V(A). Planned Program (Summary)

Program # 8

1. Name of the Planned Program

Food Safety

☑ 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%		5%	
308	Improved Animal Products (Before Harvest)	0%		5%	
311	Animal Diseases	0%		5%	
315	Animal Welfare/Well-Being and Protection	0%		5%	
501	New and Improved Food Processing Technologies	5%		15%	
503	Quality Maintenance in Storing and Marketing Food Products	20%		5%	
504	Home and Commercial Food Service	30%		15%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	30%		20%	
722	Zoonotic Diseases and Parasites Affecting Humans	0%		5%	
723	Hazards to Human Health and Safety	15%		20%	
	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
Plan	4.0	0.0	4.0	0.0
Actual Paid Professional	4.7	0.0	2.0	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**
125282	0	86769	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
125282	0	86769	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
132675	0	659737	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

The Food Safety team delivered more than 400 educational programs for widely diverse audiences. Five-week series of food preservation classes were taught in each region of the State. Topics of individual workshops and presentations ranged from bacteria and sour dough to acid canning, freezing and drying foods, to spoilage and rodent sanitation. More than 100 individual programs were delivered on food preservation to nearly 1,500 contacts. Team members continue to develop and deliver new programs that tie into special needs/interests of the public, including safe practices for holidays, organic foods issues, and genetically modified foods. The Food Safety team has conducted research leading to development of new food safety knowledge and best practices related to infused oils, garlic, and jerky.

Three organized courses of study were delivered for Master Food Safety Advisors across the state and two counties offered complete training for Advanced Master Food Safety Advisors. Thirty-seven sessions of the Preserve@Home web-based course were taught by UI Extension, including collaboration to deliver 21 courses offered in Montana, California, Colorado and Oregon.

UI Extension taught 11 sessions and facilitated the delivery of Ready, Set Food Safe curriculum to high school students by supporting collaborating teachers delivering the program in more than 100 Idaho classrooms and nearly 500 Idaho children participated in Germ City. The EFNEP and SNAP-Ed educational programs for limited resource families included food safety as part of their outreach to thousands of learners. Germ City was deployed at elementary schools across the state.

Food safety programs delivered to industry included HACCP, BRC, and related topics for 10 companies in 2013 workshops. Direct education is supplemented by brochures, newsletters and newspaper articles that reach thousands of additional learners each year.

2. Brief description of the target audience

Consumer Food Safety Programs / Just in Time Food Safety / Preserve@Home -- Consumers who need specific information to keep food safe or to avoid risky foods, for example, consumers who call extension offices with questions about food preservation, food storage, etc. Consumer programs cover a variety of topics, for example, using slow cooker safely, preserving foods safely, storing food safely, using labels to avoid allergic reaction, etc. Specific groups of consumers who benefit from targeted food safety

information, for example, seniors, parents of young children, volunteers who cook for groups who call extension offices with specific questions, consumers who want food preservation information delivered online.

Food Safety Advisor / Master Food Preserver -- Consumers with particular interest in home food preparation and food safety topics (particularly food preservation and food storage) and in sharing the knowledge with others.

Food Service Food Safety Training -- High school students in foods classes, Adult food service workers

Hand Hygiene Education -- Elementary age children, Families and children at county fairs, adults at health fair settings.

ENP-EFNEP Food Safety -- Limited income families receiving food stamps or eligible to receive food stamps (27 counties), limited income families with children (4 counties).

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	9627	19275	3861	3535

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	5	2	7

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of food safety calls answered.

Year	Actual
2013	7902

Output #2

Output Measure

- Consumer food safety classes taught.

Year	Actual
2013	99

Output #3

Output Measure

- Number of new certified Food Safety Advisors (MFPs).

Year	Actual
2013	31

Output #4

Output Measure

- Number of re-certified Food Safety Advisors (& MFP).

Year	Actual
2013	90

Output #5

Output Measure

- Number of volunteer hours logged by FSA/MFPs.

Year	Actual
2013	2971

Output #6

Output Measure

- Students receiving a RSFS certificate.

Year	Actual

2013	36

Output #7

Output Measure

- Participants in hand hygiene education programs.

Year	Actual
2013	2354

Output #8

Output Measure

- Number participants who completed EFNEP series of classes.

Year	Actual
2013	246

Output #9

Output Measure

- Number of participants in ENP one-time classes (keeping food safe).

Year	Actual
2013	508

Output #10

Output Measure

- Number of Preserve@home students passing the final test.

