

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Access to Safe & Nutritious Food

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
403	Waste Disposal, Recycling, and Reuse	5%		0%	
501	New and Improved Food Processing Technologies	10%		20%	
502	New and Improved Food Products	10%		20%	
503	Quality Maintenance in Storing and Marketing Food Products	5%		10%	
504	Home and Commercial Food Service	5%		0%	
701	Nutrient Composition of Food	5%		10%	
702	Requirements and Function of Nutrients and Other Food Components	10%		10%	
703	Nutrition Education and Behavior	10%		0%	
704	Nutrition and Hunger in the Population	10%		0%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	10%		30%	
724	Healthy Lifestyle	10%		0%	
806	Youth Development	10%		0%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	86.8	0.0	22.9	0.0
Actual Paid Professional	51.1	0.0	55.6	0.0
Actual Volunteer	8.0	0.0	1.5	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
546658	0	270469	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
703544	0	5803547	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
5081718	0	1249072	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Healthy Food Choices:

Division of Agriculture faculty will improve consumer nutrition literacy and cooking skills in preparing and consuming healthy foods by:

1. Developing, evaluating, and disseminating education programs and curricula, incorporating new research and emphasizing healthy lifestyles. Programs Include but are not limited to:

- Living Well with Diabetes
- Right Bite Cooking School
- Mediterranean Cooking School

2. Developing, evaluating, and disseminating education programs and curricula, incorporating new research and emphasizing healthy lifestyles. Programs include but are not limited to:

- Supplemental Nutrition Assistance Program Education (SNAP- Ed) Adult and Youth
- Expanded Food and Nutrition Education Program (EFNEP) Youth
- Reshape Yourself Healthy Weight Program
- HOPE2 Program
- Walk Across Arkansas Youth
- BodyWalk
- Best Care
- Adventures in Grandparenting

Division of Agriculture faculty will conduct novel research on obesity, energy balance, nutrient density, behavior modification and food choices.

Food Security:

Division of Agriculture faculty will:

Increase food security in Arkansas by teaching consumers how to locate, select, prepare and preserve economical and nutritious foods.

Increase awareness among low-income households of available nutrition assistance programs.

Engage volunteers to help develop home, school and community gardens.

Inform decisions makers about best practices for increasing community food security.

Food Industry Innovation:

Division of Agriculture faculty will:

Train a qualified workforce for the food processing industry by conducting workshops and round tables on topics including culinary arts, food safety, food processing, and food labeling.

Conduct research to improve existing, and develop new, processing technologies to produce healthy, high-quality foods and reduce environmental impact.

Conduct research to enhance the nutritional value and consumer acceptance of foods, the efficiency of food processes and the use of food by-products.

Provide assistance to small food companies and entrepreneurs in the form of services, nutritional labeling, and consulting

Food Safety:

Division of Agriculture faculty will:

Conduct research to control food-borne pathogens and toxins in the food supply.

Develop innovative methods to detect, identify and control food-borne pathogens, toxins and contaminants in agricultural production and processing.

Educate food producers, retailers, processors and consumers about food safety.

Educate Arkansans how to minimize risks of agro-terrorism.

Investigate economical, practical and naturally occurring antimicrobials and other compounds that target food pathogens.

2. Brief description of the target audience

Food Companies
Entrepreneurs and Restaurants
Adults
Grandparents
Child Care Providers
School personnel
Health Professionals
Worksites
Farmers
Consumers
Commodity Boards
Employees
County, State and Federal Agency Employees
Researchers
Food manufacturers

3. How was eXtension used?

eXtension was not used.

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	32266	2159270	242241	18

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

Patent Applications Submitted

Year: 2012
 Actual: 3

Patents listed

Application of Material Properties to Improve Grain Drying. Nationalized CN 201080043272. 3/23/2012. Inventor(s): PI - Siebenmorgen, Terry / Ondier, George

Trans-, Trans-Conjugated Linoleic Acid Compositions and use thereof. Non-Provisional US 13/471,624 5/15/2012. Inventor(s): Proctor, et.al.

