

# 2014 Colorado State University Combined Research and Extension Plan of Work

Status: Accepted

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## I. Plan Overview

### 1. Brief Summary about Plan Of Work

The Agricultural Experiment Station (AES) and Extension at Colorado State University are committed to excellence in basic and applied research and translation of this research through Extension programs to crop (including ornamental) and animal (including equine) agriculture. Extension will continue to emphasize non-formal education and transfer of knowledge to audiences throughout the state, based on research information from the AES, the colleges of Agricultural Sciences, Applied Human Sciences, Engineering, Veterinary Medicine and Natural Resources. Programs will emphasize best management practices in addressing issues that affect Coloradans.

#### 4-H Youth Development

Program Goals: 4-H will affect positive change in life skills (including leadership, citizenship, decision making, and communication) and in STEM (including interest, knowledge, and application of science process skills) for youth ages 5 to 18.

Extension, AES, or Integrated: Extension

New Programs, and/or Addressing NIFA Priorities: STEM priority will benefit from available and promised content and resource support from National 4-H Headquarters, Colorado State University, Extension, and county partners.

Ongoing, Consistent, and/or Successful Programs: Colorado State University Extension reaches Colorado's K-12 youth through 4-H youth development programs in 4-H clubs, after-school and school enrichment. Development of volunteers who provide much of the leadership for 4-H, and private fund-raising are associated activities. 4-H Youth Development emphasizes personal growth of young people through experiential learning with well-designed curricula and projects.

Cross-cutting or Cross-disciplinary Initiatives: Most 4-H Youth Development programs, while focusing on youth development, are built around content that may be supported by one or more college-based specialists.

#### Family and Consumer Science

Program Goals: Family Economic Stability programs will affect positive change in participants' financial knowledge and skills, contributing to their ability to avoid bankruptcy, economic crisis, loss of jobs, and other money-related difficulties. AgrAbility programs will help farmers avoid accidents and reduce incidence of serious injury and disability. Radon test and mitigation programs will decrease chronic disease risk.

Extension, AES, or Integrated: Extension

New Programs, and/or Addressing NIFA Priorities: DollarWorks2

Ongoing, Consistent, and/or Successful Programs: Family and Consumer Science (FCS) programs seek to provide applied research and Extension education in a coordinated set of programs related to nutrition and health, food safety, and family economic stability. Financial stability of families is the area of focus for non-nutrition FCS programming. Colorado families' financial instability includes increasing rates of bankruptcy, economic crises and loss of jobs. Working in partnership with state and nongovernmental agencies, agents will deliver Small Steps to Health & Wellness, DollarWorks2 and other

curricula relevant to individuals and families in difficult economic times. AgrAbility programming will continue.

Cross-cutting or Cross-disciplinary Initiatives: Consumer economics is a vehicle that can assist 4-H in reaching STEM targets.

### **Nutrition and Food Safety**

Program Goals: Food Safety programs will reduce the economic burden and human suffering that can be caused by food-borne illness in the US; Nutrition (Health Promotion and Disease Prevention, EFNEP, SNAP-Ed) programs will reduce incidence of chronic diseases (such as diabetes, heart disease, obesity and cancer), thus reducing health insurance premiums and mortality rates, and increasing employee productivity.

Extension, AES, or Integrated: Integrated

New Programs, and/or Addressing NIFA Priorities: Planned Programs are reorganized to again combine Nutrition and Food Safety work in this category.

Ongoing, Consistent, and/or Successful Programs:

- Food safety training for food service managers and employees
- Food safety education for high risk audiences, their caregivers, and health care professionals
- Food safety information for consumers including Farmers' Market vendors and their customers.
- Nutrition and Health Promotion Work Team will provide research-based nutrition and health

education to a variety of audiences across Colorado in an effort to promote healthful nutrition, activity and lifestyle behaviors.

Cross-cutting or Cross-disciplinary Initiatives: AES 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.

### **Plant Production Systems**

Program Goals: Crop production in the state will benefit from AES and Extension through improved crops which resist environmental and biological pests. Plant biology linking basic science with applied science is important to bring the results of basic science toward a usable form for applied agricultural sciences. Molecular biology and genomics are opening new pathways for crop plant improvement and pest management, which will enhance the economic development of agricultural regions, enhance human health through more nutritious and safer food products and find fundamental solutions to societal issues through renewable and sustainable crop production and pest management.

Extension, AES, or Integrated: Integrated

New Programs, and/or Addressing NIFA Priorities: Global Food Security and Hunger

Ongoing, Consistent, and/or Successful Programs: Molecular biology and genomics of crop plants and their pests; Integrated Pest Management.; Wheat breeding, bean breeding and potato breeding programs; Production systems in semi-arid environments with limited water availability. Communicate results through demonstration plots and field days;

Cross-cutting or Cross-disciplinary Initiatives: Wheat and Other Cropping Systems is a well-organized and highly-functioning Extension work team that will maintain its structure and contribute to the NIFA priority goal of global food security.

### **Natural Resources and Environment**

Program Goals: Environmental Horticulture, Native Plant Education, and Small Acreage Management Work Team programs will sustain and/or improve the quality and quantity of Colorado's natural resources and environment. Clean Energy Work Team efforts will be reported in this Planned Program as well -- diffuse and adopt renewable energy sources and sustainable practices that reduce

dependence on nonrenewable energy through public knowledge of energy efficiency and clean energy options.

Extension, AES, or Integrated: Integrated

New Programs, and/or Addressing NIFA Priorities: Extension will address the needs of small acreage producers and work with agricultural industry personnel and governmental agencies to assure that land managers and communities can evaluate a broad range of opportunities to enhance viability while respecting the environment.

Ongoing, Consistent, and/or Successful Programs: AES and Extension programs address the growing competition for finite water, land, and air resources in a state with a growing human population by:

- Educating agricultural and resource industry professionals;
- Researching technical and economic issues related to improved resource utilization;
- Enhancing international competitiveness.

Cross-cutting or Cross-disciplinary Initiatives: Nutrient management and odor and dust control.

### **Community Resource Development**

Program Goals: CRD Programs will provide tools so that citizens can make informed decisions to increase tax revenues, maintain and/or increase employment, and maintain and/or grow valued community resources.

Extension, AES, or Integrated: Integrated

New Programs, and/or Addressing NIFA Priorities: Community Resource Development (CRD) Work Team, and its partner, Economic Development, are highlighted by the Vice President for Engagement and Director of Extension.

Ongoing, Consistent, and/or Successful Programs: Colorado communities are changing rapidly as a result of many factors, including loss of agricultural water, influx of retirement populations, development of gas and oil industries, incidence of military deployment, and changes in cultural composition of residents. Communities struggle to develop and maintain resources: human, financial, physical, social, environmental, and political. They also are challenged to provide the organizational capacity to assess, plan, and implement activities to address resource development and management. These issues especially are acute in smaller rural communities. Colorado's rural communities are relatively unique in terms of sparse populations, a high natural amenity and public lands base, a transitory population, and relatively low public service provision. Communities require knowledge to evaluate their resource base, their economic and social service alternatives, and their futures.

Cross-cutting or Cross-disciplinary Initiatives: CRD technologies will be provided through training and technical assistance to Extension agents, as the system views CRD as a process rather than an issue. The goal is to intentionally integrate CRD into all issues work.

### **Animal Production Systems**

Program Goals: 1) Adopt improved production technologies and productive and sustainable agriculture systems to assure communities, families, and individuals have enough food to eat, and that hunger is not a factor in their well-being. 2) Develop improved animal production systems that are economically and environmentally sound. 3) Develop information and methods to improve reproductive efficiency.

Extension, AES, or Integrated; Integrated

New Programs, and/or Addressing NIFA Priorities; Global Food Security and Hunger

Ongoing, Consistent, and/or Successful Programs: Extension outreach will span the breadth of the topics of research to assure that industry participants have practical knowledge in modern beef, dairy, and sheep production systems, biosecurity, economic and risk management, and response to policy and consumer changes. Outreach to youth involved in livestock production and judging events will continue as part of experiential learning in 4-H, FFA, and college judging. Producers will realize increased prices and lower cost of production. Consumers will benefit from higher human nutritional values of food. AES will

lead research on animal production systems and reproductive efficiency.

Cross-cutting or Cross-disciplinary Initiatives: Reorganization of Planned Programs pulls apart animal production systems and plant production systems. The work will integrate Extension education in disseminating research results. CSU Extension will:

- Deliver workshops and educational classes for producers;
- Provide individual counseling for producers and clientele on specific animal production problems.

Cross-cutting or Cross-disciplinary Initiatives: Research on animal production systems and reproductive efficiency.

**Estimated Number of Professional FTEs/SYs total in the State.**

Year	Extension		Research	
	1862	1890	1862	1890
2014	150.0	0.0	50.0	0.0
2015	150.0	0.0	50.0	0.0
2016	150.0	0.0	50.0	0.0
2017	150.0	0.0	50.0	0.0
2018	150.0	0.0	50.0	0.0

**II. Merit Review Process**

**1. The Merit Review Process that will be Employed during the 5-Year POW Cycle**

- Internal University Panel
- External Non-University Panel
- Combined External and Internal University External Non-University Panel

**2. Brief Explanation**

All projects conducted by the AES and Extension are subjected to a peer review process. Each college at Colorado State University has adopted a process for conducting a peer review on all AES and Extension projects submitted for support by state and federal funds. Criteria, as requested by NIFA reviewers, include alignment with college priorities, resource allocation, and meeting needs of Coloradans.

Currently, Extension specialists and agents team together on about 20 work teams (WTs), jointly lead by a specialist and an agent. Each WT has completed a Logic Model, including providing a situation statement, assumptions, identification of inputs, outputs and outcomes (including learning, action, and condition), and an evaluation plan. The first WT Plans of Work (POW) were submitted for entry into the online Colorado Planning and Reporting System (CPRS) early in 2011. All plans were updated and resubmitted by January 31, 2013.

At the county level, all county Extension programs are required at a minimum to have an Extension Advisory Committee composed of constituents, partner agencies (such as the school districts, councils on aging, county health and human services, commodity groups, etc.). In

addition, many counties have multiple program advisory groups that guide the county staff in identification of specific programs of emphasis. In the most recent survey of these committees, 59 Extension county programs had a total of 112 advisory committees involving close to 2,000 individuals in the program review process. County programs are reviewed and evaluated by these county advisory groups. The primary criteria is meeting needs in the county.

### **III. Evaluation of Multis & Joint Activities**

#### **1. How will the planned programs address the critical issues of strategic importance, including those identified by the stakeholders?**

The AES and Extension are active participants in meetings of Advisory Committees consisting of state, county, and organizational leaders. AES and Extension programs are discussed and input is solicited on future priorities for research activities. In addition, the AES regularly participates in meetings held by CSU Extension where current and future program needs are discussed. A variety of joint research programs are conducted with USDA-ARS programs in Fort Collins, Akron, and other locations as well as collaborative programs with USDA-FS, USDA-NRCS and USDA-NASS. Numerous programs are also conducted in cooperation with individuals.

Regional listening sessions lead by the AES and Extension are held in the various regions of the state (southeast, northeast, San Luis Valley, southwest, and northwest). Both AES and Extension programs are modified to reflect the input received where appropriate and feasible.

All sessions are open to the public and advertised in the local media prior to the meeting.

Critical issues addressed by multi-state and integrated activities include the following: 1) invasive plants; 2) obesity; 3) animal and municipal waste management; 4) food safety; 5) community development; 6) water quality and environmental issues; and the emerging area of bioenergy.

