keep their operations sustainable. Many beginning operators have limited knowledge and resources for productive sheep enterprise operations, land use management, and business planning. The survival of rural communities is critically tied to productive and profitable agriculture.

What has been done
SDSU Extension is committed to supporting the sheep industry with producer education and mentorship programs. SDSU Extension developed the sheepSD program as a learning opportunity for sheep producers. The program helps potential and beginning sheep ranchers enter and expand the sheep industry by developing production and management skills for

producer efficiency, profitability and sustainability. Through its partners, SDSU Extension has collaborated on numerous other events also that offer learning opportunities. Activities and topics include lamb shrink loss, research on corn stover usage, wool and fleece grading, consumer perceptions and marketing opportunities, ram testing and working dogs on sheep flocks. A signature wool project was created to promote the lamb and wool industry by selling products made from wool owned by South Dakota sheep producers. Profits from the signature wool project raised money to provide scholarships for SDSU students.

Results
SDSU Extension?s signature program ? sheepSD ? made its debut last year with 17 participants. Of those, 14 are still in the program and 12 are expanding their operation significantly with at least 50 ewes each. Eleven participants have established active mentor relationships with experienced sheep ranchers and agriculture professionals. Forty-two members of the Growing South Dakota Sheep Producers are participating. Other activities and programs have helped sheep producers gain knowledge of new research, learn methods to improve economic return, adapt new management practices, manage lambing time challenges and enable them to network with other producers ? reminding them of how diverse sheep production can be and how different management methods can vary from region to region. SDSU Extension provides leadership and collaboration with industry leaders and multistate Extension partners, contributing greatly to rural community sustainability.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)
315	Animal Welfare/Well-Being and Protection

Outcome #4

1. Outcome Measures

Number of Cow-calf Operations Participating in the Calf Value Discovery Program

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	11

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The success of a cow-calf operation can come down to the marketing strategy employed by the producer. Retained ownership is a program that allows producers the opportunity to start with as few as five of their own calves and pool them with other calves to see how they perform in a feedlot. Retained ownership can provide the greatest opportunity to realize the true value of cattle, but it can also have increased economic risks.

What has been done
SDSU Extension coordinated the Calf Value Discovery Program, a retained ownership program in which 11 cow-calf operations participated with 184 calves. The calves were vaccinated, dewormed, individually identified, and weighed. They were consigned to a local yard where they were fed in a single pen, visually evaluated and sold in semi-load lots.

Results
The Calf Value Discover program provides feedback to producers on feeding performance and carcass characteristics of calves. The data provides a benchmark for comparison with cattle from other operations and it also provides useful guidelines for making selection and marketing decisions in the future. Several producers are using the data to influence their breeding program and some producers are using the data to market their calves for a higher price.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
315	Animal Welfare/Well-Being and Protection

Outcome #5

1. Outcome Measures

Number of Individuals Participating in Beef Production Learning Activities

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	16

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

There are many opportunities in the beef industry, but there are also many risks involved. As the average age of agriculture producers in South Dakota continues to rise, the industry must recruit more young people. And to be competitive, beginning beef producers need relevant and timely information in the areas of livestock production, natural resource stewardship, marketing, financial management, business, and risk and legal management.

What has been done
SDSU Extension launched its signature program beefSD in 2010. The program ? designed specifically for beginning producers, enrolled 43 participants from 20 operations in Class I. In this reporting period, Class II has 16 participants from nine operations. Producers have attended workshops and experienced ranch visits and will participate for the next two years. The six major components of the beefSD program are: interactive workshops, case studies of successful beef enterprises, post-weaning calf performance evaluation, web-based interaction, travel study trips, and mentoring.

Results
Producers have been given the opportunity to develop management skills, network with other producers, travel, and increase their knowledge and understanding of all aspects of the beef industry. They have been provided a curriculum with tools to help them make wise management decisions. Participants reported knowledge gain in many areas, including the science of feeding cattle, improving the herd, genetic selection, marketing, operation efficiency, and pasture management. Participants emphasized the importance of learning to be open-minded, being able to connect with experienced producers, and realizing the possibilities, opportunities, and solutions to be profitable in the beef industry.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
315	Animal Welfare/Well-Being and Protection

V(H). Planned Program (External Factors)

External factors which affected outcomes
- Economy
- Competing Programmatic Challenges

Brief Explanation

SDSU Extension and the SDSU Ag Experiment Station have met or exceeded its goals despite a decrease in state and federal resources. The reduction in funds however, has created challenges across the board with research and outreach. There are fewer faces to greet the customer, there are fewer hands-on projects, and cost recovery has taken the word free out of some programs. But while these challenges may initially seem troublesome, paradoxically they improve service to our stakeholders. Smart classrooms provide video conferencing, web-based learning is available all hours of the day, and new sponsorships create new partnerships. There will be more challenges, but SDSU Extension and the SDSU Ag Experiment Station continue their commitment to excellence and success.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Calf Value Discovery Program

On average, feeding costs were $670.91 per animal. This equates to a total cost of gain of $98.65/100 lb. When carcasses were sold on a grid marketing basis, price ranged from $953.85 to 1,992.78 but had carcasses been sold on a dressed basis this range would have been narrower ($1,180.85 to $1,992.02). When including the value of the feeder calf, there was a $949.04 dollar per animal range in return from a loss of $500.81 to a profit of $273.78. However, on average total profit was a loss of $73.73 per animal.

Key Items of Evaluation

Nothing Significant to Report

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Agricultural, Natural Resource, and Biological Engineering

☑ Reporting on this Program

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	0%		10%	
402	Engineering Systems and Equipment	0%		10%	
403	Waste Disposal, Recycling, and Reuse	0%		63%	
404	Instrumentation and Control Systems	0%		13%	
405	Drainage and Irrigation Systems and Facilities	100%		4%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Actual Paid Professional	4.3	0.0	4.6	0.0
Actual Volunteer	0.0	0.0	0.0	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
232071	0	120324	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
232071	0	67937	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 to Create New Sources of Biomass
- Conduct Drainage and Water Management Design Workshops

2. Brief description of the target audience

- Biofuel Industry
- Scientists
- Farmers
- Landowners
- Drainage Contractors

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	1311	647036	436	3101

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

Patent Applications Submitted

Year:	2013
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	2	35	37

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Percentage of all Hatch Research Projects in Agricultural, Natural Resource, and Biological Engineering Engineering

Year	Actual
2013	2

Output #2

Output Measure

- Number of Subsurface Drainage Design and Water Management Workshops

Year	Actual
2013	3

Output #3

Output Measure

- Number of Publications Posted on iGrow Website

Year	Actual
2013	13

Output #4

Output Measure

- Number of Articles Posted on iGrow Website

Year	Actual
2013	52

Output #5

Output Measure

- Number of Podcasts Posted on iGrow Website

Year	Actual
2013	20

Output #6

Output Measure

- Number of Radio Programs Posted on iGrow Website

Year	Actual

2013 39

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

Outcome #1

1. Outcome Measures

Number of Agricultural, Natural Resource, and Biological Engineering Hatch Research Projects

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Research in biomass technology is needed to enhance the energy security of the United States.

What has been done
Within the College of Agricultural and Biological Sciences, there are two Hatch projects that are categorized in the Planned Program of Agricultural, Natural Resource, and Biological Engineering. The research activities in this program are primarily supported by our Department of Agricultural and Biosystems Engineering. Projects are limited to research studies involving the development of a sustainable nonfood/non-feed biomass for biodiesel.

Results
Through research, our Department of Agriculture and Biosystems Engineering has continued to build its knowledge base to improve and understand biomass technology with the design and development of the photobioreactor system. The photobioreactor system may enhance conventional biomass to ethanol production by increasing profitability. Profitability will be enhanced by using the carbon dioxide produced during ethanol production to create a new source of biomass, namely algae. Research is ongoing. In addition, graduate students gain valuable knowledge and skills while collaborating on research projects.

4. Associated Knowledge Areas

KA Code	Knowledge Area
401	Structures, Facilities, and General Purpose Farm Supplies
402	Engineering Systems and Equipment
403	Waste Disposal, Recycling, and Reuse

404	Instrumentation and Control Systems
405	Drainage and Irrigation Systems and Facilities

Outcome #2

1. Outcome Measures

Number of Subsurface Drainage Design and Water Management Workshop Participants

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	195

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Increases in precipitation and land and commodity prices along with new technologies have led to increased interest in subsurface (tile) drainage to address excess moisture concerns. Good drainage design requires an understanding of soils, topography, drainage system, legal, and environmental factors. Improper drainage design results in systems that provide less than desired benefits or greater than desired environmental impacts.

What has been done
A multistate effort among SDSU Extension and North Dakota State University and the University of Minnesota Extension services, along with industry partners, conducted workshops that included topics on drainage design fundamentals, managed drainage design, soil principles, lift stations, design tools, agronomic considerations, and legal and wetlands issues. The workshops concluded with participants working in small groups to design a drainage system for one of their own fields or an example field.

Results
Of the evaluation respondents from the South Dakota workshop, 95% rated the overall program as useful or very useful. Six of the 12 workshop sessions were directly related to drainage design and generally rated highest for usefulness for knowledge gained from the workshop. Many participants indicated that the information they learned from the workshop would help them better design their own tiling projects, evaluate contractor designs, or advise clients on drainage design. Several participants also indicated that they would now consider drainage water management as a best management practice.

