

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

O. No.	OUTCOME NAME
1	Number of Human Nutrition, Food Safety, and Human Health and Well-Being Hatch Research Projects
2	Number of Food Processing and Food Marketing Participants
3	Increase Knowledge of Aging Issues to Participants
4	Number of Youth Participating in Tatanka's Healthy Tales Intervention Program
5	Number of Smart Choices Grocery Store Participants
6	Number of Participants Involved in Healthy Living Learning Opportunities
7	Number of Participants that Completed Food Safety Certification or Recertification Food Safety Courses

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.