Use of lactic acid bacteria to reduce pathogens and as a bio-sanitizer. Provisional US 61/513,851. 8/1/2011. Inventor(s): Crandall, Philip / Ricke, Steven / Ware, Douglas

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	99	99

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- # of 4-H Youth Food, Nutrition and Health programs delivered
 Not reporting on this Output for this Annual Report

Output #2

Output Measure

- # of 4-H participants in Food, Nutrition, and Health programs
 Not reporting on this Output for this Annual Report

Output #3

Output Measure

- # of funded commodity board grants

Year	Actual
2012	3

Output #4

Output Measure

- # of funded Federal grants and contracts

Year	Actual
2012	7

Output #5

Output Measure

- # of funded non-federal grants/contracts funded

Year	Actual
2012	41

Output #6

Output Measure

- \$ received through commodity board grants/contracts

Year	Actual
2012	275994

Output #7

Output Measure

- \$ received through funded Federal grants and contracts

Year	Actual
2012	2813453

Output #8

Output Measure

- \$ received through non-federal grants/contracts funded (industry, state)

Year	Actual
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2012 1183756

Output #9

Output Measure

- # of Food, Nutrition, and Health adult clientele contacts from educational events

Year	Actual
2012	20557

Output #10

Output Measure

- # of Food, Nutrition, and Health adult educational events

Year	Actual
2012	2324

Output #11

Output Measure

- # of adults enrolled in physical activity programs

Year	Actual
2012	12337

Output #12

Output Measure

- # of Nutrition labels developed

Year	Actual
2012	72

Output #13

Output Measure

- Number of new food businesses started

Year	Actual
2012	16

Output #14

Output Measure

- # of adults enrolled in the Strong Women program

Not reporting on this Output for this Annual Report

Output #15

Output Measure

- Food Safety - Number of participants in educational programs leading to certification for food handlers (ServSafe and Better Process Control School)

Year	Actual
2012	290

Output #16

Output Measure

- Food Safety - Number of participants in quarterly HACCP roundtables

Year	Actual
2012	125

Output #17

Output Measure

- Food Safety - Number of ServSafe classes offered

Year	Actual
2012	4

Output #18

Output Measure

- Food Safety - Number of Food Safety clientele contacts from education classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational methods

Year	Actual
2012	725

Output #19

Output Measure

- Food Safety - Number of Online Master of Agriculture (Food Safety Emphasis) students enrolled in courses.

Year	Actual
2012	24

Output #20

Output Measure

- Childhood Obesity - # of 4-H/Youth Food, Nutrition and Physical activity programs delivered

related to eating healthy and being active

Year	Actual
2012	12337

Output #21

Output Measure

- Childhood Obesity - # of participants in 4-H/ Youth Food, Nutrition, and Physical Activity programs related to eating healthy and being active

Year	Actual
2012	40544

Output #22

Output Measure

- Childhood Obesity - # of adult clientele contacts from educational events (educational classes, workshops, group discussions, one-on-one interventions, demonstrations and other educational activities) related to eating healthy and being active

Year	Actual
2012	7053

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	# of participants who indicated that they increased their knowledge related to food, nutrition and/or health following an educational class, seminar or workshop
2	# of individuals who increased physical activities as a result of completing an Extension program
3	# of participants who adopted at least one positive health or nutrition practice.
4	# of participants reporting a reduction of at least one risk factor for chronic disease after an educational program
5	# of Participants who indicated that they have gained new knowledge on universal design, assistive technology, services available, housing options or other issues related to aging in place.
6	# of participants who practiced at least 1 technique learned in an extension health program
7	# of adults enrolled in Strong Women program who completed assessment
8	# of adults who increased upper body strength after completing the Strong Women program
9	# of adults who increased lower body strength after completing the Strong Women program
10	Childhood Obesity - # of children and youth who increased consumption of foods recommended by the U.S. Dietary Guidelines for Americans.
11	Childhood Obesity - # of families/caregivers who increased consumption of foods recommended by the U.S. Dietary Guidelines for Americans.
12	Childhood Obesity - # of Children/Youth who intend to adopt healthy eating patterns.
13	Childhood Obesity - # of Families/Caregivers who intend to adopt healthy eating patterns.
14	Childhood Obesity - # of Children/Youth who gained knowledge of foods to increase as recommended by the U.S. dietary Guidelines for Americans.
15	Childhood Obesity - # of Families/Caregivers who gained knowledge of foods to increase as recommended by the U.S. dietary Guidelines for Americans.
16	Childhood Obesity - # of Children/Youth who gained knowledge of foods to decrease as recommended by the U.S. dietary Guidelines for Americans.
17	Childhood Obesity - # of Families/Caregivers who gained knowledge of foods to decrease as recommended by the U.S. dietary Guidelines for Americans.