4. Associated Knowledge Areas

KA Code	Knowledge Area
405	Drainage and Irrigation Systems and Facilities

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Competing Programmatic Challenges

Brief Explanation

SDSU Extension and the SDSU Ag Experiment Station have met or exceeded its goals despite a decrease in state and federal resources. The reduction in funds however, has created challenges across the board with research and outreach. There are fewer faces to greet the customer, there are fewer hands-on projects, and cost recovery has taken the word free out of some programs. But while these challenges may initially seem troublesome, paradoxically they improve service to our stakeholders. Smart classrooms provide video conferencing, web-based learning is available all hours of the day, and new sponsorships create new partnerships. There will be more challenges, but SDSU Extension and the SDSU Ag Experiment Station continue their commitment to excellence and success.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Subsurface Drainage Design and Water Management
Post workshop surveys with 38 respondents to all questions.
Respondents reporting that workshops were useful or very useful:

90% - Design 1: Soil & Drainage Principles
87% - Legal Considerations of Drainage
90% - Design Session 2: Introduction to Design
71% - LiDAR Data
92% - Design Session 3: Comprehensive Design
89% - Design 4: Lift Station Design
80% - DIY Tiling Panel
77% - Safety
77% - Conservation Drainage Practices
84% - Design Session 5: Managed Drainage Design
94% - Wetland Delineations
88% - Design Session 6: Small Group Design Project

Key Items of Evaluation

Nothing Significant to Report

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

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

☑ Reporting on this Program

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	0%		23%	
502	New and Improved Food Products	0%		31%	
503	Quality Maintenance in Storing and Marketing Food Products	0%		4%	
504	Home and Commercial Food Service	80%		0%	
511	New and Improved Non-Food Products and Processes	0%		41%	
512	Quality Maintenance in Storing and Marketing Non-Food Products	0%		1%	
703	Nutrition Education and Behavior	10%		0%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	10%		0%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Actual Paid Professional	2.6	0.0	25.3	0.0
Actual Volunteer	0.0	0.0	0.0	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**
139243	0	231807	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
139243	0	296889	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 Co-products of Corn and Soybeans
- Research and Improve Biofuel Production Processes
- Develop Methods to Improve Acceptability of Fresh and Processed Meats
- Conduct Barbeque Bootcamp Workshops
- Partner with South Dakota Beef Industry Council
- Partner with South Dakota Pork Producer's Council

2. Brief description of the target audience

- Farmers
- Biofuels Industry
- Beef Science Community
- Beef Producers
- Food Businesses
- Consumers

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	915	139159	682	1130

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

Patent Applications Submitted

Year:	2013
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	1	24	25

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Percentage of all Hatch Research Projects in Food and Non-Food Products: Development, Processing, Quality and Delivery

Year	Actual
2013	11

Output #2

Output Measure

- Developed a Strong Research Program to Enhance the US Dairy and Food Industry

Year	Actual
2013	0

Output #3

Output Measure

- Extracted and Analyzed Oilseeds to Determine Biofuel Production Suitability

Year	Actual
2013	0

Output #4

Output Measure

- Number of BBQ Bootcamp Workshops

Year	Actual
2013	7

Output #5

Output Measure

- Number of Publications Posted on iGrow Website

Year	Actual
2013	220

Output #6

Output Measure

- Number of Articles Posted on iGrow Website

Year	Actual
2013	96

Output #7

Output Measure

- Number of Podcasts Posted on iGrow Website

Year	Actual
2013	55

Output #8

Output Measure

- Number of Radio Programs Posted on iGrow Website

Year	Actual
2013	13

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

Outcome #1

1. Outcome Measures

Number of Food and Non-Food Products: Development, Processing, Quality, and Delivery Hatch Research Projects

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	15

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The challenge today of producing enough food, fiber and fuel for more than 9.5 billion people by 2050 is almost daunting, especially because it needs to be done using less land, less water and less energy than is used today. Science driven technologies must be developed for this to be accomplished in a sustainable manner.

What has been done
Within the College of Agriculture and Biological Sciences, there are 15 Hatch projects that are categorized in the Planned Program of Food and Non-Food Products: Development, Processing, Quality, and Delivery. The research activities in this program are primarily supported by our Department of Agricultural and Biosystems Engineering, Department of Dairy Science, and our Department of Biology and Microbiology. Projects include but are not limited to research studies in milk and whey protein, methods to augment beef flavor and tenderness, the development of oilseed biofuels, processing co-products of corn and soybeans as valuable chemicals, and the advancement of technologies for improving food safety.

Results
Through research, we continue to build a scientific knowledge base to improve and understand value added protein fractions from milk, the significance of biomass, mechanisms involved in regulating meat aging, increased shelf life for meat products, and milk homogenization. In addition, graduate students gain valuable knowledge and skills while collaborating on research projects.

4. Associated Knowledge Areas

KA Code	Knowledge Area

501	New and Improved Food Processing Technologies
502	New and Improved Food Products
503	Quality Maintenance in Storing and Marketing Food Products
511	New and Improved Non-Food Products and Processes
512	Quality Maintenance in Storing and Marketing Non-Food Products

Outcome #2

1. Outcome Measures

Increase Knowledge of Structure-Function Relationships of Milk Proteins

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Consumers are increasingly looking for dairy products with improved health and nutrition benefits. The structure and texture of a food product plays a huge role in how it is perceived by the consumer. Increased knowledge of protein structures may make it possible to tailor-make functional and nutritional properties in food products. Designing dairy products with these values will create new opportunities for the dairy industry and increase demand for dairy products.

What has been done
The focus of this first year project has been to develop a strong research program. Significant progress has been made by obtaining the essential requirements for success. At this time, the start of a great team of researchers has been built and key lab equipment has been purchased. Resources have been identified and collaboration has been secured for access to specialized equipment.

Results
Research so far has improved the knowledge of structure-function relationships of milk proteins and also provides a link between food structure and nutrient delivery. Numerous publications, keynote presentations, workshops and conferences have been used to disseminate information. Research collaboration has been established with a major university and a large dairy cooperative in New Zealand, as well as local professors. The project is also providing professional development for many graduate and undergraduate researchers.

4. Associated Knowledge Areas

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

Outcome #3

1. Outcome Measures

Increased Knowledge for Obtaining Maximum Oil Yields

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The global demand for energy threatens the economic stability of nearly every country in the world. The United States needs to develop a sustainable source of bioenergy and bio-based products. Oilseed crops have enormous potential for use in a variety of biofuel markets. The biofuels industry provides opportunities for rural economic growth while reducing our dependence on foreign oil.

What has been done
Oil was extracted from various seeds, including flax, mustard, canola, sunflower and canary. Three methods of extraction ? accelerated solvent extraction, cold press, and solvent assisted extrusion were used at different parameters to produce oils for research. By evaluating and understanding the oil profiles, researchers are able to better determine their suitability for biofuel production. The desired key outcome is to develop an efficient process to extract oils for further conversion into aviation fuels. Partial project results have been presented at various regional, national and international meetings or conferences.

Results
The heating value, viscosity, and oil density produced by accelerated solvent extraction was affected by temperature and extraction time, making the determination of maximum oil yields possible. The range of oil yield from the cold press was also measurable, depending on the oilseed species and conditions. The physical properties of the oilseeds (shape, size, hardiness of

seed shell, and oil content) had significant effects on the cold press performance, with lower screw speeds resulting in higher oil yield. Temperature and screw speed also affected the yield of residual oil with the solvent assisted extrusion.

4. Associated Knowledge Areas

KA Code	Knowledge Area
511	New and Improved Non-Food Products and Processes

Outcome #4

1. Outcome Measures

Number of BBQ Bootcamp Participants

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	325

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In recent years, there has been a lot of negative information surrounding meat products. Many times this information is incorrect and misleading, leaving the consumer grasping for answers. Consumers have expressed the need for trusted science-based information to base their decisions upon.

What has been done
SDSU Extension, partnering with the South Dakota Beef Industry Council and South Dakota Pork Producer?s Council conducted seven workshops in five cities. The workshops provided intensive, hands-on opportunities for consumers to enhance their understanding of meat cookery, barbequing, smoking, food safety,meat selection, and nutrition.

Results
Participant evaluations indicate the workshops were very successful in educating consumers. The BBQ Bootcamp program greatly enhanced the understanding of cookery, selection, and safe handling of meat cuts.

4. Associated Knowledge Areas

KA Code	Knowledge Area
504	Home and Commercial Food Service
703	Nutrition Education and Behavior
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Competing Programmatic Challenges

Brief Explanation

SDSU Extension and the SDSU Ag Experiment Station have met or exceeded its goals despite a decrease in state and federal resources. The reduction in funds however, has created challenges across the board with research and outreach. There are fewer faces to greet the customer, there are fewer hands-on projects, and cost recovery has taken the word free out of some programs. But while these challenges may initially seem troublesome, paradoxically they improve service to our stakeholders. Smart classrooms provide video conferencing, web-based learning is available all hours of the day, and new sponsorships create new partnerships. There will be more challenges, but SDSU Extension and the SDSU Ag Experiment Station continue their commitment to excellence and success.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

BBQ Bootcamp
325 participants 133 respondents
Presentation
1 = not valuable; 10 = highly valuable
8.6 - Grilling and Nutrition
8.5 - Smoking, Barbequing, Retail Selection
8.5 - Food Safety & Degrees of Doneness
8.9 - Spices, Rubs, & Marinades

Question
1 = absolutely not, 10 = absolutely; 1 = no knowledge, 10 = expert knowledge
9.1 - Did the speaker effectively explain the information?
5.9 - Knowledge level before program?
8.1 - Knowledge level after program?
9.2 - Was the program beneficial?
9.1 - Was the program beneficial in helping understand food safety, handling, and proper cooking temperatures for meat?

