V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Food, Nutrition & Health

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

<table>
<thead>
<tr>
<th>KA Code</th>
<th>Knowledge Area</th>
<th>%1862 Extension</th>
<th>%1890 Extension</th>
<th>%1862 Research</th>
<th>%1890 Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>502</td>
<td>New and Improved Food Products</td>
<td>2%</td>
<td>2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>503</td>
<td>Quality Maintenance in Storing and Marketing Food Products</td>
<td>1%</td>
<td>2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>701</td>
<td>Nutrient Composition of Food</td>
<td>5%</td>
<td>1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>702</td>
<td>Requirements and Function of Nutrients and Other Food Components</td>
<td>12%</td>
<td>15%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>703</td>
<td>Nutrition Education and Behavior</td>
<td>25%</td>
<td>30%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>712</td>
<td>Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins</td>
<td>15%</td>
<td>25%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>724</td>
<td>Healthy Lifestyle</td>
<td>25%</td>
<td>25%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>806</td>
<td>Youth Development</td>
<td>15%</td>
<td>0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>100%</strong></td>
<td><strong>100%</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

V(C). Planned Program (Inputs)

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

<table>
<thead>
<tr>
<th>Year: 2010</th>
<th>Extension</th>
<th>Research</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1862</td>
<td>1890</td>
</tr>
<tr>
<td>Plan</td>
<td>86.8</td>
<td>0.0</td>
</tr>
<tr>
<td>Actual</td>
<td>5.1</td>
<td>0.0</td>
</tr>
</tbody>
</table>

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

1. Brief description of the Activity

Health and Nutrition:

The U of A Division of Agriculture faculty will develop, evaluate, and disseminate education programs, curricula, and educational publications. Conduct workshops, training and activities that incorporate new research emphasizing healthy lifestyles.

Programs include but are not limited to:

Walk Across Arkansas (Adults and Youth)- MOVED TO CHILDHOOD OBESITY PLANNED PROGRAM

Strong Women

ServSafe- MOVED TO FOOD SAFETY PLANNED PROGRAM

Food Stamp Nutrition Education- MOVED TO CHILDHOOD OBESITY PLANNED PROGRAM

FF-News- MOVED TO CHILDHOOD OBESITY PLANNED PROGRAM

Expanded Food and Nutrition Education Program- MOVED TO GLOBAL FOOD SECURITY AND HUNGER

Reshape Yourself Healthy Weight Program - MOVED TO CHILD HOOD OBESITY

Arthritis Education Series
Aging In Place
Acknowledging Aging

BeMedwise

Healthy Homes

Food Preservation and Safety- MOVED TO FOOD SAFETY

Commercial Food Safety & Processing:
1) To improve food processing efficiency through an improved understanding of food chemistry; 2) Determine the impact of food processing systems on product quality and food safety attributes; 3) Develop new food products that utilize Arkansas raw products; 4) Increase the research base on improved food processing systems to minimize food pathogens; 5) Improve detection systems for Listeria, Salmonella and other major food pathogens; 6) Identify health related nutritional factors that will improve human health; 7) Develop new food products that have improved nutritional content.

All of the activities below were moved to the new Food Safety Planned Programs:

Conduct quarterly HACCP Roundtable meeting
Conduct food safety workshops
Conduct Better Process Control School
Conduct the ServSafe workshop
Conduct new product development workshop
Provide assistance to small food companies

2. Brief description of the target audience

Multiple groups are reached through various delivery methods. Audiences include:

Food companies- MOVED TO FOOD SAFETY
Entrepreneurs and restaurants- MOVED TO FOOD SAFETY

Food service employees and/or food handlers- MOVED TO FOOD SAFETY
Limited resource adults and youth
Minority adults
Youth, adults and senior adults
Employers & employees- MOVED TO FOOD SAFETY
Child care providers
School personnel

V(E). Planned Program (Outputs)

1. Standard output measures
<table>
<thead>
<tr>
<th>2010</th>
<th>Direct Contacts Adults</th>
<th>Indirect Contacts Adults</th>
<th>Direct Contacts Youth</th>
<th>Indirect Contacts Youth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan</td>
<td>170000</td>
<td>260000</td>
<td>21000</td>
<td>1000</td>
</tr>
<tr>
<td>Actual</td>
<td>11947</td>
<td>7202</td>
<td>163</td>
<td>81</td>
</tr>
</tbody>
</table>