18	Childhood Obesity - # of Children/Youth who gained knowledge about healthy eating patterns.
19	Childhood Obesity - Number and/or increased/improved technologies and processes that enhance the nutritional value and marketability of foods and food products.
20	Childhood Obesity - Number increased as it relates to the generation, dissemination, and utilization of research to support dietary recommendations and their adoption.
21	Childhood Obesity - # of environmental changes implemented to support healthy eating guidelines.
22	Childhood Obesity - # of Children/Youth who increased their physical activity and/or reduced sedentary time.
23	Childhood Obesity - # of Families/Caregivers who increased their physical activity and/or reduced sedentary time.
24	Childhood Obesity - # of Children/Youth who increased physical activity to 60 minutes or more daily.
25	Childhood Obesity - # of Families/Caregivers who plan time together for physical activity following an Extension program.
26	Childhood Obesity - # of Children/Youth who understand the importance of balancing food intake and physical activity.
27	Childhood Obesity - # of environmental changes implemented to support physical activity guidelines.
28	Childhood Obesity - # of families with children who supplement their diets with healthy foods that they produce/preserve/obtain utilizing community/backyard gardens, fishing, hunting, etc.
29	Childhood Obesity - # of stakeholders who made healthy foods more accessible in their communities in personally and socially acceptable ways.
30	Childhood Obesity - # of families with children who access/produce/preserve healthy foods.
31	Childhood Obesity - # of families with children who increased knowledge of how to access/produce/preserve healthy foods.
32	Food Safety - Number of participants who indicated that they increased their knowledge related of Food Safety following an educational class, seminar or workshop.
33	Food Safety - Number of participants receiving certification in Better Process Control and ServSafe
34	Food Safety - Number of participants who adopted positive safe food handling practices.
35	Number of food industry employees receiving certification as Culinary Scientists
36	Number of food industry employees receiving Food Protection Manager Certification

37	Decrease in the number of food plant audits as a result of the Global Food Safety Initiative implementation.
38	Impact of cleaning and training strategies on mitigation of cross contamination in the retail environment

Outcome #1

1. Outcome Measures

of participants who indicated that they increased their knowledge related to food, nutrition and/or health following an educational class, seminar or workshop

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	5443

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Arkansas face challenges when it comes to obesity and food insecurity in the state. Arkansas is listed as one of the top states that has a prevalence of obesity equal to or greater than 30%. 18.6% of households in Arkansas are Food Insecure. Arkansas EFNEP is positioned to address these issues in the state.

What has been done

Arkansas EFNEP uses the Eating Smart -Being Active curriculum developed by Colorado State University and University of California. It is designed for para-professional nutrition educators to use when teaching low-income families with young children to learn healthy lifestyle choices. The curriculum consists of eight core lessons, each 60 to 90 minutes long, designed to be taught in order. The goals include encouraging increased consumption of fruits and vegetables, dairy foods, whole-grains, savvy shopping, increased physical activity and reduce fat. EFNEP is conducted in 12 counties in the state.

Results

As a result of participating in EFNEP, based on a 2012 EFNEP Nutrition Education Evaluation and Reporting Systems (NEERS):
 17,701 food demonstrations and nutrition education lessons were taught.
 7,783 participants were reached through small group educational sessions.
 2,200 adults graduated from EFNEP.
 4,270 youth were reached through EFNEP.

2,160 increase their physical activity.
416 Hispanic participants graduated from EFNEP.