Key Items of Evaluation

Nothing Significant to Report

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Economics, Markets, and Policy

☑ Reporting on this Program

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	0%		10%	
602	Business Management, Finance, and Taxation	56%		11%	
603	Market Economics	36%		25%	
604	Marketing and Distribution Practices	0%		21%	
605	Natural Resource and Environmental Economics	6%		10%	
607	Consumer Economics	0%		9%	
608	Community Resource Planning and Development	2%		4%	
609	Economic Theory and Methods	0%		6%	
610	Domestic Policy Analysis	0%		4%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Actual Paid Professional	6.0	0.0	12.3	0.0
Actual Volunteer	0.0	0.0	0.0	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**
324899	0	185774	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
324899	0	245958	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

- Analyze Farm Real Estate Market Developments
- Analyze Agricultural Commodity Prices
- Research Trends and Financial Risks
- Develop Marketing Strategy Recommendations
- Partner with the South Dakota Soybean Research and Promotion Council
- Conduct Ag CEO Workshops

2. Brief description of the target audience

- Agricultural Commodity Groups
- Policy Makers
- Environmental Groups
- Farmers, Ranchers
- Producers
- Ag Land Owners
- Women in Agriculture
- Youth
- Agricultural Leaders

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	4858	335098	160	1077

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

Patent Applications Submitted

Year:	2013
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	1	18	18

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Percentage of all Hatch Research Projects in Economics, Markets, and Policy

Year	Actual
2013	8

Output #2

Output Measure

- Conducted Studies to Identify Product Attributes and Willingness to Pay for Locally Produced Beef

Year	Actual
2013	0

Output #3

Output Measure

- Number of Ag CEO Workshops

Year	Actual
2013	3

Output #4

Output Measure

- Number of Publications Posted on iGrow Website

Year	Actual
2013	7

Output #5

Output Measure

- Number of Articles Posted on iGrow Website

Year	Actual
2013	87

Output #6

Output Measure

- Number of Podcasts Posted on iGrow Website

Year	Actual
2013	5

Output #7

Output Measure

- Number of Radio Programs Posted on iGrow Website

Year	Actual
2013	45

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

Outcome #1

1. Outcome Measures

Number of Economics, Markets, and Policy Hatch Research Projects

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	11

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The economy is always changing and as new problems arise, research programs are needed to focus on the efficiency of crop and livestock sectors, sustainability of the food and fiber system, and rural development.

What has been done
Within the College of Agriculture and Biological Sciences, there are 11 Hatch projects that are categorized in the Planned Program of Economics, Markets, and Policy. The research activities in this program are supported by our Department of Economics. Hatch funded projects include but are not limited to research involving agricultural land market trends, economic impacts on wildlife and crop production from biofuel production, agricultural commodity prices, the enhancement of the value of U.S. beef, and policies regarding agriculture, energy and the environment.

Results
Through research, our Department of Economics continues to build a scientific knowledge base to improve and understand land values and cash rental rates, socioeconomic well-being, farm profitability and sustainability, the impact of bilateral ethanol trade flow, and market transparency in fed cattle markets. In addition, graduate students gain valuable knowledge and skills while collaborating on research projects.

4. Associated Knowledge Areas

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

604	Marketing and Distribution Practices
605	Natural Resource and Environmental Economics
607	Consumer Economics
608	Community Resource Planning and Development
609	Economic Theory and Methods
610	Domestic Policy Analysis

Outcome #2

1. Outcome Measures

Increased Understanding of Consumer Willingness to Pay for Locally Produced Beef

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
As producers increase efforts to meet the demand for locally produced food, demand-side information is needed to better understand the consumer's willingness to pay. This information is necessary to help producers develop efficient production and marketing strategies to increase profitability.

What has been done
A conjoint analysis was applied to study the consumer?s preferences and their willingness to pay higher price premiums for locally produced rib-eye steaks. Information was acquired from shoppers at five different farmers markets. The focus was on consumers at farmers markets because the rising trend of buying local is believed to have generated higher sales for local producers in recent years. The beef attributes used in the study included brand, price, leanness, color, juiciness, and production methods.

Results
The data suggested a significantly higher willingness to pay (WTP) for locally produced rib-eye steaks. The results also indicated that all product attributes selected for inclusion in the study contributed to a higher WTP for shoppers at farmers' markets, especially in terms of juiciness and color of the steaks. Two consumer characteristics ? household beef intakes and health knowledge ? significantly contributed to higher WTP. It is recommended that local producers

continue improving the quality of their meat; however, producers should be aware that improving quality would possibly result in diminished profits. Although consumers at farmers markets are willing to spend a higher price premium for better steaks, the additional WTP vanishes once the product's quality reaches a certain level.

4. Associated Knowledge Areas

KA Code	Knowledge Area
607	Consumer Economics

Outcome #3

1. Outcome Measures

Number of New Participants in the Ag CEO Program

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	33

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In the past 10 years, the percentage of farmers and ranchers aged 55 and over has increased, while the percentage younger than 55 has decreased dramatically. The average age of South Dakota's ag producers is now older than fifty-five. Starting or taking over a farm or ranch today has many challenges. Often times, the people taking over or beginning a farm or ranch are not fully prepared to operate in today?s business climate. The next generation of farmers and ranchers face difficult times if they are not fully engaged in visioning, strategic planning, and business operations. To be a manager and CEO of today?s farm and ranch businesses, producers must have a solid foundation in financial management, and the ability to make decisions that will be profitable and work toward the long term goals of the operation.

What has been done

The Ag CEO program is an SDSU Extension signature program with emphasis on beginning farmers and ranchers. The program is a 4-session series of workshops and self-study, with additional training for producers completing Farm Services Agency (FSA) borrower training. The program uses a systems approach to farm business planning that includes topics in farm vision, resource inventory and management, and financial subjects including record creation and budget development and analysis. Ag CEO was provided in three different communities in western South

Dakota for this reporting period.

Results
The Ag CEO program started in the spring of 2012 and in the first year, 109 people participated in the workshops. In this reporting period, 33 new farmers and ranchers participated in the workshops. Thirty-five participants received Farm Services Agency (FSA) borrower training and all were able to renew their FSA loans. Informal evaluations were conducted with lenders and other non-participants to discuss changes to improve the program. The participants continue to meet and plan to stay involved in the program to further develop their management skills.

4. Associated Knowledge Areas

KA Code	Knowledge Area
602	Business Management, Finance, and Taxation
603	Market Economics
605	Natural Resource and Environmental Economics
608	Community Resource Planning and Development

V(H). Planned Program (External Factors)

External factors which affected outcomes
- Economy
- Competing Programmatic Challenges

Brief Explanation

SDSU Extension and the SDSU Ag Experiment Station have met or exceeded its goals despite a decrease in state and federal resources. The reduction in funds however, has created challenges across the board with research and outreach. There are fewer faces to greet the customer, there are fewer hands-on projects, and cost recovery has taken the word free out of some programs. But while these challenges may initially seem troublesome, paradoxically they improve service to our stakeholders. Smart classrooms provide video conferencing, web-based learning is available all hours of the day, and new sponsorships create new partnerships. There will be more challenges, but SDSU Extension and the SDSU Ag Experiment Station continue their commitment to excellence and success.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

No Evaluation to Report

Key Items of Evaluation

Nothing Significant to Report

V(A). Planned Program (Summary)

Program # 7

1. Name of the Planned Program

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

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
701	Nutrient Composition of Food	0%		6%	
702	Requirements and Function of Nutrients and Other Food Components	0%		34%	
703	Nutrition Education and Behavior	28%		38%	
704	Nutrition and Hunger in the Population	0%		8%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	39%		4%	
723	Hazards to Human Health and Safety	0%		1%	
724	Healthy Lifestyle	33%		9%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Actual Paid Professional	11.1	0.0	4.5	0.0
Actual Volunteer	0.0	0.0	0.0	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**
603385	0	172661	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
603385	0	193140	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 that Focuses on Dietary Micronutrients
- Conduct Research for the Prevention and Treatment of Obesity
- Research to Understand Nutrient-gene Interactions
- Teach Food Safety Programs
- Distribute Fact Sheets to Food Pantries
- Develop Food Preservation Programs
- Conduct Home Food Preservation Workshops
- Conduct Local Food Entrepreneur Programs
- Develop Nutrition and Physical Activity Curriculum
- Train Teens as Teachers
- Collaborate with the University of Nebraska-Lincoln
- Conduct Workshops for the Aging and Senior Citizens

2. Brief description of the target audience

- Nutrition and Food scientists
- Health Educators
- Athletes
- Food Service Establishments and Employees
- Minority Audiences
- Food Pantries
- Food Entrepreneurs
- Consumers of Food Products
- Local Schools
- Youth
- Senior Citizens

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	4061	327443	1801	3382

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

Patent Applications Submitted

Year: 2013

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	21	21

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Percentage of all Hatch Research Projects in Human Nutrition, Food Safety, and Human Health and Well-Being

