

V(A). Planned Program (Summary)

Program # 6

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
307	Animal Management Systems	0%		20%	
315	Animal Welfare/Well-Being and Protection	0%		5%	
504	Home and Commercial Food Service	25%		5%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	15%		10%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	25%		50%	
723	Hazards to Human Health and Safety	35%		10%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	4.0	0.0	25.0	0.0
Actual Paid Professional	27.4	0.0	13.5	0.0
Actual Volunteer	14.5	0.0	0.0	0.0

2. Institution Name: Washington State University

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
272624	0	167763	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
272624	0	167763	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
2289531	0	2135703	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Food safety is an important public health issue with foodborne pathogens causing an estimated 48 million illnesses, 128,000 hospitalizations and 3,000 deaths yearly in the United States. Maintaining a safe food supply requires vigilance from farm to table, and involves food producers, processors, retailers and consumers. WSU Extension interacts with other state and national agencies, such as the Washington State Department of Health, Washington State Department of Agriculture, USDA, FDA, CDC and EPA to address food safety issues in the Pacific Northwest. Furthermore, food safety educators must communicate with representatives throughout the food chain. Interaction among these groups is vital to address the breadth of food safety issues. Addressing food safety issues requires examination of the farm-to-table continuum in order to understand and solve food safety concerns. Performing educational outreach to promote food safety throughout the farm-to-table continuum in the state can reduce foodborne illness prevalence.

We are conducting significant research into the epidemiology of foodborne diseases, especially in animal herds, and in mechanisms whereby pathogenic organisms reach the consumer. Conferences, workshops, and onsite visits were conducted. In some counties, volunteers were trained to in turn engage with the general public to provide training on home food preservation. Publications and websites were maintained as outreach instruments to the food industry and to consumers. A major effort involves the transfer of microwave sterilization technology, which has achieved FDA approval at two levels, into commercial applications. We are also adapting microwave sterilization technology to the technically less demanding process of pasteurization through a large USDA food safety grant.

Extension programs have concentrated on the presence of pathogens in the production and distribution system, including crops, food processing and consumer safety. Conferences, workshops, and onsite visits have been conducted. In some counties, volunteers have been and are being trained to engage with the general public to provide training on home food preservation. Publications and websites are also maintained as outreach instruments to the food industry and to consumers.

2. Brief description of the target audience

The target audiences for this program include food processors, food purveyors, food producers and the general public.

3. How was eXtension used?

Faculty Participation in Communities of Practice

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	45457	313000	25312	29000

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

Patent Applications Submitted

Year: 2012

Actual: 1

Patents listed

Desaturases and Methods for using them for Synthesis of Polyunsaturated Fatty Acids. Browse, J., J. Wallis, and J. Watts. The amino acid and nucleic acid sequences of a .DELTA..sup.5-desaturase enzyme and a .DELTA..sup.8-desaturase enzyme are disclosed. The nucleic acid sequences can be used to design recombinant DNA constructs and vectors. These vectors can then be used to transform various organisms including, for example, plants and yeast. The transformed organisms will then produce polyunsaturated fatty acids. The amino acid sequences are useful for generating enzyme-specific antibodies that are useful for identifying the desaturases. Patent # 8,124,838.

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	6	14	18

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of conferences, workshops or other training sessions conducted by WSU Extension educators related to food safety.

Year	Actual
2012	910

Output #2

Output Measure

- Number of peer reviewed (official) WSU Extension publications published per year

Year	Actual
2012	6

Output #3

Output Measure

- Number of graduate students with a significant professional orientation in the area of Food Safety.

Year	Actual
2012	37

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Percentage of evaluated participants who demonstrated increased knowledge and skills relative to key learning objectives.
2	Percentage of evaluated participants who applied at least one practice learned from WSU Extension workshops, conferences, or training sessions.
3	Percentage of participants who will institute a HACCP plan as a result of attending WSU workshops.

Outcome #1

1. Outcome Measures

Percentage of evaluated participants who demonstrated increased knowledge and skills relative to key learning objectives.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	90

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Food can transmit disease from person to person as well as serve as a growth medium for bacteria and other pathogens that can cause food poisoning. An estimated 48 million cases of foodborne illness occur each year in the U.S. according to the CDC. Food safety is the use of resources and methods to keep food safe for human consumption. There are typically 40 to 60 outbreaks reported annually in Washington State, each with few to even hundreds of individual cases in each outbreak.

What has been done

Faculty members delivered 910 training sessions statewide, and logged over 45,400 contacts in 2012. This work included Food Worker Education classes (ServSafe Program), Master Food Preserver, General Ag Practices (GAP) Training for farmers, safe food handling for individuals, food preservation methods, worked with small to mid-size food processors on food safety issues, and responded to a large number of food safety questions from individual consumers.

Results

Ninety percent of program participants reported an increase in knowledge and skill on food safety practices. There was significant increase in interest among home gardeners, farmers market consumers, and school-age youth on proper food preservation. The demand continues to increase for educational classes. The Germ City Program continues to be an effective hands-on learning opportunity for reaching school-age youth to improve knowledge of hand washing techniques.

