

V(A). Planned Program (Summary)

Program # 9

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
501	New and Improved Food Processing Technologies	0%	0%	0%	10%
502	New and Improved Food Products	0%	0%	0%	10%
503	Quality Maintenance in Storing and Marketing Food Products	0%	0%	0%	10%
701	Nutrient Composition of Food	0%	0%	0%	10%
702	Requirements and Function of Nutrients and Other Food Components	0%	0%	0%	20%
703	Nutrition Education and Behavior	0%	0%	0%	10%
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	0%	0%	0%	20%
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	100%	100%	100%	10%
	Total	100%	100%	100%	100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	5.0	7.0	3.0	17.0
Actual Paid Professional	4.3	2.0	4.1	7.0
Actual Volunteer	0.0	219.0	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
58879	120519	233117	981777
1862 Matching	1890 Matching	1862 Matching	1890 Matching
58879	68221	250973	806786
1862 All Other	1890 All Other	1862 All Other	1890 All Other
483130	0	1081672	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

AgriLife Extension and AgriLife Research

County Extension Agents were trained to become instructors for the Food Protection Management Program. Additional training was provided/identified so that instructors can maintain their instructor qualification status per Agency guidelines. The program was implemented in counties across the state that have a County Extension Agent who is able to teach the program. Program materials were available in both English and Spanish.

The Certified Food Manager (CFM) course was evaluated by assessing the pass rate on the CFM exam. The food handler's course was also offered by qualified instructors (CEA-FCS) in both English and Spanish and via the use of distance education (on-line). Pre and post knowledge surveys were used to evaluate the course (change in knowledge).

Work at the National Center for Electron Beam Research was focused on development and application of safe technologies to reduce pathogens on fruits and vegetables. E-beam was also studied as a means of reducing the threat of accidental introduction of insect pests and plant diseases in imported agricultural commodities.

Cooperative Extension Program and Cooperative Agricultural Research Center

The Cooperative Extension Program county agents target limited resource adults and youth and provided presentations on food safety. Limited resource clientele learned proper food handling procedures, personal hygiene while preparing produce and meat products to prevent cross contamination, how to prepare and store food properly.

Agents and specialist within the Cooperative Extension Program were ServSafe trained and received certification. Three CEP agents took the Certified Food Manager Course and were certified. Educational trainings were conducted with restaurants, schools, and churches teaching staff members how to properly handle food.

Educational methods used to conduct trainings included one-on-one consultations, on-site food demonstrations, train-the-trainer, educational programs and classes, taught a series of food safety classes to special interest groups, and educational displays at various sites.

The Cooperative Agricultural Research Center (CARC) provided information to the Cooperative Extension Program regarding conducting research based food quality and food products. CARC examined ways to

supplement caprine products with polyunsaturated fatty acids (PUFA). Ongoing development of value added caprine products (both meat and dairy).

Evaluated strategies for minimizing transfer of microbial pathogens during food handling. Food selection was improved by optimal evaluation of transfer of nutrition knowledge. CARC worked with CEP-FCS Specialist to develop, FACT Sheets, social media, and other resources pertaining to food safety.

2. Brief description of the target audience

AgriLife Extension and AgriLife Research

AgriLife Extension targets individuals who are employed in the retail food service industry. This includes cooks, managers, and owners who are affiliated with foodservice establishments including restaurants, school food service, bed and breakfasts, prisons, and other establishments that prepare and serve food to individuals. The work of AgriLife Research is focused on growers, importers, food processors, purveyors, and retailers.

Cooperative Extension Program

The Cooperative Extension Program Family and Consumer Sciences unit works directly in communities with minority families, single adults, single parents, Title I schools, restaurants, and churches who are underserved and under-represented.

Cooperative Agricultural Research Center

The primarily targeted audience is the underserved population living in the surrounding counties and the Northwest Houston Corridor. This population is dominated by Hispanics and African - Americans. Also, this area has been designated by the State of Texas as Prairie View A&M University's service area.

3. How was eXtension used?

eXtension was used to market our online food handler course. FACT Sheets were used by CEP from eXtension to provide limited resource clientele additional food safety information.

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	7192	53531	283	0

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	3	35	38

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- # of group educational sessions conducted.

Year	Actual
2013	335

Output #2

Output Measure

- # of research-related projects.

Year	Actual
2013	17

Output #3

Output Measure

- # of on site demonstrations for adults and youth.

Year	Actual
2013	68

Output #4

Output Measure

- # of research workshops/presentations.