4. Associated Knowledge Areas

KA Code	Knowledge Area
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
724	Healthy Lifestyle

Outcome #2

1. Outcome Measures

of individuals who increased physical activities as a result of completing an Extension program

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

of participants who adopted at least one positive health or nutrition practice.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2867

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In Arkansas, 68% of adults are overweight or obese, 9.6% have diabetes, 40% have high blood cholesterol and 36% have high blood pressure. Research shows that even small changes in diet and small decreases in weight can lower the risks for diabetes, heart disease and hypertension.

What has been done

The Reshape Yourself healthy weight program was offered in 5 counties. Participants learned to plan healthy meals, balance calorie intake with calorie expenditure, read food labels, reduce fat

and sodium intake and manage blood glucose. Cooking schools offered in 5 counties helped people learn skills that enable them to plan and prepare healthier meals at home. Participants learned how to cook using healthier techniques; eat more locally grown foods and save money by eating at home more often.

Results

As a result of Extension nutrition programs, 1,073 participants adopted healthier eating practices, 215 lost weight and 33% improved blood pressure, glucose or cholesterol. Some participants were able to reduce medications. Changes like these can reduce the risk for diet-related chronic diseases and save participants money. With much of the growth in health care spending linked to rising rates of diabetes, hypertension and heart disease, programs that help Arkansas reduce weight and improve health can reduce health care costs. Health experts estimate that every \$1 invested in proven community-based disease prevention programs saves Arkansas \$5 in health care costs.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
724	Healthy Lifestyle

Outcome #4

1. Outcome Measures

of participants reporting a reduction of at least one risk factor for chronic disease after an educational program

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	217

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
724	Healthy Lifestyle

Outcome #5

1. Outcome Measures

of Participants who indicated that they have gained new knowledge on universal design, assistive technology, services available, housing options or other issues related to aging in place.

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

of participants who practiced at least 1 technique learned in an extension health program

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

of adults enrolled in Strong Women program who completed assessment

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

of adults who increased upper body strength after completing the Strong Women program

Not Reporting on this Outcome Measure

Outcome #9

1. Outcome Measures

of adults who increased lower body strength after completing the Strong Women program

Not Reporting on this Outcome Measure

Outcome #10

1. Outcome Measures

Childhood Obesity - # of children and youth who increased consumption of foods recommended by the U.S. Dietary Guidelines for Americans.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	4541

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In Arkansas, approximately 23% of the total population receives SNAP benefits. Thirty-eight percent of school-aged children and adolescents, and 67% of adults are overweight or obese. Research shows that a healthy diet can lead to weight loss and lower the risk for heart disease, diabetes and certain cancers.

What has been done

SNAP-Ed programs were conducted at 325 locations throughout Arkansas including schools, Head Starts, senior centers, food banks and pantries, shelters, DHS offices, WIC offices and grocery stores. Lessons focused on: making healthy choices within a limited budget, learning how to read food labels, cook, grocery shop and increase physical activity. Parents in seventeen counties whose children participated in school-based nutrition projects were surveyed to determine if the SNAP-Ed program was reaching parents through children.

Results

As a result of SNAP-Ed in schools in FY12, Arkansas families reported the following:

- 83% reported their child talked to them about healthy foods and snacks.
- 76% reported their child asked for more or different fruits, vegetables, milk, or yogurt.
- 60% made changes in their family's eating and/or were more physically active.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
724	Healthy Lifestyle

806 Youth Development

Outcome #11

1. Outcome Measures

Childhood Obesity - # of families/caregivers who increased consumption of foods recommended by the U.S. Dietary Guidelines for Americans.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1638

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #12

1. Outcome Measures

Childhood Obesity - # of Children/Youth who intend to adopt healthy eating patterns.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	5250

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
724	Healthy Lifestyle
806	Youth Development

Outcome #13

1. Outcome Measures

Childhood Obesity - # of Families/Caregivers who intend to adopt healthy eating patterns.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1445

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #14

1. Outcome Measures

Childhood Obesity - # of Children/Youth who gained knowledge of foods to increase as recommended by the U.S. dietary Guidelines for Americans.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	3881

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
724	Healthy Lifestyle

806 Youth Development

Outcome #15

1. Outcome Measures

Childhood Obesity - # of Families/Caregivers who gained knowledge of foods to increase as recommended by the U.S. dietary Guidelines for Americans.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2016

