V(A). Planned Program (Summary)

Program # 5

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	10%		0%	
308	Improved Animal Products (Before Harvest)	5%		0%	
315	Animal Welfare/Well-Being and Protection	5%		0%	
503	Quality Maintenance in Storing and Marketing Food Products	5%		0%	
703	Nutrition Education and Behavior	20%		0%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	5%		12%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	25%		88%	
723	Hazards to Human Health and Safety	20%		0%	
806	Youth Development	5%		0%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	20.7	0.0	4.4	0.0
Actual Paid Professional	3.5	0.0	2.4	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**
227829	0	235406	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
227829	0	235406	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
939671	0	1818011	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

• Conduct workshops and facilitate meetings. Workshops include ServSafe® Certification food safety, food preservation, HACCP implementation and GAPS preparation.
• Develop food safety educational materials and resources, such as web based tools and Extension publications.
• Provide training and technical assistance such as fundamental food safety training for volunteer staffed events, line level employees, and respond to specific questions related to application of food safety principles.
• Provide food preservation education to consumers.
• Provide certification training and technical assistance in the dairy, beef and swine industries.
• Faculty participate in the following associated multistate research committees: NC213, NC1023, NC1183, NC1194, NE1048, S294, and S1056.

2. Brief description of the target audience

Food growers, food processors, food plant personnel, foodservice management and staff in commercial and noncommercial operations, consumers, and food stand volunteers will be served.

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	6187	300160	100	100

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	0	24

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of Iowans receiving food safety certification.

Year	Actual
2013	3592

Output #2

Output Measure

- Number of adult participants in Extension programs on food safety.

Year	Actual
2013	12840

Output #3

Output Measure

- Number of hits on Iowa State University Extension food safety project websites.
  Not reporting on this Output for this Annual Report

Output #4

Output Measure

- Number of unique visitors on Iowa State University Extension food safety project websites.

Year	Actual
2013	310475

Output #5

Output Measure

- Number of consumers who understand modern livestock practices as they pertain to animal health and comfort, and product quality and safety.

Year	Actual
2013	3600

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of people receiving food safety certification.
2	Percent of adult EFNEP/FNP graduates with a positive change in food safety practices.
3	Number of individuals who learn about prevention, detection, control and intervention technologies.
4	Number of growers, producers, and food workers completing GAPS, GMPS, HACCP, food safety certification and on farm BMP programs to increase food safety.
5	Number of food handlers receiving food safety training and education in safe food practices.
6	Number of consumers who understand modern livestock practices as they pertain to animal health and comfort, and product quality and safety.
7	Number of adults that increase their awareness of safe home food preservation techniques.

Outcome #1

1. Outcome Measures

Number of people receiving food safety certification.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	3699

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
It is estimated 48 million people experience a foodborne illness each year with 3,000 deaths resulting from these illnesses. This evidences a critical need for food safety extension and outreach, which is also a priority item for USDA and FDA and has been the top area of focus within funding. There is a lack of understanding within the food community on the causes of foodborne outbreaks and preventive measures required to prevent or limit these microbes from entering the food supply. The government expects land grant universities to provide research-based extension programming to target the food companies across commodity groups. Short courses, workshops, and webinars target both manufacturers of food and crop producers. Extension food safety team programming is targeted into three main areas: food law, food manufacturing, and food production.

Providing food handlers and decision makers involved in food production, processing and service from farm to fork with knowledge about risks can help in reducing incidents of foodborne illness by leading to better practices.

What has been done
This issue is being addressed from two directions:

Families: Over 1000 Iowans (n = 1046) participated in an 8-hour workshop about safe food handling practices and 4,321 participated in food safety sessions related to on farm food safety, safe food preservation, or safe handling of food when working in retail outlets.

Ag and Natural Resources: The Extension food safety team has developed short courses, workshops, and webinars to provide the latest food safety information. Additionally, extension publications and new websites with up to date information sources are available for clientele to

have timely and convenient access.

Results
Families: Over 1000 Iowans (n = 1046) participated in an 8-hour workshop about safe food handling practices and 4,321 participated in food safety sessions related to on farm food safety, safe food preservation, or safe handling of food when working in retail outlets.

Ag and Natural Resources: Knowledge assessment surveys were provided at the beginning and end of each program along with a 3-6 month follow-up evaluation. In 2013, 85% of participants indicated knowledge gained and 87% intend to make food safety changes based on Extension recommendations. The follow-up surveys indicated that 97% made at least 1 change in their business related to food safety because of knowledge gained from Extension (return rate of 95% pre and post; 45% 3-6month follow-up).

