

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%		5%	
702	Requirements and Function of Nutrients and Other Food Components	13%		42%	
703	Nutrition Education and Behavior	29%		39%	
704	Nutrition and Hunger in the Population	33%		1%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	13%		4%	
723	Hazards to Human Health and Safety	0%		1%	
724	Healthy Lifestyle	12%		8%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890
Plan	11.7	0.0	3.7	0.0
Actual Paid	11.3	0.0	5.0	0.0
Actual Volunteer	0.8	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
444150	0	178415	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
444150	0	183573	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 Cheyenne Eagle Butte School Administration
- Conduct Research on Obesity in Rural Populations
- Conduct Research on Obesity and Chronic Diseases
- Conduct Research on Dietary Micro-Nutrients
- Research to Understand Nutrient-Gene Interactions
- Teach Food Safety Programs
- Distribute Fact Sheets
- Conduct Food Preservation Workshops
- Conduct Local Food Entrepreneur Programs
- Develop Nutrition and Physical Activity Curriculum
- Partner with the South Dakota Retailers Association
- Partner with the South Dakota Department of Health
- Develop and Enhance Community and School Gardens
- Conduct Workshops for the Aging and Senior Citizens

2. Brief description of the target audience

- Refugees from Asia and Africa
- Nutrition and Food scientists
- Health Educators
- Food Service Establishments and Employees
- Minority Audiences
- 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

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	3412	2053550	2549	5374

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

Patent Applications Submitted

Year: 2014
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2014	Extension	Research	Total
Actual	3	16	19

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
2014	7

Output #2

Output Measure

- Number of Home Food Preservation Workshops
 Not reporting on this Output for this Annual Report

Output #3

Output Measure

- Number of Food Entrepreneur Programs Conducted
Not reporting on this Output for this Annual Report

Output #4

Output Measure

- Number of Teens Trained as Teachers for KidQuest
Not reporting on this Output for this Annual Report

Output #5

Output Measure

- Number of Healthy Aging Presentations
Not reporting on this Output for this Annual Report

Output #6

Output Measure

- Number of Tatanka's Healthy Tales Activity Books Distributed
Not reporting on this Output for this Annual Report

Output #7

Output Measure

- Number of Senior Resource Fairs Presented
Not reporting on this Output for this Annual Report

Output #8

Output Measure

- Number of Intergenerational Bonds Presentations
Not reporting on this Output for this Annual Report

Output #9

Output Measure

- Number of Smart Choices Grocery Store Locations

Year	Actual
2014	7

Output #10

Output Measure

- Number of Food Safety Certification or Recertification Courses Presented

Year	Actual
2014	4

Output #11

Output Measure

- Number of Food Processing and Food Marketing Events

Year	Actual
2014	9

Output #12

Output Measure

- Number of Gerontology Events Presented

Year	Actual
2014	20

Output #13

Output Measure

- Number of Healthy Living Events that Created Learning Opportunities

Year	Actual
2014	23

Output #14

Output Measure

- Number of Garden Development or Enhancement Workshops and Webinars Conducted

Year	Actual
2014	12

Output #15

Output Measure

- Increase Quality of Life for Refugees in South Dakota

Year	Actual
2014	0

Output #16

Output Measure

- Number of Publications Posted on iGrow Website

Year	Actual
2014	123

Output #17

Output Measure

- Number of Articles Posted on iGrow Website

Year	Actual
2014	265

Output #18

Output Measure

- Number of Podcasts Posted on iGrow Website

Year	Actual
2014	0

Output #19

Output Measure

- Number of Radio Programs Posted on iGrow Website

Year	Actual
2014	15

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 Preservation Workshop Participants
3	Number of Food Entrepreneur Program Participants
4	Number of Schools that Completed the KidQuest Curriculum
5	Number of Healthy Aging Participants
6	Number of Children Reached through the Tatanka's Healthy Tales Activity Books
7	Number of Senior Resource Fairs Participants
8	Number of Intergenerational Bonds Participants
9	Number of Smart Choices Grocery Store Participants
10	Number of Participants that Completed a Food Safety Course
11	Number of Food Processing and Food Marketing Participants
12	Increase Knowledge of Aging Issues to Participants
13	Number of Participants Involved in Healthy Living Learning Opportunities
14	Number of Community or School Gardens Receiving Assistance with Development or Enhancement
15	Number of New Roots for New Americans Program Participants

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 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	8

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. Obesity research in rural populations is lacking. To improve individual's health, scientific discoveries need to be found and translated to practice.

What has been done

Within the College of Agricultural and Biological Sciences, there are 8 Hatch projects that are categorized in the Planned Program of Human Nutrition, Food Safety, and Human Health and Well-Being. Research in this program is supported by our partnership with the College of Education and Human Sciences. Hatch funded projects include research involving dietary bioactive components, rural food environment, intervention to improve healthful behaviors in young adults, and dietary influences on obesity and chronic inflammation.

Results

Through research, we continue to build a scientific knowledge base to understand and improve nutritional sciences.

