V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program
Nutrition and Food Safety

2. Brief summary about Planned Program

   Extension reports two Work Teams (WTs) in this Planned Program - HEALTH PROMOTION & DISEASE PREVENTION (NH) and FOOD SAFETY (FSAFE).

   The DISEASE PREVENTION & HEALTH PROMOTION (NH) Work Team provides research-based nutrition and health education to a variety of audiences across Colorado in an effort to promote healthful nutrition, activity and lifestyle behaviors. Adoption of healthful behaviors may reduce the incidence of chronic diseases, such as diabetes, heart disease, obesity and cancer, thus impacting health insurance premiums, mortality rates, and employee productivity. This will include the establishment of an interdisciplinary research consortium led by plant production systems professionals to determine relationships between metabolites and disease and to identify metabolites in animal and crop foods to help prevent disease and improve health.

   The aim of the FOOD SAFETY (FSAFE) Work Team program of work is to provide information and guidance to a variety of audiences across Colorado to promote understanding and adoption of safe food production, handling, and preservation practices that help to enhance food quality and decrease the incidence of foodborne illness.

   Food safety research emphasizes pre-harvest management of livestock to prevent transmission of human pathogens in livestock production and handling and post-harvest detection and management systems to prevent contamination of meat and plant products with human pathogens. Human nutrition research focus on basic research to understand the interactions between plant composition and human health, the interrelationships between nutrition, exercise, and human health, and the basic biochemistry of human nutrition.

3. Program existence : Mature (More than five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes
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>314</td>
<td>Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals</td>
<td>5%</td>
<td>0%</td>
<td>10%</td>
<td>0%</td>
</tr>
<tr>
<td>501</td>
<td>New and Improved Food Processing Technologies</td>
<td>5%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>503</td>
<td>Quality Maintenance in Storing and Marketing Food Products</td>
<td>5%</td>
<td>0%</td>
<td>10%</td>
<td>0%</td>
</tr>
<tr>
<td>701</td>
<td>Nutrient Composition of Food</td>
<td>0%</td>
<td>30%</td>
<td>0%</td>
<td>0%</td>
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<tr>
<td>703</td>
<td>Nutrition Education and Behavior</td>
<td>23%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>704</td>
<td>Nutrition and Hunger in the Population</td>
<td>4%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>711</td>
<td>Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources</td>
<td>5%</td>
<td>0%</td>
<td>10%</td>
<td>0%</td>
</tr>
<tr>
<td>712</td>
<td>Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins</td>
<td>30%</td>
<td>30%</td>
<td>30%</td>
<td>30%</td>
</tr>
<tr>
<td>724</td>
<td>Healthy Lifestyle</td>
<td>23%</td>
<td>0%</td>
<td>10%</td>
<td>0%</td>
</tr>
</tbody>
</table>

**Total** 100% 100%

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

**HEALTH PROMOTION & DISEASE PREVENTION (NH)** - Adoption of healthful behaviors may reduce the incidence of chronic diseases, such as diabetes, heart disease, obesity and cancer, thus impacting health insurance premiums, mortality rates, and employee productivity.

**FOOD SAFETY (FSAFE)** - Food-borne illness in the US is a major economic burden and cause of human suffering and death. Economic and social consequences of food-borne illness are estimated to be over $3 billion each year, with lost productivity estimated at $30-40 billion. It is estimated that food-borne contaminants cause approximately 76 billion illnesses, 325,000 hospitalizations, and 5,000 deaths in the US each year. The risk of food-borne illness is especially important when hazardous food is served in group settings (eating establishments, child and assisted care facilities) and/or to high risk individuals (seniors, young children, pregnant women, immune-compromised individuals). Illness resulting from food consumption is usually a preventable disease that can be avoided by applying well established hygienic standards in the production, preparation, holding, and serving of food. The CDC recently reported the decline in foodborne illness appears to be stalling and concluded that “the lack of recent progress points to the need to continue to develop and evaluate food safety practices as food moves from the farm to the table” (CDC, 2009). A key priority of the Food Safety Education Work Team is to translate knowledge into effective actions on the part of consumers, retail food workers, and agricultural producers that improve the health of Coloradans. We partner with local and state health departments, the state department of agriculture, food subsistence programs, schools, and local businesses to deliver current food safety information to the residents of Colorado. Our work team is engaged in activities designed to inform and educate diverse audiences about key aspects of food safety and safe food handling; the work is critical because no other organizations are addressing food safety education on a state-wide level. Our complex and globalized food network is vulnerable to numerous food safety threats, including microbiological and chemical contamination, and food safety education can help reduce the risks associated with unsafe food...
and promote consumer health and wellness.

