

Food Safety, Quality, and Nutrition

Food Safety, Quality, and Nutrition

V(A). Planned Program (Summary)

1. Name of the Planned Program

Food Safety, Quality, and Nutrition

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
204	Plant Product Quality and Utility (Preharvest)	0%	0%	3%	
205	Plant Management Systems	0%	0%	6%	
307	Animal Management Systems	0%	0%	2%	
311	Animal Diseases	0%	0%	6%	
501	New and Improved Food Processing Technologies	10%	10%	10%	
502	New and Improved Food Products	5%	5%	12%	
503	Quality Maintenance in Storing and Marketing Food Products	0%	0%	4%	
511	New and Improved Non-Food Products and Processes	0%	0%	1%	
701	Nutrient Composition of Food	0%	0%	1%	
702	Requirements and Function of Nutrients and Other Food Components	5%	5%	21%	
703	Nutrition Education and Behavior	40%	40%	0%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources.	0%	0%	1%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	40%	40%	28%	
722	Zoonotic Diseases and Parasites Affecting Humans	0%	0%	5%	
	Total	100%	100%	100%	

V(C). Planned Program (Inputs)

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

Year: 2007	Extension		Research	
	1862	1890	1862	1890
Plan	43.5	2.5	18.0	0.0
Actual	143.0	5.6	32.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c 1915213	1890 Extension 502553	Hatch 876526	Evans-Allen 0
1862 Matching 6165903	1890 Matching 251276	1862 Matching 3337870	1890 Matching 0
1862 All Other 5106764	1890 All Other 405101	1862 All Other 843256	1890 All Other 0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Extension used the Power of Choice curriculum in Tennessee schools and afterschool programs. Extension personnel and volunteers used the curriculum to teach diet quality to young adolescents. The program has 10 interactive lessons.

Extension conducted the Walk Across Tennessee program in over 25 communities in the state. This eight-week walking program organizes teams for walking, jogging, or biking. Instruction is delivered in the prevention of obesity-related diseases such as cancer, diabetes and heart disease. Also, physical activity and weight management are taught.

In the Safe Food for Tennessee initiative, lessons were delivered in homes, schools, community centers, churches, and other accessible locations to consumers. The lessons in "Cook's Corner" and "Safe Food for You" were successful in changing attitudes, skills and behaviors in regards to safe food handling practices.

Youth participants received food safety education using Fight BAC and other curricula through their school classroom, community center or after-school program. Teaching methods emphasized the following:

- how to use MyPyramid.gov and following Dietray Guidelines.
- how to use the Healthy Plate Method.
- decreasing consumption of high-fat foods like fried foods, bologna, hot dogs, etc.
- increasing consumption of fruits, vegetables and whole-grains.
- using a thermometer to check the internal temperature of food.
- using a thermometer to check the internal temperature of the refrigerator.

We conduct applied and basic research in foodborne risks and nutrition to address high priority issues for consumers of food products. We disseminate information gained from these studies to food industries and consumers through outreach programs, including workshops and educational events at the county level, and through a variety of publications.

Research projects in food safety are multi-pronged in their objectives. A major thrust is characterization of the antimicrobial activity of novel natural (i.e., plant-, animal- or microbial-based) compounds and better targeting through controlled-delivery encapsulation systems and incorporation into nanofibers and packaging films. Encapsulation strategies include micelles, liposomes, chitosans, supercritical carbon dioxide, high pressure homogenization and ultrasound. Novel molecular biology strategies are used to identify stress mechanisms in bacteria that allow them to resist interventions.

Studies are done on how nonthermal processing (high pressure, ultrasound, solvents) affects the functional properties of proteins for food and non-food applications.

2. Brief description of the target audience

Tennesseans targeted include consumers and youth. Because of the prevalence of obesity in the state, all consumers were potentially members of the target audience. However, the TNCEP and EFNEP programs were targeted to the state's limited resource population. In addition, the TSU Food Nutrition Education Program targeted to eligible food stamp recipients.

V(E). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons (contacts) reached through direct and indirect contact methods

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	10000	30000	10000	30000
2007	112231	351000	106345	351000

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

Patent Applications Submitted

Year	Target
Plan:	1
2007:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

	Extension	Research	Total
Plan			
2007	2	38	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

Number of exhibits displayed to promote program awareness and participation.

Year	Target	Actual
2007	10	340

Output #2

Output Measure

Number of research-based publications distributed as part of this program.