#### **2. How will the planned programs address the needs of under-served and under-represented populations of the State(s)?**

For CSU Extension, county needs determine programming direction. These include addressing the needs of under-served and under-represented populations. Extension participated in the first cohort of CSREES-funded Change Agents States. We have maintained the system changes implemented during the initiative, as well as the Diversity Catalyst Team (DCT). Goals for Extension diversity include increasing: diversity of employees; diversity of audiences served; and cultural competency of current Extension employees.

#### **3. How will the planned programs describe the expected outcomes and impacts?**

A variety of measures will be used based on the goals of each program. Data on outcomes in the Logic Model that are typically collectible by Extension and AES include: increase in knowledge and/or attitude (learning), and change in behavior (action, including intent to change behavior). Each Work Team (WT) has a completed Logic Model with identified outputs and outcomes for the respective program areas. However, documenting long term results (changes in condition), as requested by NIFA reviewers, remains problematic. The rigor that is required by such program evaluation and the presence of multiple extrinsic factors are often beyond the capability of field staff to manage. Specialists may have the knowledge and experience for such research design, but with fewer state-wide programs underway, there are complexities in aggregating data to demonstrate impact.

#### **4. How will the planned programs result in improved program effectiveness and/or**

Plans of Work (POW) are updated and reviewed annually, assuring necessary changes are made as suggested through the review process, or as indicated by the evaluations

conducted on specific programs. Formative evaluations conducted at programs' conclusions provide feedback to improve quality and efficacy. These are not often reported, as requested by NIFA reviewers, as they do not address outcomes but rather the success of outputs. Extension is exploring options that will more clearly link program to performance as we seek to focus our planned programs and collect data that we can aggregate and that will be impactful in presenting the value of Extension's work to stakeholders. The goal is continual evaluation and strengthening of program efforts, including changes that will increase effectiveness and efficiency.

All projects conducted by the AES are subjected to a peer review process. Each college at Colorado State University has adopted a process for conducting a peer review on all AES projects submitted for support by state and federal funds. The peer review process involves the Dean/Department Head soliciting reviews from faculty on the research approach and methodology followed by incorporation of suggested changes by the investigator.

#### **IV. Stakeholder Input**

##### **1. Actions taken to seek stakeholder input that encourages their participation**

- Use of media to announce public meetings and listening sessions
- Targeted invitation to traditional stakeholder groups
- Targeted invitation to non-traditional stakeholder groups
- Targeted invitation to traditional stakeholder individuals
- Targeted invitation to non-traditional stakeholder individuals
- Targeted invitation to selected individuals from general public
- Survey of traditional stakeholder groups
- Survey of traditional stakeholder individuals
- Survey of the general public
- Survey specifically with non-traditional groups
- Survey specifically with non-traditional individuals
- Survey of selected individuals from the general public
- Other (Survey of County Commissioners regarding Extension Programs in their county.)

##### **Brief explanation.**

The AES and Extension annually utilize multiple means of obtaining stakeholder input on programs conducted and solicit input on changes in program direction. The AES and Extension support programs in seven of the eight colleges on the Colorado State University campus as well as at nine off-campus research centers, 54 individual county offices and three area programs serving 59 counties.

AES: Each year, the off-campus research centers hold a public meeting where research results are presented and proposed programs are discussed. Public input is solicited on all proposed programs. It should be noted that many of the programs discussed involve faculty and staff located on the Fort Collins campus as well as at the off-campus research centers and Extension county or area offices.

CE: Each County/Area Extension program is required to have a stakeholder advisory committee, representing all programmatic and geographic areas, as well as the diversity found in the county. Evidence of the advisory committee must be documented in performance appraisals, as well as during the regularly scheduled affirmative action reviews. These advisory committees are expected to meet on a regular basis and provide guidance on programming and target audiences.

Finally, a Colorado Extension Advisory Committee (CEAC), representing program recipient groups and programmatic collaborators provides oversight and input at the state level. Extension administration pays travel expenses to two meetings each year, to encourage participation. Yearly the county advisory committees review the county plans of work which are then incorporated into the statewide work team plans. These plans are reviewed by the CEAC for additional input and acceptance. There is an open call for additional Work Teams so that emerging priority areas may be identified and state-wide focus provided, when appropriate. Diversity among stakeholders is expected, but as NIFA reviewers have noted, it is not documented.

**2(A). A brief statement of the process that will be used by the recipient institution to identify individuals and groups stakeholders and to collect input from them**

**1. Method to identify individuals and groups**

- Use Advisory Committees
- Use Internal Focus Groups
- Use External Focus Groups
- Open Listening Sessions
- Use Surveys
- Other (Council for Agricultural Research, Extension, and Teaching)

**Brief explanation.**

We identify stakeholder groups through input from county staff and advisory committee members. We engage community partners in the process and request feedback on appropriate individuals and groups to be included in the stakeholder input process. Both AES and Extension meet regularly with advisory committees to solicit feedback on programs and also invite the general public to participate in listening sessions.

**2(B). A brief statement of the process that will be used by the recipient institution to identify individuals and groups who are stakeholders and to collect input from them**

**1. Methods for collecting Stakeholder Input**

- Meeting with traditional Stakeholder groups
- Survey of traditional Stakeholder groups
- Meeting with traditional Stakeholder individuals
- Survey of traditional Stakeholder individuals
- Meeting specifically with non-traditional groups
- Meeting specifically with non-traditional individuals
- Meeting with invited selected individuals from the general public
- Survey of selected individuals from the general public
- Other (Review of county Web sites to discern priorities)

**Brief explanation.**

Regular meetings with advisory committees and other stakeholders to solicit input on program direction, focus, implementation and success. Yearly satisfaction survey of county commissioners regarding the Extension program in their county provides valuable information on county needs and the impact/success of Extension programs. <http://outreach.colostate>.

### 3. A statement of how the input will be considered

- To Identify Emerging Issues
- Redirect Extension Programs
- Redirect Research Programs
- In the Staff Hiring Process
- In the Action Plans
- To Set Priorities

#### **Brief explanation.**

- Regular meetings with advisory committees and other stakeholders to solicit input on program direction, focus, implementation and success.
- Yearly satisfaction survey of county commissioners regarding the Extension program in their county provides valuable information on county needs and the impact/success of Extension programs.[http://outreach.colostate.edu/docs/2011\\_ExtCtyCommSummaryRptFeb2012.pdf](http://outreach.colostate.edu/docs/2011_ExtCtyCommSummaryRptFeb2012.pdf).
- AES utilizes one-time funds to conduct research on an emerging issues in



## V. Planned Program Table of Content

S. No.	PROGRAM NAME
1	4-H Youth Development
2	Family and Consumer Science
3	Nutrition and Food Safety
4	Animal Production Systems
5	Plant Production Systems
6	Natural Resources and Environment
7	Community Development

## **V(A). Planned Program (Summary)**

### **Program # 1**

#### **1. Name of the Planned Program**

4-H Youth Development

#### **2. Brief summary about Planned Program**

Communities in Colorado depend on quality, contributing members of society. Fostering productive community members begins with our young people. 4-H is Colorado State University's premier youth development program. Positive youth development addresses broader developmental needs of youth, in contrast to deficit-based models which focus solely on youth problems. Positive youth development occurs from an intentional process that promotes outcomes for young people by providing opportunities and relationships and externally, through the delivery of projects and curriculum designed according to the best practices of youth development.

Therefore, in order to be prepared to succeed in a quickly changing world, our young people need a sense of competence, usefulness, belonging, and power. Studies have shown that youth who have developed these senses are involved in positive group settings and become productive citizens and successful young adults. Also, adolescents who have developed these characteristics appear to be more likely than others to engage in pro-social behavior. 4-H targets critical skills (life skills) that help cultivate these senses.

In order for youth in Colorado to cultivate critical life skills, the 4-H Youth Development work team will strive to incorporate the three mission mandates from National 4-H Council which are Science, Engineering and Technology (STEM), Healthy Living, and Citizenship.

Program delivery is via one of six different delivery methods 1) Organized clubs, 2) School enrichment, 3) Short term/special interest, 4) School-age child care, 5) After school programs, 6) Camping.

**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

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
806	Youth Development	100%		0%	
	<b>Total</b>	100%		0%	

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

**1. Situation and priorities**

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**2. Scope of the Program**

- In-State Extension
- Multistate Extension

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

**1. Assumptions made for the Program**

- 4-H Youth Development is a well-respected and effective youth development program in Colorado.
- A successful 4-H youth development program is dependent on adequate numbers of competent and well trained volunteers.
- Colorado 4-H Youth Development staff collaborates with other CSU Extension staff and community partners to accomplish desired impacts.
- The Colorado 4-H Youth Development Program provides youth a unique and inclusive setting for individual life skill development and mastery of subject matter competencies through the interactions with caring adults (paid and volunteer).

- 4-H youth development staff has the ability to recognize and understand the needs of individuals in communities, and to facilitate educational opportunities in response to those needs.

**2. Ultimate goal(s) of this Program**

4-H empowers youth to reach their full potential by working and learning in partnership with caring adults.

- 4H 1: 4-H Youth Development volunteers and staff positively influence the development of youth and continually develop their competencies as adult volunteers who work with youth. Survey instrument to measure the following learning outcomes can be found at:

[http://www.colorado4h.org/research\\_impact/surveys/VolunteerKnowledgeAndSkillSurvey.pdf](http://www.colorado4h.org/research_impact/surveys/VolunteerKnowledgeAndSkillSurvey.pdf)

- 4H 2: 4-H Youth Development volunteers develop capacity and have a positive influence on the well-being of their communities. Survey instrument to measure changes in the following action outcome can be found at:[http://www.colorado4h.org/research\\_impact/surveys/Survey-VolunteerImpactOnCommunities.pdf](http://www.colorado4h.org/research_impact/surveys/Survey-VolunteerImpactOnCommunities.pdf)

- 4H 3: Youth become caring and contributing members of society through life skill development attained in the 4-H program. Survey instrument to measure the following changes in this action outcome can be found at: [:http://www.colorado4h.org/research\\_impact/surveys/MemberLifeSkillSurvey.pdf](http://www.colorado4h.org/research_impact/surveys/MemberLifeSkillSurvey.pdf)

- 4H 4: Colorado youth will have an increased understanding and interest in Science, Technology, Engineering, and Math skills to enhance the STEM talent pool to benefit our country and to enhance their marketability as they enter the work force.

- 4H 5: Colorado K-12 youth have the academic and personal skills needed for success in work and life.

**V(E). Planned Program (Inputs)**

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

Year	Extension		Research	
	1862	1890	1862	1890
2014	49.0	0.0	0.0	0.0
2015	50.0	0.0	0.0	0.0
2016	50.0	0.0	0.0	0.0
2017	50.0	0.0	0.0	0.0
2018	50.0	0.0	0.0	0.0

**V(F). Planned Program (Activity)**

**1. Activity for the Program**

- Support traditional club programs by recruiting and establishing new clubs;
- Conduct after school and school enrichment programs that provide curriculum in Science, Technology, Engineering and Math (STEM), leadership, citizenship and life skills development;
- Develop new curriculum in response to new audience needs;

- Strengthen the volunteer management system needed to implement the 4-H Youth Development program by: conducting agent trainings to develop volunteer management skills; developing tools to support volunteer management system; delivering volunteer leader training; developing new funding support through individual and group solicitation, grant applications and fee-for-service programs.

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

**Extension**

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>• Education Class</li> <li>• Workshop</li> <li>• Group Discussion</li> <li>• One-on-One Intervention</li> <li>• Demonstrations</li> <li>• Other 1 (eXtension)</li> <li>• Other 2 (phone calls &amp; e-mail)</li> </ul>	<ul style="list-style-type: none"> <li>• Public Service Announcement</li> <li>• Newsletters</li> <li>• Web sites other than eXtension</li> <li>• Other 1 (Newspaper column)</li> <li>• Other 2 (Public meetings)</li> </ul>

**3. Description of targeted audience**

- For 4-H Youth Development programming - all Colorado youth, ages 5 - 19.
- For volunteers - interested adults, parents, community members, seniors, partner agencies.
- For increased funding - potential funding entities, including grant providers.