4. Associated Knowledge Areas

KA Code	Knowledge Area
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504	Home and Commercial Food Service
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
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

Percentage of evaluated participants who applied at least one practice learned from WSU Extension workshops, conferences, or training sessions.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	60

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

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Results

Sixty percent of the program participants adopted one or more safe food handling and processing practices learned through the variety of programs and events delivered during the year. Deploying these techniques clearly benefited food safety and shelf-life, and minimized foodborne illness

4. Associated Knowledge Areas

KA Code	Knowledge Area
504	Home and Commercial Food Service
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
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

Percentage of participants who will institute a HACCP plan as a result of attending WSU workshops.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	95

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Food packers and processors in the Pacific Northwest represent the target audience for assessment of this outcome. HACCP is a food safety management system utilized by many food companies to manage food safety risks, meet buyer requirements, and in some cases is a regulatory requirement

What has been done

Training was provided for HACCP plan development, implementation, management, and recordkeeping to strengthen the food safety of US food products. The workshops are delivered as 2.5-day courses involving lectures and a group learning activity to develop a HACCP plan for selected packed and processed foods relevant to the participants attending the workshop.

Results

112 of the program participants developed and implemented a HACCP plan based on this training.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
504	Home and Commercial Food Service
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
723	Hazards to Human Health and Safety

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

Numerous external factors can impact the success of our extension and research programs. In 2012 a statewide Extension Consumer Food Safety team was formed and encouraged to reinstate a WSU Extension Consumer Food Safety program. Collaborating with Colorado and Idaho State University Extension faculty, trainings and workshops were held, publications are being updated and capacity is continuing to be built.

The development of the School for Global Animal Health, which is focusing on zoonotic diseases and their potential role as reservoirs for human illness continues to evolve. This effort, which was primarily developed by the WSU College of Veterinary Medicine and funded by Foundations, has involved several ARC supported faculty.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The program encompasses a wide variety of food safety work including Good Agricultural Practices (GAP), Farm-to-Table, Hazard Analysis Critical Control Point (HACCP), Home Food Preservation, Germ City, ServeSafe and Food Handler's education. During 2012, relationships with state organizations were maintained to increase awareness of food safety issues among producer groups, food packing and processing personnel, retail food service as well as consumers and youth. Increases to knowledge and application were assessed and documented as a part of workshops, conferences, or training sessions. In addition, the percentage of participants who will institute a HACCP plan as a result of attending WSU workshops continued to be measured. Overall, our capacity to reach Washington state residents in the area of food safety increased.

Key Items of Evaluation

With the objective of increasing our State Extension capacity to provide consumer food safety education across the state, thirty-one Extension staff and volunteers were trained through an online food safety course in addition to a 4 day face-to-face hands on food preservation seminar. One hundred percent passed the exam and became Food Safety/preservation Informational Assistants in their county.

920 Food Worker Education participants completed a post-course survey. Sixty percent indicated their knowledge of how to keep food safe to eat improved after taking the class. Ninety-nine percent passed the WA Food and Beverage Permit Exam and received their food worker cards.

One hundred percent of the new Benton/Franklin Master Food Preservers (n=20) passed the certification exam with an average score of 94%. The 20 MFP volunteers documented 1,003 hours of outreach, valued at \$21,855. Sixty-five percent (588 hours) were spent staffing educational booths in public settings, 30% (274 hours) were spent teaching classes and mentoring others and 5% (54 hours) was spent on program support. A content analysis on a random sample of program contacts indicates 20% of the inquiries were related to a quality issue, 47% concern the safety of the food and, 33% concern the safety to the degree it could cause a severe disability or death. A content analysis of faculty contacts shows a slightly different profile, with a higher percentage of concerns about potentially fatal issues. Faculty and office contacts find a similar split of 20% quality issues and 80% safety issues. The safety issues are split with 47% concerning safety and 33% concerning potentially deadly practices.

In just a four county area, more than 216 pressure gauges were tested, revealing that 55% of the gauges were inaccurate. As a result 120 families were spared the potential for serious illness or death through botulism poisoning because of participating in the gauge screening program.

Seventy percent of the food preservation class attendees self reported that they can now make better decisions about "safe or risky" foods when deciding how to prepare or consume a specific food.

Over 3000 people went through the Germ City display at the Clark County Fair. Participants were surprised at how poorly they do at washing their hands and said that they will now wash more effectively. In the schools, teachers and parents report that students are taking more time to wash their hands after using the bathroom and before lunch as a result of participating in the Germ City educational display. Teachers are also reporting that they are seeing fewer students out of school due to illness.

Participants demonstrated increased knowledge of HACCP pre-and post-tests; post test scores increased an average of 0.9 to 2.8 points. Participants anticipated increased employee awareness of HACCP, economic benefits and improved recordkeeping.

Consultations with food companies on food safety issues saved businesses \$160,000.