**Local Impact:** The 2011 Listeria in Colorado cantaloupe outbreak was a watershed event in public health, in that 146 persons (mostly elderly) in 28 states were hospitalized with listeriosis and 30 died from eating whole cantaloupe purchased from Jensen Farms in SE Colorado. This was the first outbreak of listeriosis associated with cantaloupe and the most deadly outbreak in 90 years. CSU Extension’s Food Safety Education Work Team played an essential role in the response and their expertise will continue to be critical as research and outreach projects are developed to address food safety concerns in production, processing, transportation, marketing, and consumer handling of melons and other types of fresh produce.

**Cost of Foodborne Illness in Colorado:** The economic and social consequences of foodborne disease in relation to health care costs and loss of worker productivity are significant. It is estimated that one in six Americans suffers from a foodborne illness each year (Scallan et al. 2011). The estimated cost to Colorado is $2.3 billion while the estimated U.S. total cost is $152 billion (Scharff, 2010). These estimates include medical costs, quality of life losses, and lost life expectancy. The average cost per case in Colorado is estimated to be $1814. Among the nine types of foodborne illness that are reported to the Colorado Department of Public Health and Environment, a total of 2506, 2562, and 2349 cases were reported in 2007, 2008 and 2009, respectively (CDPHE, 2010). Since it is estimated that only 1-5% of cases of foodborne illness are reported to governmental agencies (Mead et al. 1999), the actual number of cases of illness caused by food each year in Colorado is far greater. In addition to their impact on human health, foodborne illness outbreaks and food recalls negatively impact consumer confidence in the food supply and may counteract health messages regarding the benefits associated with specific types of food, like fresh fruits and vegetables (IFIC 2010).

The public health challenges of foodborne disease are changing rapidly as a result of newly identified pathogens and vehicles of transmission, changes in food production, and an apparent decline in food safety awareness. Emerging pathogens, improper food handling practices, insufficient training of retail employees, an increasingly global food supply, and an increase in the number of people at risk because of aging and compromised capacity to fight these diseases all play important roles in foodborne illness trends (DHHS, 2011). Increased demand for ready-to-eat and minimally processed foods and increased consumption of food in eating establishments outside of the home also have contributed to new exposures to foodborne disease.

**Priorities:** Of the food related disease outbreaks reported to the CDC (Centers for Disease Control and Prevention) between 1998 and 2004, 52% were associated with food prepared outside the home (CDC, 2009). In a review of 816 foodborne outbreaks where food workers were implicated in the spread of disease, the most frequently reported factors contributing to the outbreaks were bare hand contact with food, failure to properly wash hands, inadequate cleaning of processing or preparation equipment and utensils, cross-contamination of ready-to-eat foods with contaminated raw ingredients, and temperature abuse (Todd et al., 2007).

The hazard of foodborne illness originating from mishandled food is an issue in any location where food is available to consumers. This risk is especially important when hazardous food is served in group settings to older persons, young children, or individuals with compromised immune systems. Protecting high risk individuals from foodborne disease is expected to take on increased significance as more children are in childcare settings and a greater segment of the population becomes immuno-compromised through aging, medical intervention, and illness (Gerner-Smidt et al, 2007).