**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

- 4H 10. Web Hits: Number of web hits regarding 4-H topics, excluding pages of Agent Resources and Blog areas of the site.
- Funding: Grant dollars generated to support 4-H Youth Development programs.
- Value of Volunteers' Time: Value of volunteers' time that Colorado 4-H adult volunteers provide to 4-H programming, based on average donation [CPRS average hours/year/volunteer] at \$22.03/hour (national average for value of time, adjusted for Colorado)
- 4H1. Trainings, Classes, Workshops, Field Days, Educational Activities, or Events for youth (examples might include: NWSS, Ag Fest, MQA Training, etc.)
- 4H 5. Community Meetings Convened [examples: Advisory Groups, Councils, Coalition Meetings, Boards]
- 4H 11. Press/News Release or Column (number submitted)
- 4H9. Newsletters (This is number of newsletters, not number mailed or number of Coloradans who received them.)
- 4H 8. Direct Communication/Education by telephone and/or e-mail
- 4H 10. Websites (number of Websites & number of hits)
- 4H 2. Trainings for Volunteers (one-on-one)
- 4H 13. Emergency/Disaster Response. (one-on-one)
- 4H 6. Community Meetings Facilitated [examples: Focus Group, Citizen Forum, Round Table Dialogue, Strategic Planning Process]
- 4H 7. Community Coalitions, Collaborations, Alliances Formed to Address a Specific Issue [list specific groups/issue]
- 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**

O. No	Outcome Name
1	4H 1.1: 4-H Youth Development volunteers continually develop their competencies as adult volunteers who work with youth: increase leadership capacity; foster life skill development in youth; increase effectiveness of Extension programs, contribute to increased public service; increase skills in audience(s) in which they work.
2	4H 4.1: Colorado youth apply STEM knowledge and skills in club, community and academic projects and programs. <a href="http://www.colorado4h.org/research_impact/surveys/STEM.pdf">http://www.colorado4h.org/research_impact/surveys/STEM.pdf</a>
3	4H 1.1: 4-H Youth Development programs positively influence the development of youth. Youth develop life skills: contribute to community improvement; set goals; make decisions; keep records; speak in public; lead.

**Outcome # 1**

**1. Outcome Target**

4H 1.1: 4-H Youth Development volunteers continually develop their competencies as adult volunteers who work with youth: increase leadership capacity; foster life skill development in youth; increase effectiveness of Extension programs, contribute to increased public service; increase skills in audience(s) in which they work.

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

**3. Associated Knowledge Area(s)**

- 806 - Youth Development

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 2**

**1. Outcome Target**

4H 4.1: Colorado youth apply STEM knowledge and skills in club, community and academic projects and programs.

[http://www.colorado4h.org/research\\_impact/surveys/STEM.pdf](http://www.colorado4h.org/research_impact/surveys/STEM.pdf)

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

**3. Associated Knowledge Area(s)**

- 806 - Youth Development

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 3**

**1. Outcome Target**

4H 1.1: 4-H Youth Development programs positively influence the development of youth. Youth develop life skills: contribute to community improvement; set goals; make decisions; keep records; speak in public; lead.

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

**3. Associated Knowledge Area(s)**

- 806 - Youth Development



#### **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.)
- Other (competing family priorities)

#### **Description**

Participation in 4-H Youth Development programs does not come without cost. If funding is not sufficient, scholarship help for families may not be available and individuals may be forced to not participate. Families have the opportunity to choose from many different activities for youth. 4-H may lose membership to other youth activities. At the same time, population shifts to urban sites could increase 4-H Youth Development participation if 4-H is able to establish and maintain relevant programs in non-rural environments.

### **V(K). Planned Program - Planned Evaluation Studies**

#### **Description of Planned Evaluation Studies**

- After Only (post program)
- Retrospective (post program)
- Before-After (before and after program)
- During (during program)

Livestock Project Survey - Retrospective evaluation based on self-assessment prior to their 4-H experience compared to the present.

Survey instrument to measure STEM learning outcomes can be found at:  
[http://www.colorado4h.org/research\\_impact/surveys/STEM.pdf](http://www.colorado4h.org/research_impact/surveys/STEM.pdf)

**V(A). Planned Program (Summary)**

**Program # 2**

**1. Name of the Planned Program**

Family and Consumer Science

**2. Brief summary about Planned Program**

Extension plans from two Work Teams (WTs) are in this section: Family Economic Security (FES) and Radon in the Home (RH).

- FES - Family Economic Stability programming affects positive change in the financial literacy and capability of Coloradans leading to increased financial stability across the life cycle.
- RH - With science based education provided by a neutral expert, community members can understand and embrace the ease of testing and relatively low expense of mitigating.

**3. Program existence :** Intermediate (One to 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

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
723	Hazards to Human Health and Safety	5%		0%	
801	Individual and Family Resource Management	95%		0%	
	<b>Total</b>	100%		0%	

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

**1. Situation and priorities**

FES - The FINRA Investor Education Foundation's 2009 National Financial Capability Study (<http://www.usfinancialcapability.org/geo.php?id=Colorado>), study focused on four key components of the financial capability of adults in Colorado:

1. Making Ends Meet. 20% of Coloradans (compared to 20% nationwide) reported that over the past year, their household spent more than their income. Individuals who report spending more than their household income (not including the purchase of a new home, car, or other big investment) are not saving. In addition, individuals who spend about the same as their income are breaking even. Only those who spend less than their household income are able to save. Individuals who are not balancing monthly income and expenses may find themselves struggling to make ends meet.
2. Planning Ahead. 59% Coloradans (compared to 60% nationwide) lack a "rainy day" to cover expenses for three months, in case of emergencies such as sickness, job loss, or economic downturn.

Individuals who have a "rainy day" fund demonstrate that they are planning ahead for their financial future. Individuals without this emergency savings lack a buffer against unexpected financial shocks, threatening their personal financial stability, as well as decreasing stability of the economy as a whole.

3. Managing Financial Products. 22% of Coloradans (compared to 24% nationwide) reported using one or more non-bank borrowing methods in the past five years. Numerous Americans have engaged in non-bank borrowing within the past five years, such as taking out an auto title loan or a payday loan, getting an advance on a tax refund or using a pawn shop or rent-to-own store. Non-bank borrowing methods are likely to come with high interest rates, and often attract individuals with poor credit histories, lack of access to more traditional sources of credit, or both. Sound borrowing practices and management of financial products are crucial to financial capability.

4. Financial Knowledge and Decision-Making. On average, Coloradans answered 3.2 out of five financial literacy questions correctly. In addition, 61% of Coloradans said that, when obtaining their most recent credit card, they did not collect and compare information about cards from more than one company. Study participants were asked five questions covering concepts of economics and finance expressed in everyday life. Results were tabulated according to average number participants answered correctly, incorrectly, or "don't know." "Don't know" responses suggest limited financial literacy may impede participants' ability to even attempt to answer quiz questions. In addition, most Americans do not comparison shop for credit cards, indicating a gap in the application of financial decision-making skills to real life situations. Individuals need at least a fundamental level of financial knowledge. This knowledge, paired with financial decision-making skills, can best ensure an individual's financial capability.

2011 U. S. Census Bureau data establishes Colorado as the 9<sup>th</sup> wealthiest out of the top 10 states where median income is the highest in the country and poverty rates are low. The data for Colorado include the following:

- Median income: \$59,669
- Poverty rate: 11.9% (20th lowest)
- Without health insurance: 14.3% (23rd highest)
- Unemployment: 8.5% (22nd highest)

However, Colorado's unemployment rate of 8.5% is not ideal -- nor is its high number of people without health insurance. Most of Colorado consists of poor rural areas, like Costilla County, which has a median income of less than \$25,000. However, the most populous areas, including Denver and Boulder, all have median incomes at or above the national level. Colorado's extremely affluent resort cities, including Vail, Telluride, Breckenridge, and Aspen, have pushed it to the top tier of wealthy states. Douglas County, which is located near Colorado Springs, is the seventh-wealthiest county in the United States. Source: America's Richest States - 24/7 Wall St. (<http://247wallst.com/2011/09/15/the-wealthiest-states-in-america/#ixzz1Y93fASrr>).

RH - Conservative estimates by EPA state that 16,000-21,000 deaths are attributed to radon annually and the leading cause of lung cancer deaths in non-smokers. The impact locally and nationally to the health care expenses for insurance, medical care providers and those who get lung cancer is substantial.

## **2. Scope of the Program**

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

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

**1. Assumptions made for the Program**

**FES:**

1. When people are in a state of "financial wellness," they are in control. They are confident and focused. They have greater balance and stability so they can concentrate on the most important tasks at hand such a weathering financial difficulties and making progress toward their financial goals.
2. Financial management is a learned skill. Education and good role modeling contribute to the development of this life-long skill.
3. Financial management, including financial decision making, is a skill that must be practiced daily throughout life.
4. Extension Family and Consumer Science professionals are trustworthy sources of financial education due to their training, experience, and objectivity.
5. There is public value in providing financial education.

**RH:** According to the CDPHE BRIEFFS survey of 2009, 73% of the state population stated they knew what radon is though overall only 34.5% had tested their home (23% in one of the counties in this POW) and of that only 36% knew the outcome of their radon test. Residents who are Hispanic or Black females, smoke and are under the age of 49 with a high school education and household income of less than \$50,000 are identified as demographics least likely to know about radon in our state.

**2. Ultimate goal(s) of this Program**

**FES** - Coloradans across the lifecycle will have increased financial literacy, capability, and stability as a result of family economic stability education programs.

**RH** - Safe air quality in homes particularly redirection of air for removal of radon.

**V(E). Planned Program (Inputs)**

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

Year	Extension		Research	
	1862	1890	1862	1890
2014	4.0	0.0	0.0	0.0
2015	4.0	0.0	0.0	0.0
2016	4.0	0.0	0.0	0.0
2017	4.0	0.0	0.0	0.0
2018	0.0	0.0	0.0	0.0

**V(F). Planned Program (Activity)**

**1. Activity for the Program**

Educational activities include:

- Adoption of curriculum, training for agents and other service providers, educational programs on financial management for individuals and families.

- Science based education (radon in homes) provided by a neutral expert.

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

**Extension**

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>• Education Class</li> <li>• Workshop</li> <li>• Group Discussion</li> <li>• One-on-One Intervention</li> <li>• Demonstrations</li> </ul>	<ul style="list-style-type: none"> <li>• Public Service Announcement</li> <li>• Newsletters</li> <li>• Web sites other than eXtension</li> </ul>

**3. Description of targeted audience**

Colorado families, including diverse and difficult- to-reach populations.

**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**

- FES 2) Trainings/Classes/Workshops, Field Days, Activity Days.
- FES 9) Newsletters (This is number of newsletters, not number distributed or number of Coloradans who received them).
- FES 13) Number of Volunteers (total) in Planned Program.
- FES 15) Agencies Partnering/Collaborating.
- FES 10) Websites (number of Websites).
- FES 11) Websites (number of hits).
- FES 3) Trainings for Volunteers.
- FES 4) Trainings for Extension Staff.
- FES 5) Community Meetings Convened [examples: Advisory Groups, Councils, Coalition Meetings, Boards].
- FES 6) Community Meetings Facilitated [examples: Focus Group, Citizen Forum, Round Table Dialogue, Strategic Planning Process].
- FES 7) Community Coalitions, Collaborations, Alliances Formed to Address a Specific Issue [list specific groups/issue.
- FES 8) Direct Communication/Education by telephone and/or e-mail.
- FES 12) Press/News Releases or Columns number submitted, not number distributed or read by Coloradans).
- RH 1) Trainings/Classes/Workshops, Field Days, Activity Days.
- RH 2) Trainings for stakeholders such as builders, mitigators, and Realtors.
- RH 3) Trainings for stakeholders such as builders, mitigators, and Realtors.
- RH 4) Direct Communication/Education by telephone.
- RH 5) Newsletters (This is number of newsletters, not number mailed or number of Coloradoans who received them.)
- RH 6) Press/News Release or Column (number submitted).
- RH 8) External Grant Dollars.