4. Associated Knowledge Areas

KA Code	Knowledge Area
503	Quality Maintenance in Storing and Marketing Food Products
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

Percent of adult EFNEP/FNP graduates with a positive change in food safety practices.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	63

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Previous EFNEP and SNAP-Ed data show that low-income families 'do not, seldom, or sometimes' (as opposed to 'most of the time or almost always') practice food safety management

skills such as thawing and storing food properly. These are skills that can prevent illness.

What has been done
As part of EFNEP and SNAP-Ed, a series of eight to ten nutrition lessons were taught by paraprofessional nutrition educators to low-income families with children (age ten and under) and pregnant women/teens. These lessons show participants how to choose nutritious foods, stretch their food dollars, handle food safely, be physically active, and prepare nutritious recipes. Each lesson includes a component related to food safety.

Results
At entry to the program, 25% (237 of 957 participants) demonstrated acceptable food safety practices (i.e. thawing and storing foods properly). Following participation in at least eight lessons, 62% (598 of 957 participants) at exit of the program demonstrated acceptable food safety practices (i.e. thawing and storing foods properly).

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

Outcome #3

1. Outcome Measures

Number of individuals who learn about prevention, detection, control and intervention technologies.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	90

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
There are many swine issues that impact consumers and producers. Animal wellbeing is a concern for both; proper handling techniques are important for economic and food quality reasons as well. Treating sick animals and timeliness of proper euthanasia techniques are considered as primary importance for the welfare of the pig. Thinking about power failures ahead of time is essential to pig survival and the producer's economic survival. Having emergency action plans is

a piece of economic survival and pig welfare. The environment for the pig is important as well for its wellbeing and the farmer's economic success. Additionally, food safety is a top priority for pork producers and consumers alike.

What has been done
More than 50 workshops were held instructing producers on topics of welfare including euthanasia, timeliness, power outage, handling techniques, facilities, heating/cooling.

Results
More than 1000 operations have completed a workshop on pork quality assurance (PQA Plus) or transport quality assurance (TQA) taught by ISU Extension. Changes in behavior were documented by third party audit. Documented changes in animal welfare, handling and food quality were shown by follow-up farm assessment. For example, producers learned about timely euthanasia, follow-up shows implementation of that learning at 94.87%. Adjusting for adequate sow space was shown to be practiced by 96.33% of the herds. Good heating/cooling and air quality were documented on over 97% of farms. Many other practices such as emergency planning, euthanasia planning, residue avoidance, medical records, and facility upkeep were implemented to improve welfare and increase food safety. Additionally, as result of the education, the percentage of farms making improvements is increasing. Third party audits of 90 farms showed that minor and major non-conformities year over year decreased, dropping from 80 to 63 and from 25 to 9, respectively. A decrease in percent of deads and downers at packer plants (from .22% to .20% -- equivalent to 21,600 hogs valued at $4.3 million industry wide) can be linked to handling education from these workshops.

4. Associated Knowledge Areas

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

Outcome #4

1. Outcome Measures

Number of growers, producers, and food workers completing GAPS, GMPS, HACCP, food safety certification and on farm BMP programs to increase food safety.

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Number of food handlers receiving food safety training and education in safe food practices.

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Number of consumers who understand modern livestock practices as they pertain to animal health and comfort, and product quality and safety.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	3600

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
A large percentage of the US population lives in an urban or suburban environment and is somewhat disconnected from agriculture and food production. At the same time, there is increasing interest and concern within the general population about food safety, quality, and sustainability. While many exercise trust in dairy and other food systems, a segment of anxious but uninformed consumers appear to readily accept viewpoints of anti-livestock/anti-agriculture that are negative about animal care, environmental stewardship, and safety/quality of dairy products.

What has been done
The ISU Extension Dairy Team partnered with Iowa's dairy producer and industry associations, other farm and commodity organizations and the regional dairy check-off organization, Midwest Dairy Association, to plan and host 3 Dairy Farm Open House workshops. The purpose was to provide experiential events incorporating a tour of a dairy with designated stations to showcase and educate participants on specific attributes of dairy farms (animal comfort and health, milking practices, product safety and quality, environmental stewardship). A post workshop survey to rate their experience of the dairy tour, assess their knowledge and trust of dairy practices, and evaluate their interests in the dairy industry and dairy products was conducted at 2 sites.