Support for local agriculture and availability of farmers markets and community supported agriculture (CSA) programs has contributed to the increased utilization of produce marketed directly to the public and has created a need to address related food safety issues. The recent increases in the number of foodborne illness outbreaks associated with fresh fruits and vegetables have affected the health of millions of consumers and resulted in negative impacts on the produce industry (FDA, 2007). Leafy greens (Jungk et al., 2008), melons (CDC, 2011), tomatoes (Bidol et al., 2007; FDA 2008a) and peppers (FDA, 2008b) are all crops that are produced in Colorado and are all have recently been involved in high-profile foodborne illness outbreaks. Specific information on the safe production and handling of produce crops sold fresh could help decrease the risk of contamination and prevent future outbreaks (Bihn & Gravani, 2006). This need extends to safe handling of produce by consumers and education on safe home food preservation techniques.

Ensuring a safe food supply is an important priority for Colorado and our nation. Safe food means healthier children, longer lives, less costly healthcare, and a more resilient food industry (USDA/HHS 2010). In response to current problems related to our food supply, a Presidential Food Safety Working
Group has been formed (USDA/HHS 2010) and one of USDA's five NIFA (National Institute of Food and Agriculture) priorities is: Improve food safety for all Americans (USDA, 2010). As Colorado's only university with a food safety program, Colorado State Extension provides valuable research-based information, expertise, and training for consumers of various ages, retail food workers, health care professionals, and food safety educators.


2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

HEALTH PROMOTION & DISEASE PREVENTION (NH) : Adoption of healthful behaviors may reduce the incidence of chronic diseases, such as diabetes, heart disease, obesity and cancer, thus impacting health insurance premiums, mortality rates, and employee productivity.

FOOD SAFETY (FSAFE):
Food safety illnesses and food recalls will continue to be a significant problem across the country. CDC reports that foodborne illness rates are not decreasing and there continues to be a decline in basic consumer food safety practices such as washing hands with soap and water (89% in 2010 vs. 92 % in 2008).

Food safety education can decrease the risk of contamination and foodborne illness. Food safety practices and restaurant inspection scores have been reported to increase following employee food safety training. Young adults today often have limited opportunities to learn safe food handling and are reported to take more risks in regards to food safety. The work force employed in food preparation and serving operations tends to be young with little background training in food safety.
Emerging pathogens and food system changes will continue to challenge food safety efforts, especially to individuals at increased risk of foodborne illness. Education to pregnant women, the elderly and other high risk consumers, as well as health professionals who work with these groups is essential in helping reduce incidence of foodborne illness and thereby saving lives.

2. Ultimate goal(s) of this Program

HEALTH PROMOTION & DISEASE PREVENTION(NH) Work Team (WT) provides these goals:
1. Coloradans will practice healthy eating. Healthy Eating is defined under each Action Outcome.
2. Healthy physical activity levels are defined by national physical activity guidelines: A) Children - 60 minutes or more of PA daily B) Adults - 150 minutes of PA per week
3. Coloradans will decrease chronic disease risk.
4. EFNEP reports against national goals and objectives
5. SNAP-Ed reports against goals and objectives laid out in SNAP-Ed proposal made to state and regional SNAP offices.

FOOD SAFETY (FSAFE) Work Team (WT) provides these goals:
1. Coloradans will experience reduced incidence of foodborne illness. The incidence of foodborne illness is impacted by many factors including changes in pathogens, production methods, processing technologies, distribution patterns, and populations as well as food safety education outreach. Individuals
experience decreased incidence of illness associated with contamination of food resulting from household food handling practices.

2: Coloradans will experience a decreased incidence of foodborne illness as a result of promoting awareness of and adoption of recommended safe food handling practices at the individual, family, community, production, and supply system levels. Foodborne illness incidence can be reduced when recommended food safety practices are adopted by users all along the food chain.

3: Increase understanding of the ecology of threats to food safety from microbial and chemical sources. Define Outcome: To increase our understanding of the ecological impacts on the fate and occurrence of pathogens and fecal indicators in/on water, air, and land. To increase our understanding of the social, cultural, and economic impacts on the ecology of pathogens and fecal indicators in environments associated with food. To understand the interface of food with people, plants, soil, domestic animals and wildlife.