- RH 9) Screening Kits distributed.
  
- 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**

O. No	Outcome Name
1	FES 1.10: Coloradans intend to increase their utilization of successful strategies and/or adopt strategies for financial management. Small Steps to Health & Wellness (SSHW) financial indicators include: setting financial goals; record keeping; creating and using a spending plan; credit management and debt reduction; fraud, exploitation, and risk management; housing decisions; saving; investing; and long term and retirement planning.
2	RH 1.1) Safe air quality in homes particularly redirection of air for removal of radon.
3	RH 1.2) Identify appropriate action for mitigation.



**Outcome # 1**

**1. Outcome Target**

FES 1.10: Coloradans intend to increase their utilization of successful strategies and/or adopt strategies for financial management. Small Steps to Health & Wellness (SSHW) financial indicators include: setting financial goals; record keeping; creating and using a spending plan; credit management and debt reduction; fraud, exploitation, and risk management; housing decisions; saving; investing; and long term and retirement planning.

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

**3. Associated Knowledge Area(s)**

- 801 - Individual and Family Resource Management

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 2**

**1. Outcome Target**

RH 1.1) Safe air quality in homes particularly redirection of air for removal of radon.

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

**3. Associated Knowledge Area(s)**

- 723 - Hazards to Human Health and Safety

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 3**

**1. Outcome Target**

RH 1.2) Identify appropriate action for mitigation.

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

**3. Associated Knowledge Area(s)**

- 723 - Hazards to Human Health and Safety

#### **4. Associated Institute Type(s)**

- 1862 Extension

### **V(J). Planned Program (External Factors)**

#### **1. External Factors which may affect Outcomes**

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

#### **Description**

All of the above external factors are unknown at this time, but may have an impact on ability to meet the goals of this plan of work.

### **V(K). Planned Program - Planned Evaluation Studies**

#### **Description of Planned Evaluation Studies**

**FES:** Immediate (after only) or retrospective (post, then pre - - one assessment given at the end of a session) evaluations will be conducted for the majority of presentations and programs. With some curricula, a Before-After (pre-test and a post-test) evaluation model will be used. For educational programs that are done in a series format, "During" evaluations will be used. For a select program, such as Money Talk, a Time Series evaluation (immediately after and several weeks or months follow up) will be conducted. The primary evaluation strategies to be employed are surveys via mail, on-site, and online.

For **Radon (RH)** surveys will be done post program. The surveys will ask questions focused primarily on test results, and will help us measure the percentage of program participants who increased their knowledge of abatement of radon levels. The results of the surveys will be distributed to or will be used to document reduced levels of radon in home.

## **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

<b>KA Code</b>	<b>Knowledge Area</b>	<b>%1862 Extension</b>	<b>%1890 Extension</b>	<b>%1862 Research</b>	<b>%1890 Research</b>
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals	5%		10%	
501	New and Improved Food Processing Technologies	5%		0%	
503	Quality Maintenance in Storing and Marketing Food Products	5%		10%	
701	Nutrient Composition of Food	0%		30%	
703	Nutrition Education and Behavior	23%		0%	
704	Nutrition and Hunger in the Population	4%		0%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	5%		10%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	30%		30%	
724	Healthy Lifestyle	23%		10%	
	<b>Total</b>	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.

**References:** Bidol, S. A., Daly, E., Rickert, R., Hill, T. A., Al Khaldi, S., Taylor, T. H., et al. 2007.

## 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

Year	Extension		Research	
	1862	1890	1862	1890
2014	45.0	0.0	2.0	0.0
2015	45.0	0.0	2.0	0.0
2016	45.0	0.0	2.0	0.0

Year	Extension		Research	
	1862	1890	1862	1890
2017	45.0	0.0	2.0	0.0
2018	45.0	0.0	2.0	0.0

**V(F). Planned Program (Activity)**

**1. Activity for the Program**

Conduct basic and applied research on nutrition and wellness.

HEALTH PROMOTION & 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**

**Extension**

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Education Class</li> <li>● Workshop</li> <li>● Group Discussion</li> <li>● One-on-One Intervention</li> <li>● Demonstrations</li> <li>● Other 1 (Public Meetings)</li> </ul>	<ul style="list-style-type: none"> <li>● Public Service Announcement</li> <li>● Newsletters</li> <li>● Web sites other than eXtension</li> <li>● Other 1 (Newspaper columns &amp; News release)</li> </ul>

**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**

O. No	Outcome Name
1	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	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.
3	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).
4	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).
5	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.
6	FSAFE 1.2: Participants will adopt skills necessary to teach others about food safety practices that reduce risk of foodborne illness.
7	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).
8	FSAFE 3.1. Number of Participants who will plan to implement processes that will minimize microbial and/or chemical threats to the food supply.
9	FSAFE 3.2. Number of Participants who will plan to adopt food safety processes developed through NIFA-funded projects.
10	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)
11	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.
12	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.
13	NH 1.2 Consuming less foods/food components that are commonly eaten in excess such as: sodium, solid fats, added sugars, and refined grains.
14	NH 1.3. Following healthy eating patterns such as: eating breakfast, eating as a family, making healthy snack choices.
15	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
16	NH 3: Coloradans will decrease chronic disease risk.
17	NH 4.1. EFNEP reports against national goals and objectives (
18	NH 5.1. SNAP-Ed reports against goals and objectives laid out in SNAP-Ed proposal made to state and regional SNAP offices

**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

**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

**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)**

- 703 - Nutrition Education and Behavior

**4. Associated Institute Type(s)**

- 1862 Extension

**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)**

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

**4. Associated Institute Type(s)**

- 1862 Extension

**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.

## **V(A). Planned Program (Summary)**

### **Program # 4**

#### **1. Name of the Planned Program**

Animal Production Systems

#### **2. Brief summary about Planned Program**

AES will focus on fundamental and applied research in breeding, nutrition, physiology, behavior, integrated resource management systems, economics, health, and range/forage management. Extension outreach will span the breadth of the topics of research to assure that industry participants have practical knowledge in modern beef, dairy, and sheep production systems, biosecurity, economic and risk management, and response to policy and consumer changes.

Extension Work Teams (WT) planning under this Planned Program include Agriculture Business Management (ABM); Livestock and Range (LR), and Small Acreage Management (SAM).

**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

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	5%		0%	
111	Conservation and Efficient Use of Water	10%		0%	
121	Management of Range Resources	10%		0%	
301	Reproductive Performance of Animals	10%		10%	
302	Nutrient Utilization in Animals	10%		10%	
303	Genetic Improvement of Animals	0%		20%	
307	Animal Management Systems	10%		30%	
311	Animal Diseases	10%		10%	
315	Animal Welfare/Well-Being and Protection	10%		10%	
601	Economics of Agricultural Production and Farm Management	10%		10%	
602	Business Management, Finance, and Taxation	5%		0%	
603	Market Economics	5%		0%	
604	Marketing and Distribution Practices	5%		0%	
	<b>Total</b>	100%		100%	

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

## 1. Situation and priorities

Animal agriculture is a major economic sector in the United States and the leading agricultural activity in Colorado. In 2011, live meat animal sales were valued at \$4.15 billion and the value of dairy production was \$594 million. Livestock and livestock products accounted for 60% of crop and livestock sales in Colorado. Remaining competitive requires that the industry produce with the most technically sophisticated systems available while considering environmental and animal welfare dimensions to maintain confidence of the consuming public. Ruminant agriculture on range is the only significant agricultural enterprise which is ubiquitous in Colorado. In addition to novel and economic production practices, today's livestock producers must be knowledgeable of alternative supply chains to select a lucrative market, be aware of animal identification and trace-back requirements, understand the effects of emerging animal public health conditions, and understand the international and domestic trade environment and trends and how to respond with risk management strategies.

**LR:** Colorado ranks 5th in the nation for value of cattle and calves (\$3.2 billion) which is over half of the total market value of agricultural products sold in Colorado. There were 2.6 million cattle and calves in Colorado (livestock and dairy) on January 1, 2009. The contribution from livestock cattle is greater than 3 times that of grains, oilseeds, dry beans and dry peas (\$1.0 billion). According to the 2007 Census of

Agriculture, the number of farms in Colorado with livestock cows decreased 6.4% from 1997 to 2007 and the number of farms with all cattle and calves decreased 28.1% during the same 10-year period. There are over 30,000 farms and ranches in Colorado consisting of over 30,000,000 acres of agricultural land (land in farms and ranches), 46% of the state's total land area of 66.3 million acres. Colorado's agricultural industry has lost nearly 2 million acres of agricultural land over the last ten years. Agricultural land in Colorado is being converted in three primary ways: urban and built up lands, low density non-agricultural rural land, and public open lands. As we continue to lose acres of agricultural land, we also continue to have fewer days spent working on the farm or ranch. 38.5% of operators worked 200 days or more off the farm or ranch. Agriculture land represents more than 85% of the private, undeveloped land in Colorado. Another ~35% is federally owned, of which a large percentage is leased for agricultural production (Source: <http://csfs.colostate.edu/pages/land-use-ownership.html>).

**ABM:** There are currently **three primary circumstances** for farmers and ranchers in Colorado that will drive the ABM Team's focus over the next year. **First**, Colorado has experienced dramatic demographic and economic transformations during the past decade. The makeup of farm operators has changed significantly, and enterprises increasingly face greater production, financial, marketing, human, and institutional risks. There are 36,700 farms in Colorado (2012 Colorado Agricultural Statistics) which is a 17 percent decrease from the number of Colorado farms in 2007. Net farm income, for the same period, increased by 32 percent - from a per farm average of \$34,557 to \$45,496. Colorado continues to have most of its farms and ranches considered as small with 31,200 (85%) having annual economic sales of less than \$100,000. Wheat, forage, and corn are the major crops grown in Colorado, while the sale of cattle and calves dominates "value of sales" for all commodities produced in the state. A survey conducted by Extension specialists and researchers at Colorado State University and the Universities of Arizona and Wyoming attempted to gain a better understanding of the changing role of farm operators and the behavioral and institutional factors that promote or impede agricultural growth in the West (Tranel, 2007). The results of the study can be found at [www.ruralfamilyventures.org](http://www.ruralfamilyventures.org). A second study by the same researchers was conducted with those agricultural operators having annual farm and ranch sales of \$50,000 or more. The results are not yet available, but they will become available at the same web address. The **second** issue is that Colorado producers are facing a time of great financial uncertainty and volatility. Prices for many commodities are at all-time highs, but can vary significantly within very short periods of time. Prices for inputs, especially petro-based inputs, are extremely volatile. Higher interest rates and inflation could cause further pressures on profitability in agriculture. The current general national economy is causing investors to look more closely at agriculture lands for investment. These factors are forcing farm and ranch managers to be increasingly more vigilant about their finances and to consider new management and investment strategies. The **third** issue is the increasing average age of farmers and ranchers and the concerns related to succession. Farmers and ranchers in Colorado are growing older. The average age of Colorado producers was 54.5 in 2002 and 57.0 in 2007, according to the Census of Agriculture. Furthermore, those farm operators aged 55 and older own 44 percent of the land in Colorado. Given the advancing age of producers in Colorado and the amount of land and value of machinery and equipment they own, inter-generational transfer issues are becoming ever more important.