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

Patent Applications Submitted

Year: 2010
Plan: 4
Actual: 1

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

<table>
<thead>
<tr>
<th>2010</th>
<th>Extension</th>
<th>Research</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan</td>
<td>1</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Actual</td>
<td>2</td>
<td>33</td>
<td>35</td>
</tr>
</tbody>
</table>

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- # of grants written and funded in support of Food, Nutrition and Health programming and research

<table>
<thead>
<tr>
<th>Year</th>
<th>Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>49</td>
<td>49</td>
</tr>
</tbody>
</table>

Output #2

Output Measure

- # of participants in educational programs leading to certification for food handlers (ServSafe and Better Process Control School and Culinology)
Not reporting on this Output for this Annual Report
### Output #3

**Output Measure**

- # of participants in quarterly HACCP roundtable (Specialists only)
  
  Not reporting on this Output for this Annual Report

### Output #4

**Output Measure**

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

### Output #5

**Output Measure**

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

### Output #6

**Output Measure**

- # of Arkansas Commodity Board Grants

<table>
<thead>
<tr>
<th>Year</th>
<th>Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>8</td>
<td>4</td>
</tr>
</tbody>
</table>

### Output #7

**Output Measure**

- # of Federal grants and contracts

<table>
<thead>
<tr>
<th>Year</th>
<th>Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>11</td>
<td>8</td>
</tr>
</tbody>
</table>

### Output #8

**Output Measure**

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

<table>
<thead>
<tr>
<th>Year</th>
<th>Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>117000</td>
<td>12109</td>
</tr>
</tbody>
</table>

### Output #9

**Output Measure**

- # of Food, Nutrition, and Health educational events

<table>
<thead>
<tr>
<th>Year</th>
<th>Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output #10</td>
<td>Output Measure</td>
<td></td>
</tr>
<tr>
<td>--------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● # of research projects conducted related to Food, Nutrition and Health-Experiment Station</td>
<td></td>
</tr>
<tr>
<td>Year</td>
<td>Target</td>
<td>Actual</td>
</tr>
<tr>
<td>2010</td>
<td>59</td>
<td>60</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Output #11</th>
<th>Output Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>● # of food processing and safety laboratory services provided</td>
</tr>
<tr>
<td></td>
<td>Not reporting on this Output for this Annual Report</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Output #12</th>
<th>Output Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>● # of Nutritional labels developed</td>
</tr>
<tr>
<td></td>
<td>Not reporting on this Output for this Annual Report</td>
</tr>
</tbody>
</table>
## V(G). State Defined Outcomes