Year	Actual
2013	6

Output #2

Output Measure

- Number of Food Processing and Food Marketing Events

Year	Actual
2013	15

Output #3

Output Measure

- Number of Gerontology Events Presented

Year	Actual
2013	14

Output #4

Output Measure

- Increase Preferences for Fruits, Vegetables, Low-fat Dairy Products and Physical Activity

Year	Actual
2013	0

Output #5

Output Measure

- Number of Smart Choices Grocery Store Locations

Year	Actual
2013	14

Output #6

Output Measure

- Number of Healthy Living Events that Created Learning Opportunities

Year	Actual
2013	10

Output #7

Output Measure

- Number of Food Safety Certification or Recertification Courses Presented

Year	Actual
2013	23

Output #8

Output Measure

- Number of Publications Posted on iGrow Website

Year	Actual
2013	132

Output #9

Output Measure

- Number of Articles Posted on iGrow Website

Year	Actual
2013	289

Output #10

Output Measure

- Number of Podcasts Posted on iGrow Website

Year	Actual
2013	8

Output #11

Output Measure

- Number of Radio Programs Posted on iGrow Website

Year	Actual
2013	12

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

Outcome #1

1. Outcome Measures

Number of Human Nutrition, Food Safety, and Human Health and Well-Being Hatch Research Projects

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	7

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Obesity is a major concern within the United States and specifically within South Dakota. It is related to poor nutrition, the lack of physical activity and increased sedentary behavior. Obesity has been associated with increased risk for many chronic diseases. To improve individual's health, scientific discoveries need to be found and translated to practice.

What has been done
Within the College of Agriculture and Biological Sciences, there are 7 Hatch projects that are categorized in the Planned Program of Human Nutrition, Food Safety, and Human Health and Well-Being. The research activities in this program are supported by our partnership with College of Education and Human Sciences. Hatch funded projects include but are not limited to research involving nutrition and physical activity education, induction of the death of fat cells - apoptotic, the understanding of nutrient-gene interaction, enhanced beef consumption, determining the impact of dietary components, and assessing factors that influence eating behavior of young adults.

Results
Through research, we continue to build a scientific knowledge base to improve and understand nutritional genomics, behaviors that support healthful lifestyles in young adults, apoptosis-based approach to the prevention of obesity, and that consumption of lean beef in runners can prevent loss of lean muscle mass. In addition, graduate students gain valuable knowledge and skills while collaborating on research projects.

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food

702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
723	Hazards to Human Health and Safety
724	Healthy Lifestyle

Outcome #2

1. Outcome Measures

Number of Food Processing and Food Marketing Participants

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	135

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Millions of Americans become ill each year from foodborne diseases. With an increase in home processed foods that are consumed by the processor or sold at local markets, there is the potential for an increase in foodborne illnesses. It is imperative that proper equipment, methods and laws are followed to prevent unnecessary illnesses and deaths from home processed foods.

What has been done
SDSU Extension conducted numerous events throughout South Dakota to educate home food processors and entrepreneurs that want to sell home processed foods. Workshops, classes, and webinars are all methods used by SDSU Extension to present USDA Guidelines for Safe Home Food Processing, FDA regulations, Acid Food Processing Authority standards, and Good Agricultural Practices (GAP). Printed fact sheets and SDSU Extension?s online teaching platform, iGrow were also used to disseminate food safety information. In addition, an SDSU Extension mentor program expands its outreach by training individuals to serve as food preservation mentors.

Results
Participants of SDSU Extension's food processing and food marketing programs increased their knowledge and gained confidence that they are practicing safe food guidelines and regulations.

This gives consumers more control over the foods they eat and it adds value and profitability to the growers that choose to sell their foods at local markets. Seven participants trained in the mentoring program have volunteered to serve as mentors across South Dakota; connecting people in communities with USDA recommended food preservation methods. The more people that increase their knowledge of safe food processing, the more likely that foodborne illnesses will be reduced in South Dakota.

4. Associated Knowledge Areas

KA Code	Knowledge Area
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #3

1. Outcome Measures

Increase Knowledge of Aging Issues to Participants

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	577

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
By the year 2035, nearly 1 in 4 South Dakotans is projected to be over the age of 65. As the average age of the population increases, the number of individuals with disabilities is also projected to increase. Senior citizens and their families need access to educational information to help them live active and healthy lives in their homes and communities. Access to information can be especially limited in rural areas.

What has been done
SDSU Extension conducted gerontology workshops, conferences, and health fairs to citizens in rural and urban South Dakota. In addition, news releases, newspaper articles and the publication Population Aging in South Dakota: Preparing for Success was written for the SDSU Extension online teaching platform, iGrow. Topics presented at the events included: challenges of an aging population, community action, long-term care, and population projections. Breakout sessions at the events included: Fraud, Waste, and Abuse; South Dakota Braille and Talking Book Library; Are You Sick & Tired of being Sick & Tired?; Hearing Loss; and the 10 Warning Signs of

Alzheimer's Disease. One of the workshops was directed to youth participants of Operation Military Kids, with emphasis on awareness of aging and disabilities to the participants.

Results
As a result of SDSU Extension's outreach efforts, senior citizens in South Dakota have more knowledge to help them maintain and improve their overall health, which increases their opportunities for independent living. Participants also have new sources for services and agencies of healthy aging consultation. This includes many seniors that could have easily been overlooked in rural communities. By involving youth in the some of the activities, 179 of our future decision makers were equipped with knowledge to help them make decisions about the communities they are growing up in.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
724	Healthy Lifestyle

Outcome #4

1. Outcome Measures

Number of Youth Participating in Tatanka's Healthy Tales Intervention Program

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	252

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
According to the Centers for Disease Control and Prevention, no state met the country's Healthy People 2010 goal to lower obesity rates. And South Dakota American Indian children have higher than average health risks for obesity and diabetes. Adopting a healthy diet and active lifestyle can decrease the chances for these at-risk children to develop these diseases. Education at an early age, in a culturally sensitive way, and with repeated exposure encourages adoption of healthy practices.

What has been done

Tatanka's Healthy Tales is a nutrition and physical activity workbook, translated into Lakota, designed for elementary- aged youth. The objective of this study was to determine if the Tatanka's Healthy Tales curriculum increased second grade youth participant's preferences for fruits, vegetables, low-fat dairy products and physical activity. Eight control schools (244 youth) and eight intervention schools (252 youth) participated in a 5 month intervention. Teachers were trained via in-person trainings provided by SDSU Extension personnel. The teachers of control groups were not trained on implementation of the workbook lessons, but were encouraged to use the curriculum after the project implementation period was over and post-surveys were completed.

Results
The results of this study indicate that the Lakota translation of Fun with Foodella to Tatanka?s Healthy Tales is effective in changing food preferences. The odds ratios ranged from 1.91 (avocado) to 4.25 (pineapple) indicating a strong likelihood of change. Thus this suggestion of a possible increase in preferences could lead to an increase in consumption of fruits and vegetables and physical activity with further implementation of this curriculum.

Strengths of the Tatanka's Healthy Tales curriculum are its tie to South Dakota Native American culture, aim towards youth, its study population of nearly 500 students, and its promotion of physical activity, low-fat dairy products, fruits and vegetables. There are currently no valid Lakota nutrition education tools, and this curriculum promotes that cultural component. Tatanka?s Healthy Tales offers nutrition education within Lakota studies classes and has the potential for successful nutrition and physical activity intervention.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
724	Healthy Lifestyle

Outcome #5

1. Outcome Measures

Number of Smart Choices Grocery Store Participants

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	2000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
South Dakota has been identified among the states consuming the lowest amounts of fruits and vegetables, which are known to be key components of a healthy diet. In order to improve produce consumption people need information on how to shop for and prepare fruits and vegetables. People who are struggling to make ends meet financially also need food shopping and food preparation skills to help them provide both adequate food and a healthy selection of foods for their family, especially fruits and vegetables.

What has been done
Through SDSU Extension and Family and Consumer Sciences, the Family Nutrition Program conducts activities at grocery stores that demonstrate shopping skills and resource management to educate shoppers on how to improve their choices when purchasing food. SDSU Extension developed fact sheets, recipe cards, and recipe video podcasts on fruits and vegetables that can be grown in SD. Using these materials, SDSU Extension provided monthly grocery store displays featuring a fruit and/or vegetable, a tasting table to promote enjoying a healthy new recipe, and an opportunity for shoppers to discuss preparation and shopping selection. Ten grocery locations hosted recipe card racks and signs promoting produce throughout each month featuring a different fruit or vegetable. The materials are also available on the SDSU Extension online teaching platform, iGrow and are linked to the Harvest of the Month promotion by the SD Department of Health.

Results
More than 2000 shoppers received information for fruits and vegetables at the sampling stations in over 70 individual demonstrations. Interview surveys of shoppers at the sampling station indicated that almost half of shoppers do not follow practices such as eating deep orange or deep green vegetables and approximately two-thirds indicated an interest in using the recipe provided to increase their fruit or vegetable intake. Existing partnerships in five grocery stores were expanded from one-time demonstrations to include rack displays and produce cards posted each month. Nine additional grocery locations for the rack cards and produce area signs were added during the year. Grocers were very receptive to including the materials in their stores. Store employees who sample the produce recipe encourage shoppers to stop. Shoppers sometimes indicate a switch from their traditional recipe, which includes more sugar or fat. It is common for shoppers to go to the produce area to purchase the items.