**SAM:** The program addresses the needs of small acreage landowners who own one to 100 acres of land. These individuals live on small acreage properties because they embrace the rural lifestyle but do not necessarily intend to derive income from the property. According to the USDA ERS (Economic Research Service) 2007 census data, 48.5% of Colorado farms are 1-99 acres in size. The number of small farms (1-99 acres in size) has increased by 7.7% since 1997. The 2007 US Census of Agriculture classifies 36.4% of small farms (1-100 acres) as Residential/Lifestyle properties in which operators report major non-farming occupations. Placing rural agricultural land into the hands of many diverse owners has created a new educational challenge for Extension. Urban sprawl is a phenomenon so pervasive in our society today that it was featured in the July 2001 issue of the National Geographic magazine as the offshoot of the American dream. As communities grow, land on the urban fringes is being rezoned from large agricultural enterprises to smaller, 1 to 35+ acre parcels that maintain some agricultural uses or at least a sense of the openness that comes with agriculture, while attracting a more



diverse population of owners. According to the American Farmland Trust, population growth in Colorado is transforming traditional agricultural landscapes into low-density residential development. (<http://www.farmland.org/resources/rockymtn/documents/Strategic%20Ranchland%20in%20the%20Rocky%20Mountain%20West.pdf>). Small acreage landowners have a significant impact on the conditions of soil, water, plants, animals, and other natural and man-made resources through their cumulative effects. The large tracts of agricultural lands in Colorado are being subdivided into one to 100 acre tracts of dry land for rural homesteads. Many of these homesteaders move from cities or other states and do not have the land management knowledge base which traditional agricultural landowners hold. Therefore, the demand for information and technical assistance is immense. Weed control, water use, and grazing management are prime examples of the land management skills which many small acreage landowners seek. CSU Extension, along with partners such as the USDA-Natural Resources Conservation Service, Colorado Division of Parks and Wildlife, and local Conservation Districts will lead this educational effort.

## 2. Scope of the Program

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

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

### 1. Assumptions made for the Program

Research in beef production management systems and nutrition is conducted on CSU owned facilities at the Agricultural Research, Development, and Education Center (ARDEC), Eastern Colorado Research Center, Southeastern Colorado Research Center, and the Rouse Ranch in Saratoga, Wyoming. An integrated "Beef Alliance" coordinates teaching, research, and outreach in beef across all facilities focused on value-added production systems. Strong relationships exist between animal scientists and agricultural management and market economists. ARDEC hosts seed stock herds for Angus and Hereford. The University has several significant assets, including the Western Center for Integrated Resource Management, the Center for Genetic Evaluation of Livestock, and strength in research and graduate programs in beef nutrition and breeding. Livestock industry outreach includes a team of campus specialists in livestock management systems, economics, trade, policy, manure management, meat science, alternative marketing chain participation, and animal identification system.

**Livestock & Range (LR):** Members of the work team have demonstrated expertise and recognition in areas of livestock and range research and educational efforts. This expertise spans several departments, colleges and disciplines. For example, within the Animal Science Department production expertise in cattle nutrition, reproduction, genetics and meat science are all represented. In addition, members of the work team represent veterinary medicine, rangeland science as well as agricultural economics. The team also has broad representation from both on-campus and off-campus faculty. Many of the team members have worked together in various efforts in the past and have demonstrated their ability to be effective.

#### **Agriculture Business Management (ABM):**

- Average age of agricultural producers is increasing.
- Farm sizes are either increasing or getting smaller (mid-sized farms are decreasing in number).
- Commodity and input prices are more volatile than in the past.
- The number of "women" operators is increasing.

- Consumers are demanding specific characteristics of agricultural products.
- Legal and human risks are becoming more problematic in agriculture.

**Small Acreage Management (SAM)**

- With the proper education, tools, and skills, small acreage managers will become better stewards of their properties. They will enhance the sustainability of their parcels as well as their neighbors.
  - They will see themselves as an interrelated system instead of a stand-alone entity, and understand that land is best managed as a collective whole because of the residual benefits received by all involved.
  - With the knowledge and tools to maintain and manage their land properly, landowners will save substantial time and money.
    - These practices will help maintain, or increase property values; control noxious weed spread; conserve water, land, and air quality; and provide continuity of landscape management.

**2. Ultimate goal(s) of this Program**

- Develop improved animal production systems that are economical and environmentally sound including genetics and breeding, nutrition, and management components.
  - Develop information and methods to improve reproductive efficiency including increasing pregnancy rate, decreasing embryonic mortality and decreasing prenatal mortality

**LR:** The livestock industry in Colorado is entering into a time of uncertainty that it's never experienced before. With recent record production and feed cost along with the volatility in the livestock industry the Livestock and Range Team will have to stay very pro-active with its programming efforts and dissemination of information.

**ABM:** The ABM Team provides information and education to Colorado's citizens in order that they can make more informed, goal-oriented decisions about their businesses and their families; Improve the management and communications skills of agricultural and rural business managers and their families so as to increase the competitiveness and sustainability of Colorado farms and ranches.

**SAM:** The primary goal of this program of work is to provide small acreage landowners (1-100 acres) with natural resource management education so that landowners will increase their skills and knowledge base, resulting in adoption of accepted best management practices on small acreage properties across Colorado. The small acreage program work team members will work together to develop and implement high quality educational programs and tools for the small acreage landowners in their communities. Strategies to provide education and technical assistance will include site visits, workshops (single or in a series format), field demonstrations, webinars, educational videos, newsletters, seminars, and technical advising.

**V(E). Planned Program (Inputs)**

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

Year	Extension		Research	
	1862	1890	1862	1890
2014	13.0	0.0	5.0	0.0
2015	13.0	0.0	5.0	0.0
2016	13.0	0.0	5.0	0.0
2017	13.0	0.0	5.0	0.0
2018	13.0	0.0	5.0	0.0

**V(F). Planned Program (Activity)**

**1. Activity for the Program**

- Workshops and educational classes for producers
- Demonstration field days to showcase the results
- Individual counseling on producers' specific problems
- Conduct basic and applied research on livestock, primarily beef, dairy, sheep, and horses

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

**Extension**

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>• Education Class</li> <li>• Workshop</li> <li>• Group Discussion</li> <li>• One-on-One Intervention</li> <li>• Demonstrations</li> <li>• Other 1 (Field Days)</li> <li>• Other 2 (Workshop)</li> </ul>	<ul style="list-style-type: none"> <li>• Public Service Announcement</li> <li>• Newsletters</li> <li>• Web sites other than eXtension</li> </ul>

**3. Description of targeted audience**

Individual agricultural producers, commodity groups, agri-business partners

**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**

- LR 1) Trainings/Classes/Workshops, Field Days, Activity Days
- LR 3) Trainings for Extension Staff
- LR 4) Community Meetings Facilitated [examples: Focus Group, Citizen Forum, Round Table Dialogue, Strategic Planning Process].
- LR 6) Newsletters (This is number of newsletters, not number mailed or number of Coloradoans who received them.)
- LR 7) Websites (number of Websites).
- LR 8) Websites (number of hits).
- LR 9) Press/News Release or Column (number submitted).
- LR 10) New Technologies Expected to be Adopted by Producers.
- LR 12) Emergency/Disaster Response(group).
- ABM 1: Trainings/Classes/Workshops, Field Days, Activity Days.
- SAM 1) Trainings/Classes/Workshops, Field Days, Activity Days, and/or Field Visits.
- SAM 2) Direct Communication/Education by telephone and/or e-mail.
- SAM 3) Newsletters (number of newsletters, not number mailed or number of Coloradoans who received them).
- SAM 4) Websites (number of websites maintained related to small acreages. Report only once per year).
- SAM 6) The number of acres on which small acreage landowners are implementing weed management and monitoring.
- SAM 7) The number of acres seeded in grass/legumes/forbs.
- SAM 8) The number of acres on which small acreage landowners have implemented proper grazing and pasture management.
- SAM 10) Peer Reviewed Publications, including Fact Sheets, Curricula, and Bulletins.
- SAM 5) Websites (average number of hits per month. Report once at end of year).
- SAM 9) The number of acres on which small acreage landowners have implemented a forest management plan which includes insect/disease issues, proper stand health, and/or creating defensible space.

- ABM 2: Trainings for Extension Staff.
  - ABM 4: Direct Communication/Education by telephone and/or e-mail.
  - ABM 5: Websites (number of Websites).
  - ABM 6: Websites (number of hits).
  - ABM 7: Press/News Release or Column (number submitted).
  - ABM 3: Community Coalitions, Collaborations, Alliances Formed to Address a Specific Issue [list specific groups/issue].
  - ABM 9: Peer Reviewed Publications, including Fact Sheets & Curricula.
  - ABM 8: External Grant Dollars.
  - LR 2) Trainings for Volunteers.
  - LR 5) Direct Communication/Education by telephone and/or e-mail.
  - LR 11) External Grant Dollars.
  - LR 13) Emergency/Disaster Response. (one-on-one).
- 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**

O. No	Outcome Name
1	SAM 1.1a)- Water-related - Small acreage landowners report implementation of water-related conservation practices (such as having their septic system checked/pumped, well water tested, excluding livestock from a stream, drought tolerant landscaping, or increasing irrigation efficiency).
2	SAM 2.1a) - Animals, livestock, wildlife - Small acreage landowners report implementation of animal/wildlife-related conservation practices (such as improved manure management, livestock emergency preparedness, attracting pollinators or other desired wildlife, or deterring unwanted wildlife).
3	SAM 3.1a)- Soils - Small acreage landowners report implementation of soil-related conservation practices (such as composting and soil testing).
4	SAM 4.1a) - Plant-related - Small acreage landowners report implementation of plant-related conservation practices (such as active weed management, pasture management techniques, grass stand establishment, planting windbreaks, and active forest management).
5	ABM 1.1: Participants intend to develop formal plans regarding the succession of their farms and ranches.
6	ABM 2.1: Participants intend to investigate strategies for increasing the profitability, including changing enterprise mixes, leasing, and use of crop insurance.
7	ABM 2.2: Participants intend to implement management strategies for making more informed decisions to sustain profitability and/or manage risk.
8	ABM 2.3: Participants will apply leasing principles and increase their use of written, appropriate, and equitable lease arrangements.
9	ABM 2.4: Participants will access new direct markets for their agricultural products and services.
10	LR 1.1: Producers use rangeland monitoring documentation.
11	LR 1.2: Adult and youth livestock producers gain proficiency in producing profitable animal products.
12	ABM 1.2: Participants have improved intra-family communications.
13	LR 1.2.a: Livestock producers, adult and youth will report an increased use of animal quality assurance practices and techniques.

**Outcome # 1**

**1. Outcome Target**

SAM 1.1a)- Water-related - Small acreage landowners report implementation of water-related conservation practices (such as having their septic system checked/pumped, well water tested, excluding livestock from a stream, drought tolerant landscaping, or increasing irrigation efficiency).

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

**3. Associated Knowledge Area(s)**

- 111 - Conservation and Efficient Use of Water

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 2**

**1. Outcome Target**

SAM 2.1a) - Animals, livestock, wildlife - Small acreage landowners report implementation of animal/wildlife-related conservation practices (such as improved manure management, livestock emergency preparedness, attracting pollinators or other desired wildlife, or deterring unwanted wildlife).

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

**3. Associated Knowledge Area(s)**

- 307 - Animal Management Systems
- 315 - Animal Welfare/Well-Being and Protection

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 3**

**1. Outcome Target**

SAM 3.1a)- Soils - Small acreage landowners report implementation of soil-related conservation practices (such as composting and soil testing).