Year	Actual
2013	56

Output #11

Output Measure

- Number of individuals receiving ServSafe certification.
  Not reporting on this Output for this Annual Report

Output #12

Output Measure

- Number of classes taught by FSA-MFP volunteers

Year	Actual

2013	24

Output #13

Output Measure

- Number of food preservation equipment safety checks.

Year	Actual
2013	491

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	O: People use Just in Time Food Safety Information to help them make decisions about food preparation, storage, etc.I: Number of people who describe that they will use requested advice.
2	O: Food Safety Advisor/Master Food Preserver-Knowledgeable citizens volunteer to help others learn and adopt safe food practices.I: Number of certified Food Safety Advisors and Master Food Preservers.
3	O: Food Service Food Safety Training-High school students are prepared to work in food service jobs.I: Number of students passing the RSFS exam and becoming certified.
4	O: Hand Hygiene Education-People will practice improved hand hygiene for reduction of colds, flu and foodborne illness.I: Hand Hygiene Education-Program participants indicate their intention to adopt recommended health practices.
5	O: An increase in the number of trained graduate students prepared to enter the workforce. I: Number of M.S. and Ph.D. candidates relevant to this topic team.
6	O: Other scientists are aware of our research findings. I: Number of refereed scientific journal articles.
7	O: ENP-EFNEP Food Safety-Low income family members will practice safe food behaviors.I: Number of EFNEP graduates reporting intent to adopt practices.
8	O: Interested consumers will learn skills through Preserve@Home I: number of people completing program
9	Numbers of companies served; outcomes are measured as Increased Sales, Jobs Created, Cost Savings, Company Equipment Investment, Company Information System Investment, Company Workforce Practices Investment, and Investment Avoidance reported by businesses.

Outcome #1

1. Outcome Measures

O: People use Just in Time Food Safety Information to help them make decisions about food preparation, storage, etc.I: Number of people who describe that they will use requested advice.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	5520

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Many consumers are unaware of proper food safety techniques. Many are hobby preservers learning their information from popular websites or family members that may not be using accurate information putting people at risk for food borne illness. Consumers need real-time assistance to help them make informed decisions about food preparation, storage and preservation while they are in the process of these activities, not after they have applied an unsafe behavior. Approximately 210,000 Idahoans will be affected by food borne illness in a year, of which more than 500 cases will require hospitalization.

What has been done
Master Food safety Advisers and Extension faculty members respond to requests for information and recommendations over the phone. Counties have a schedule with which they sample their callers, asking them about their intention to use the information provided by the expert.

Results
Ninety-two percent of people who requested information indicated that they would use the recommendations provided. If each of our clientele who adopt recommendations was only responsible to feed only two persons, this program would reduce the number of cases of food poisoning in Idaho by 1500 cases, and would eliminate four cases severe enough to require hospitalization.

4. Associated Knowledge Areas

KA Code	Knowledge Area
503	Quality Maintenance in Storing and Marketing Food Products
504	Home and Commercial Food Service

712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
723	Hazards to Human Health and Safety

Outcome #2

1. Outcome Measures

O: Food Safety Advisor/Master Food Preserver-Knowledgeable citizens volunteer to help others learn and adopt safe food practices.I: Number of certified Food Safety Advisors and Master Food Preservers.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	95

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Interest in home food preservation has always been strong in Idaho and has recently been increasing because consumers want to save money, preserve garden produce, have more control over their food, and live more sustainably. The increasing demand for information about home food preservation and food safety topics results in a huge volume of calls that come into Extension County Offices. Ttrained volunteers are needed to help provide information to the public.

What has been done
Interest in home food preservation has always been strong in Idaho and has recently been increasing because consumers want to save money, preserve garden produce, have more control over their food, and live more sustainably. The increasing demand for information about home food preservation and food safety topics results in a huge volume of calls that come into Extension County Offices. Ttrained volunteers are needed to help provide information to the public.

Results
Master Food Safety Advisors commit their volunteer service to teaching beginning classes and to answering phone questions. The average volunteer contributes about 60 hours of public service, about twice the amount required for certification. These volunteers provide answers to thousands of residents each year who call Extension offices with questions that relate to food safety, saving hundreds of hours for Extension faculty members and providing just-in-time information to consumers, likely preventing serious cases of food-borne illness.