Goals of the AES research program are:

- Pre-harvest management of livestock to prevent acquisition of human pathogens in livestock production and handling.
- Post-harvest detection and management systems to prevent contamination of meat products with human pathogens.
- Assessment of production systems and regulatory protocols for effective food safety.
- Determine important relationships between diet and health
- Evaluate the relationships between plant composition, food processing, and diet on bioavailability of nutrients and interactions with disease and obesity
- Study the impact of diet and exercise on human health

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

<table>
<thead>
<tr>
<th>Year</th>
<th>Extension</th>
<th>Research</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1862</td>
<td>1890</td>
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<tr>
<td>2014</td>
<td>45.0</td>
<td>0.0</td>
</tr>
<tr>
<td>2015</td>
<td>45.0</td>
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</tr>
<tr>
<td>2016</td>
<td>45.0</td>
<td>0.0</td>
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<tr>
<td>2017</td>
<td>45.0</td>
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</tr>
<tr>
<td>2018</td>
<td>45.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

V(F). Planned Program (Activity)

1. Activity for the Program

   Conduct basic and applied research on nutrition and wellness.

   HEALTH PROMOITON & DISEASE PREVENTION (NH) programs include:
   - Strong Women, Strong Bones
   - Heart Disease Awareness & Prevention
   - Diabetes Awareness, Prevention and Management
   - Nutrition Education for Low-income Audiences
   - Nutrition and Wellness
   - Multi-lesson series: Dining with Diabetes, Small Changes Make a Big Difference, Strong Women-Strong Bones, Moving Toward a Healthier You, Healthy Heart, Smart-START for a Healthy Heart
• Self-paced program - Self-Care for a Healthy Heart
• Single lessons - Workable Wellness (work site wellness).
• Youth programs: Food Friends-Making New Foods Fun for Kids, Eating Right Is Basic, Chef Combo's Fantastic Adventures in Tasting and Nutrition, Professor Popcorn

FOOD SAFETY (FSAFE) Education

• Food Safety training for consumers, high risk audiences and their caregivers. (Eat Well for Less, La Cocina Saludable, Work site Wellness, Safe Home Food Preparation and Preservation, Promotion at Farmers Markets.)
• Food Safety Training for Food Service Managers and Workers (Food Safety Works, ServSafe, Food Safety for Food Bank Workers). Some of these programs are fee-based.

Promoting Food Security

• Multi-lesson series programs-Eat Well for Less, La Cocina Saludable]
• Single event programs targeting limited resource families
• Newsletters-Senior Nutrition News

Research

• Development of new technologies for improving food safety
• Determine important relationships between diet, food composition, and health

2. Type(s) of methods to be used to reach direct and indirect contacts

<table>
<thead>
<tr>
<th>Direct Methods</th>
<th>Indirect Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education Class</td>
<td>Public Service Announcement</td>
</tr>
<tr>
<td>Workshop</td>
<td>Newsletters</td>
</tr>
<tr>
<td>Group Discussion</td>
<td>Web sites other than eXtension</td>
</tr>
<tr>
<td>One-on-One Intervention</td>
<td>Other 1 (Newspaper columns &amp; News release)</td>
</tr>
<tr>
<td>Demonstrations</td>
<td></td>
</tr>
<tr>
<td>Other 1 (Public Meetings)</td>
<td></td>
</tr>
</tbody>
</table>

3. Description of targeted audience

HEALTH PROMOTION & DISEASE PREVENTION (NH): Adults and children in Colorado

FOOD SAFETY (FSAFE): Consumers, High Risk Audiences (pregnant, immune-compromised, elderly); Food handlers and their managers at retail food establishments;

Research: Producers and processors of plant and animal agricultural products.
V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☐ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.
V(H). State Defined Outputs

1. Output Measure

- FSAFE 2) Number of Trainings/Classes/Workshops, Field Days, Activity Days - Could include: Food Preservation Workshops; Proper Hand washing Demonstration; Pressure Canner Gauge Inspection; Healthy Baby Healthy Me; Food Safety during Pregnancy; Food Safety Works; ServSafe Manager Certification; Safe GAPS; Food Safety for Seniors; Farmers' Market Vendor Training; Other Educational Classes.