4. Associated Knowledge Areas

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

Outcome #6

1. Outcome Measures

Number of Participants Involved in Healthy Living Learning Opportunities

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	405

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The Centers for Disease Control (CDC) reports that 75% of our nation?s health care costs are for the treatment of chronic diseases. Heart disease, stroke, cancer and diabetes are among the leading chronic diseases in the United States, with heart disease accounting for 25% of the deaths in South Dakota. Chronic illnesses affect quality of life and can cause lifelong disability. Physical inactivity, poor nutrition, tobacco use, and excessive alcohol consumption are all risk behaviors that can be modified, which can prevent or greatly reduce the risk for developing chronic disease. The CDC also reports that no state met the Healthy People 2010 goal to lower obesity rates in adults or children and adolescents. Obesity has increased in the last ten years with South Dakota ranking above the national average of 63.5% for being overweight or obese.

What has been done
Through its partnerships, SDSU Extension works with the SDSU Health and Nutritional Sciences Department, the South Dakota Department of Health, Area Chamber of Commerce?s, local businesses and other community entities to address health problems facing South Dakota. The Worksite Well-Being project specifically targets the workplace, providing consultation and resources to businesses to promote health and well-being for their employees. Ignite: Adolescent Obesity Prevention ? is a program that focuses on efforts to prevent obesity among 6th, 7th and 8th grade youth in two targeted communities. This multistate project utilizes Community Based Participatory Based Research methods to develop a strategic plan to focus on nutrition and physical activity interventions.

Results
By promoting a healthy living style to employees, businesses invest in their employees and help prevent chronic illnesses. This could result in reduced absenteeism and a more productive workforce, which may lower insurance premiums and increase profitability for the business. Two

communities were selected for the Ignite: Adolescent Obesity Prevention program and baseline assessments of food availability and physical environments were established. The assessments will be used with input from community focus groups to determine nutrition and physical activity interventions to reduce adolescent obesity.

4. Associated Knowledge Areas

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

Outcome #7

1. Outcome Measures

Number of Participants that Completed Food Safety Certification or Recertification Food Safety Courses

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	347

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In South Dakota, it is estimated that in 2012, there were 125,714 incidences of illness, 336 hospitalizations and eight deaths from food-borne illness. Behavioral based education can prevent or reduce the number of food-born illnesses. Food safety training provides all types of food service establishments and individuals the opportunity to adopt safe food handling practices.

What has been done
In partnership with a community of learners, SDSU Extension is helping to create a Food Safety Culture in South Dakota. SDSU Extension Food Safety Specialists conducted food safety Food Service Manager Sanitation Certification and Recertification courses across South Dakota. Additionally, food safety training sessions were provided to temporary food stands, and at the SD Early Childcare Education Conference. SAFE FOOD SD, a self-study series was published on the SDSU Extension online teaching platform, iGrow. The series is used for training all food handlers in food service type settings including all food pantry employees and volunteers across the state of SD, as well as consumers preparing foods for large groups. Statewide news articles specific to

food handlers in food service establishments were also published.

Results

Eighty-eight percent of the individuals participating in Foodservice Manager Sanitation Certification and Recertification received certification. Sixteen percent of the participants receiving certification were Native Americans. Two individuals became ServSafe® certified instructors serving the Cheyenne River Indian Reservation.

Continued training by SDSU Extension on food safety for food stands has encouraged the Turner County Fair Board to set higher food safety standards, becoming the first fair board in South Dakota to do so. A new policy will require ServSafe® food safety training certification for individuals managing temporary food stands at the Turner County Fair. Temporary food stands serve thousands of people, with more than 10,000 pounds of meat estimated to be served at the Turner County Fair alone.

The Food Safety Culture in South Dakota is getting stronger as food safety training on reservations continues both in the business sector and in educational entities such as Head Start and child care centers. A partnership is in place between SDSU Extension with a 1994 tribal college, Oglala Lakota Community College, to continue food safety trainings and to research possibilities for future collaborations.

4. Associated Knowledge Areas

KA Code	Knowledge Area
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Competing Programmatic Challenges

Brief Explanation

SDSU Extension and the SDSU Ag Experiment Station have met or exceeded its goals despite a decrease in state and federal resources. The reduction in funds however, has created challenges across the board with research and outreach. There are fewer faces to greet the customer, there are fewer hands-on projects, and cost recovery has taken the word free out of some programs. But while these challenges may initially seem troublesome, paradoxically they improve service to our stakeholders. Smart classrooms provide video conferencing, web-based learning is available all hours of the day, and new sponsorships create new partnerships. There will be more challenges, but SDSU Extension and the SDSU Ag Experiment Station continue their commitment to excellence and success.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Gerontology

Aging: Healthy, Happy, and Wise Conference
At the end of the conference, of the 98 participants:

Increased their awareness in the following areas:
100% on fraud, waste, and abuse
65% on wellness
95% on hearing loss
91% on the warning signs of Alzheimer's
When the seniors were asked which areas they planned to utilize this new information within the next three months, the top two answers were fraud and wellness.

Tatanka's Healthy Tales Intervention Program

252 Youth Participants in the intervention schools were more likely to change their preference to:
19% "like to eat" an avocado
38% "like to eat" a tangerine
48% "like to eat" carrots
36% "like to eat" a cranberry
50% "like to eat" pineapple, and
22% of participants were likely to change their preference towards "like to be" active.

Key Items of Evaluation

Gerontology

All 98 participants at the Aging: Healthy, Happy, and Wise Conference reported that they increased their awareness of fraud, waste and abuse. The knowledge gain about fraud is also the most likely to be used by the seniors within three months of the conference.

V(A). Planned Program (Summary)

Program # 8

1. Name of the Planned Program

Families, Youth and Communities

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
205	Plant Management Systems	5%		0%	
215	Biological Control of Pests Affecting Plants	1%		0%	
216	Integrated Pest Management Systems	2%		0%	
704	Nutrition and Hunger in the Population	7%		0%	
801	Individual and Family Resource Management	0%		67%	
802	Human Development and Family Well-Being	0%		13%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	35%		5%	
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures	2%		0%	
805	Community Institutions, Health, and Social Services	0%		15%	
806	Youth Development	48%		0%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Actual Paid Professional	34.2	0.0	0.9	0.0
Actual Volunteer	7.5	0.0	0.0	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**
1856568	0	23662	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
1856568	0	26749	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 that Examines Financial Savings Behavior
- Research to Understand Mental and Physical Health and Economics in Rural America
- Conduct Community Book Read and Discussions
- Conduct Small Business Workshops
- Conduct Leadership Workshops
- Deliver Healthy Living Program
- Conduct Workshops on Indian Reservations in Western South Dakota
- Conduct Character Education Program Training
- Develop and Enhance Community and School Gardens
- Partner with Ground Works School Teaching Gardens

2. Brief description of the target audience

- Low to Moderate Income Families
- Mothers Living in Rural Areas
- Rural Communities
- Entrepreneurs
- Youth
- Teenagers
- Native Americans
- Consumers of Food Products
- Local Schools
- Youth Program Leaders

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	13047	1085671	37445	59267

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

Patent Applications Submitted

Year: 2013

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	3	5	8

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Percentage of all Hatch Research Projects in Families, Youth and Communities

Year	Actual
2013	4

Output #2

Output Measure

- Number of Communities Participating in the Book Reads and Discussions

Year	Actual
2013	1

Output #3

Output Measure

- Number of Communities Hosting Small Business Beginnings Workshops

Year	Actual
2013	1

Output #4

Output Measure

- Number of Teens Trained in the Teens as Teachers Program

Year	Actual
2013	62

Output #5

Output Measure

- Number of High School Students Selected as 4-H Hometown Hero Representatives

Year	Actual
2013	96

Output #6

Output Measure

- Implemented Evidence-Based Programs for Children, Youth and Families at Risk (CYFAR)

Year	Actual
2013	0

Output #7

Output Measure

- Number of Communities Hosting the Ripple Effect Mapping

Year	Actual
2013	11

Output #8

Output Measure

- Increase Intergenerational Engagement with Community Organizations

Year	Actual
2013	4

Output #9

Output Measure

- Number of Events Conducted on Native American Reservations

Year	Actual
2013	29

Output #10

Output Measure

- Number of Garden Development or Enhancement Workshops and Webinars Conducted

Year	Actual
2013	10

Output #11

Output Measure

- Number of Publications Posted on iGrow Website

Year	Actual
2013	399

Output #12

Output Measure

- Number of Articles Posted on iGrow Website

Year	Actual
2013	398

Output #13

Output Measure

- Number of Podcasts Posted on iGrow Website

Year	Actual
2013	21

Output #14

Output Measure

- Number of Radio Programs Posted on iGrow Website

Year	Actual
2013	21

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of Families, Youth and Communities Hatch Research Projects
2	Number of Participants in the Book Reads and Discussions
3	Number of Small Business Beginnings Workshop Participants
4	Number of Students Taught by Teens as Teachers
5	Number of Elementary Students Impacted by 4-H Hometown Hero Representatives
6	Number of Children, Youth and Families at Risk (CYFAR) Participants
7	Ripple Effect Mapping Participants
8	Number of Youth Voices Program Participants
9	Number of Participants Involved in Native American Reservation Events
10	Number of Community or School Gardens Receiving Assistance with Development or Enhancement

Outcome #1

1. Outcome Measures

Number of Families, Youth and Communities Hatch Research Projects

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	5

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
There are concerns that the savings rate of American households, especially low and moderate income households is inadequate, leaving families extremely vulnerable to economic setbacks. Additionally, research indicates that there is a link between financial security and over-all health. Unhealthy families are not able to fully socially and economically contribute to their communities.