4. Associated Knowledge Areas

KA Code	Knowledge Area
503	Quality Maintenance in Storing and Marketing Food Products
504	Home and Commercial Food Service
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
723	Hazards to Human Health and Safety

Outcome #3

1. Outcome Measures

O: Food Service Food Safety Training-High school students are prepared to work in food service jobs.I: Number of students passing the RSFS exam and becoming certified.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	36

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
About one-third of employed youth, 15-17 years of age, work in food service. Over 70% of teens work in food service as their first job. Increasingly, the foods Americans eat are prepared by others, via a variety of food service formats. Half of the total food expenditures in 2004 were spent on food away from home. Many Idaho high schools have vocational food service programs, including in-school cafes or bakeries, where food is prepared for public sale.

What has been done
In response to stakeholder needs, Extension colleagues researched, planned and authored a food service food safety curriculum for teens and updated the curriculum in 2009. This program has been acknowledged by the Idaho Food Protection to meet the standards required to receive a Safe Food Handlers Certification. Extension has made a significant push to train high school teachers who have largely adopted the training and are delivering food safety education to their students. Several faculty, however, continue to deliver the Ready, Set, Food Safe program in their counties.

Results
Building partnerships with secondary teachers has allowed food safety knowledge and food handling practices to increase across Idaho. From 2002-2010, 10,579 youth passed the rigorous exam with an 80% or higher. A team of Extension colleagues are in the process of collecting observational data to document implementation of food safety behavior change. More than 1,300 high school youth are estimated to have completed the certification in 2013.

4. Associated Knowledge Areas

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

Outcome #4

1. Outcome Measures

O: Hand Hygiene Education-People will practice improved hand hygiene for reduction of colds, flu and foodborne illness.I: Hand Hygiene Education-Program participants indicate their intention to adopt recommended health practices.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1901

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Issue (Who cares and Why)
Good hand washing is the first line of defense against the spread of many illnesses, quite often associated with food handling and food preparation. Illnesses range from the common cold to more serious conditions such as meningitis, bronchiolitis, influenza, hepatitis A, and most types of infectious diarrhea.

What has been done
Hand washing lessons, most often using Germ City, were taught to youth in grade schools, junior high schools, at 4-H events and to scout groups. They learned the importance and practiced washing their hands. Children were taught the most important times to wash their hands: before eating, after using the rest-room, after playing with pets, after coughing and sneezing, after

playing outside. Children were then asked to focus on one "important" time and set that as their goal for the next week to make sure they were doing a thorough job.

Results
Youth were involved and interested to know how much effort it took to really clean their hands. They were going to share the information with friends and family. Children were able to wash their hands in an appropriate manner and understood why they needed to.

4. Associated Knowledge Areas

KA Code	Knowledge Area
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
723	Hazards to Human Health and Safety

Outcome #5

1. Outcome Measures

O: An increase in the number of trained graduate students prepared to enter the workforce. I: Number of M.S. and Ph.D. candidates relevant to this topic team.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Every year within the US, 76 million foodborne illnesses are reported with 325,000 hospitalizations and 5000 deaths. Costs
associated with foodborne illnesses are approximately $23 billion every year. Over the past 30 years, listeriosis caused by L.
monocytogenes has become a major foodborne disease. There are now over 1500 cases of listeriosis reported every year with
260 fatalities. Pregnant women, infants, and people with compromised immune system are at serious risk.

What has been done
Potato peel waste (PPW)-based edible films with oregano oil were developed. Incorporation of oil into the films

reduced the film strength and increased their water vapor pressure. The potato peel waste-oregano essential oil (PPW-OO)
film reduced the growth of L. monocytogenes on cold-smoked salmon during storage under vacuum conditions at 4 °C for 28
days. The application of the newly developed PPW-OO
films would provide an additional hurdle to the growth of L. monocytogenes on the surface of cold-smoked salmon. The PPWOO
films have the potential to be used as coatings on seafood and possibly other food products to inhibit L. monocytogenes.
Our goal in a parallel study was to develop nisin-containing edible films using trout skin gelatin and test their effectiveness
against L. monocytogenes on raw trout fillets (stored at 4 °C and 10 °C) as a strategy for reducing the risk of contamination.
Films with 18 μg nisin/cm2 showed consistent inhibition and were chosen for storage studies conducted at 4 and 10 °C for 30
days. Trout fillets were challenged with 2 log CFU L. monocytogenes/g before or after coating with nisin-containing films.
Films with nisin reduced L. monocytogenes counts below the detection limit (0.3 log CFU/g) at 4 °C. At 10 °C, a 0.3 to 1.1 log
reduction was observed compared to controls by the end of storage. The effectiveness of treatments depended upon the
concentration of nisin and storage temperature. The developed edible films have the potential to reduce pathogens on
seafood and can be incorporated with a variety of antimicrobials.