- FSAFE 3) Number of Trainings for Volunteers.

- FSAFE 4) Number of Trainings for Extension Staff.

- FSAFE 5) Number of Community Meetings Convened [examples: Advisory Groups, Councils, Coalition Meetings, Boards].

- FSAFE 7) Number of Community Coalitions, Collaborations, Alliances Formed to Address a Specific Issue [list specific groups/issue].

- FSAFE 8) Number of Direct Communications/Education by telephone and/or e-mail.

- FSAFE 9) Number of Newsletters (This is number of newsletters created, not number mailed or number of Coloradans who received them.) SafeFood News; electronic County or other newsletters.

- FSAFE 10) Websites (number of Websites) Farm to Table Website County or Other websites.

- FSAFE 11) Number of Website hits (this is number of hits, not number of websites).

- FSAFE 12) Number of Press/News Releases or Columns (number submitted, not number read by Coloradans).

- FSAFE 13) Number of Volunteers (total) in Planned Program including Master Food Safety Advisers Program and/or other food safety education.

- FSAFE 14) Number of Certified Master Volunteers (of those reported in FSAFE #13).

- FSAFE 15) Number of New Technologies Expected to be Adopted by Producers.

- FSAFE 17) User Fees generated.

- NH 1) Peer Reviewed Publications, including Fact Sheets & Curricula.

- NH 2) Trainings/Classes/Workshops, Field Days, Activity Days.

- NH 4) Trainings for Extension Staff.

- NH 5) Community Meetings Convened [examples: Advisory Groups, Councils, Coalition Meetings, Boards].

- NH 6) Community Meetings Facilitated [examples: Focus Group, Citizen Forum, Round Table Dialogue, Strategic Planning Process].

- NH 7) Community Coalitions, Collaborations, Alliances Formed to Address a Specific Issue [list specific groups/issue].

- NH 8) Direct Communication/Education by telephone and/or e-mail.
● NH 9) Newsletters - This is number of newsletters, not number mailed or number of Coloradans who received them, such as Family Matters & others.

● NH 10) Websites (number of Websites).

● NH 12) Press/News Releases or Columns (number submitted).

● NH 15) EFNEP 1) Adult: Paraprofessional educators provide classes to adults in the neighborhoods in which they reside. Educators teach small group classes and one-on-one. Educators use Eating Smart Being Active (ESBA) a nutrition education curriculum developed by EFNEP staff in Colorado and California. In ESBA, participants learn basic nutrition, food safety and food resource management through Adult Learning Theory principles.

● NH 16) EFNEP 2) Youth: Educators teach a series of nutritionally related lessons to groups of youth at schools and after school programs such as Boys and Girls club.

● NH 17) SNAP-Ed 1) Adult: Paraprofessional educators provide classes to adults in the neighborhoods in which they reside. Educators teach small group classes and one-on-one. Educators use Eating Smart Being Active (ESBA) a nutrition education curriculum developed by EFNEP staff in Colorado and California. In ESBA, participants learn basic nutrition, food safety and food resource management through Adult Learning Theory principles.

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.
## V(I). State Defined Outcome