What has been done
Within the College of Agriculture and Biological Sciences, there are five Hatch projects that are categorized in the Planned Program of Families, Youth and Communities. The research activities in this program are supported by our partnership with College of Education and Human Sciences. Hatch funded projects include but are not limited to research involving financial literacy and management behavior, physical and mental health in diverse rural low-income families, and psychological and socio-cultural factors that impact the decision to save.

Results
Through research, we continue to build a scientific knowledge base to improve and understand the sociological factors associated with personal finance. Economic and sociological factors do explain whether or not respondents have a savings or investment account. Saving habits are a predictor in whether low to moderate individuals have life insurance. Findings indicate difficulty recruiting Native American mothers for research. In addition, graduate students gain valuable knowledge and skills while collaborating on research projects.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management
802	Human Development and Family Well-Being

803	Sociological and Technological Change Affecting Individuals, Families, and Communities
805	Community Institutions, Health, and Social Services

Outcome #2

1. Outcome Measures

Number of Participants in the Book Reads and Discussions

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	6

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Many small communities in South Dakota do not realize that they are spending more educational funding on the best and the brightest high school students that graduate and leave their communities, while spending less on the graduates that stay.

What has been done
SDSU Extension coordinated The Great American Book Read with one community and marketed the program to others. Participants in the communities read the book Hollowing Out the Middle (Carr and Kefalas, 2009), which types graduates into Achievers, Stayers, Seekers, and Returners. Discussions were then held to create strategies to deal with the situation, which then lead to action steps that the community can take to improve their community.

Results
Participants have gained knowledge about their high schools and the impact it has on their communities. Most of the communities have taken at least one action step to help with resource the Stayers and attract Returners. Steps taken include providing leadership training, supporting local entrepreneurs, offering vocational training beneficial to the local area, and discussing the development of a business incubator center.

4. Associated Knowledge Areas

KA Code	Knowledge Area
803	Sociological and Technological Change Affecting Individuals, Families, and

Communities

Outcome #3

1. Outcome Measures

Number of Small Business Beginnings Workshop Participants

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	15

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Small businesses represent approximately 60% of all jobs nationally and are a large part of South Dakota's economy. Small businesses need educational resources, but often times it is not easily accessible.

What has been done
SDSU Extension's Small Business Beginnings program delivers proactive and comprehensive business education outreach in South Dakota?s small towns. The program is a set of tools designed to provide technical assistance to early stage entrepreneurs, start-up businesses and existing small firms. The program has become a one-stop-shop for business education and technical assistance.

Results
All participants began and developed parts of business plans. The knowledge that small business owners gained from the program contribute greatly to successful business ventures and the likelihood of business longevity. The participants learned market analysis, concepts of business feasibility, state and federal laws, business performance, and creating or updating a business plan.

4. Associated Knowledge Areas

KA Code	Knowledge Area
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

Outcome #4

1. Outcome Measures

Number of Students Taught by Teens as Teachers

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	750

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In South Dakota, 32.5% of youth ages 5-19 are either overweight or obese, which is higher than the national average. This reflects unhealthy dietary behaviors, including 85% eating less than five servings of fruits daily and 89% eating less than three servings of vegetables daily. Physically, 79.4% did not attend PE classes daily when in school and 23% watched television 3 or more hours daily on an average school day. Research indicates that teens as teachers of younger youth is an effective teaching model showing a positive impact on the teens as well as the younger youth they are teaching.

What has been done
SDSU Extension 4-H Youth Development delivered programming utilizing the Teens Educating through Advocacy and Mentorship (T.E.A.M) model of instruction. The T.E.A.M Teens as Teachers program was designed as a tool to enhance 4-H youth development through Service Learning Projects planned and carried out by local teens. A partnership with SDSU Extension, the 21st Century Community Learning Centers, SD Coordinated School Health, SD Discovery Center, SD School Districts and 4-H clubs created learning communities that allowed youth the opportunity to make a difference within their communities and schools. The teens problem solved by developing and carrying out lesson plans for 3rd, 4th and 5th grade students that were relevant to the SD Health Education Standards. Teens also carried out larger community events to increase awareness to the issue.

Results
Through the Teens as Teachers program, teen teachers acquired and practiced critical life skills including 21st century learning skills. The life skills included responsibility, time management, ability to work well with adults, effective communication, self-confidence, and healthy living practices. The elementary students demonstrated an increased awareness and practice of healthy-living habits. These learning experiences help all of the students become responsible and

mature adults. Strong community partnerships were formed and a sustainable community outreach was also created.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #5

1. Outcome Measures

Number of Elementary Students Impacted by 4-H Hometown Hero Representatives

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	9623

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
With 82% of parents in South Dakota working, children are less supervised and parents often lack the tools or the time to teach character development. Today?s youth are continually exposed to negative role models and high risk behaviors, leading to higher incidences of bad decision making.

What has been done
Hometown Heroes was implemented as a twofold project of the SDSU Character Education Program. Two high school seniors were selected from their school as Hometown Hero representatives. The high school representatives that were chosen displayed good character, maintained good grades, were active in extracurricular activities, and make positive role models for elementary students. As Hometown Hero representatives, they gave presentations to elementary students about the importance of good character choices. The classroom visits were based on a theme that emphasized,? Standing Up for Others.? The objective of the lesson was to become more aware of the needs of others around us. The lesson raised the student?s consciousness to the fact that there are moments when we all need to stand up for a friend in need or perhaps a classmate who is not being treated very nicely. A poster is left in each classroom with a positive character message from each representative. The second goal of the project was to provide the high school students with leadership roles to gain and practice good leadership skills. They were also made aware that what they do in making good choices does

impact others more than they are aware of.

Results
Statewide - 9,623 elementary students in 40 communities heard a positive character message on how to Stand Up for Others. Since the messages were presented by high school students from their own schools, the elementary students were left with a lasting impression of a true Hometown Hero that is a positive role model. Through a Hometown Hero teacher survey - teachers have reported that long after the students have been in their classrooms the elementary students are talking about what was said by the Hometown Hero representatives. Some teachers have shared that they have heard about the presentation more than a year later. The messages delivered by the Hometown Heroes are impacting elementary students to make more positive decisions.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #6

1. Outcome Measures

Number of Children, Youth and Families at Risk (CYFAR) Participants

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	147

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The communities in Charles Mix and Roberts counties in South Dakota have high poverty rates, problematical school drop-out rates and challenging school environments. These risk factors can impact both family functioning and youth development outcomes.

What has been done
To address the needs of the youth and their families, a community team for each county is in place to help implement evidence-based programs, to build capacity for program implementation, and to plan for long-term community support and sustainability. The community-team approach supports the implementation of a family-based and a school-based evidence-based program. The

Strengthening Families Program 10-14 (SFP 10-14) was implemented for middle school youth and their parents. SFP 10-14 has demonstrated success in strengthening family communication, and building youth coping and resistance skills. Additionally, the evidenced-based program, LifeSkills Training, a school-based program, was implemented with the seventh grade student population.

Results
1) Strengthening Families Program 10-14 was attend by families in the Lake Andes and Sisseton communities. The SFP 10-14 program also expanded to 5 additional communities in SD beyond the two original CYFAR locations. Surveys were conducted at the final session for all participants. Of the survey items that pertain to the parent-child relationship, all items indicated an increase in positive parent-child interaction and relationship building experiences.

2) LifeSkills Training was instructed to all 7th graders in the Andes Central and Sisseton public school districts. The LST post tests indicated an increase in the use of positive life skills, drug refusal skills and positive assertiveness skills.

4. Associated Knowledge Areas

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

Outcome #7

1. Outcome Measures

Ripple Effect Mapping Participants

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	123

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Several communities have requested information on how they can demonstrate progress to their communities. Concurrently, SDSU Extension's Community Development program was interested in a participative model for evaluation of its community projects.

What has been done
SDSU Extension participated with 11 communities using the evaluation method - Ripple Effect Mapping. Ripple Effect Mapping engages participants to visually map and understand the intended and unintended results of programming. Like the ripple effect of throwing a stone in the water, each ripple answers a question, ultimately leading to the discovery of the changes in the community as a result of the program.

Results
Ripple Effect Mapping proved to be a very effective tool for communicating with each community. The method demonstrated to all participants that they had big accomplishments and made great progress. Participants were able to see that they were making positive changes in their communities along with positive changes in community attitudes. Some communities reported an increase in outside funding and volunteers became more active. SDSU Extension has included Ripple Effect Mapping in several grants for future community engagement projects.

4. Associated Knowledge Areas

KA Code	Knowledge Area
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

Outcome #8

1. Outcome Measures

Number of Youth Voices Program Participants

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	48

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Community members have expressed concern about the younger generation not engaging in community organizations and not working with older generational leaders. The goal was to get youth more invested in their community by working with community leaders who are in an older generation to improve life in their community. Both groups learn more about working with the other while engaging in a community project.

What has been done
Youth and adults are selected by the high school FCCLA organization to take part in three hours of training to learn about the other generation and to guide them in selecting and planning projects. The community development field specialist provides coaching to assist them in carrying out and evaluate their projects.