### V. State Defined Outcomes Table of Content

<table>
<thead>
<tr>
<th>O. No.</th>
<th>OUTCOME NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td># of participants who indicated that they increased their knowledge related to food, nutrition and/or health following an educational class, seminar or workshop</td>
</tr>
<tr>
<td>2</td>
<td># of participants receiving certification in Better Process Control School, Culinary Scientists and ServSafe</td>
</tr>
<tr>
<td>3</td>
<td># of 4-H journals completed in Food, Nutrition and Health</td>
</tr>
<tr>
<td>4</td>
<td># of individuals who increased physical activities as a result of completing an Extension program</td>
</tr>
<tr>
<td>5</td>
<td># of Peer reviewed publications</td>
</tr>
<tr>
<td>6</td>
<td># of participants who adopted positive nutrition practices.</td>
</tr>
<tr>
<td>7</td>
<td># of participants reporting reduction in body weight after completing a nutrition education program</td>
</tr>
<tr>
<td>8</td>
<td># of participants reporting reduction in blood pressure after completing a nutrition education program</td>
</tr>
<tr>
<td>9</td>
<td># of participants reporting a reduction in blood cholesterol after completing an extension education program</td>
</tr>
<tr>
<td>10</td>
<td># of participants reporting a reduction in blood glucose after completing an extension education program</td>
</tr>
<tr>
<td>11</td>
<td># of new food businesses started</td>
</tr>
<tr>
<td>12</td>
<td># of culinary participants sampled by survey that reported actual practice change as a result of the workshop within 2 years</td>
</tr>
<tr>
<td>13</td>
<td># of small and very small meat and poultry plants that successfully completed an Action Plan developed in consultation with the University of Arkansas after a USDA-FSIS Food Safety Assessment</td>
</tr>
<tr>
<td>14</td>
<td># of participants who practiced at least 1 technique learned in a health extension program</td>
</tr>
<tr>
<td>15</td>
<td># of participants who practiced at least 1 technique learned in an environmental health Extension program</td>
</tr>
<tr>
<td>16</td>
<td># of adults enrolled in the Strong Women program</td>
</tr>
<tr>
<td>17</td>
<td># of adults who increased upper body strength after completing the Strong Women program</td>
</tr>
</tbody>
</table>
# of adults who increased lower body strength after completing the Strong Women program | 18
---|---
# of Aging in Place (AIP) 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 | 19
# of participants who adopted safe food preparation and preservation practices | 20
# of adults enrolled in Strong Women program who completed assessment | 21
Improved release of bound procyanidins from cranberry pomace by alkaline hydrolysis | 22
Cranberry pomace partially ameliorates metabolic factors associated with high fructose feeding in growing Sprague-Dawley rats. | 23
How to motivate parents to promote intake of calcium rich foods among early adolescents. | 24
Incorporating conjugated linoleic acid (CLA) rich soy oil in the diet to reduce heart disease and diabetes risk factors. | 25

**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**

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantitative Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>19000</td>
<td>9163</td>
</tr>
</tbody>
</table>

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

   **Issue (Who cares and Why)**

   What has been done

   Results
4. Associated Knowledge Areas

<table>
<thead>
<tr>
<th>KA Code</th>
<th>Knowledge Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>502</td>
<td>New and Improved Food Products</td>
</tr>
<tr>
<td>503</td>
<td>Quality Maintenance in Storing and Marketing Food Products</td>
</tr>
<tr>
<td>702</td>
<td>Requirements and Function of Nutrients and Other Food Components</td>
</tr>
<tr>
<td>703</td>
<td>Nutrition Education and Behavior</td>
</tr>
<tr>
<td>712</td>
<td>Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and</td>
</tr>
<tr>
<td></td>
<td>Naturally Occurring Toxins</td>
</tr>
<tr>
<td>724</td>
<td>Healthy Lifestyle</td>
</tr>
</tbody>
</table>

Outcome #2

1. Outcome Measures

# of participants receiving certification in Better Process Control School, Culinary Scientists and ServSafe

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

# of 4-H journals completed in Food, Nutrition and Health

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

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

2. Associated Institution Types

• 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantitative Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>1100</td>
<td>431</td>
</tr>
</tbody>
</table>
3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

<table>
<thead>
<tr>
<th>KA Code</th>
<th>Knowledge Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>724</td>
<td>Healthy Lifestyle</td>
</tr>
</tbody>
</table>

Outcome #5

1. Outcome Measures

# of Peer reviewed publications

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

# of participants who adopted positive nutrition practices.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantitative Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>1400</td>
<td>7010</td>
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</tbody>
</table>

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results
4. Associated Knowledge Areas

<table>
<thead>
<tr>
<th>KA Code</th>
<th>Knowledge Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>702</td>
<td>Requirements and Function of Nutrients and Other Food Components</td>
</tr>
<tr>
<td>703</td>
<td>Nutrition Education and Behavior</td>
</tr>
<tr>
<td>724</td>
<td>Healthy Lifestyle</td>
</tr>
</tbody>
</table>

Outcome #7

1. Outcome Measures

# of participants reporting reduction in body weight after completing a nutrition education program

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

# of participants reporting reduction in blood pressure after completing a nutrition education program

Not Reporting on this Outcome Measure

Outcome #9

1. Outcome Measures

# of participants reporting a reduction in blood cholesterol after completing an extension education program

Not Reporting on this Outcome Measure

Outcome #10

1. Outcome Measures

# of participants reporting a reduction in blood glucose after completing an extension education program

Not Reporting on this Outcome Measure
Outcome #11

1. Outcome Measures

   # of new food businesses started

   Not Reporting on this Outcome Measure

Outcome #12

1. Outcome Measures

   # of culinary participants sampled by survey that reported actual practice change as a result of the workshop within 2 years

