

V(A). Planned Program (Summary)

Program # 10

1. Name of the Planned Program

Food Safety

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	5%		5%	
104	Protect Soil from Harmful Effects of Natural Elements	5%		5%	
311	Animal Diseases	0%		15%	
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals	0%		15%	
404	Instrumentation and Control Systems	0%		10%	
501	New and Improved Food Processing Technologies	15%		15%	
502	New and Improved Food Products	10%		0%	
503	Quality Maintenance in Storing and Marketing Food Products	10%		0%	
504	Home and Commercial Food Service	20%		5%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	10%		10%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	10%		10%	
722	Zoonotic Diseases and Parasites Affecting Humans	0%		10%	
723	Hazards to Human Health and Safety	15%		0%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Actual	3.0	0.0	4.0	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
11479	0	232922	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
229734	0	727729	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
5692	0	349089	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Conduct training and certificate programs for growers, producers, food workers, consumers and vendors to increase knowledge of food safety practices.
- Design strategies, tools and processes to detect and eliminate pathogens, chemical and physical contaminants during production, transportation, processing and preparation of food.
- Investigate the ecology of threats to the food supply from microbial and chemical sources
- Develop technologies for the detection of food supply contaminants

2. Brief description of the target audience

- Producers
- Processors
- Retail - restaurants/vendors/supermarkets
- Department of Health
- Consumers, families, youth communities
- NJAES - faculty - staff - students
- Food manufacturers
 - Schools - child care providers - food service workers

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	{NO DATA}	{NO DATA}	{NO DATA}	{NO DATA}
Actual	25000	50000	2100	15000

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

Year: 2010
Plan:
Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Actual	12	21	33

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- A variety of strategies will be implemented to reach target audiences. This will include and not be limited to workshops, field visits, classes, newsletters, media releases, electronic communications, publications. In addition a trained volunteer teaching base will be developed. Quantitative reports of participation will be collected.
Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Short Term - Increase knowledge of viable technologies, detection prevention, intervention and control technologies and practices to ensure food safety. Increase understanding of the ecology of threats to food safety from microbial and chemical sources.
2	Medium Term - Adoption of safe food handling practices at the individual, family, community, production and supply system levels.
3	Long Term - A safe food supply resulting from reduced incidence of food-borne illnesses.
4	Medium Term - Food Defense and Industry Preparedness: Adoption of safe food handling practices at the individual, family, community, production and supply system levels.
5	Long Term - Microbial Food Safety for the Fruit and Vegetable Industry: A safe food supply resulting from reduced incidence of food-borne illnesses.

Outcome #1

1. Outcome Measures

Short Term - Increase knowledge of viable technologies, detection prevention, intervention and control technologies and practices to ensure food safety. Increase understanding of the ecology of threats to food safety from microbial and chemical sources.

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Medium Term - Adoption of safe food handling practices at the individual, family, community, production and supply system levels.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Food Safety Cognitions of Middle Schoolers and Parents of Middle Schoolers

Little attention has been given to children and teen's understanding of safe food handling knowledge and skills, despite their interests in studying food safety and preparing food, growing food shopping and preparation responsibilities, and future roles as caregivers for infants, young children, and elderly parents. Moreover, the most common jobs held by youth are in the food service industry, ranging from cashier, to table buser, to server, to cook. Opportunities for children to learn safe food handling via observation have diminished as more mothers have taken employment outside the home and as the reliance on fully or partially pre-prepared convenience foods have increased. As a result, a large proportion of teens and adults have limited food preparation experience, have never learned basic food safety principles, and, thus, lack critical knowledge needed to proactively protect themselves and their future families. These societal changes indicate that the risk of food-borne illness arising from unsafe food handling in the home is likely to rise.

What has been done

A qualitative research design involving focus groups with middle school youth, parents of middle school youth, and food safety experts was used. This study had three phases: baseline focus groups with middle school youth and baseline focus groups with parents of middle schoolers, interviews with food safety experts, and follow-up focus groups with middle schoolers.

Results

The food safety cognitions of middle schoolers and parents of middle schoolers were elucidated. Recommendations for food safety education targeted to middle schoolers were created. These recommendations were used to develop a computer-based game for middle schoolers and are beginning to be used to create video snacks. Formative evaluation of the game (Kitchen Ninja) was completed (middle schoolers enjoyed the game and rated it highly).

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
104	Protect Soil from Harmful Effects of Natural Elements
311	Animal Diseases
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
404	Instrumentation and Control Systems
501	New and Improved Food Processing Technologies
502	New and Improved Food Products
503	Quality Maintenance in Storing and Marketing Food Products
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
722	Zoonotic Diseases and Parasites Affecting Humans
723	Hazards to Human Health and Safety

Outcome #3

1. Outcome Measures

Long Term - A safe food supply resulting from reduced incidence of food-borne illnesses.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Improving Food Safety Through Predictive Models and Microbial Risk Assessment

Food manufacturers are under a variety of regulatory, economic and environmental pressures. Retaining a strong manufacturing base is an essential component for the states' economic growth.