Results
A total of 3600+ participants were involved in these 3 events with many families and young children, and most participants from non-agricultural backgrounds and 440 post event surveys were completed.
* 99% rated successful/educational (88% rating excellent; 11% rating very good (3.95/ 4.00 rating).
* Prior to the event, 70 had a positive (61% extremely positive) opinion and trust in dairy farms.

* Post workshop, 99% believed dairies provided the best care and handling of animals.
* Post workshop, 96% believed dairies are protective of the environment and excel at environmental stewardship.
* Post workshop, 99% stated dairies provided extremely safe and wholesome milk and dairy products.
* 100% supported growth of the dairy industry in Iowa.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)
315	Animal Welfare/Well-Being and Protection
703	Nutrition Education and Behavior
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources

Outcome #7

1. Outcome Measures

Number of adults that increase their awareness of safe home food preservation techniques.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	4431

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Interest in home food preservation has increased due to the local food movement and economy. According to the National Center on Home Food Preservation, 1 in 5 U.S. households can their own food; however, many are unaware of the food safety issues that home food preservation encompasses.

What has been done

In addition to the >3800 people who called with food preservation questions, 616 adults participated in food preservation education programming. Of these 616 adults, 50 completed online food preservation lessons, 54 attended a food preservation workshop, 12 had their pressure canner tested, and 410 attended a general food preservation class.

Results
Of those who took part in the online food preservation lessons, results indicated a 1) 50% increase in those who reported high or very high knowledge about foodborne illness; 2) 40.4% increase in those stating high or very high knowledge of safe food handling practices; and 3) 59.2% increase in those reporting high or very high knowledge of recommended canning practices after viewing the lessons.

4. Associated Knowledge Areas

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

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

Pending implementation of the Food Safety Modernization Act has raised awareness about risks from improper handling of food along the food chain, particularly proposed standards related to fresh produce. Foodborne illness outbreaks continued, with one outbreak in Iowa and Nebraska from the parasite cryptosporidium garnering national attention, further raising awareness of food safety risks of fresh produce. Economic challenges and increasing numbers of new Iowans led to investigation by food entrepreneurs of ways to grow food based businesses. Also, in response to consumer's interest in indirect education resources, ISU Extension and Outreach has designed several websites and social media pages. We are now monitoring the use of these pages through "unique visitors" rather than page "hits," which has resulted in a decrease in numbers. Furthermore, indirect contacts made through the EFNEP program have been reported elsewhere and are no longer included in this report.

Within the food safety grower/farmer population of workshop participants, a reduced number attended the short courses due to weather and scheduling conflicts. Specifically,

last spring and this fall it was warmer and growers were working in the fields earlier and later than most years. Additionally, a hard winter came early which made traveling difficult. Attendance was not as high as we would have liked for the food manufacturer related programming, but this was the first year the course was offered and people were not aware of it. Extension has since started advertising earlier and seeking partners to offer more courses throughout the year.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Families: Through high pass rates (90%) on the national certification exam and food preservation knowledge surveys we know our food safety programs have led to increases in knowledge, with ultimate goal of changes in behavior. Increases in numbers of Iowans participating in food safety programming, beyond our targets, indicates there is considerable interest in improving safe food handling practices at all links of the food chain.

Ag and Natural Resources: The food safety team moved to a knowledge quiz standard to assess the amount of knowledge gained as a immediately after a program, and a follow-up 3-6 months later. Before surveys indicated major knowledge gaps in the ability of both growers and food manufacturers to identify food safety risks within their operations. Additionally, these operators were unable to identify mitigation methods to reduce the risks that may cause a foodborne illness. Thus programming targeted these two key areas of identification and control which resulted in higher post and 3-6 month follow-up knowledge assessments. With more than 90% of participants successfully completing a food safety plan, this is our major indicator of success within the short course.

Post-open house dairy tour workshops, 99+% indicated modern dairies and dairy practices were impressive and had extreme confidence and trust in dairy farms and the dairy industry. Participants' opinion of modern dairies following the event was positively and significantly increased.

Key Items of Evaluation

Families: Numbers participating in food safety certification programs, number and percent of those that achieve food safety certification, and the number of those taking part in food preservation programming are key evaluation indicators for food safety programs.

Ag and Natural Resources: Extension food safety programming such as HACCP, Food Microbiology, Good Agricultural Practices, and Food Law series reached more than 2000 growers, processors, and food manufacturers throughout the U.S. through short courses, workshops, webinars, and speaking events. The Extension food safety team has worked closely with local, state, and federal governments to ensure that the information provided is of the highest priority to these agencies.