   Not Reporting on this Outcome Measure

Outcome #13

1. Outcome Measures

   # of small and very small meat and poultry plants that successfully completed an Action Plan developed in consultation with the University of Arkansas after a USDA-FSIS Food Safety Assessment

   Not Reporting on this Outcome Measure

Outcome #14

1. Outcome Measures

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

2. Associated Institution Types

   ● 1862 Extension

3a. Outcome Type:

   Change in Action Outcome Measure

3b. Quantitative Outcome

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantitative Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>35</td>
<td>455</td>
</tr>
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</table>

3c. Qualitative Outcome or Impact Statement
Issue (Who cares and Why)
In 2002, 59% of American reported they took an over-the-counter (OTC) medication in the last 6 months. Since then, medications misuse costs the nation well over $177 billion dollars annually, resulting in extra physician visits, avoidable medication side effects, loss of productivity on the job, prolonged or exacerbated illnesses, unnecessary emergency room visits, hospitalizations and even death. As of the latest statistics, Arkansas has the highest rate of teen prescription drug abuse in the nation.

What has been done
The Cooperative Extension Service addresses health literacy through a medications literacy awareness initiative entitled "Be MedWise Arkansas". This program partners with the National Council for Patient Information and Education (NCPIE) and several local agencies. Several lessons were created to address medicine misuse including how to choose over the counter medicine correctly, drug interactions, dietary supplements, prescription drug abuse, giving medicine to children correctly, storing and disposing medicine properly and how to talk to your doctor. In addition, Extension became a stakeholder in the "take-back" statewide efforts.

Results
One thousand five hundred fifty nine (1,559) Arkansans attended at least one class. Eight-three percent (83%) reported an increase in knowledge. Over 95% participants surveyed reported practicing at least one technique learned in class. Participants reported the most important things learned were the importance of reading the entire drugs facts label, being more careful about mixing, storing and disposing medicines, and utilizing their pharmacists more to pose questions. One participant reported improved quality of life, more energy, and a savings of over $100 a month in prescription drug costs after learning he needed to show his doctor all the medicines he was taking. Arkansas participated in the national Take Back Day where county agents utilized the event for educating residents on medicine use. Seventy three out of seventy five of counties registered to participate in National Take Back Day and 5,407 pounds of pills were collected.

4. Associated Knowledge Areas

<table>
<thead>
<tr>
<th>KA Code</th>
<th>Knowledge Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>724</td>
<td>Healthy Lifestyle</td>
</tr>
</tbody>
</table>

Outcome #15

1. Outcome Measures

   # of participants who practiced at least 1 technique learned in an environmental health Extension program

2. Associated Institution Types

   ● 1862 Extension

3a. Outcome Type:

   Change in Action Outcome Measure
3b. Quantitative Outcome

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantitative Target</th>
<th>Actual</th>
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</thead>
<tbody>
<tr>
<td>2010</td>
<td>35</td>
<td>7</td>
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</tbody>
</table>

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code | Knowledge Area
--------|------------------
724     | Healthy Lifestyle

Outcome #16

1. Outcome Measures

# of adults enrolled in the Strong Women program

2. Associated Institution Types

● 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantitative Target</th>
<th>Actual</th>
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</thead>
<tbody>
<tr>
<td>2010</td>
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<td>1372</td>
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</table>

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas
Outcome #17

1. Outcome Measures

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

2. Associated Institution Types

   ● 1862 Extension

3a. Outcome Type:

   Change in Knowledge Outcome Measure

3b. Quantitative Outcome

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantitative Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>2000</td>
<td>407</td>
</tr>
</tbody>
</table>

3c. Qualitative Outcome or Impact Statement

   **Issue (Who cares and Why)**
   While strength-training is recommended for senior adults to maintain functional mobility and independence, only 13% of senior adults report regular strengthening activities. Rates are lower among low-income seniors. Only 5.7% of poor seniors report strength-training. Lifestyle changes like regular strength training have a large impact on helping older adults manage chronic disease such as diabetes and heart disease.