What has been done

The Extension Specialist assisted the industry through short courses and telephone assistance. In addition to the assistance provided to NJ-based companies, provided technical assistance to other states and internationally. Twelve such examples included companies based nationally and in NY, CA, UT, and PA. Companies include cheese companies, an online retailer, a material science company, pet food companies, meat processing companies, and a foodservice company. Assistance included the technical evaluation of the safety and suitability of challenge study experiments for controlling Salmonella in pasteurized dairy ingredients. Evaluation of refrigeration failure and leaks and technical evaluation of clean room technology for controlling microbial risk.

Results

There were 7 different instances where his assistance had a specific and direct economic benefit to NJ companies. The value of product affected exceeded \$90,000. The total value of products affected exceeded \$200,000 for those reached beyond NJ. NJAES researchers have been effective in reducing the incidence of food-borne illnesses and providing a safe food supply.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
104	Protect Soil from Harmful Effects of Natural Elements
311	Animal Diseases
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501	New and Improved Food Processing Technologies
502	New and Improved Food Products
503	Quality Maintenance in Storing and Marketing Food Products

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
722	Zoonotic Diseases and Parasites Affecting Humans
723	Hazards to Human Health and Safety

Outcome #4

1. Outcome Measures

Medium Term - Food Defense and Industry Preparedness: Adoption of safe food handling practices at the individual, family, community, production and supply system levels.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Food Defense and Industry Preparedness

Acts of nature, human error, technology failure, or deliberate efforts to destabilize the state's food system could have substantial economic and social impacts. The food system is a large segment of the NJ economy and a lifeline sector in the sense that it facilitates access to food for nearly 9 million NJ residents. It is also a lynch pin in broader regional food distribution. Industry-government partnerships are needed to ensure industry-level continuity of operation in a time of emergency.

What has been done

An "incident annex" was developed for the New Jersey State Emergency Operations Plan, maintained under the Office of Emergency Management. Funded by the NJ Office of Homeland Security and Preparedness in 2008, the annex was finalized in August 2010. Speaking forums have included a food industry loss prevention conference, a state infrastructure advisory committee meeting (under the NJ Domestic Security Preparedness Task Force), and regional emergency planning summits.

Results

The Incident Annex has been hailed as "the first of its kind in the Nation". It was submitted by the Rutgers NJAES team in February 2010 and accepted in August 2010. Functional exercise planning is underway to "test" the annex in 2011. The annex has been presented at state and regional emergency planning forums as a model for incorporating food industry continuity of operations into state-level planning. A tangible outcome to date is the marked increase in communication and networking between state homeland security/emergency management personnel and the private food sector. The ultimate beneficiaries of improved emergency planning and response related to food industry continuity will include food firms reduced economic losses associated with discontinued operations. The general public benefit from reduced food insecurity during an emergency, and state/federal governments from reduced involvement in the feeding of civilian populations during an emergency.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
104	Protect Soil from Harmful Effects of Natural Elements
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722	Zoonotic Diseases and Parasites Affecting Humans
723	Hazards to Human Health and Safety

Outcome #5

1. Outcome Measures

Long Term - Microbial Food Safety for the Fruit and Vegetable Industry: A safe food supply resulting from reduced incidence of food-borne illnesses.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Microbial Food Safety for the Fruit and Vegetable Industry

The wholesale fruit and vegetable industry is under increased pressure to improve their food safety practices and to obtain a third party audit confirming they are improving their practices. This is even more important with the enactment of the Food Modernization Act.

What has been done

A variety of methods and techniques were utilized to train the produce industry (wholesale/retail growers and distributors) in basic food safety and wholesale growers on how to write a food safety plan and prepare for a third party audit, first level buyers train on food safety and how to prepare for third party audits.

Results

Ninety-eight percent of participants who filled out the evaluation indicated that they would likely or definitely recommend the training to another individual. The number of operations passing a USDA Good Agricultural Practices & Good Handling Practices Audit Verification was 57. At least ten operations passed a Primus Laboratories Audit, one passed a Safety Quality Foods Audit (SQF) and one passed a British Consorcium Audit in New Jersey. One hundred and thirty-six passed audits in Massachusetts, Maine and Vermont. Additionally growers who did not go through the audit process in 2010 indicated they are making changes to their operations based on the training sessions and research presented to be ready for 2011.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
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723	Hazards to Human Health and Safety

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.)

Brief Explanation

- Public education
- Partnerships with industry, government, consumers and communities
- Funding to support research and outreach education
 - State and federal food safety regulations

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Retrospective (post program)
- Before-After (before and after program)
- During (during program)
- Time series (multiple points before and after program)
- Case Study
- Comparisons between program participants (individuals, group, organizations) and non-participants
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- Comparison between locales where the program operates and sites without program intervention

Evaluation Results

See Qualitative Outcome and Impact Statements

Key Items of Evaluation