Examples include:

Understanding and preventing the underlying mechanisms of chronic diseases, dietary and physical activity behaviors of rural populations, behaviors that support healthful lifestyles in young adults, and determining the impact of dietary components. 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 Preservation Workshop Participants

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Number of Food Entrepreneur Program Participants

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Number of Schools that Completed the KidQuest Curriculum

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Number of Healthy Aging Participants

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Number of Children Reached through the Tatanka's Healthy Tales Activity Books

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

Number of Senior Resource Fairs Participants

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

Number of Intergenerational Bonds Participants

Not Reporting on this Outcome Measure

Outcome #9

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
2014	1000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

South Dakotans consume fewer fruits and vegetables than recommended for good health by the Dietary Guidelines. To improve produce consumption people need information on how to shop for and prepare fruits and vegetables. Educational materials on fruits and vegetables are most helpful if they are easy to use and available online or at the point-of-purchase.

What has been done

Through SDSU Extension and SDSU Health and Nutritional Sciences, the resource tool Pick It! Try It! Like It! was used at grocery stores to demonstrate shopping skills and resource management. Displays and sampling demonstrations were set up to increase consumer awareness and consumption of a wide variety of fruits and vegetables. SDSU Extension's online teaching platform iGrow, is also used extensively to distribute Pick It! Try It! Like It! materials.

Results

Approximately 1,000 shoppers received information for fruits and vegetables at the sampling demonstrations and an additional 8,500 nutritional information cards were distributed to other grocery stores, farmers markets and WIC clinics for display. Participants acquired factual information, healthy recipes and knowledge to improve their choices when purchasing food. As citizens become more educated about healthy eating, they are able to make positive choices to achieve good health and prevent or delay diet related diseases. The Pick It! Try It! Like It! program has grown and changed over the years in response to the needs identified by Extension and requests from stakeholders and partners.

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 #10

1. Outcome Measures

Number of Participants that Completed a Food Safety Course

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	55

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The Center for Disease Control and Prevention (CDC) estimates that annually, 76 million people in the United States become sick with foodborne illnesses: 325,000 are hospitalized and 5,000 die each year. Foodborne illnesses are typically caused by improperly prepared food. 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.

What has been done

SDSU Extension Food Safety Field Specialist taught 4 Food Safety Foodservice Manager Certification and Recertification courses across South Dakota, including school food service personnel. One new teacher was identified in the south-central part of the state. She was trained and mentored by the Extension Field Specialist in teaching the class and coordinating with SD DOH and SDRA.

Results

Participants representing restaurants, schools, nursing homes and other food service establishments will adopt safe food handling practices, which lead to safe food served to individuals and families within the communities, minimizing the risk of food borne illness. A partnership continues with SD Retailers Association and the South Dakota Department of Health to meet food safety certification needs of South Dakotans. Following the training, food service managers are equipped with the knowledge and skills to train their staff members. Of the 55 trained at private classes, 78% received either their certification or recertification.

4. Associated Knowledge Areas

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

Outcome #11

1. Outcome Measures

Number of Food Processing and Food Marketing Participants

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	103

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 participated in nine workshops throughout South Dakota to educate home food processors and entrepreneurs that want to sell home processed foods. The workshops were presented using the USDA Guidelines for Safe Home Food Processing. Social media, printed fact sheets and SDSU Extension's online teaching platform, iGrow were also used to disseminate food safety information. In addition, SDSU Extension's 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. Twelve 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. There are currently 29 mentors in participating in the program. The more people that increase their knowledge of safe food processing, the more likely that food-borne 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 #12

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
2014	0

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

In collaboration with SDSU Counseling and Human Development, SDSU Extension conducts educational events for its aging citizens in rural and urban South Dakota. The annual conference Aging: Healthy, Happy, and Wise had 94 participants attending breakout sessions that include: Fraud, Waste, and Abuse, Physical Activity, Optimum Health, The Basics of Pre-Planning Funerals and Living Wills. A separate program, TeachSD, is an intergenerational program to help adults develop technology skills. In its first year, ten youth have been trained to provide one-on-one technology training to adult learners.

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. The youth involved in TeachSD gained knowledge on aging, and perspective on challenges that adults face as they learn new skills.

4. Associated Knowledge Areas

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

Outcome #13

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
2014	1209

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Obesity, poor nutritional habits, low levels of physical activity, and chronic diseases adversely affect the quality of life in South Dakota. The problem is not limited to adults; children in South Dakota have higher than average risks for obesity and diabetes. Risk behaviors for all ages need to be modified to prevent or greatly reduce the risk for developing health related problems and diseases.

What has been done

With its partners, SDSU Extension is involved in many programs that help create healthy living environments. Worksite Well-Being targets the health and well-being of the South Dakota workplace. Health Insurance Literacy provides decision making information for the Affordable Care Act. Better Choices, Better Health-SD addresses the impact of chronic diseases in the state. iGrow Readers helps educate children about the importance of healthy eating and physical activity. Community Walk Audits increase awareness and encourage support for walking and biking routes.