   **What has been done**
   StrongWomen is an evidence-based community strength-training program. It is based on research conducted by Tufts University. Program sessions meet twice weekly for one hour, and participants are led through a warm-up, eight to ten strengthening exercises using dumbbells and ankle weights, and a cool down/stretch and balance exercises. The standard format of the program is delivery in 12-week segments. In most states, after 12-weeks are up the program is over. However, Arkansas responded to the need of participants for ongoing support of their healthy behavior change with a solution for sustaining the program beyond the initial 12-weeks. Volunteer leaders expand the reach of the program.

   **Results**
   StrongWomen was offered in 37 counties. Volunteers instructed an estimated 14,000 exercise sessions, reaching approximately 2,000 participants in FY10 with duplicated contacts of 42,119. Fitness test data for FY10 show that 80% improved upper body strength, 80% improved lower body strength, 76% improved balance, 82% improved upper body flexibility, 81% improved lower body flexibility, and 81% increased aerobic endurance.
Value of Program:
*Volunteer time: Estimated $563,920 per year, based on 14,000 sessions per year x 1 volunteer x 2 hrs (prep and instruction time) per session, using lowest estimate of value of volunteer time of $20.14/hr from AR Department of Volunteerism.
  oUsing value of volunteer time for those in leadership positions ($100/hour) the value the time StrongWomen volunteers contribute is in excess of $2.8 million per year.
*Savings to participants: The SWP saves participants nearly $1.2 million dollars each year compared to the cost of membership at a fitness center.
*Direct medical costs: Based on the standard national statistics that 55% of women over the age of 50 will have a hip fracture, 93% of our program's participants should NOT have a hip fracture. Using the direct average cost of a hip fracture being $13,470, the Strong Women program participants have avoided $8.2 million in direct medical expenditures.

4. Associated Knowledge Areas

<table>
<thead>
<tr>
<th>KA Code</th>
<th>Knowledge Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>724</td>
<td>Healthy Lifestyle</td>
</tr>
</tbody>
</table>

Outcome #18

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantitative Target</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>2000</td>
<td>406</td>
</tr>
</tbody>
</table>

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

<table>
<thead>
<tr>
<th>KA Code</th>
<th>Knowledge Area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Outcome #19

1. Outcome Measures

# of Aging in Place (AIP) 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.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantitative Target</th>
<th>Actual</th>
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</thead>
<tbody>
<tr>
<td>2010</td>
<td>400</td>
<td>151</td>
</tr>
</tbody>
</table>

3c. Qualitative Outcome or Impact Statement

**Issue (Who cares and Why):**
Lack of adequate and affordable housing is an issue in the state. An even greater issue is the lack of assessable housing for senior adults and disabled adults. The majority of these individuals wish to remain in their own homes instead of moving to assisted living or nursing homes.

**What has been done:**
The University of Arkansas Division of Agriculture developed the "Aging in Place" program that focuses on assisting elders and individuals with disabilities to remain in their own homes through the use of Universal Design and Assistive Technology.

**Results:**
As a direct result of this program, two individuals did not have to move from their present residence in order to secure necessary support services in response to changing needs. With nursing home costs upward of $2,500 a month, that is $60,000 saved by the individual and the State.

4. Associated Knowledge Areas

<table>
<thead>
<tr>
<th>KA Code</th>
<th>Knowledge Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>724</td>
<td>Healthy Lifestyle</td>
</tr>
</tbody>
</table>
Outcome #20
1. Outcome Measures
   # of participants who adopted safe food preparation and preservation practices

   Not Reporting on this Outcome Measure

Outcome #21
1. Outcome Measures
   # of adults enrolled in Strong Women program who completed assessment

2. Associated Institution Types
   ● 1862 Extension

3a. Outcome Type:
   Change in Action Outcome Measure

3b. Quantitative Outcome

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantitative Target</th>
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<tbody>
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<td>508</td>
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</table>

3c. Qualitative Outcome or Impact Statement

   Issue (Who cares and Why)