Year	Target	Actual
2007	10	10

V(G). State Defined Outcomes

O No.	Outcome Name
1	Safe Food Handling Practices for Consumers: Number of participants surveyed who made a positive change in the attitude about cooking food to a safe internal temperature.
2	Safe Food Handling Practices for Consumers: Number of participants surveyed who made a positive change in their attitude about cleaning surfaces, utensils and equipment to prevent cross-contamination.
3	Safe Food Handling Practices for Consumers: Number of participants surveyed who made a positive change in their attitude about eating/drinking foods from unsafe sources.
4	Safe Food Handling Practices for Consumers: Number of participants surveyed who made a positive change in their attitude about how they thaw food.
5	Safe Food Handling Practices for Consumers: Number of participants surveyed who made a positive change in their attitude about keeping the temperature in the refrigerator at 40 degrees F or below.
6	Safe Food Handling Practices for Consumers: Number of participants surveyed who consumed fewer foods from unsafe sources.
7	Safe Food Handling Practices for Consumers: Number of participants surveyed who made a positive change in the way they stored perishable foods.
8	Safe Food Handling Practices for Consumers: Number of participants surveyed more often cooked foods to safe internal temperatures.
9	Safe Food Handling Practices for Consumers: Number of participants surveyed who more often thoroughly washed their produce under running water before eating them.
10	Safe Food Handling Practices for Consumers: Number of participants surveyed more often washed items that came in contact with raw meat, chicken or seafood with hot, soapy water before continuing to cook.
11	Safe Food Handling Practices for Consumers: Number of participants surveyed who more often washed their hands with soap and warm running water before eating.
12	Safe Food Handling Practices for Consumers: Number of participants surveyed who more often washed their hands with soap and warm running water before preparing food.
13	Safe Food Handling Practices for Consumers: Number of participants surveyed who more often washed the plate used to hold raw meat, poultry, or seafood with hot, soapy water before returning cooked food to the plate OR used a
14	Safe Food Handling Practices for Consumers: Number of participants surveyed who used a thermometer to check the internal temperature of food.
15	Safe Food Handling Practices for Consumers: Number of participants surveyed who used a thermometer to check the internal temperature of their refrigerator.
16	Safe Food Handling Practices for Consumers: Number of participants who washed their hands with soap and warm running water after working with raw meat, chicken, or seafood.
17	Safe Food Handling Practices for Consumers: Number of pregnant or formerly pregnant participants surveyed avoided one or more of the following foods during pregnancy: cold hot dogs, soft cheese like brie, Camembert and queso fesc
18	Number of medium or large food processing companies (1,000,000 food purchases) adopting an antimicrobial strategy developed through the food safety program.
19	Diet Quality: Number of participants who learned how to use MyPyramid.gov and Dietary Guidelines.
20	Diet Quality: Number of participants who learned how to use the Healthy Plate to balance their diet.
21	Diet Quality: Number of participants who learned sources of healthy fats.
22	Diet Quality: Number of participants who learned which foods increase blood sugar.
23	Diet Quality: Number of participants who decreased consumption of high-fat foods such as chips, fast food, fried foods, sausage, bacon, bologna, hot dogs, etc.
24	Diet Quality: Number of participants who decreased consumption of high-sugar foods and sweetened beverages, such as soft drinks, Kool Aide type beverages, sweetened tea, etc.
25	Diet Quality: Number of participants who increased consumption of dairy foods.
26	Diet Quality: Number of participants who increased consumption of fruits.
27	Diet Quality: Number of participants who increased consumption of vegetables.
28	Diet Quality: Number of participants increased consumption of whole grains.
29	Diet Quality: Number of participants who improved their blood pressure.
30	Diet Quality: Number of participants who improved their blood sugar.
31	Diet Quality: Number of participants who improved their cholesterol levels.
32	Diet Quality: Number of participants who improved their sleep habits.
33	Diet Quality: Number of participants who improved their stress.
34	Diet Quality: Number of participants who improved their triglyceride levels.
35	Diet Quality: Number of participants who reduced their risk factor for diet-related diseases.
36	Effect on obesity of dairy products

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37	Encapsulation of pharmaceutical compounds
38	Fruit and vegetable quality
39	Stress response in E. coli
40	Protection from food-borne contamination
41	Novel biodegradable and edible films and coatings
42	Polyunsaturated fatty acids and human health
43	Foodborne disease from contaminated baby formula
44	Foodborne bacteria and antibiotic resistance

Outcome #1

1. Outcome Measures

Not reporting on this Outcome for this Annual Report

2. Associated Institution Types

3a. Outcome Type:

3b. Quantitative Outcome

Year	Quantitative Target	Actual
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3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
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V(H). Planned Program (External Factors)

External factors which affected outcomes

Appropriations changes

Public Policy changes

Government Regulations

Competing Programmatic Challenges

Brief Explanation

Outcome targets for diet quality were exceeded, and in most cases, exceeded by great margins. On the other hand, targets for food safety outcomes were not met in many cases. This was due to input from local stakeholders. In the TNCEP program, for example, 93 county coalitions helped Extension agents plan and conduct local programs. The actual outcome data demonstrates where these local decision-makers placed emphasis in 2007. The 2009-2013 Plan of Work will be changed accordingly.

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

1. Evaluation Studies Planned

Before-After (before and after program)

During (during program)

Evaluation Results

In 33 Tennessee counties, pre- and post-test evaluation questionnaires were used during program implementation of safe food handling practices for consumers. Adult participants who received food safety education using lessons in "Cook's Corner" and "Safe Food for You" completed survey questions on "Your Opinions About Food Safety" (short term attitude/knowledge outcomes) or "Food Handling and Eating Preferences Questionnaire" (intermediate outcomes) before and after education. Results were tracked using the Extension System for University Planning, Evaluation and Reporting (SUPER) software. The results from those counties (percentages) were extrapolated for the outcome totals based on statewide participation. The evaluation results (as shown by the state defined outcomes) indicate that the planned programs successfully helped:

- consumers wash their hands before eating and preparing food;
- pregnant or formerly pregnant women to avoid high-risk foods; and
- consumers cook foods to safe internal temperatures.

Key Items of Evaluation