<table>
<thead>
<tr>
<th>O. No</th>
<th>Outcome Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Number of new technologies in pre-harvest livestock management adopted to reduce and/or avoid contamination of meat and/or plant products with human pathogens.</td>
</tr>
<tr>
<td>2</td>
<td>Number of new technologies in handling and/or post-harvest detection and management systems adopted to prevent contamination of meat and plant products with human pathogens.</td>
</tr>
<tr>
<td>3</td>
<td>FSAFE 1.1. Decrease in reportable foodborne illness as determined through statistics gathered by public health agencies such as Colorado Department of Public Health &amp; Environment (CDPHE), FoodNet, Center for Disease Control and Prevention (CDC), Food and Drug Administration (FDA) and Food Safety Inspection Service (FSIS).</td>
</tr>
<tr>
<td>4</td>
<td>FSAFE 1.2: Reduction in foodborne illness-related economic losses (including reduced worker productivity, increased medical expenses, and food industry losses) as determined through public health agencies such as Colorado Department of Public Health &amp; Environment (CDPHE), FoodNet, Center for Disease Control and Prevention (CDC), Food and Drug Administration (FDA) and Food Safety Inspection Service (FSIS).</td>
</tr>
<tr>
<td>5</td>
<td>FSAFE 1.1. Participants will adopt recommended food safety practices (including food production, processing, transport, preparation, preservation, consumption and storage practices) to minimize risk of foodborne illness.</td>
</tr>
<tr>
<td>6</td>
<td>FSAFE 1.2: Participants will adopt skills necessary to teach others about food safety practices that reduce risk of foodborne illness.</td>
</tr>
<tr>
<td>7</td>
<td>FSAFE 2.3. Number of Participants who will adopt safe home food preservation practices (including use of tested recipes, following research-based procedures and canning equipment that is routinely inspected and tested for safety).</td>
</tr>
<tr>
<td>8</td>
<td>FSAFE 3.1. Number of Participants who will plan to implement processes that will minimize microbial and/or chemical threats to the food supply.</td>
</tr>
<tr>
<td>9</td>
<td>FSAFE 3.2. Number of Participants who will plan to adopt food safety processes developed through NIFA-funded projects.</td>
</tr>
<tr>
<td>10</td>
<td>FSAFE 2.1. Food safety stakeholders will engage in community events, classes, meetings, discussions, etc. to build awareness and understanding of local food systems and their impact along the food chain that effect availability, affordability, quality, and sustainability of a safe food supply. (Action)</td>
</tr>
<tr>
<td>11</td>
<td>FSAFE 1.3: Participants will acquire basic competencies associated with food safety training required or recommended for retail food establishments, cottage foods producers, local growers, food processors, food safety professionals, trained volunteers or consumers.</td>
</tr>
<tr>
<td>12</td>
<td>NH 1.1 Consuming more healthy foods such as: vegetables, fruits, whole grains, fat-free or low-fat milk and milk products, seafood, lean meats and poultry, eggs, beans and peas, and nuts and seeds.</td>
</tr>
<tr>
<td>13</td>
<td>NH 1.2 Consuming less foods/food components that are commonly eaten in excess such as: sodium, solid fats, added sugars, and refined grains.</td>
</tr>
<tr>
<td>14</td>
<td>NH 1.3. Following healthy eating patterns such as: eating breakfast, eating as a family, making healthy snack choices.</td>
</tr>
<tr>
<td>15</td>
<td>NH 2.1 Healthy physical activity levels are defined by national physical activity guidelines: A) Children - 60 minutes or more of PA daily B) Adults - 150 minutes of PA per week</td>
</tr>
<tr>
<td>16</td>
<td>NH 3: Coloradans will decrease chronic disease risk.</td>
</tr>
<tr>
<td>17</td>
<td>NH 4.1. EFNEP reports against national goals and objectives (</td>
</tr>
<tr>
<td>18</td>
<td>NH 5.1. SNAP-Ed reports against goals and objectives laid out in SNAP-Ed proposal made to state and regional SNAP offices</td>
</tr>
</tbody>
</table>
Outcome # 1

1. Outcome Target
Number of new technologies in pre-harvest livestock management adopted to reduce and/or avoid contamination of meat and/or plant products with human pathogens.

2. Outcome Type: Change in Action Outcome Measure

3. Associated Knowledge Area(s)
   ● 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

4. Associated Institute Type(s)
   ● 1862 Research

Outcome # 2

1. Outcome Target
Number of new technologies in handling and/or post-harvest detection and management systems adopted to prevent contamination of meat and plant products with human pathogens.

2. Outcome Type: Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)
   ● 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

4. Associated Institute Type(s)
   ● 1862 Research

Outcome # 3

1. Outcome Target
FSAFE 1.1. Decrease in reportable foodborne illness as determined through statistics gathered by public health agencies such as Colorado Department of Public Health & Environment (CDPHE), FoodNet, Center for Disease Control and Prevention (CDC), Food and Drug Administration (FDA) and Food Safety Inspection Service (FSIS).