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

**3. Associated Knowledge Area(s)**

- 102 - Soil, Plant, Water, Nutrient Relationships

#### **4. Associated Institute Type(s)**

- 1862 Extension

#### **Outcome # 4**

##### **1. Outcome Target**

SAM 4.1a) - Plant-related - Small acreage landowners report implementation of plant-related conservation practices (such as active weed management, pasture management techniques, grass stand establishment, planting windbreaks, and active forest management).

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

##### **3. Associated Knowledge Area(s)**

- 121 - Management of Range Resources

#### **4. Associated Institute Type(s)**

- 1862 Extension

#### **Outcome # 5**

##### **1. Outcome Target**

ABM 1.1: Participants intend to develop formal plans regarding the succession of their farms and ranches.

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

##### **3. Associated Knowledge Area(s)**

- 602 - Business Management, Finance, and Taxation

#### **4. Associated Institute Type(s)**

- 1862 Extension

#### **Outcome # 6**

##### **1. Outcome Target**

ABM 2.1: Participants intend to investigate strategies for increasing the profitability, including changing enterprise mixes, leasing, and use of crop insurance.

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



**3. Associated Knowledge Area(s)**

- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 7**

**1. Outcome Target**

ABM 2.2: Participants intend to implement management strategies for making more informed decisions to sustain profitability and/or manage risk.

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

**3. Associated Knowledge Area(s)**

- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 8**

**1. Outcome Target**

ABM 2.3: Participants will apply leasing principles and increase their use of written, appropriate, and equitable lease arrangements.

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

**3. Associated Knowledge Area(s)**

- 602 - Business Management, Finance, and Taxation

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 9**

**1. Outcome Target**

ABM 2.4: Participants will access new direct markets for their agricultural products and services.

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

**3. Associated Knowledge Area(s)**

- 604 - Marketing and Distribution Practices

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 10**

**1. Outcome Target**

LR 1.1: Producers use rangeland monitoring documentation.

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

**3. Associated Knowledge Area(s)**

- 121 - Management of Range Resources

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 11**

**1. Outcome Target**

LR 1.2: Adult and youth livestock producers gain proficiency in producing profitable animal products.

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

**3. Associated Knowledge Area(s)**

- 601 - Economics of Agricultural Production and Farm Management

#### **4. Associated Institute Type(s)**

- 1862 Extension

#### **Outcome # 12**

##### **1. Outcome Target**

ABM 1.2: Participants have improved intra-family communications.

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

##### **3. Associated Knowledge Area(s)**

- 602 - Business Management, Finance, and Taxation

#### **4. Associated Institute Type(s)**

- 1862 Extension

#### **Outcome # 13**

##### **1. Outcome Target**

LR 1.2.a: Livestock producers, adult and youth will report an increased use of animal quality assurance practices and techniques.

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

##### **3. Associated Knowledge Area(s)**

- 315 - Animal Welfare/Well-Being and Protection

#### **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 Programmatic Challenges

### Description

Changes in international regulations for export and import of food animals and products affect production alternatives and economics of trade. Drought and weather extremes affect the availability of water, forage, and other factors of production that may contribute to the availability of food animals in the marketplace.

**LR:** Livestock and range outcomes are dependent on government regulation, public policy, weather, volatility in the market and increasing input costs. These external factors will be addressed in education and research efforts but will still influence participation

**ABM:** ABM programming attempts to meet the needs of farmers, ranchers, and other clientele as they face the risks associated with drought and other natural disasters, changes in market prices, the economy, and agriculturally related policies/legislation. Changes in federal and state financial appropriations and availabilities of grant funds will also affect the ability of the ABM Team to deliver successful educational programs and the outcomes of that education.

**SAM:** Small acreage team outcomes are dependent on the needs and engagement levels of small acreage landowners. Their needs and level of interest in change can be affected by weather, public policy, economy, and population changes.

## V(K). Planned Program - Planned Evaluation Studies

### Description of Planned Evaluation Studies

Regular pre-post evaluations are used. Formative evaluations are often used during programs to adjust focus and direction. Case studies are used to clearly demonstrate impact through the Integrated Resource Management graduate program.

**LR:** A state-wide survey has been developed for all Livestock & Range (LR) Team members to use. This survey is divided to represent the 4 quarters of the state, NE, SE, SW, NW allowing an overall summary and area-specific summary for all beef programming needs. This survey also allows participants to list specific programming needs and delivery method. This survey will also allow team leaders to develop an entire state wide programming effort when needed.

- Evaluations will occur immediately following the educational programs (short term).
- Evaluations will occur 6-12 months following the program to determine if changes were incorporated (medium term).
- Evaluations will be conducted 2-5 years following the program to determine the sustainability of the change and the economic return gained as a result of the change (long term).

**ABM:** The ABM WT actively and continuously solicits input from agents, ag lenders, researchers, legislators and policy makers, colleagues, funders, and other stakeholder to determine future educational and informational needs of clientele. Personal response systems (clickers) and various other methodologies are used to test knowledge and understanding levels and to solicit feedback, knowledge gained, and intended actions by participants before, during, and after educational programs. Responses to inter-program questions are often used to change presentations 'on the fly' in order to meet the educational needs of participants. Further, research conducted with colleagues at other universities and anecdotal evidence is used to plan and deliver needed and/or demanded education and information.

**SAM:** Evaluations are developed using the indicators listed in the Impacts/Outcomes Expected section, to survey program participants about program impacts and long term behavioral changes. Sample evaluation instruments are available in the "Living on the Land" curriculum. Pre and post evaluations and surveys



## **V(A). Planned Program (Summary)**

### **Program # 5**

#### **1. Name of the Planned Program**

Plant Production Systems

#### **2. Brief summary about Planned Program**

Plant biology linking basic science with applied science is important to bring the results of basic plant science toward a usable form for applied agricultural sciences. Molecular biology and genomics are opening many new pathways for crop plant improvement and pest management, which will enhance the economic development of agricultural regions, enhance human health through more nutritious and safer food products, and find fundamental solutions to societal issues through renewable and sustainable crop production and pest management. Successful applied crop science, environmental science, and pest management only occur through collaboration with scientists actively involved in fundamental plant and pest sciences.

Cropping systems research and extension activities contribute significantly to the profitability and sustainability of field crop (including hayed or ensiled forages) production in Colorado. This is a key component of the state's rural economy. The goal of this program is to support sustainable and profitable field crop production systems in Colorado.

Three Extension Work Teams (WTs) plan and will report in this Program Area: Small Farms and Specialty Crops (SFSC) ; Pest Management (PM); and Wheat and Other Cropping Systems (WOCS).

**Small Farms and Specialty Crops Work Team** strives to increase the sustainability and profitability of small and mid-sized farms whose operators report farming as their major occupation and report sales of less than \$250,000, or between \$250,000 and \$1,000,000 in less commodity oriented, diverse channels using a broad array of methodologies to provide education to producers and Team members. There is a long-term need for a comprehensive, high quality integrated pest management system encompassing the disciplines of entomology, plant pathology and weed science. Pest activity and severity are dynamic and thus demand for pest diagnostics, management education and a systems approach will be ongoing. There is no other agency or organization that can assume the core applied research and outreach IPM program of Bioagricultural Sciences & Pest Management and IPM-disciplinary based extension and research personnel throughout the Colorado State University

**Pest Management**, with a sub-teams on Diagnostics and Pest Management; Plant Introduction and Invasive Species; Wheat-Based Dryland Cropping Systems. There is a long-term need for a comprehensive, high quality integrated pest management system encompassing the disciplines of entomology, plant pathology and weed science. Endemic and invasive pest activity and severity, as well as abiotic stresses, are dynamic and thus demand for pest diagnostics, management education and a systems approach will be ongoing. There is no other agency or organization that can assume the core applied research and outreach IPM program of Bioagricultural Sciences and Pest Management and IPM-disciplinary based extension and research personnel throughout the Colorado State University system

**Wheat and Other Cropping Systems:** Cropping systems research and extension activities contribute significantly to the profitability and sustainability of field crop (including hayed or ensiled forages) production in Colorado. This is a key component of the state's rural economy. The goal of this program is to support sustainable and profitable field crop production systems in Colorado.

**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

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	10%		0%	
111	Conservation and Efficient Use of Water	10%		0%	
201	Plant Genome, Genetics, and Genetic Mechanisms	0%		10%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	0%		10%	
204	Plant Product Quality and Utility (Preharvest)	10%		0%	
205	Plant Management Systems	20%		20%	
206	Basic Plant Biology	0%		10%	
211	Insects, Mites, and Other Arthropods Affecting Plants	0%		10%	
212	Pathogens and Nematodes Affecting Plants	0%		10%	
213	Weeds Affecting Plants	0%		10%	
215	Biological Control of Pests Affecting Plants	0%		10%	
216	Integrated Pest Management Systems	10%		10%	
308	Improved Animal Products (Before Harvest)	10%		0%	
601	Economics of Agricultural Production and Farm Management	10%		0%	
602	Business Management, Finance, and Taxation	10%		0%	
604	Marketing and Distribution Practices	10%		0%	
	<b>Total</b>	100%		100%	

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

**1. Situation and priorities**

Colorado State has a history of providing crop selection and testing in other agronomic crops and fruits and vegetables to support the development of these agricultural industries in Colorado. In 2011, wheat generated \$584 million in commodity sales, dry beans \$29 million, potatoes \$249 million, and all

agronomic crops and vegetable and fruit crops generated \$2,922 million, in Colorado. The value of these industries to the Colorado economy through other related economic activity is at least double these combined amounts.

Fundamental plant biology linking basic science with applied science is important to bring the results of basic plant science toward a usable form for applied agricultural sciences. Molecular biology and genomics are opening many new pathways for crop plant improvement and pest management, which will enhance the economic development of agricultural regions, enhance human health through more nutritious and safer food products, and find fundamental solutions to societal issues through renewable and sustainable crop production and pest management. Non-hybrid crop plants require public investment in genetic improvement to provide varieties of cultivars which improve yield, resist environmental and pest stresses, and serve the consuming public. Colorado State has a history of providing cultivar breeding for wheat, dry beans, and potatoes to serve the industries in climatic zones represented in Colorado.

Three Extension Work Teams (WT) report in this Planned Program Area:

#### **Wheat & Other Cropping Systems (WOCS)**

Wheat is the most widely grown crop in Colorado with an average of 2.1 million acres harvested in 2001 - 2010. Crop value over the same period has averaged \$313 million. This compares favorably to grain corn, which has averaged 980,000 acres and \$460 million in crop value over the same period. The difference in crop value per acre is explained by the fact that roughly 90% of Colorado's wheat is grown under dryland conditions, while about 75% of corn grown for grain is irrigated. Approximately 8% of Colorado wheat production comes from limited and fully irrigated conditions. Wheat for limited irrigation conditions is attracting more and more interest because the timing and amount of its water use minimizes competition with summer crops (alfalfa, corn, sunflower, sugar beet and soybean).

There are approximately 9,000 wheat producers in Colorado, and their crop is an important part of the state's agricultural exports. Approximately 80% of the state's wheat production is exported, with the top 10 purchasers in 2009-2010 being Nigeria, Japan, Mexico, Philippines, Korean Republic, Taiwan, Venezuela, Colombia, Peru, and Indonesia.

The two most important negative pressures on agriculture are competition for water and urban development. Dryland production is not affected by the former and is less affected than irrigated cropland by the latter because the majority of non-irrigated cropland is located well out of the path of development, as evidenced by the list of ag-dependent counties above.

Efficient production practices continue to be an essential component of profitable wheat cultivation. Growers need up-to-date, research-based information on variety selection, seed quality, seeding rates, fertilization, carbon sequestration, management for wheat quality, weed management, the role of biofuels in wheat production systems, and crop rotations that optimize water use efficiency. Similar management information is required for traditional and emerging pests and diseases. While this situation statement emphasizes wheat and its importance to Colorado, this team also addresses issues with many other crops important to Colorado agriculture. These include corn, alfalfa, bean, sunflower, sorghum, millet and several others.

