

V(A). Planned Program (Summary)

Program # 2

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
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources			100%	
	Total			100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	2.0	0.0
Actual Paid Professional	0.0	0.0	3.4	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
0	0	39243	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	195527	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	83088	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

The main research activities are to develop more efficient and sensitive analytical methods to detect toxic chemicals and heavy metals in food and other consumer products, to determine if consumer products contain allowable amounts of these constituents, and to determine the role of pesticides in causing honey bee mortality. A pilot collaboration program was established in a previous reporting period with the CT Department of Public Health to test foods for unwanted chemicals and pathogenic bacteria. Decisions on whether or not foods are "safe" depends on tolerance levels established for chemicals by the US Environmental Protection Agency (EPA) or the Food and Drug Administration (FDA). Good progress was made on all objectives. The activities, services, and events that reach people are designed to assist a broad, diverse group of stakeholders by mainly disseminating scientific information to the public through the media, publications, and exhibits. People will have equality of service, ease of access to scientific results, and the ability to see laboratories and field plots. The state-generated outputs include numbers of food and consumer product samples tested, scientific publications, and talks and interviews. The following activities were planned: (1) new analytical chemistry procedures were developed, (2) staff members disseminated new information on analytical test results to visitors at open house events and in scientific displays at agricultural fairs, (3) oral presentations were given to civic groups, and (4) laboratories were opened to allow adults and youth to meet staff members and see analytical equipment. Direct interactions with a broad base of stakeholders provide a mechanism for public input on the research program. Non-traditional stakeholders are reached at agricultural fairs when they visit Station displays. An annual open house event on Station property allows the public to hear oral presentations on research results and to offer comments. Results of these activities will lead to specific outcomes, such as removing tainted or adulterated food items from the markets and greater public awareness of research on food safety.

2. Brief description of the target audience

A diverse group of target audiences includes: state and federal public health officials and regulators, state and federal legislators and their staff members, food producers and importers, managers of supermarkets, educators, extension specialists, researchers in the food sciences, and the general public. Women, members of minority organizations, and children are examples of under-represented and under-served groups who are expected to receive benefits.

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	1575	133	20	66

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	8	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Total research papers

Year	Actual
2013	12

Output #2

Output Measure

- # of talks and interviews

Year	Actual
2013	81

Output #3

Output Measure

- # of tests performed

Year	Actual
2013	2047

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	# of stakeholders gaining knowledge of food safety
2	# state and federal regulatory agencies making decisions on test results

Outcome #1

1. Outcome Measures

of stakeholders gaining knowledge of food safety

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1595

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

There have been several instances when foods were contaminated with toxic chemicals or heavy metals. Food producers, retail operators, and consumers want foods that contain safe levels of these constituents. Federal and state regulators request analyses of foods and enforce laws by recalling contaminated products from commerce. These programs include fresh and manufactured foods, as well as animal feeds, including raw products such as alfalfa and processed products such as canned wet and bagged dry feeds.

What has been done

As part of routine surveillance of the food supply in the CT, Department of Consumer Protection Inspectors submitted samples of fruits and vegetables, including certified organic products, for analysis by the Department of Analytical Chemistry at The Connecticut Agricultural Experiment Station (CAES). The food samples were extracted and analyzed for over 1000 pesticides, poisons, and toxins. The US EPA sets tolerance levels for specific pesticides on specific food commodities. The USDA National Organic Program has regulatory jurisdiction over organic food products. The Organic Foods Production Act of 1990 indicates that a food product may only be sold as certified organic if it contains less than 5% of the allowable tolerance of a pesticide as set by the US EPA.

Results

Organic yellow nectarines were found to contain residues of the pesticide Thiophanate Methyl at unacceptable levels. This residue fails the criteria for organic labelling and as a result, the USDA National Organic Program, Compliance and Enforcement Division, conducted an investigation of the growers fields. A determination of spray drift was found to be the root cause of the contamination and the NOP mandated an increase in buffer zones in between organic and non-organic crops. This change in actions will prevent exposure to excessive chemicals in food. Stakeholders gained knowledge of the test findings and the actions taken to correct the problem.

4. Associated Knowledge Areas

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

Outcome #2

1. Outcome Measures

state and federal regulatory agencies making decisions on test results

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)

Food and other consumer products are tested for unwanted chemicals and heavy metals to determine if they are in compliance with labels or safe to use by consumers. People are concerned about potentially contaminated products. State and federal regulatory officials are mandated to enforce consumer protection laws. Historical precedence exists for concerns over certain imported consumer goods having excessive levels of heavy metals. Past products of concern where the Department of Analytical Chemistry at The Connecticut Agricultural Experiment Station (CAES) reported findings of dangerous heavy metals include childrens toy jewelry and toys.

What has been done

In response to a consumer complaint, Department of Consumer Protection inspectors submitted a sample of Hashmi Surma Special Eyeliner to the Department of Analytical Chemistry at The Connecticut Agricultural Experiment Station (CAES) due to such concerns. The sample was digested in concentrated acid and analyzed by inductively coupled plasma with mass spectrometry to screen for heavy metal content.

Results

The eyeliner was found to contain nearly 17% lead by weight (167,390 parts per million lead). Results were reported to the Department of Consumer Protection and to the US FDA. As a consequence of the findings, the US FDA facilitated a product recall and issued a public notice indicating that this product could cause health problems to consumers, particularly infants.

4. Associated Knowledge Areas

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

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Competing Programmatic Challenges
- Other (Staff changes)

Brief Explanation

One scientist retired on August 1, 2008, and up until 2013, the vacancy could not be filled due to a hiring freeze. We are happy to report that the vacancy was indeed filled effective July 12, 2013. In addition, a Postdoctoral Research Scientist was also hired on a federal grant (US FDA) to assist in this work. These are critical positions because the discipline requires the testing of toxic heavy metals (e.g., lead, arsenic, cadmium, and mercury) in range of products by a number of advanced methods. Other scientists, who were working entirely on state projects with state funds, have been reassigned to either part or full-time status on Hatch-funded programs. Work continues in the Department of Analytical Chemistry and planned program objectives were met. Grant-funded positions are now a critical component for food safety programs.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Information on research and service results was obtained "during the program" written evaluations and oral comments received at public meetings (1 Open House), civic groups' meetings, and at Station exhibits. Positive feedback as received from stakeholders. Observations made during interviews with stakeholders revealed positive stakeholder sentiment about program effectiveness and value.

Key Items of Evaluation

The key items of evaluation and data collection were as follows: stakeholders' written responses concerning food analyses; constructive written feedback from grant peer-reviewers for a competitive USDA grant; and responses and corrective actions by the State of Connecticut, USDA, and US FDA to remove suspect products from commerce. The Citation Index and Google Scholar indicated that articles written in previous years by several scientists were recognized and cited by other scientists in this field (total citations exceeded 600 during the reporting period).