2. Outcome Type: Change in Condition Outcome Measure

3. Associated Knowledge Area(s)
   ● 503 - Quality Maintenance in Storing and Marketing Food Products
   ● 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
4. Associated Institute Type(s)
   - 1862 Extension

Outcome # 4
1. Outcome Target
FSAFE 1.2: Reduction in foodborne illness-related economic losses (including reduced worker productivity, increased medical expenses, and food industry losses) as determined through public health agencies such as Colorado Department of Public Health & Environment (CDPHE), FoodNet, Center for Disease Control and Prevention (CDC), Food and Drug Administration (FDA) and Food Safety Inspection Service (FSIS).

2. Outcome Type: Change in Condition Outcome Measure

3. Associated Knowledge Area(s)
   - 503 - Quality Maintenance in Storing and Marketing Food Products
   - 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

4. Associated Institute Type(s)
   - 1862 Extension

Outcome # 5
1. Outcome Target
FSAFE 1.1. Participants will adopt recommended food safety practices (including food production, processing, transport, preparation, preservation, consumption and storage practices) to minimize risk of foodborne illness.

2. Outcome Type: Change in Action Outcome Measure

3. Associated Knowledge Area(s)
   - 503 - Quality Maintenance in Storing and Marketing Food Products
   - 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

4. Associated Institute Type(s)
   - 1862 Extension

Outcome # 6
1. Outcome Target
FSAFE 1.2: Participants will adopt skills necessary to teach others about food safety practices that
reduce risk of foodborne illness.

2. Outcome Type: Change in Action Outcome Measure

3. Associated Knowledge Area(s)
   - 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

4. Associated Institute Type(s)
   - 1862 Extension

Outcome # 7
1. Outcome Target
FSAFE 2.3. Number of Participants who will adopt safe home food preservation practices (including use of tested recipes, following research-based procedures and canning equipment that is routinely inspected and tested for safety).

2. Outcome Type: Change in Action Outcome Measure

3. Associated Knowledge Area(s)
   - 503 - Quality Maintenance in Storing and Marketing Food Products

4. Associated Institute Type(s)
   - 1862 Extension

Outcome # 8
1. Outcome Target
FSAFE 3.1. Number of Participants who will plan to implement processes that will minimize microbial and/or chemical threats to the food supply.

2. Outcome Type: Change in Action Outcome Measure

3. Associated Knowledge Area(s)
   - 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

4. Associated Institute Type(s)
   - 1862 Extension
**Outcome # 9**

1. **Outcome Target**
FSAFE 3.2. Number of Participants who will plan to adopt food safety processes developed through NIFA-funded projects.

2. **Outcome Type**: Change in Action Outcome Measure

3. **Associated Knowledge Area(s)**
   - 314 - Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
   - 503 - Quality Maintenance in Storing and Marketing Food Products
   - 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

4. **Associated Institute Type(s)**
   - 1862 Extension

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**Outcome # 10**

1. **Outcome Target**
FSAFE 2.1. Food safety stakeholders will engage in community events, classes, meetings, discussions, etc. to build awareness and understanding of local food systems and their impact along the food chain that effect availability, affordability, quality, and sustainability of a safe food supply. (Action)

2. **Outcome Type**: Change in Action Outcome Measure

3. **Associated Knowledge Area(s)**
   - 503 - Quality Maintenance in Storing and Marketing Food Products
   - 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

4. **Associated Institute Type(s)**
   - 1862 Extension

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**Outcome # 11**

1. **Outcome Target**
FSAFE 1.3: Participants will acquire basic competencies associated with food safety training required or recommended for retail food establishments, cottage foods producers, local growers, food processors, food safety professionals, trained volunteers or consumers.