Year	Actual
2013	2

Output #5

Output Measure

- # of graduate/undergraduate students involved in research projects.
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	FPM Pass/Fail Rate - percentage of participants who pass the DSHS Certified Food Manager exam on the first attempt.
2	Percentage increase in knowledge as a result of completing the food handler's course.
3	# of participants who will be able to practice food safety best practices to include identify sanitation and food safety, practice personal cleanliness when handling food, identify causes of foodborne illness, identify symptoms of foodborne illness, and use food safety procedures when preparing and serving meals
4	# of commercialization of methods/technologies for improving the quality, safety and use of food and food products that will ensure the reduction of food borne illnesses and other nutritionally related diseases.

Outcome #1

1. Outcome Measures

FPM Pass/Fail Rate - percentage of participants who pass the DSHS Certified Food Manager exam on the first attempt.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	79

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

AgriLife Extension

Nearly 1 in 6 Americans become ill from a foodborne illness (FBI) each year. While hundreds of pathogens have been linked to FBI, the Economic Research Service (ERS) of the USDA estimates that five pathogens alone (Campylobacter, Salmonella, Listeria monocytogenes, E. coli O157:H7, and E. coli non-O157:H7 STEC) cost nearly \$7 billion dollars annually (medical expenses, lost productivity, and death). Foodborne illness can originate in the home but it is most often associated with foods produced outside the home. In Texas, restaurants in counties that are under the jurisdiction of the State Health Department are required to have a Certified Food Manager on site.

Cooperative Extension Program

Food quality and safety involves purchasing, preparing, and storing food using procedures that prevent the spread of bacteria and reduce the risk of foodborne illness. Every year more than 76 million people get sick from food poisoning. County Health Department provides food handler training for food service employees. Extension provides all clients with proper food handling procedures, teaching the effectiveness of personal hygiene, preparing food properly, and storing food properly allows clients to handle food safely and can prevent contamination which causes foodborne illness.

What has been done

AgriLife Extension

In response to the need for trained foodservice workers and the need for restaurants to have a CFM on site, Extension Agents offered the Certified Food Manager Program to individuals who needed this certification for employment.

Cooperative Extension Program

The Health Coordinator and Extension agents became ServSafe certified and enrolled in Food Protection Management courses to educate limited resource clientele and business on proper food safety. Education programs were conducted throughout 17 Texas counties with youth and adults. Education programs were conducted in churches, schools, restaurants, day cares, and with community outreach organizations.

Results

AgriLife Extension

During 2013 1,245 individuals across the state completed the Certified Food Manager program. The Certified Food Manager program uses classroom lectures, discussion, and hands-on activities to teach targeted concepts which include time and temperature control, preventing cross contamination, personal hygiene, pest control, receiving and storing foods, safe food preparation, and working with local health inspectors. The program was offered over a one-day or two-day period immediately followed by the administration of the Certified Food Manager exam.

Cooperative Extension Program

100% of the 1,320 of the respondents indicated that because of the information they will use food thermometers to check their food temperature. Participants stated that they would practice thawing meat properly, 93% of 650 participants stated that they would watch dates of keeping food. Other participants stated that they would make changes of handling food by making sure foods are stored properly, store food in the refrigerator sooner, reheat leftovers to 165 degrees, keep cold foods cold and hot foods hot, put up leftovers earlier, and not leave all day on food left out at social gatherings. Positive results from handling food properly could result in preventing food borne illness and the public health care costs that may occur.

4. Associated Knowledge Areas

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

Outcome #2

1. Outcome Measures

Percentage increase in knowledge as a result of completing the food handler's course.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
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2013

25

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

AgriLife Extension

Nearly 1 in 6 Americans become ill from a foodborne illness (FBI) each year. While hundreds of pathogens have been linked to FBI, the Economic Research Service (ERS) of the USDA estimates that five pathogens alone (Campylobacter, Salmonella, Listeria monocytogenes, E. coli O157:H7, and E. coli non-O157:H7 STEC) cost nearly \$7 billion dollars annually (medical expenses, lost productivity, and death). Foodborne illness can originate in the home but it is most often associated with foods produced outside the home. Therefore, having a trained workforce that handles food safely is critical to preventing FBI.

Cooperative Extension Program

Each year, an estimated 1 in 6 people become ill from the food they eat. Common symptoms of foodborne disease include nausea, vomiting, diarrhea, abdominal cramping, fever, and headache. While some people may view this as a mere case of "food poisoning" foodborne illness has serious health and economic consequences. In fact, foodborne illnesses from five pathogens alone (Campylobacter, Salmonella, Listeria monocytogenes, E. coli O157:H7, and E. coli non-O157:H7 STEC) cost more than \$6.9 billion in medical expenses, lost productivity, and even death. All of us are at risk for foodborne illness, but older adults, pregnant women, young children, individuals with chronic disease, and those with a compromised immune system are at an increased risk. Because nearly half of our food dollars are spent on foods eaten away from home, it is imperative that employees who work in retail food service handle food safely.