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #16

1. Outcome Measures

Childhood Obesity - # of Children/Youth who gained knowledge of foods to decrease as recommended by the U.S. dietary Guidelines for Americans.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	3410

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
724	Healthy Lifestyle
806	Youth Development

Outcome #17

1. Outcome Measures

Childhood Obesity - # of Families/Caregivers who gained knowledge of foods to decrease as recommended by the U.S. dietary Guidelines for Americans.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1454

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #18

1. Outcome Measures

Childhood Obesity - # of Children/Youth who gained knowledge about healthy eating patterns.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	7053

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Childhood obesity is a major public health issue and is presently receiving great deal of attention due to its broader economic consequences and long term effects on children's overall health, academic accomplishments, quality of life and productivity as they become adults. Arkansas school children are especially at risk for obesity.

What has been done

Division of Agriculture researchers examined the link between childhood obesity outcomes and features of the built and social environment. This work is being done to ensure that interventions are targeted to those children most at-risk for obesity. Starting in 2004, Arkansas public

schoolchildren have been measured for BMI and ACHI has facilitated geocoding records in this dataset, merging these with geo-referenced data on the commercial food environment.

Results

Based on this research, interventions are being developed to improve the diets of young children, promote physical activity, and encourage other healthy behaviors. These interventions are woven into a comprehensive curriculum designed for use in Head Start, preschool, and early elementary classrooms. Work is being done to improve access to fresh fruits and vegetables via a direct farm-to-school distribution network linking local farmers to these schools. Finally, a formal education program is being developed that will prepare the next generation of childcare providers, early childhood educators, and other career professionals in such a way that they will have a better understanding of childhood obesity and will be in a better position to address this crisis throughout their professional lives.

4. Associated Knowledge Areas

KA Code	Knowledge Area
502	New and Improved Food Products
703	Nutrition Education and Behavior
724	Healthy Lifestyle
806	Youth Development

Outcome #19

1. Outcome Measures

Childhood Obesity - Number and/or increased/improved technologies and processes that enhance the nutritional value and marketability of foods and food products.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Dietary CLA is well recognized for its ability to protect against obesity related diseases and three grams of CLA per day has been proposed to be required to obtain the optimal human health benefits. However, conventional CLA food sources, such as beef and dairy fats contain only 0.2-2% CLA, which are quite low levels to satisfy CLA dietary needs. Consuming enough beef or

dairy products to obtain three grams of CLA per day would result in an unhealthy increase dietary saturated fat and cholesterol. Therefore, the development of foods with a much greater CLA content, while low in saturated fat and containing no cholesterol, would be valuable in promoting a healthy diet and realizing the nutritional benefits of CLA.

Soy oil is naturally cholesterol free, low in saturated fat and composed of 50% linoleic acid (LA). A 20% CLA-rich soy oil was produced by converting soy oil LA to CLA, using ultraviolet light and an iodine catalyst. However, the problem with this processing method is the need to remove the iodine for food use.

What has been done

Division of Agriculture researchers have developed a new technology using a low pressure and steam in the presence of a solid metal catalyst to produce a 20% CLA-rich soy oil. The advantage of this method relative to the iodine processing method is that the solid catalyst can be easily be removed by filtration or centrifugation to produce a food grade oil. Furthermore, the process takes only 2 hours, relative to the 12 hours required for photo-processing to produce CLA-rich oil.

Results

The University of Arkansas has filed a patent to protect the novel technology and significant industrial interest is expected, as the conditions used to produce the CLA-rich oil are already used in conventional commercial refining of vegetable oils.

Half an ounce of CLA-rich salad oil or an ounce and half of CLA-rich potato chips will provide the 3g of CLA needed to obtain the health benefits reported for CLA. In contrast, an 8 ounce serving of beef or milk will only provide 0.27g and 0.06g of CLA. Only by increasing saturated fat and cholesterol from these animal sources can 3g of dietary CLA per day be realized. Therefore, including a small amount of CLA-rich oil in the US diet could be a major factor in reducing heart disease and diabetes risk factors.