Results
A Ph.D. candidate and a MS student carried out various experiments for this research project. Due in part to their efforts, the students
are well trained in the areas of bioactive food packaging and microbial food safety.

4. Associated Knowledge Areas

KA Code	Knowledge Area
201	Plant Genome, Genetics, and Genetic Mechanisms
308	Improved Animal Products (Before Harvest)
311	Animal Diseases
315	Animal Welfare/Well-Being and Protection
501	New and Improved Food Processing Technologies
503	Quality Maintenance in Storing and Marketing Food Products
504	Home and Commercial Food Service
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
722	Zoonotic Diseases and Parasites Affecting Humans
723	Hazards to Human Health and Safety

Outcome #6

1. Outcome Measures

O: Other scientists are aware of our research findings. I: Number of refereed scientific journal articles.

2. Associated Institution Types

- 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
201	Plant Genome, Genetics, and Genetic Mechanisms
308	Improved Animal Products (Before Harvest)
311	Animal Diseases
504	Home and Commercial Food Service
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #7

1. Outcome Measures

O: ENP-EFNEP Food Safety-Low income family members will practice safe food behaviors.I: Number of EFNEP graduates reporting intent to adopt practices.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	213

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Children are at higher risk of food borne illness and parents need to use good food safety practices to keep their young children safe.

What has been done
Food safety education is incorporated into all of the Eat Smart Idaho courses for low income Idahoans. EFNEP participants are surveyed as to their adoption of recommended practices.

Results
Of 322 graduates, 66% showed improvement in one or more of the food safety practices included in the post-course questionnaire (thawing and storing food properly).

4. Associated Knowledge Areas

KA Code	Knowledge Area
503	Quality Maintenance in Storing and Marketing Food Products
504	Home and Commercial Food Service
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
723	Hazards to Human Health and Safety

Outcome #8

1. Outcome Measures

O: Interested consumers will learn skills through Preserve@Home I: number of people completing program

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)
Home food preservation is increasing in popularity. In 2011, home canning product sales rose nearly 35% over the three previous years. However, many home canners are inexperienced and may not have been trained in safe home food preservation techniques. Additionally, with new methods of distributing and gaining information such as blogs, Pinterest, etc., unsafe food preservation practices are also reappearing.

What has been done
Preserve @ Home is an online, six-week food safety and food preservation course developed by University of Idaho Extension. The course includes thirteen lessons of online and downloadable text, discussion board, real-time weekly chats, visuals, handouts, quizzes, FAQ's, and links to government websites. UI Extension co-taught Preserve @ Home three times this year in multi-state collaborations with California, Colorado, and Oregon.

Results
Thirty-one (69%) out of 45 students completed with a grade of 70% or better which indicate increased knowledge of safe home food preservation methods. Most students will share this information with family, friends and community groups thus spreading the impact even further.

4. Associated Knowledge Areas

KA Code	Knowledge Area
503	Quality Maintenance in Storing and Marketing Food Products
504	Home and Commercial Food Service
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

723 Hazards to Human Health and Safety

Outcome #9

1. Outcome Measures

Numbers of companies served; outcomes are measured as Increased Sales, Jobs Created, Cost Savings, Company Equipment Investment, Company Information System Investment, Company Workforce Practices Investment, and Investment Avoidance reported by businesses.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Food processing companies need accredited training on food safety, Hazard Analysis Critical Control Points (HACCP) and internal auditing methods. They wished to become food safety certified to meet customer requirements. Technical assistance was needed to resolve product food safety issue.

What has been done
On-site food safety training was provided to a dozen companies, including an accredited course on HACCP and a course on food safety internal auditing. One company received technical assistance on the food safety risk of their potato product.

Results
Companies reported a total increase in sales $5,000,000; three new jobs created; a net cost savings $2,020,000; $485,000 invested in new equipment Investment $485,000; company workforce practices investment totaling $161,533; and $15,000 of investment avoidance.

4. Associated Knowledge Areas

KA Code	Knowledge Area
501	New and Improved Food Processing Technologies
503	Quality Maintenance in Storing and Marketing Food Products
723	Hazards to Human Health and Safety

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Competing Public priorities
- 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}