What has been done

AgriLife Extension

Texas A&M AgriLife Extension developed a food handler program which is currently accredited by the Texas Department of State Health Services. The program is targeted towards front line food service employees and focuses on time and temperature control, preventing cross contamination, and personal hygiene. The program is offered face-to-face at the County level and online in English, Spanish, and Chinese Mandarin.

Cooperative Extension Program

To meet the need for quality food safety education in Texas retail food establishments, the Food Protection Management (FPM) program was developed. A two-day certified food manager program prepares food service workers to sit for the state Certified Food Manager exam. The 2-hour food handler program, which is accredited by the Department of State Health Services, trains front-line food service workers on the basic principles of food safety. Both programs are conducted at the county level by Extension agents.

Results

AgriLife Extension

During 2013 3,417 individuals completed the food handler course (either face-to-face or online). Mean knowledge score when the course began was 70 (out of a possible 100) and significantly rose to 88 immediately after the course ended.

Cooperative Extension Program

During 2013, 33 people in Maverick County participated in the FPM program and completed the

food handler program. Change in knowledge (pre vs post) was used to evaluate the food handler program. In addition, client (customer) satisfaction surveys were collected from participants.

Upon completion of the pre and post survey, twenty four participants reported working in food service and 13 - 39% of the total participants reported receiving training in food safety. There was a significant increase in test scores comparing pre vs post which suggest an increase in knowledge regarding food safety. The mean score pre was 62 and post was 87.

4. Associated Knowledge Areas

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

Outcome #3

1. Outcome Measures

of participants who will be able to practice food safety best practices to include identify sanitation and food safety, practice personal cleanliness when handling food, identify causes of foodborne illness, identify symptoms of foodborne illness, and use food safety procedures when preparing and serving meals

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

of commercialization of methods/technologies for improving the quality, safety and use of food and food products that will ensure the reduction of food borne illnesses and other nutritionally related diseases.

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

This issue is of great importance to our stake-holders primarily the underserved community, including students from low socio-economic backgrounds. The process of adding value to primary food products accomplishes the dual purpose of introducing new products and also extending the shelf-life for storage of foods (both intermediate to long-term storage). Historically, Americans have not consumed caprine products in any significant quantities, possibly due to a lack of education (i.e. either disinformation or misinformation), or exposure to the good attributes of these products. Also, there has been a lack of visibility and availability of saleable forms of consistent quality and quantity of these products.

What has been done

We have developed some value-added caprine products.

1. Pregnant does diets were supplemented with heated vegetable oils containing mono-unsaturated fatty acids and poly-unsaturated fatty acids. The offspring's natural antioxidant compounds were thus enhanced from birth to adulthood. This knowledge is important in controlling the health and disease fighting potential of the general population.
2. Food fortification and supplementation have been practical approaches for increasing the intake of essential fatty acids such as docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA), which are naturally present in algae and fish oils. The difficulties encountered when fortifying foods with DHA/EPA are primarily due to the lack of oxidative stability of these essential fatty acids. To improve the oxidative stability of algae and fish oils, antioxidants are usually added. The most effective antioxidants are synthetic antioxidants, but they are restricted by the FDA because of food safety concerns, hence the need for natural antioxidants. Research conducted in the PVAMU/CARC laboratories has shown that bovine and caprine caseins isolated from cow and goat milks used in combination with the carotenoids can contribute to the oxidative stability of algae oil-in-water emulsions.
3. For too long, goat milk consumption has been low due to the perception that goat milk is different and off-flavor from cow milk. However, with more education, the consumption of goat milk is now on the rise. PVAMU scientists are working on focusing attention on physical and chemical characteristics of goat milk products.

Results

Goat milk cheeses were manufactured at PV using different levels of proteolytic peptidases. The aroma compounds that are potentially important in contributing the typical flavor of goat milk were identified and quantified. This resulted in significant increase in the concentration of free short-chain fatty acids during the aging process. These short-chain fatty acids contribute to a more desirable end product. The impact of this research is more diversity in our food supply.

4. Associated Knowledge Areas

KA Code	Knowledge Area
501	New and Improved Food Processing Technologies
502	New and Improved Food Products
503	Quality Maintenance in Storing and Marketing Food Products
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
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

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges

Brief Explanation

Other agencies are certified to conduct Food Safety in Texas Counties.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

For the food handler program, participants are asked to complete and pre and post knowledge survey to assess change in knowledge. For the certified manager program, we use the pass rate on the exam as the method of program evaluation. In addition, customer satisfaction survey is assessed for both programs.

Key Items of Evaluation

No additional information to report.