4. Associated Knowledge Areas

KA Code	Knowledge Area
501	New and Improved Food Processing Technologies
502	New and Improved Food Products
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components

Outcome #20

1. Outcome Measures

Childhood Obesity - Number increased as it relates to the generation, dissemination, and utilization of research to support dietary recommendations and their adoption.

Not Reporting on this Outcome Measure

Outcome #21

1. Outcome Measures

Childhood Obesity - # of environmental changes implemented to support healthy eating guidelines.

Not Reporting on this Outcome Measure

Outcome #22

1. Outcome Measures

Childhood Obesity - # of Children/Youth who increased their physical activity and/or reduced sedentary time.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2086

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
724	Healthy Lifestyle
806	Youth Development

Outcome #23

1. Outcome Measures

Childhood Obesity - # of Families/Caregivers who increased their physical activity and/or reduced sedentary time.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	721

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
724	Healthy Lifestyle

Outcome #24

1. Outcome Measures

Childhood Obesity - # of Children/Youth who increased physical activity to 60 minutes or more daily.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1080

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle
806	Youth Development

Outcome #25

1. Outcome Measures

Childhood Obesity - # of Families/Caregivers who plan time together for physical activity following an Extension program.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	174

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #26

1. Outcome Measures

Childhood Obesity - # of Children/Youth who understand the importance of balancing food intake and physical activity.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1189

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
724	Healthy Lifestyle

806 Youth Development

Outcome #27

1. Outcome Measures

Childhood Obesity - # of environmental changes implemented to support physical activity guidelines.

Not Reporting on this Outcome Measure

Outcome #28

1. Outcome Measures

Childhood Obesity - # of families with children who supplement their diets with healthy foods that they produce/preserve/obtain utilizing community/backyard gardens, fishing, hunting, etc.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	56

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #29

1. Outcome Measures

Childhood Obesity - # of stakeholders who made healthy foods more accessible in their communities in personally and socially acceptable ways.

Not Reporting on this Outcome Measure

Outcome #30

1. Outcome Measures

Childhood Obesity - # of families with children who access/produce/preserve healthy foods.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	105

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population

Outcome #31

1. Outcome Measures

Childhood Obesity - # of families with children who increased knowledge of how to access/produce/preserve healthy foods.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	156

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
724	Healthy Lifestyle

Outcome #32

1. Outcome Measures

Food Safety - Number of participants who indicated that they increased their knowledge related of Food Safety following an educational class, seminar or workshop.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	732

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
504	Home and Commercial Food Service
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #33

1. Outcome Measures

Food Safety - Number of participants receiving certification in Better Process Control and ServSafe

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	251

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The food industry of Arkansas needs continuous training to remain globally competitive. Workshops and training sessions offered and conducted will allow them to remain prosperous and competitive.

What has been done

The Institute of Food Science & Engineering and Cooperative Extension Service in Fayetteville has been offering the Better Process Control School (BPCS) since 1973 which is one of the oldest in the nation and required for FDA controlled canning industries. Twenty-eight BPCS are offered nationally each year and historically Arkansas is the only contiguous state except for Texas offering the program. The number of Better Process Control Schools and number of students has ramped up the past 2 years and the number of BPCS conducted within the region has averaged 4 per year for 2 years in a row.

Results

Since starting the Better Process Control School in Fayetteville in 1973, over 3,000 people have been certified mostly from major canning companies in the region. This allows for these Arkansas-based companies to train a large number of their employees at a reduced cost since travel expenses are minimal. In 2012, four BPCS were offered in Arkansas and surrounding states (Oklahoma and Missouri). For the Cooperative Extension Service, the Better Process Control School has served as a springboard to other food-related workshops for industry to include food safety, food defense, food labeling, microbiology, sensory evaluation and other courses under development.