   What has been done

   Results

4. Associated Knowledge Areas

<table>
<thead>
<tr>
<th>KA Code</th>
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<tbody>
<tr>
<td>724</td>
<td>Healthy Lifestyle</td>
</tr>
</tbody>
</table>
1. Outcome Measures

Improved release of bound procyanidins from cranberry pomace by alkaline hydrolysis

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantitative Target</th>
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</thead>
<tbody>
<tr>
<td>2010</td>
<td>{No Data Entered}</td>
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</tbody>
</table>

3c. Qualitative Outcome or Impact Statement

**Issue (Who cares and Why)**

Cranberries are growing in popularity due to their high content of procyanidins and ability to prevent urinary tract infection. Polyphenolics found in cranberries are also thought to confer additional health benefits through antioxidant, antitumor, antiulcer, anti-inflammatory and antiatherosclerotic activities. Cranberry pomace, the residue remaining from the juicing and canning processes, contains seeds and skins, the source of the polyphenolics responsible for health benefits associated with the berries. Unfortunately, the procyanidins in cranberries as well as other berries have a strong affinity for cell wall polysaccharides and are not released by normal extraction methods.

**What has been done**

This study evaluated the efficacy of sodium hydroxide treatment in releasing procyanidins from cranberry pomace. The optimal alkaline hydrolysis conditions to liberate procyanidins and depolymerize large molecular weight polymers from dried cranberry pomace were identified. Alkaline hydrolysis resulted in an increase in low molecular weight procyanidins and the increase was greater at higher temperature, short time combinations. When compared to conventional organic solvent extraction, treatment with sodium hydroxide increased procyanidin monomers and dimers by 15 and 8-fold, respectively. Additionally, alkaline extraction of the residue remaining after conventional organic solvent extraction resulted in further procyanidin extraction, indicating that procyanidins are not fully extracted by conventional extraction methods.

**Results**

The alkaline hydrolysis method developed has several important applications. 1) It can be used to estimate the amount of bound procyanidins in plant materials, 2) It can be used to increase levels of the small molecular weight procyanidin monomers and dimers (which are bioavailable) at the
expense of the large molecular weight polymers (which are not bioavailable), and 3) It can be used industrially to recover procyanidins from waste materials to be used in dietary supplements or fortification purposes.

4. Associated Knowledge Areas

<table>
<thead>
<tr>
<th>KA Code</th>
<th>Knowledge Area</th>
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<tbody>
<tr>
<td>502</td>
<td>New and Improved Food Products</td>
</tr>
<tr>
<td>701</td>
<td>Nutrient Composition of Food</td>
</tr>
</tbody>
</table>

Outcome #23

1. Outcome Measures

Cranberry pomace partially ameliorates metabolic factors associated with high fructose feeding in growing Sprague-Dawley rats.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

<table>
<thead>
<tr>
<th>Year</th>
<th>Quantitative Target</th>
<th>Actual</th>
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</thead>
<tbody>
<tr>
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</table>

3c. Qualitative Outcome or Impact Statement

**Issue (Who cares and Why)**

Cranberry pomace the by-product of cranberry processing can account for up to 20% of the initial fruit weight. The pomace is a rich source of polyphenols including anthocyanins, procyanidins, and flavonols, since the compounds are concentrated in the skins and seeds of the fruit and are retained in the pomace. Cranberries are one of few foods that contain A-type procyanidins, which have been linked to the prevention of insulin resistance and are also suggested to be the active components responsible for the prevention of urinary tract infections. We have previously demonstrated that extrusion processing of fruit by-products such as blueberry, grape and cranberry pomace can enhance the low molecular weight procyanidins that are bioavailable at the expense of some of their large molecular weight counterparts that are not readily absorbed. The goal of this research was to investigate the effect of feeding cranberry pomace on different metabolic characteristics associated with metabolic syndrome in high fructose fed growing rats.

