

**V(A). Planned Program (Summary)**

**Program # 3**

**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
201	Plant Genome, Genetics, and Genetic Mechanisms	5%		5%	
204	Plant Product Quality and Utility (Preharvest)	5%		5%	
212	Pathogens and Nematodes Affecting Plants	5%		5%	
216	Integrated Pest Management Systems	5%		5%	
308	Improved Animal Products (Before Harvest)	10%		10%	
501	New and Improved Food Processing Technologies	20%		20%	
503	Quality Maintenance in Storing and Marketing Food Products	10%		10%	
504	Home and Commercial Food Service	10%		10%	
607	Consumer Economics	5%		5%	
702	Requirements and Function of Nutrients and Other Food Components	5%		5%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	5%		5%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	15%		15%	
	<b>Total</b>	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	5.1	0.0	7.9	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
558541	0	180115	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
936501	0	1117770	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
196046	0	358174	0

**V(D). Planned Program (Activity)**

**1. Brief description of the Activity**

- Conducted research projects and programs that emphasized our key interest areas including detection and control of foodborne pathogens.
- Developed and delivered a variety of educational workshops and seminars to targeted audiences.
- Developed web-based and distance education materials
- Partnered with important stakeholders
- Published research results

**2. Brief description of the target audience**

- Animal production personnel
- Plant production personnel
- Food manufacturing and processing plant personnel
- Food service and food retail workers
- Consumers
- Youth
- State and county health departments
- Federal regulatory officials
- State industry associations
- First responders

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Plan</b>	{NO DATA}	{NO DATA}	{NO DATA}	{NO DATA}
<b>Actual</b>	432400	0	410	0

**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	17	18	8

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

- Number of educational workshops

Year	Target	Actual
2010	{No Data Entered}	67

**Output #2**

**Output Measure**

- Number of Extension publications written, new or revised

Year	Target	Actual
2010	{No Data Entered}	17

**Output #3**

**Output Measure**

- Number of research publications

Year	Target	Actual
2010	{No Data Entered}	18

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Number of flour mill pest managers that can justify increasing their sanitation budgets.
2	Number of hours to detect food-borne bacteria, toxins and other pathogens in food
3	Number of food service managers that changed behaviors after being re-certified as National Food Protection Managers.

## **Outcome #1**

### **1. Outcome Measures**

Number of flour mill pest managers that can justify increasing their sanitation budgets.

### **2. Associated Institution Types**

- 1862 Extension
- 1862 Research

### **3a. Outcome Type:**

Change in Knowledge Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	{No Data Entered}	0

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

Protection of food from insect pests is important because insects may carry disease and other micro-organisms, are allergens and are considered unacceptable by the general public.

#### **What has been done**

Researchers spent the past 12 months documenting the importance of sanitation in managing pest problems in flour milling facilities. The intention is to provide flour mill pest managers with sufficient data to increase their sanitation budgets.

#### **Results**

The data confirms that facilities that improve their sanitation programs have fewer reported insects captured by their monitoring programs and get a considerable increase in the longevity of their fumigation rebound. This research also brings together quality control and sanitation departments--departments that do not usually have common ground.

### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
212	Pathogens and Nematodes Affecting Plants
216	Integrated Pest Management Systems
503	Quality Maintenance in Storing and Marketing Food Products

## **Outcome #2**

### **1. Outcome Measures**

Number of hours to detect food-borne bacteria, toxins and other pathogens in food

### **2. Associated Institution Types**

- 1862 Research

### **3a. Outcome Type:**

Change in Knowledge Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	{No Data Entered}	0

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

Food borne pathogens can be introduced into the food supply--intentionally or unintentionally--making tens of thousands of individuals sick. These pathogens include Salmonella, E. coli, Listeria monocytogenes, and Vibrio (cholera). Current technology allows for the identification of individual pathogens in food and can take several days and infect many individuals before pathogen is known.

#### **What has been done**

Purdue researchers have developed bio-sensing applications that allow for the simultaneous detection of multiple pathogens using a single sensor platform.

#### **Results**

The technology has the potential to speed up the detection process from several days to less than 24 hours and to test more than one pathogen at a time. This technology could significantly reduce the length of time to manage the issue along the entire food chain and is now being leveraged to build high-throughput screening tools that will allow more food to be screened more rapidly with little impact on time to market.

### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
212	Pathogens and Nematodes Affecting Plants
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

**Outcome #3**

**1. Outcome Measures**

Number of food service managers that changed behaviors after being re-certified as National Food Protection Managers.

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

Year	Quantitative Target	Actual
2010	{No Data Entered}	427

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

According to the Center for Disease Control and Protection, 46 million Americans are sickened, 325,000 hospitalized and 5,000 die from food borne illnesses at a cost of \$152 billion per year. Education and action at food establishments are critical to reducing the spread of food-borne illnesses.

**What has been done**

454 people attended the ServSafe Retail Food Safety Recertification Program conducted by Purdue Extension in Johnson County, IN.

**Results**

427 of 454 (94%) of the participants were successfully recertified. A 3-month follow up survey indicated the following behavior changes:

- \* 85% washed hands more frequently during food prep vs 28% before training
- \* 82% checked food temperature to ensure cooked safely compared to 28%
- \* 81% checked food temperature to ensure cooling vs. 28%
- \* 76% kept raw food separate from cooked compared to 39%
- \* 68% cleaned and sanitized work surfaces, equipment and utensils vs. 51%

**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

## **V(H). Planned Program (External Factors)**

### **External factors which affected outcomes**

#### **Brief Explanation**

{No Data Entered}

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

### **1. Evaluation Studies Planned**

- After Only (post program)
- Before-After (before and after program)
- Other (Success/pass rate on regulatory certification exams)

### **Evaluation Results**

### **Key Items of Evaluation**