#### **Small Farms & Specialty Crops (SFSC)**

Direct market, value added, and/or entrepreneurial agriculture pertains to those Colorado farms and ranches with a particular focus on values-driven consumers who seek to make purchases from producers who share their values related to the principles of environmental health, economic profitability, and enhancing local communities. Sustainable agricultural business practices must also include enhancing soil productivity and the surrounding natural and social environment, while at the same time increasing biodiversity on the farm. Typically, these farms are considered "sustainable", as they focus on the triple bottom line (environmental, economic and social sustainability).

However, farms must also be profitable enough to provide an adequate return on the management, labor, and investment inputs. They must also provide investment capital for adapting to changing trends in markets and societal values. For the full-time farm, its economic base should be able to foster an adequate



retirement for elderly managers and workers as well as a functional transition to subsequent generations.

### **Pest Management (PM)**

There is a long-term need for a comprehensive, high quality integrated pest management system encompassing the disciplines of entomology, plant pathology and weed science. Pest activity and severity are dynamic and thus demand for pest diagnostics, management education and a systems approach will be ongoing. There is no other agency or organization that can assume the core applied research and outreach IPM program of Bioagricultural Sciences & Pest Management and IPM-disciplinary based extension and research personnel throughout the Colorado State University system

## **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**

Successful applied crop science, environmental science, and pest management do not occur in the absence of scientists actively involved in fundamental plant and pest sciences. Colorado State has created the Cancer Prevention Laboratory (CPL) embedded among strong programs of plant breeding and crop production research to address the interactions between crop composition and human health.

**Wheat & Other Cropping Systems (WOCS):** Colorado farmers are economically challenged compared to the State's non-farm counterparts. Their ability to compete for land and water for irrigation is hampered by this disparity in net income. The average age of Colorado farmers in 2007 was 57 compared to 53.5 in 1997. The percentage of Colorado farmers with farm gate sales of over \$100,000 was 15.7% in 1997 vs. 13.8% in 2007. Of all Colorado farmers in 2007 less than 2.6% accounted for 75% of all agricultural products sold. These are primarily livestock, field crops (grains, oilseeds, and dry beans), and forage producers but probably include a very few specialty marketers for the nursery, produce, and greenhouse markets. Extension integrated crop (and crop & livestock) and pest management based programs that work with producers, their advisors, and agricultural industry partners significantly impact many farm operators' economic and environmental vitality and sustainability. Farm operators are keenly interested in transferring vibrant farms for successful generations. These collaborative Extension programs provide the basis for successful farm transfers.

**Small Farms & Specialty Crops (SFSC):** Approximately 78 percent of the farms and ranches in Colorado have annual agricultural sales of less than \$50,000, according to a 2006 survey conducted by Tranel, et.al. The impact of direct market, value added, and/or entrepreneurial agricultural strategies is even greater when one considers those farms classified by the USDA as small (less than \$250,000 in annual agricultural sales) and those farms using direct marketing strategies. The team will continue to seek out opportunities to provide technical assistance and education to all facets of the agricultural community, but this team will focus on assistance that supports the triple bottom line of sustainability. CSU researchers and Extension personnel excel in the technical assistance areas of integrated cropping systems, no-till and reduced tillage farming, site-specific/precision agriculture, manure and biosolid applications, biointensive crop integrated pest management, market farm production and

marketing and alternative Ag business development.

**Pest Management (PM):** Continued staffing of pest management extension and research positions; Continued increase in population of Colorado.

**2. Ultimate goal(s) of this Program**

- Molecular biology and genomics of crop plants and their pests, mechanisms of biological resistance to pests, mechanisms of invasion of weed species, and understand the molecular and cellular foundations for crop improvement and crop pest management.

- Combine the knowledge of human nutrition and plant genetics to extend crop selection, germplasm screening, and crop improvement with the objective to build greater amounts of compounds relevant to improved human health and disease prevention into these crops.
- Research in plant selection and improvement, limited-irrigation landscape plant cultivation, and landscape policies, and outreach in landscape industry plant selection, cultivation management, and Master Gardener education and volunteer development.
- Research in genetic determinants of host plant resistance, fundamental mechanisms of biological invasions, and ecology, bio-informatics, genomics, and population genetics of pests. Extension will include applied research and education relevant to emerging issues of Colorado's agricultural industries, including bio-security, safe and effective pesticide use, and implementation of effective pest management strategies that do not rely on pesticides.
- Evaluate new crop, range, and livestock systems in semi-arid environments including disciplinary and interdisciplinary work in crop and soil sciences, animal sciences, pest sciences, range science, wildlife biology and ecology, forest science, water sciences, economics, and landscape design and policy applicable to the state and region.
- Disseminate findings through extension educational programs aimed at changing practices to control pests.
- Proper diagnosis of plant problems, entomology related to plants and structures, weed control and recommendations of integrated pest management strategies.

For Extension:

- PM 1: Environment - reduced health complications that may result from exposure to pesticides and other negative outcomes of IPM practices.
- SFSC 1: Agricultural land owners and managers are wisely using natural resources
- SFSC 2: Colorado farmers and ranchers have formal succession/legacy plans so that land and water will remain in agriculture and pathways are created for beginning farmers and ranchers in production agriculture
- SFSC 3: Commercial agriculture producers of all sizes are increasing their opportunities for economic sustainability
- SFSC 4: Commercial producers are attaining their business goals and improving their business management and practices.
- SFSC 5: Colorado farmers and ranchers have increased access to resources, information and networks to improve their production enterprises.
- WOCS 1: Enhanced capacity of a sustainable global food system including new/improved plans, animals, technologies and management systems
- WOCS 2: Enhance adaptive capacity of production and natural systems to reduce exposure and vulnerability to climate variability and change.

**V(E). Planned Program (Inputs)**

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

Year	Extension		Research	
	1862	1890	1862	1890

Year	Extension		Research	
	1862	1890	1862	1890
2014	15.0	0.0	26.0	0.0
2015	15.0	0.0	26.0	0.0
2016	15.0	0.0	26.0	0.0
2017	15.0	0.0	26.0	0.0
2018	15.0	0.0	26.0	0.0

**V(F). Planned Program (Activity)**

**1. Activity for the Program**

- Conduct basic and applied research in plant productions systems.
- Workshops and educational classes for producers.
- Utilize demonstration plots and field days to communicate program results.
- Use individual counseling with producers and clientele on specific plant production problems.

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

**Extension**

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>• Education Class</li> <li>• Workshop</li> <li>• Group Discussion</li> <li>• One-on-One Intervention</li> <li>• Demonstrations</li> <li>• Other 1 (Field Days)</li> </ul>	<ul style="list-style-type: none"> <li>• Public Service Announcement</li> <li>• Newsletters</li> <li>• Web sites other than eXtension</li> <li>• Other 1 (Radio reports)</li> </ul>

**3. Description of targeted audience**

Individual agricultural producers, homeowners, agribusinesses, and commodity organizations.

### **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**

- PM 14) New Technologies Expected to be Adopted by Producers
- PM 2) Pest diagnostics in field, urban, office, individual settings.
- PM 3) Trainings/Classes/Workshops, Field Days, Activity Days.
- PM 4) Trainings for Volunteers.
- PM 5) Trainings for Extension Staff.
- PM 6) Community Meetings Convened [examples: Advisory Groups, Councils, Coalition Meetings, Boards].
- PM 7) Direct Communication/Education by field call, telephone and/or e-mail.
- PM 8) Newsletters (This is number of newsletters, not number mailed or number of Coloradans who received them.)
- PM 9) Websites (number of Websites)
- PM 10) Websites (number of hits).
- PM 11) Press/News Releases or Columns (number submitted).
- PM 12) Volunteers (total) in Planned Program.
- PM 13) Certified Master Volunteers (of those in #12).
- PM 15) External Grant Dollars and User Fee Dollars in support of relevant Extension and outreach project and activity.
- SFSC 1) Trainings/Classes/Workshops, Field Days, Activity Days.
- SFSC 2) Direct Communication/Education by telephone and/or e-mail.
- WOCS 1) Trainings/Classes/Workshops, Field Days, Activity Days.
- WOCS 10) Press/News Release or Column (number submitted)
- WOCS 11) Volunteers (total) in Planned Program
- WOCS 12) New Technologies Expected to be Adopted by Producers
- WOCS 13) External Grant Dollars

- WOCS 14) User Fees
- WOCS 3) Websites (number of hits).
- WOCS 2) Community Coalitions, Collaborations, Alliances Formed to Address a Specific Issue.
- WOCS 6) Direct contact (one-on-one and group) with producers.
- WOCS 7) Newsletters (This is number of newsletters, not number mailed or number of Coloradans who received them.)
- WOCS 8) Websites (number of Websites, not number of hits)
- PM 1) News Releases sharing Applied Research & Demonstration Progress in support of relevant extension and outreach project and activity.
- 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**

O. No	Outcome Name
1	Economic impact of the change in behavior reported.
2	Adoption of improved wheat cultivars.
3	PM 1.1 a: Participants will improve or intend to improve their practices, decisions and skills in action through timely access to pest management resources and/or pest identification and IPM implementation.
4	WOCS 1.1: % wheat (or other crop) acres planted to CSU and other recently released improved varieties.
5	WOCS 1.2: % of field crop acreage under crop and soil management systems that result in an enhancement of soil health and crop productivity (includes but is not limited to no-till or conservation tillage practices)
6	WOCS 1.3: % of producers using new marketing and/or management techniques for enhancing enterprise efficiency and optimizing net profits
7	WOCS 1.4: % of producers using research based nutrient management practices for cropping systems
8	WOCS 1.5: % of producers using research based integrated pest management practices for field crops
9	WOCS 2.1: % of farmed acreage planted to diversified cropping systems.
10	WOCS 2.2: % of farmed acreage managed with research based best management practices for water use crop efficiency
11	Adoption of crop production technology as measured by agricultural statistics
12	SFSC 1.1) Participants intend to adopt or have adopted soil management practices that will increase soil health/quality (carbon, biology, structure, etc.)
13	SFSC 1.2) Participants intend to adopt or have adopted soil fertility/plant nutrient best management practices.
14	SFSC 1.3) Participants intend to implement or have implemented more efficient methods of irrigation and soil moisture management.
15	SFSC 1.4) Participants have implemented strategies for improving crop yield and quality, and/or livestock product output and quality.
16	SFSC 2.1) Participants develop and use business, marketing and production plans.
17	SFSC 2.2) Participants use a record-keeping system for financial and production records.
18	SFSC 2.3) Participants intend to adopt or have adopted risk management strategies for ag business management.
19	SFSC 2.4) Participants have accessed resources, information and networks to improve their production enterprises.

### **Outcome # 1**

#### **1. Outcome Target**

Economic impact of the change in behavior reported.

#### **2. Outcome Type : Change in Condition Outcome Measure**

#### **3. Associated Knowledge Area(s)**

- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants
- 215 - Biological Control of Pests Affecting Plants
- 216 - Integrated Pest Management Systems

#### **4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research

### **Outcome # 2**

#### **1. Outcome Target**

Adoption of improved wheat cultivars.

#### **2. Outcome Type : Change in Condition Outcome Measure**

#### **3. Associated Knowledge Area(s)**

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants



#### **4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research

#### **Outcome # 3**

##### **1. Outcome Target**

PM 1.1 a: Participants will improve or intend to improve their practices, decisions and skills in action through timely access to pest management resources and/or pest identification and IPM implementation.