**What has been done**

The effect of feeding cranberry pomace on selected metabolic parameters associated with high fructose feeding (58% by weight) was investigated in growing Sprague-Dawley rats. Compared to a positive control (modified AIN93 diet) high fructose feeding increased fasting plasma insulin,
cholesterol, and triacylglycerols (TAG), post-prandial plasma TAG as well as homeostatic assessment models of insulin resistance and β-cell function, but not weight gain, diet intake and efficiency, abdominal fat, oral glucose tolerance, and fasting and post-prandial plasma glucose and cholesterol levels. Inclusion of cranberry pomace was effective in minimizing or ameliorating some of the metabolic anomalies, such as increased fasting plasma insulin, cholesterol, and TAG level as well as decreasing insulin resistance, especially when extruded cranberry pomace was fed at 3% of the diet. Feeding high fat diets was only partially effective in augmenting some of the metabolic factors associated with high fructose feeding, including triacylglycerolemia and insulin resistance, but not weight gain or abdominal obesity.

**Results**

Inclusion of 58% fructose in the purified diet did not produce a strong response in some of the metabolic parameters associated with metabolic syndrome in growing Sprague-Dawley rats such as weight gain, accumulation of abdominal fat, and increase in fasting plasma glucose. We suspect these young animals can adapt better to the nutritional intervention without developing some of the classical signs of positive energy balance, abdominal fat secretion or glucose intolerance that are associated with metabolic syndrome, but yet manifest some other metabolic parameters such as higher plasma TAG, increased insulin resistance, or elevated plasma insulin levels. Both extruded and un-extruded cranberry pomace were effective in mitigating or minimizing some of the negative effects of high fructose feeding with the greatest protection provided by extruded pomace at 3% of the diet. Further investigation is needed to determine the individual polyphenols present in cranberry pomace that may be responsible for improvements in metabolic parameters.

**4. Associated Knowledge Areas**

<table>
<thead>
<tr>
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<th>Knowledge Area</th>
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</thead>
<tbody>
<tr>
<td>502</td>
<td>New and Improved Food Products</td>
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<tr>
<td>701</td>
<td>Nutrient Composition of Food</td>
</tr>
<tr>
<td>702</td>
<td>Requirements and Function of Nutrients and Other Food Components</td>
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</tbody>
</table>

**Outcome #24**

1. **Outcome Measures**

   How to motivate parents to promote intake of calcium rich foods among early adolescents.

2. **Associated Institution Types**

   - 1862 Research

3a. **Outcome Type:**

   Change in Knowledge Outcome Measure

3b. **Quantitative Outcome**

<table>
<thead>
<tr>
<th>Year</th>
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</thead>
<tbody>
<tr>
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</table>
3c. Qualitative Outcome or Impact Statement

**Issue (Who cares and Why)**
Osteoporosis, a disease of the elderly, is most commonly connected to calcium; however it is not generally regarded as a childhood disease. Yet, the origins of osteoporosis putatively occur at the much younger age of 10 to 13 years during the period of peak bone acquisition. Parents and caregivers are a dominant influence on eating and activity behaviors of early adolescents and therefore play an essential role in preventing osteoporosis by promoting intake of CRF. However, few messages about improving CRF intake among early adolescents are directed to the parent's role. Little is known about what the content of these messages should be, how they would be perceived, and whether they would motivate parents to promote CRF to early adolescents. Key messages could address motivation and/or benefits to behavior change, barriers and strategies to enable parents to promote CRF intake among early adolescents.

**What has been done**
Given that little has been done to determine which messages would resonate with parent audiences regarding their role in promoting intake of CRF for their children, through this regional project, we propose to fill this void through qualitative methods. Risk communication literature and social marketing concepts indicate that behavior change involves understanding perceptions and motivations concerning the behaviors of interest. Qualitative research methods provide data that can only come from the persons engaged (or failing to engage) in the behaviors. Understanding whether parents perceive that their child is susceptible to risk from consuming diets low in CRF as well as the belief systems that influence those perceptions are needed to craft messages and develop programming that will motivate parents to change behavior.

**Results**
A multistate perspective will provide greater abilities to recruit a wide representation of the sample population, which is not feasible for groups working within a more narrow geographic reach. Studying a population from multiple states with diverse demographic characteristics will provide a rich database from which to identify motivations and test messages based on factors that may promote intake of calcium rich foods by early adolescents. This will help in the prevention of osteoporosis.