Results
Participants in the communities chose and implemented the following projects: joined an action team to raise funds to convert a local theater to digital format; created a Christmas caroling program for shut-ins and for the community's downtown area; held a mixed generational game night; conducted a community wellness fair; organized a farm safety camp for youth, and conducted an intergenerational Pitch card tournament. One community is in the process of recruiting students and adults for the program.

4. Associated Knowledge Areas

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

Outcome #9

1. Outcome Measures

Number of Participants Involved in Native American Reservation Events

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	779

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Health and social problems exist on many of South Dakota's Indian Reservations. Reservation schools have high attrition rates and the schools have limited resources for some of the country's most important programs, namely science and technology. There is also limited access to educational resources on health and nutritious foods. Many communities have few grocery stores, making very little fresh food available. Reservations throughout South Dakota are classified as food deserts by the USDA. Pride in the community is also lacking as an overabundance of plastic

trash is littered throughout one of the communities.

What has been done
Through great partnerships, SDSU Extension has Federally Recognized Tribal Extension Program offices at Cheyenne River, Pine Ridge and Rosebud Reservations. Nutrition Assistants, 4-H Program Advisors, and Field Specialists all provide leadership and outreach activities to the Native American communities. SDSU Extension is a partner with local schools and youth organizations to provide workshops to more than 200 youth for science and technology topics in robotics, photography, natural and physical sciences with a cultural component, and scalable video game design. Through partnerships, SDSU Extension also collaborated on workshops for home gardening, farmers markets, entrepreneur skills, high tunnels, and poultry and beef enterprises. Numerous planning sessions were also held to develop an action plan for the 2014 gardening year. Action has been taken to go into the schools and educate youth about the environmental consequences of plastic trash.

Results
By using the 4-H experiential learning model, youth in reservation schools are becoming more engaged in their learning process. As youth pursue science-based activities, they also learn and develop other valuable life skills. The additional learned skills in creativity and leadership give them the experience that they need to then be mentors for others. The students have also learned about environmental stewardship and the hazards of plastic trash. By learning about their environment, the youth gain and demonstrate pride in their community, which then reciprocates with the adults taking pride in the youth. All ages participated in gardening activities, gaining knowledge in organic production, water utilization, nutrition, preservation, and marketing. More than 250 youth learned hands-on gardening and food preparation techniques and more than 50 home gardens were implemented. Individuals enhanced their opportunities to gain income through farmers markets training.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
806	Youth Development

Outcome #10

1. Outcome Measures

Number of Community or School Gardens Receiving Assistance with Development or Enhancement

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	67

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
As rural America keeps shrinking, there is a greater disconnect between our citizens and agriculture. At the same time, more people are in need of affordable, safe, and healthy foods. Research indicates that community gardeners, as well as youth that participate in gardening programs, include more fruits and vegetables in their diet.

What has been done
In response to educational requests, SDSU Extension has conducted workshops and activities involving horticulture, curriculum, food safety, nutrition, project management and physical activity. New resources were established to support these efforts, including a 32-page workbook to guide communities wanting to launch community gardens and the iGrowSDLocalFoods.org site which provides a clearinghouse of information including educational and community garden resources. A taskforce of educators were united to direct garden-based education curriculum provided through Extension. Initial steps included developing a strategic plan and conducting a state-wide survey of SD teachers to assess their needs. SDSU Extension also coordinated funding and donations to providing grants to 37 teaching garden projects across the state.

Results
Sixty-seven community or school gardens have been launched, enhanced, or are in the development stage. The participants involved have learned valuable organization, development and horticulture skills that make them more self-reliant with their food production and consumption choices. Participants expressed confidence in themselves to launch and improving projects in their communities, providing more opportunities for food production and exposure to the amazing world of agriculture.

4. Associated Knowledge Areas

KA Code	Knowledge Area
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
806	Youth Development

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Competing Programmatic Challenges

Brief Explanation

SDSU Extension and the SDSU Ag Experiment Station have met or exceeded its goals despite a decrease in state and federal resources. The reduction in funds however, has created challenges across the board with research and outreach. There are fewer faces to greet the customer, there are fewer hands-on projects, and cost recovery has taken the word free out of some programs. But while these challenges may initially seem troublesome, paradoxically they improve service to our stakeholders. Smart classrooms provide video conferencing, web-based learning is available all hours of the day, and new sponsorships create new partnerships. There will be more challenges, but SDSU Extension and the SDSU Ag Experiment Station continue their commitment to excellence and success.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Teens as Teachers

Elementary Teacher Survey Results:

17 Participants

70% have observed an increase in discussion among their students about eating healthier

82% have observed one or more changes in the students eating and/or physical activity habits

Elementary Teacher Comments:

Students bring more fruit for snack breaks.

Students more willing to try the snacks for fruits and vegetables program at our school.

Some students have discussed they brought fruits for snacks to school because it is healthier.

Witnessed students trying foods that they haven't previously tried, kids are saying ...that contains too much sugar or, how many calories is that?

Teachers/Advisors of Teen Teachers:

10 Participants

100% observed an increase in life skills such as taking responsibility, working with adults and self-confidence

90% observed an awareness of time management among teen participants

90% observed an increase in discussion among teen participants about healthy behaviors

100% believe 4-H Teens as Teachers has been a positive experience for teen participants and would like to participate in a similar program again

Teacher/Advisor Comments: They learned life skills by having to communicate with

after school staff, principal, teachers, and as a team to schedule their programming and community event. They also learned that they must have perseverance to continue with a project they committed to even when roadblocks kept occurring such as scheduling and weather.

Hometown Hero

The Hometown Hero program evaluates the teachers following the student presentations.

One of the questions asked of the teachers:

Are the Hometown Heroes, such as those depicted on the 4-H Hometown Hero poster program, an effective way to share character building values. Out of 100 responses 96 teachers responded.

Strongly Agree	57.3%
Agree	36.5%
It's OK	6.3%
Disagree	0.0%

Below are two teacher responses:

Northwestern/Redfield Counselor

Just wanted to let you know that the kids heard your message, loud and clear. Today I asked the first grade class what they learned in the assembly. Was amazed at how they were able to remember all of the details! Keep your presentation going, and if you need my help, just ask!!

Northwestern Teacher

I teach 2nd grade as well as coaching high school volleyball and jr. high track. Good character in the younger students directly plays into the type of student-athletes I will get when they are older. We spend class time talking about the characteristics I look for in the athletes I coach, and what other coaches are looking for. For me to have a poster that shows these student - athletes from different schools and different athletic fields telling why character is important to them and how it relates to their classroom and sports team experience gives me back up on what I preach. Being in a small (class B) school with everyone sharing the same building, my students get to see the older students during the day, at sporting events, and in many cases are related to them. The messages (24 positive character messages) the poster presents is an even better way for younger students to admire and model student-athletes than what they do on a court or field. It also tells in their (Hometown Hero Representative's) own words how they feel about character. We don't always have an opportunity to hear from them, so this provides a means to see what character means to them.

Children, Youth and Families at Risk (CYFAR)

Evaluation of each component of the CYFAR project was completed.

1) Community team members completed a online survey to assess the level of functioning of the teams. Technical assistance was provided if issues were listed.

2) Strengthening Families Program 10-14 participants completed a retroactive pre/post evaluation at the conclusion of the program.

3) Students participating in LifeSkills Training completed a standard pre and post test process. The LifeSkills Training pre and post tests analyzed the knowledge and skills gained by students using true or false and 5 point Likert scale questions on anti-drug attitudes and various life and resistance skills.

Key Items of Evaluation

Teens as Teachers

Fourteen of the 17 elementary teachers that were surveyed reported that they have observed changes in their 3rd, 4th and 5th grade students, either in their eating habits or their physical activities. Ten of the adults that teach or advise the teens reported observing an increase in several areas of maturity amoung the teens that work with the elementary students.

Hometown Hero

Eighty-nine out of 96 teachers agree or strongly agree that the Hometown Heroes are effective in helping to build character in students.

Children, Youth and Families at Risk (CYFAR)

Following the Strengthening Families Program 10-14, 91% of participating parents indicated that they work together with their youth to solve problems that come up at home a "good bit" or "most of the time". This is a 64% increase from the beginning of the program.

Following the Strengthening Families Program, 10-14, 89% of participating youth indicated that they do things to help them feel better when under stress a "good bit" or "most of the time". This is an increase of 78% when compared to the beginning of the program.

V(A). Planned Program (Summary)

Program # 9

1. Name of the Planned Program

Global Food Security and Hunger

☐ Reporting on this Program

Reason for not reporting

Beginning with the 2012 Annual Report and the 2014 Plan of Work, we discontinued reporting the five NIFA Priority Areas and replaced them with eight new Planned Programs.

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	39.5	0.0	108.5	0.0
Actual Paid Professional	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
Actual Volunteer	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 Matching	1890 Matching	1862 Matching	1890 Matching
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 All Other	1890 All Other	1862 All Other	1890 All Other
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

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. Horticulturalists will develop appropriate varieties for home gardeners and landscapers, and will teach cost effective production methods. Livestock scientists, specialists and educators will further explore and teach producers how to maximize income through genetics, resource management and marketing. 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

Farmers, ranchers, agricultural land owners, hobby gardeners, homeowners and Master Gardeners.