4. Associated Knowledge Areas

KA Code	Knowledge Area
504	Home and Commercial Food Service
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #34

1. Outcome Measures

Food Safety - Number of participants who adopted positive safe food handling practices.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	494

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
504	Home and Commercial Food Service
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #35

1. Outcome Measures

Number of food industry employees receiving certification as Culinary Scientists

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	48

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

From the U of A Division of Agriculture Strategic Plan, 2011 - 2015 "The long-term growth of the food industry in Arkansas is dependent upon the industry's ability to innovate, to respond to consumers' taste and expectations, to employ a quality workforce." The poultry/meat industry is a mature industry that is part commodity market and part value-added with higher profit margins. Individual company growth in profits can be expected from increased percentage of value-added

and foodservice markets.

What has been done

Early in 2005, Dr. John Marcy, U of A Division of Agriculture Poultry Processing Specialist and local chef, Suzie Stephens, approached Tyson Foods Research & Development to offer hands-on culinary classes at the University of Arkansas to enable their food technologists / product developers to achieve a certificate as a "Certified Culinary Scientist". This recognition is from the Research Chefs Association, a group dedicated to the blending of culinary arts and food technology called Culinology(TM). This experience is meant to enable the food technologist to understand what the R & D chef wants and be better able to translate that vision and taste to the production plant floor. They are also respected for their culinary knowledge by the customer as well.

Results

As of February 2013, there are 170 Certified Culinary Scientists recognized by RCA worldwide. August 2012 completed the original goal of 60 Tyson Foods associates through the program set in 2005 after 25 week-long classes during the 7 year period. During this period, 98 Tyson associates took at least one class at the University of Arkansas. Sixty-six current associates have completed all classes and 48 have received certification. Conducting these classes at the University of Arkansas is what made the program possible for Tyson as well as other Arkansas companies. The cost savings to Tyson Foods to have people take this program in Arkansas saved them upwards of \$380,000 in reduced tuition but primarily in travel costs over the 7 year period. Since 2007, the Division of Agriculture has reached another 67 food professionals from Arkansas and from around the country for at least one class and 23 of them have finished all three classes. The Division continues to offer all three week-long classes every year.

4. Associated Knowledge Areas

KA Code	Knowledge Area
504	Home and Commercial Food Service

Outcome #36

1. Outcome Measures

Number of food industry employees receiving Food Protection Manager Certification

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
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2012

151

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The Centers for Disease Control and Prevention estimated in 2011 that 9.4 million people will be made ill each year from a combination of 31 known pathogens and 58% or 5.5 million will be caused by 1 pathogen, norovirus. In 2006, CDC published a study done by the National Center for Environmental Health on the differences between outbreak restaurants and non-outbreak restaurants. The primary cause of outbreaks in the one-year study was norovirus at 42%. The primary environmental difference between an outbreak restaurant and a non-outbreak restaurant was a Certified Kitchen Manager (CKM). The presence of a CKM was associated with the absence of bare-hand contact with foods as a contributing factor, fewer norovirus outbreaks, and the absence of outbreaks associated with *Clostridium perfringens*.

The 2009 Food Code now uses the term certified food protection manager. This refers to a person who has successfully demonstrated knowledge by taking one of four tests to receive the Food Protection Manager Certificate. The testing to achieve this designation is accredited by the American National Standards Institute and the standards by which accreditation is judged come from the Conference for Food Protection. Two of the four FPMC tests accepted nationally are used by the Division of Agriculture; the ServSafe Food Protection Manager exam from the National Restaurant Association and the Food Protection Manager exam from the National Registry for Food Safety Professionals.

What has been done

Every year, the University of Arkansas Division of Agriculture offers restaurant managers the opportunity to take classes and an exam to become a Certified Food Protection Manager. In addition, several classes are also offered for restaurant employees and food handlers.

Results

In 2012, 178 foodservice managers and associates took a ServSafe class from the Division of Agriculture and 85% of those people (151) passed the examination to become a Certified Food Protection Manager. But the story does not end with them. The effect of having a certified manager in the kitchen environment enables them to lead and teach the people doing the actual food handling to avoid bare hand contact with food, which is a primary cause of norovirus outbreaks. For every manager certified, many others become better food handlers through better understanding of how foodborne illness really occurs.

4. Associated Knowledge Areas

KA Code	Knowledge Area
504	Home and Commercial Food Service
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #37

1. Outcome Measures

Decrease in the number of food plant audits as a result of the Global Food Safety Initiative implementation.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

International attention has been focused on minimizing costs that may unnecessarily raise food prices. One important aspect to consider is the redundant and overlapping costs of food safety audits.