4. Associated Knowledge Areas

<table>
<thead>
<tr>
<th>KA Code</th>
<th>Knowledge Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>703</td>
<td>Nutrition Education and Behavior</td>
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</table>

**Outcome #25**

1. **Outcome Measures**
   
   Incorporating conjugated linoleic acid (CLA) rich soy oil in the diet to reduce heart disease and diabetes risk factors.

2. **Associated Institution Types**
3a. Outcome Type:
Change in Knowledge Outcome Measure

3b. Quantitative Outcome

<table>
<thead>
<tr>
<th>Year</th>
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<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
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<td>{No Data Entered}</td>
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</tr>
</tbody>
</table>

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. Three grams of CLA/day is proposed to be needed to obtain the optimal human health benefit. However, conventional CLA food sources such as beef and dairy contain low levels of CLA at 0.2-2% in milk-fat or beef-fat. Obtaining this level of CLA from naturally occurring sources of beef and dairy products would produce an unhealthy increase in dietary saturated fat and cholesterol increase. Production of foods with more CLA with low saturated fat and no cholesterol would promote a healthier diet. High CLA oil is being produced from soy oil, which is naturally composed of 50% linoleic acid (LA), by converting LA to CLA. The challenge is to incorporate this CLA safely into food acceptable to consumers.

What has been done
Some time ago we produced a 20% CLA-rich soy using ultraviolet light to convert soy oil LA to CLA. We have subsequently increased the CLA levels during processing by adding food additives that promote health and well being. Furthermore, studies have shown that potato chips and salad oils produced from CLA rich soy oil are as shelf stable as similar products obtained using conventional soy oil. Furthermore, the CLA oil is stable under frying conditions. In addition we have produced a 100% CLA concentrate which is composed of the most common form of CLA found in CLA-rich oil which could be used as a dietary supplement of pharmaceuticals.

Results
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 benefits of 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 sources can 3g a day be realized. Therefore, increasing CLA-rich oil in the US diet would be a major fact in reducing heart disease and diabetes risk factors. A major US soy company is working with Division scientists to move soy CLA-rich oil production for food use towards commercialization.

4. Associated Knowledge Areas

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</tr>
</tbody>
</table>
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

Brief Explanation
External factors that impacted outcomes included the following: 1) Program realignment impacted efforts expended in several of the listed programs within the new Food Safety initiative; 2) Several state defined outcomes were moved from the Food, Nutrition, and Health State Planned Programs to the Food Safety and Childhood Obesity; 3) The Food Preservation program was a relatively new focus after being dormant for many years. New programs materials were developed and trainings offered; 4) A reduction in staff (FTEs), which reduced the amount of programming at the State level and in several counties had a negative impact on program delivery for the Food Safety and Food Preservation component; 5) The economic downturn impeded the replacement of staff and the attainment of resources for program implementation.

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

1. Evaluation Studies Planned
- After Only (post program)
- Retrospective (post program)
- Before-After (before and after program)
- During (during program)

Evaluation Results
One thousand five hundred fifty nine (1,559) Arkansans attended at least one BeMedwise class. A survey of participants indicated the following: Eight-three percent (83%) reported an increase in knowledge; Over 95% participants surveyed reported practicing at least one technique learned in class; Participants reported the most important things learned were the importance of reading the entire drugs facts label, being more careful about mixing, storing and disposing medicines, and utilizing their pharmacists more to pose questions.

Key Items of Evaluation
Within the Strong Women program fitness test data for FY10 show that 80% improved upper body strength, 80% improved lower body strength, 76% improved balance, 82% improved upper body flexibility, 81% improved lower body flexibility, and 81% increased
aerobic endurance.

As a direct result of the Aging In Place program, two individuals did not have to move from their present residence in order to secure necessary support services in response to changing needs. With nursing home costs upward of $2,500 a month, that is $60,000 saved by the individual and the State.

BeMedwise Program: One participant reported improved quality of life, more energy, and a savings of over $100 a month in prescription drug costs after learning he needed to show his doctor all the medicines he was taking. Arkansas participated in the national Take Back Day where county agents utilized the event for educating residents on medicine use. Seventy three out of seventy five of counties registered to participate in National Take Back Day and 5,407 pounds of pills were collected.