2. **Outcome Type**: Change in Action Outcome Measure
3. Associated Knowledge Area(s)
   ● 503 - Quality Maintenance in Storing and Marketing Food Products

4. Associated Institute Type(s)
   ● 1862 Extension

**Outcome # 12**

1. Outcome Target

   NH 1.1 Consuming more healthy foods such as: vegetables, fruits, whole grains, fat-free or low-fat milk and milk products, seafood, lean meats and poultry, eggs, beans and peas, and nuts and seeds.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)
   ● 703 - Nutrition Education and Behavior

4. Associated Institute Type(s)
   ● 1862 Extension

**Outcome # 13**

1. Outcome Target

   NH 1.2 Consuming less foods/food components that are commonly eaten in excess such as: sodium, solid fats, added sugars, and refined grains.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)
   ● 703 - Nutrition Education and Behavior

4. Associated Institute Type(s)
   ● 1862 Extension

**Outcome # 14**

1. Outcome Target

   NH 1.3. Following healthy eating patterns such as: eating breakfast, eating as a family, making healthy snack choices.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)
Outcome # 15
1. Outcome Target
NH 2.1 Healthy physical activity levels are defined by national physical activity guidelines:
A) Children - 60 minutes or more of PA daily
B) Adults - 150 minutes of PA per week
2. Outcome Type: Change in Action Outcome Measure
3. Associated Knowledge Area(s)
   ● 703 - Nutrition Education and Behavior
   ● 724 - Healthy Lifestyle
4. Associated Institute Type(s)
   ● 1862 Extension

Outcome # 16
1. Outcome Target
NH 3: Coloradans will decrease chronic disease risk.
2. Outcome Type: Change in Action Outcome Measure
3. Associated Knowledge Area(s)
   ● 703 - Nutrition Education and Behavior
   ● 724 - Healthy Lifestyle
4. Associated Institute Type(s)
   ● 1862 Extension

Outcome # 17
1. Outcome Target
NH 4.1. EFNEP reports against national goals and objectives
2. Outcome Type: Change in Action Outcome Measure
3. Associated Knowledge Area(s)
Outcome # 18

1. Outcome Target

NH 5.1. SNAP-Ed reports against goals and objectives laid out in SNAP-Ed proposal made to state and regional SNAP offices

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 704 - Nutrition and Hunger in the Population
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

HEALTH PROMOTION & DISEASE PREVENTION (NH) - examples may include changes to school wellness policies; training opportunities for school personnel and food service staff, increases in funding for childhood obesity in the state and communities.

- Funding for SNAP-Ed and EFNEP is provided through federal sources. Changes in funding or program guidelines are plausible. Additionally, legislation regarding the School Nutrition program and the Farm bill may influence Extension programming.
- In today's economic climate, Extension staff and partner agencies are being asked to do more with less. Nutrition and health promotion programming may be a lower priority in some areas due to
competing public priorities at both the local and state levels.

FOOD SAFETY (FSAFE) - Foodborne illness outbreaks, weather and other natural disasters creates the need for prompt food safety information and response, involving collaboration with public health and government agencies, the media, emergency response networks and others depending on the situation. Expected changes in FDA Guidelines and Colorado Food Code will have a large and immediate impact on FSE programs. Pending legislation regarding changes in the cottage food industry may require focused effort by the team to develop and deliver targeted food safety education.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

HEALTH PROMOTION & DISEASE PREVENTION (NH)

- Examples may include changes to school wellness policies; training opportunities for school personnel and food service staff, increases in funding for childhood obesity in the state and communities.
- Funding for SNAP-ED and EFNEP is provided through federal sources. Changes in funding or program guidelines are plausible. Additionally, legislation regarding the School Nutrition program and the Farm bill may influence Extension programming.
- In today's economic climate, Extension staff and partner agencies are being asked to do more with less. Nutrition and health promotion programming may be a lower priority in some areas due to competing public priorities at both the local and state levels.

FOOD SAFETY (FSAFE) - Impacts and general outcomes will be assessed by method of instruction:

- Class series - Pre/Post knowledge, reported behaviors, and intent to change; demographics at pre-only; and class feedback (post only) may be collected. Type of information gathered will be specific to the program offered.
- Single events - demographics and varied outcome measures depending on program content.
- Standard survey methods will be utilized, including pre-post, retrospective pre-post, and post-only surveys.