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 businesses. More than 20 community members across South Dakota attended training and became certified

Master Trainers for chronic disease self-management. The Master Trainers will train other citizens that will become certified Lay Leaders that will then be able to co-facilitate the Better Choices, Better Health-SD workshops. After one year, it is expected that 250 people will have knowledge and training in chronic disease self-management.

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 #14

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 Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	74

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, STEM, biodiversity, language arts, curriculum, food safety, nutrition, project management and grant resources. University credit was obtained by nine students. The Black Hills Garden Education Network was established to help

Results

Seventy-four 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 improve 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
704	Nutrition and Hunger in the Population

Outcome #15

1. Outcome Measures

Number of New Roots for New Americans Program Participants

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	38

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Many of the refugees that have come to live in Sioux Falls, SD have an interest in growing their own food and for some, turning this production into an income source is also of interest. Barriers for this group include language, income levels, access to fresh fruits and vegetables, transportation, and land access. An incubator approach has the potential to help refugees gain knowledge of production in South Dakota as well as to assist with some of the start-up costs associated in launching a community garden and farmers market. It could ultimately help increase incomes and opportunity among low-income residents, increase access and potential consumption of healthy produce and create community among refugees as well as with the mainstream culture.

What has been done

In 2013 the Somali Bantu Community Development Councils of South Dakota acquired a Refugee Agricultural Partnership Program (RAPP) grant to assist aspiring, limited-resource

refugees to develop their skills as growers, to encourage healthy diets and to sell their produce. Their funding helped to establish a community garden, program director and horticultural educator. SDSU Extension developed New Roots for New Americans, a 6-month intensive urban farming incubator program, providing refugee families with classroom and garden-based training. The 50+ hour multidisciplinary training program included gardening/horticulture, food entrepreneurship, food safety and preservation, food preparation, resource management, and nutrition. Participants also took field trips to commercial produce farms. SDSU Extension coached a small team of participants as they planned a farmers market at the community garden site. SDSU Extension wrote and administered a block grant to provide funding and to increase awareness of the farmers market.

Results

Thirty-eight refugee participants from Asia and Africa gained knowledge of sustainable produce production, food safety, nutritional information, canning, and local food entrepreneurship. All participants indicated the training was helpful and that they were successful growing a large supply of fruits and vegetables. As a result of the block grant, funds were provided to increase water access to the garden site, making it possible to expand from 12 to 102 raised beds. The grant also provided funding for display containers and tents that helped create a professional looking market - the New American Garden Market. Eighteen participants were vendors at the New American Garden Market. Overall, the participants indicated an improved quality of life and also reported that the program improved cultural interaction, creating new friendships.

4. Associated Knowledge Areas

KA Code	Knowledge Area
704	Nutrition and Hunger in the Population

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Competing Public priorities
- Competing Programmatic Challenges

Brief Explanation

According to the US Census Bureau, South Dakota has the top three counties in the nation with the highest poverty rates.

Western South Dakota experienced one its worst blizzards on record, killing an estimated 50,000 or more livestock. Valuable man-hours and resources had to be redirected for both livestock and non-livestock issues.

Salary and benefit increases have eroded the impact of federal funds, deferring vacancy fills in both SDSU Research and SDSU Extension.

Many of the research facilities at SDSU have exceeded their useful life and no longer accommodate the needs of the scientists in the Agricultural Experiment Station. Deferred

maintenance and repair of facilities remain a serious limit to research, faculty recruiting and retention.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Smart Choices Grocery Stores

An evaluation of individuals who shopped in grocery stores where materials were being used showed program recognition increased before and after implementation. Information obtained regarding shopping and food preparation habits will allow for further refining of materials. These materials, in addition to materials targeting youth and seniors, promote fruits and vegetables community-wide.

Food Processing and Food Marketing

Through knowledge and ability gained, participants have the confidence to make decisions and adopt safe food preservation behaviors to safely preserve food for their business and home. Of the participants that had never used a pressure canner, 100% gained confidence with using a pressure canner. Results indicated an increase in knowledge from 2.6 to 3.9 (out of 5) in technique for using a pressure canner and 2.8 to 4.2 (out of 5) in technique for using a boiling water bath canner. Understanding the pH level of various food products grew from 3.06 to 4.23 (out of 5).

Aging: Healthy, Happy, and Wise Conference

At the end of the conference, participants indicated their awareness in the following areas:

100% on fraud, waste, and abuse

90% on physical activity

100% on pre-planning funerals

91% on optimum health

93% on living wills

When the seniors were asked which areas they planned to utilize this new information within the next three months, the top two answers were physical activity and optimizing health.

New Roots for New Americans

Number of Participants - 38

100% - indicated the training was helpful and that they were successful producing food

48% - are interested in selling at more venues in the future

19% - are interested in expanding into an independent business in the future

77% - showed improvement in one or more food resource management practices

50% - showed improvement in one or more nutrition practices

72% - showed improvement in one or more food safety practices

5% - preserved produce through canning

67% - intend to preserve food by canning

90% - indicated having more food available

76% - are saving money on grocery bills

76% - are eating healthier

71% - are eating more fruits and vegetables

43% - have seen an increase in income from selling produce at the market

Key Items of Evaluation