3. How was eXtension used?

{No Data Entered}

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

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

Patent Applications Submitted

Year: 2013

Actual: {No Data Entered}

Patents listed

{No Data Entered}

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	40	40	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of AES research projects which are intended to enhance agricultural profitability and address global food security.

Year	Actual
2013	0

Output #2

Output Measure

- Number of CES programs for producers which are intended to enhance agricultural profitability and address global food security.

Year	Actual
2013	0

Output #3

Output Measure

- Enroll Students in the Pine Ridge Beginning Farmer/Rancher Program.

Year	Actual
2013	0

Output #4

Output Measure

- Increase Family Financial Stability

Year	Actual
2013	0

Output #5

Output Measure

- Increase Knowledge of Agricultural Drainage

Year	Actual
2013	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of producers growing alternative crops.
2	Number of Graduates of the Pine Ridge Beginning Farmer/Rancher Program.
3	Number of Participants That Increased Knowledge of Agricultural Drainage
4	Number of People that Increased Knowledge of Financial Stabiltiy

Outcome #1

1. Outcome Measures

Number of producers growing alternative crops.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #2

1. Outcome Measures

Number of Graduates of the Pine Ridge Beginning Farmer/Rancher Program.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #3

1. Outcome Measures

Number of Participants That Increased Knowledge of Agricultural Drainage

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #4

1. Outcome Measures

Number of People that Increased Knowledge of Financial Stabiltiy

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

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

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 10

1. Name of the Planned Program

Climate Change

☐ Reporting on this Program

Reason for not reporting

Beginning with the 2012 Annual Report and the 2014 Plan of Work, we discontinued reporting the five NIFA Priority Areas and replaced them with eight new Planned Programs.

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	4.3	0.0	30.7	0.0
Actual Paid Professional	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
Actual Volunteer	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 Matching	1890 Matching	1862 Matching	1890 Matching
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 All Other	1890 All Other	1862 All Other	1890 All Other
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

V(D). Planned Program (Activity)

1. Brief description of the Activity

Homeowners, landowners and gardeners will be taught concepts of horticultural sustainability to reduce inputs and conserve natural resources. Create Extension civic engagement curriculum for community leaders and organizations, and promote leadership capacity to enhance civic activity within the

community.

2. Brief description of the target audience

- Ranchers
- Livestock Producers
- Agricultural Lenders
- Land Assessors
- Governmental Agency Personnel
- Dairy Farmers

3. How was eXtension used?

{No Data Entered}

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

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

Patent Applications Submitted

Year: 2013

Actual: {No Data Entered}

Patents listed

{No Data Entered}

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	2	1	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Increase Knowledge of Healthy Grazing and Pasture Lands.

Year	Actual
2013	0

Output #2

Output Measure

- Increase Knowledge of Nutrient Flow

Year	Actual
2013	0

Output #3

Output Measure

- Increase Knowledge of Sustainable Consumer Horticulture.

Year	Actual
2013	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of Ranchers that Increased their Knowledge to Maintain Healthy Grazing and Pasture Lands.
2	Quantify Improvements in Plant Diversity and Production of South Dakota Grasslands.
3	Increase the Understanding of Nutrient Flow though a Livestock Facility.

Outcome #1

1. Outcome Measures

Number of Ranchers that Increased their Knowledge to Maintain Healthy Grazing and Pasture Lands.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #2

1. Outcome Measures

Quantify Improvements in Plant Diversity and Production of South Dakota Grasslands.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #3

1. Outcome Measures

Increase the Understanding of Nutrient Flow though a Livestock Facility.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

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)

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 11

1. Name of the Planned Program

Food Safety

☐ Reporting on this Program

Reason for not reporting

Beginning with the 2012 Annual Report and the 2014 Plan of Work, we discontinued reporting the five NIFA Priority Areas and replaced them with eight new Planned Programs.

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	18.2	0.0	25.4	0.0
Actual Paid Professional	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
Actual Volunteer	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 Matching	1890 Matching	1862 Matching	1890 Matching
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 All Other	1890 All Other	1862 All Other	1890 All Other
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

V(D). Planned Program (Activity)

1. Brief description of the Activity

South Dakota State University will conduct research and Extension programs to increase understanding of safe food handling, preparation and storage practices.

2. Brief description of the target audience

Parents, food service workers and managers, consumers

3. How was eXtension used?

{No Data Entered}

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

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

Patent Applications Submitted

Year: 2013

Actual: {No Data Entered}

Patents listed

{No Data Entered}

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	6	13	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Increase Knowledge of Food Safety through the Food Safety Virtual Lab program.

Year	Actual
2013	0

Output #2

Output Measure

- Increase Food Safety Knowledge through Certification or Re-certification Programs.

Year	Actual
2013	0

Output #3

Output Measure

- Increase Knowledge of IPM Techniques.

Year	Actual
2013	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of people that adopted 1 or more food preparation, storage, or preservation practices for increased access to a safe food supply
2	Number of People Participating in the Food Safety Virtual Lab Program.
3	Number of Participants in IPM Programs.
4	Number of People that were Certified or Re-certified in Food Safety Programs.

Outcome #1

1. Outcome Measures

Number of people that adopted 1 or more food preparation, storage, or preservation practices for increased access to a safe food supply

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #2

1. Outcome Measures

Number of People Participating in the Food Safety Virtual Lab Program.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #3

1. Outcome Measures

Number of Participants in IPM Programs.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #4

1. Outcome Measures

Number of People that were Certified or Re-certified in Food Safety Programs.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 12

1. Name of the Planned Program

Sustainable Energy

☐ Reporting on this Program

Reason for not reporting

Beginning with the 2012 Annual Report and the 2014 Plan of Work, we discontinued reporting the five NIFA Priority Areas and replaced them with eight new Planned Programs.

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	7.5	0.0	20.2	0.0
Actual Paid Professional	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
Actual Volunteer	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 Matching	1890 Matching	1862 Matching	1890 Matching
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 All Other	1890 All Other	1862 All Other	1890 All Other
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

V(D). Planned Program (Activity)

1. Brief description of the Activity

South Dakota State University will conduct research in support of biofuel development, including new and adapted crop varieties. Extension will address energy conservation and efficiency, recycling and

air quality.

2. Brief description of the target audience

Homeowners, agricultural commodity group leaders with interests in biofuels, biofuels industry leadership.

3. How was eXtension used?

{No Data Entered}

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

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

Patent Applications Submitted

Year: 2013

Actual: {No Data Entered}

Patents listed

{No Data Entered}

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	8	6	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Increase Energy Conservation Information through Consultation, Workshops, Displays and Other Methods.

Year	Actual
2013	0

Output #2

Output Measure

- Increase Knowledge of Business Goals.

Year	Actual
2013	0

Output #3

Output Measure

- Increase Involvement with the Number of People Gaining Knowledge in Community Development.

Year	Actual
2013	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Increase the Knowledge of Cellulosic Biomass Feedstock.
2	Number of People that Increased Their Understanding of Civic Involvement through the Community Capacity Building Program.
3	Number of people that Increased Their Knowledge of Alternate Cropping Systems.
4	Number of People that Increased their Knowledge of Business Goals.

Outcome #1

1. Outcome Measures

Increase the Knowledge of Cellulosic Biomass Feedstock.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #2

1. Outcome Measures

Number of People that Increased Their Understanding of Civic Involvement through the Community Capacity Building Program.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #3

1. Outcome Measures

Number of people that Increased Their Knowledge of Alternate Cropping Systems.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #4

1. Outcome Measures

Number of People that Increased their Knowledge of Business Goals.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 13

1. Name of the Planned Program

Childhood Obesity

☐ Reporting on this Program

Reason for not reporting

Beginning with the 2012 Annual Report and the 2014 Plan of Work, we discontinued reporting the five NIFA Priority Areas and replaced them with eight new Planned Programs.

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	37.4	0.0	6.0	0.0
Actual Paid Professional	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
Actual Volunteer	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 Matching	1890 Matching	1862 Matching	1890 Matching
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 All Other	1890 All Other	1862 All Other	1890 All Other
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

V(D). Planned Program (Activity)

1. Brief description of the Activity

Scientists will continue to conduct research on nutrition and SDSU Extension will continue programs to increase knowledge on nutrition, diet, and the understanding ot the importance of physical activity.

2. Brief description of the target audience

- Researchers
- Youth
- Parents
- Families
- People Living in Poverty

3. How was eXtension used?

{No Data Entered}

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

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

Patent Applications Submitted

Year: 2013

Actual: {No Data Entered}

Patents listed

{No Data Entered}

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	9	4	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Increase Knowledge of Healthy Meals through Nutrition Programs.

Year	Actual
2013	0

Output #2

Output Measure

- Increase Consumption of Fruits and Vegetables.

Year	Actual
2013	0

Output #3

Output Measure

- Increase Citizen's Physical Activities.

Year	Actual
2013	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of people that increased their frequency in using the food label to make food choices.
2	Number of people that adopted 1 or more practices to choose/consume healthier snack choices.
3	Number of people that adopted 1 or more healthy practices to healthy eating when dining out.

Outcome #1

1. Outcome Measures

Number of people that increased their frequency in using the food label to make food choices.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #2

1. Outcome Measures

Number of people that adopted 1 or more practices to choose/consume healthier snack choices.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #3

1. Outcome Measures

Number of people that adopted 1 or more healthy practices to healthy eating when dining out.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
{No Data Entered}

What has been done
{No Data Entered}

Results
{No Data Entered}

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}