What has been done

The Global Food Safety Initiative (GFSI) has devised benchmarked schemes based on existing international food safety standards for use as a unifying standard accepted by many retailers. Division of Agriculture researchers conducted a study to evaluate the impact of the decision made by Walmart Stores (Bentonville, AR) to require their food suppliers to become GFSI compliant.

Results

An online survey of retail suppliers was conducted to assess opinions of the requirement by Walmart and the benefits suppliers realized when they transitioned from their previous food safety systems. The most common reason for becoming GFSI compliant was to meet customers' requirements; thus, supplier implementation of the GFSI standards was not entirely voluntary. Other reasons given for compliance were enhancing food safety and remaining competitive. About 54% of food processing plants using GFSI benchmarked schemes followed the guidelines of Safe Quality Food 2000 and 37% followed those of the British Retail Consortium. At the supplier level, 58% followed Safe Quality Food 2000 and 31% followed the British Retail Consortium. Respondents reported that the certification process took about 10 months. The most common reason for selecting a certain GFSI benchmarked scheme was because it was widely accepted by customers (retailers). Four other common reasons were (i) the standard has a good reputation in the industry, (ii) the standard was recommended by others, (iii) the standard is most often used in the industry, and (iv) the standard was required by one of their customers. Most suppliers agreed that increased safety of their products was required to comply with GFSI benchmarked schemes. They also agreed that the GFSI required a

more carefully documented food safety management system, which often required improved company food safety practices and increased employee training. Adoption of a GFSI benchmarked scheme resulted in fewer audits, i.e., one less per year. An educational opportunity exists to acquaint retailers and suppliers worldwide with the benefits of having an internationally recognized certification program such as that recognized by the GFSI.

4. Associated Knowledge Areas

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

Outcome #38

1. Outcome Measures

Impact of cleaning and training strategies on mitigation of cross contamination in the retail environment

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Contamination of food contact surfaces with pathogens is considered an important vehicle for the indirect transmission of foodborne diseases. Research has also shown that many foodborne illnesses result from employee food handler error, which may be minimized when employees are properly trained and transfer their training to their jobs.

What has been done

Division of Agriculture researchers tested the efficacy of four wipe cloth types (cotton bar towel, nonwoven, microfibre and blended cellulose cotton) with either quaternary ammonia cleaning solution or silver dihydrogen citrate (SDC) in cleaning food contact surfaces. Swab samples were collected from untreated, cloth-treated and cloth disinfectant-treated surfaces and tested using ATP bioluminescence and aerobic total plate counting (TPC) assays.

Results

The ATP measurements taken after wiping the surfaces showed poor cleaning by nonwoven cloths compared to woven. The cellulose cotton cloth had the highest reduction in ATP (95%) and CFU values (98.3%) when used in combination with SDC disinfectant. Cleaning effect of wiping cloths on food contact surfaces can be enhanced by dipping them in SDC disinfectant.

The results of this research are being used to develop a carefully planned training program that includes assessing impact of training on both short and long term changes in behavior. If sanitation techniques are better able to clean, sanitize and thermally treat potential *L. monocytogenes* harborages on food contact surfaces, equipment and environmental surfaces, then it can be assumed that employees in these environments will be less likely to cross-contaminate RTE foods with *L. monocytogenes*. Again, fewer *L. monocytogenes* harborages and minimal cross-contamination will decrease the hazard and decrease the risk of listeriosis. Extending these findings to impact deli specific training targeting Hispanics and other minority deli employees can decrease one of the principal factors in reducing risk, minimizing or eliminating the hazard that of having employees utilize their food safety training. Short term assessment of training for deli employees to minimize behaviors that cause cross-contamination is fairly achievable. However, long-term behavior changes are difficult to measure in employees where there are high-turnover rates, such as in a deli. Deli specific training with pre-test and post-test assessment of learning, in addition to the usability testing at the Reaction and Learning levels, could make these newly developed training modules part of the solution.

4. Associated Knowledge Areas

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

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}