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

##### **3. Associated Knowledge Area(s)**

- 211 - Insects, Mites, and Other Arthropods Affecting Plants

##### **4. Associated Institute Type(s)**

- 1862 Extension

#### **Outcome # 4**

##### **1. Outcome Target**

WOCS 1.1: % wheat (or other crop) acres planted to CSU and other recently released improved varieties.

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

##### **3. Associated Knowledge Area(s)**

- 201 - Plant Genome, Genetics, and Genetic Mechanisms

##### **4. Associated Institute Type(s)**

- 1862 Extension

#### **Outcome # 5**

##### **1. Outcome Target**

WOCS 1.2: % of field crop acreage under crop and soil management systems that result in an enhancement of soil health and crop productivity (includes but is not limited to no-till or conservation tillage practices)

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

**3. Associated Knowledge Area(s)**

- 102 - Soil, Plant, Water, Nutrient Relationships
- 601 - Economics of Agricultural Production and Farm Management

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 6**

**1. Outcome Target**

WOCS 1.3: % of producers using new marketing and/or management techniques for enhancing enterprise efficiency and optimizing net profits

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

**3. Associated Knowledge Area(s)**

- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 604 - Marketing and Distribution Practices

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 7**

**1. Outcome Target**

WOCS 1.4: % of producers using research based nutrient management practices for cropping systems

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

**3. Associated Knowledge Area(s)**

- 102 - Soil, Plant, Water, Nutrient Relationships

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 8**

**1. Outcome Target**

WOCS 1.5: % of producers using research based integrated pest management practices for field crops

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

**3. Associated Knowledge Area(s)**

- 216 - Integrated Pest Management Systems

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 9**

**1. Outcome Target**

WOCS 2.1: % of farmed acreage planted to diversified cropping systems.

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

**3. Associated Knowledge Area(s)**

- 102 - Soil, Plant, Water, Nutrient Relationships

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 10**

**1. Outcome Target**

WOCS 2.2: % of farmed acreage managed with research based best management practices for water use crop efficiency

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

**3. Associated Knowledge Area(s)**

- 111 - Conservation and Efficient Use of Water

#### **4. Associated Institute Type(s)**

- 1862 Extension

#### **Outcome # 11**

##### **1. Outcome Target**

Adoption of crop production technology as measured by agricultural statistics

##### **2. Outcome Type : Change in Knowledge Outcome Measure**

##### **3. Associated Knowledge Area(s)**

- 111 - Conservation and Efficient Use of Water
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 216 - Integrated Pest Management Systems
- 601 - Economics of Agricultural Production and Farm Management
- 604 - Marketing and Distribution Practices

#### **4. Associated Institute Type(s)**

- 1862 Research

#### **Outcome # 12**

##### **1. Outcome Target**

SFSC 1.1) Participants intend to adopt or have adopted soil management practices that will increase soil health/quality (carbon, biology, structure, etc.)

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

##### **3. Associated Knowledge Area(s)**

- 102 - Soil, Plant, Water, Nutrient Relationships

#### **4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 13**

**1. Outcome Target**

SFSC 1.2) Participants intend to adopt or have adopted soil fertility/plant nutrient best management practices.

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

**3. Associated Knowledge Area(s)**

- 102 - Soil, Plant, Water, Nutrient Relationships

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 14**

**1. Outcome Target**

SFSC 1.3) Participants intend to implement or have implemented more efficient methods of irrigation and soil moisture management.

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

**3. Associated Knowledge Area(s)**

- 111 - Conservation and Efficient Use of Water

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 15**

**1. Outcome Target**

SFSC 1.4) Participants have implemented strategies for improving crop yield and quality, and/or livestock product output and quality.

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

**3. Associated Knowledge Area(s)**

- 601 - Economics of Agricultural Production and Farm Management

#### **4. Associated Institute Type(s)**

- 1862 Extension

#### **Outcome # 16**

##### **1. Outcome Target**

SFSC 2.1) Participants develop and use business, marketing and production plans.

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

##### **3. Associated Knowledge Area(s)**

- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation

#### **4. Associated Institute Type(s)**

- 1862 Extension

#### **Outcome # 17**

##### **1. Outcome Target**

SFSC 2.2) Participants use a record-keeping system for financial and production records.

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

##### **3. Associated Knowledge Area(s)**

- 602 - Business Management, Finance, and Taxation

#### **4. Associated Institute Type(s)**

- 1862 Extension

#### **Outcome # 18**

##### **1. Outcome Target**

SFSC 2.3) Participants intend to adopt or have adopted risk management strategies for ag business management.

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

### **3. Associated Knowledge Area(s)**

- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation

### **4. Associated Institute Type(s)**

- 1862 Extension

## **Outcome # 19**

### **1. Outcome Target**

SFSC 2.4) Participants have accessed resources, information and networks to improve their production enterprises.

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

### **3. Associated Knowledge Area(s)**

- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 604 - Marketing and Distribution Practices

### **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 Programmatic Challenges

### **Description**

Public policies and weather and other natural diseases will affect the adoption of new crop production technologies. Most of the advances are multi-year activities and cumulative rather than episodic in nature.

- weather conditions such as drought, flooding, hail, moisture/temperature trends influencing

pathogen and pest life cycles, which will require short/medium/long term redirection of effort to accommodate program needs for pest diagnostics and management strategies

- economic issues that may lead more individuals to acquire and/or redirect their IPM strategies according to resource limitations or opportunities
- continued funding through federal, state and county agencies
- changes by governmental and non-governmental agencies to irrigation and pest management requirements.

Drought: affects productive capacity and is a business risk

Economy: affects direct market purchasing power and is a business risk

Appropriations changes: ABM Small Farm Specialist is a great asset and loss of that position would negatively impact outcomes

Public Policy changes: food safety policies in local markets can be a business risk, immigration policy is currently a risk for ag labor

Competing public priorities: loss of traditional farming systems via public interest in market farms (dismissive of traditional farming) can cause systemic damage to the ag input supply sector as demand for these inputs wanes, loss of input providers, and make administration and management of ditch systems problematic for irrigation

Competing programmatic challenges: Extension covering several important programs can deplete time and effort toward these POW outcomes

Population changes: market demand may vary with population changes, requiring new marketing strategies and products, also a business risk.

## **V(K). Planned Program - Planned Evaluation Studies**

### **Description of Planned Evaluation Studies**

**Wheat & Other Cropping Systems (WOCS):** For this Planned Program, evaluation will be performed by [for example, distributing written surveys to all program participants.] The results of the surveys will be distributed to or will be used for developing further program plans for the work team as well as developing impact reports for stakeholders.

- The surveys will be done pre and post program
- The surveys will ask questions focused primarily on knowledge and skills gained and intention to change behaviors or use knowledge & skills gained. Follow-up surveys will ask for actual changes made and practices used as well as their economic or welfare benefits.
- The surveys will help us measure the percentage of program participants who increased people's knowledge and skills as well as the profitability and sustainability of people's business enterprises (primarily farms & ranches).

**Small Farms & Specialty Crops (SFSC):** Evaluating impacts pre and post with written and online instruments based on stated learning and action outcomes in this POW, using surveys and questionnaires with participants to elicit immediate, and in some cases, longer term changes in behavior, attitudes and practices because they participated in this team's programs.

**Pest Management (PM):** For this Planned Program, evaluation criteria will be adapted from the National Roadmap for IPM and will be performed by distributing written surveys to all program participants.

- The surveys will be done pre and post program.
- The surveys will ask questions focused primarily on pest biology, education and management.
- The surveys will help us measure the percentage of program participants who increased their knowledge on pest biology, education, and management.





## **V(A). Planned Program (Summary)**

### **Program # 6**

#### **1. Name of the Planned Program**

Natural Resources and Environment

#### **2. Brief summary about Planned Program**

An increasing world population is placing greater demands on our natural resources. Public concern for a quality environment has increased as agriculture has become more complex and population pressures have increased. Natural resources must be conserved and their capacity maintained or improved in order to meet the needs of future generations. The long-term viability of agriculture and forestry production is tightly linked to proper use and protection of our soil, air and water resources. Impacts of urban horticulture on the environment are significant.

The Census of Agriculture reports decreasing numbers of mid- and large-sized farms and a significant increase in the number of small farms. Small acreage owners/operators frequently may not possess much agricultural or business knowledge. Extension will address the needs of small acreage producers and work with agricultural industry personnel and governmental agencies to assure that land managers and communities can evaluate a broad range of opportunities to enhance viability while respecting the environment.

AES and Extension programs address the growing competition for finite water, land, and air resources in a state with a growing human population by:

- educating agricultural and resource industry professionals;
- researching technical and economic issues related to improved resource utilization; and
- enhancing international competitiveness.

In this Planned Program three Extension Work Teams (WTs) present their Plans of Work: Environmental Horticulture (HORT), including Colorado Master Gardeners (CMG); Native Plant Education (NPE); and Water Resources (WR).

**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

<b>KA Code</b>	<b>Knowledge Area</b>	<b>%1862 Extension</b>	<b>%1890 Extension</b>	<b>%1862 Research</b>	<b>%1890 Research</b>
101	Appraisal of Soil Resources	5%		10%	
102	Soil, Plant, Water, Nutrient Relationships	5%		10%	
103	Management of Saline and Sodic Soils and Salinity	5%		10%	
104	Protect Soil from Harmful Effects of Natural Elements	5%		0%	
111	Conservation and Efficient Use of Water	10%		10%	
112	Watershed Protection and Management	5%		10%	
121	Management of Range Resources	5%		10%	
123	Management and Sustainability of Forest Resources	5%		10%	
124	Urban Forestry	5%		0%	
132	Weather and Climate	5%		10%	
133	Pollution Prevention and Mitigation	5%		0%	
136	Conservation of Biological Diversity	5%		0%	
204	Plant Product Quality and Utility (Preharvest)	5%		0%	
206	Basic Plant Biology	5%		0%	
211	Insects, Mites, and Other Arthropods Affecting Plants	5%		0%	
213	Weeds Affecting Plants	5%		0%	
403	Waste Disposal, Recycling, and Reuse	5%		10%	
601	Economics of Agricultural Production and Farm Management	5%		0%	
605	Natural Resource and Environmental Economics	5%		10%	
	<b>Total</b>	100%		100%	

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

## 1. Situation and priorities

Development of management practices that are compatible with a high quality environment requires new methods of study that involve entire agroecosystems. Quantitative relationships between agriculture, natural resource use, and environmental quality must be defined. This will require a more thorough understanding of basic biological/ecological processes, as well as computer-aided systems management research. Continuing to use natural resources to produce agricultural, range, and forestry products

requires new multiple use strategies which are realistic in terms of biological, economic, social and environmental constraints. Transport and fate of pesticides, fertilizers, and other agricultural chemicals, as well as threatened and endangered species, biodiversity, habitat, wetlands, and water are all issues of concern. Knowledge must be developed to understand and evaluate competitive land use impacts and interactions on agricultural, range, and forest lands. This research provides the basis for developing agricultural and forestry management systems that are more compatible with conservation and environmental goals.

**Water Resources (WR):** Adequate **supplies** of clean water are essential to the health and wellbeing of Colorado citizens, agriculture, industry, wildlife and the economic vitality of the State. With shifting demographics, a growing population and a more integrated global economy, Colorado communities are increasingly faced with losing irrigated agriculture to growing municipal and industrial demands. Many residents and visitors to Colorado also value the state's recreational and environmental water uses putting additional pressure on the state's scarce water supply. **Amounts of water.** Additionally there are a growing number of water **quality** concerns throughout the state. As diluting flows are not likely to become more abundant in the future and detection technology improves, threats to Colorado's snowmelt fed rivers, streams, and lakes should see increased scrutiny. **Number of impaired segments.** Colorado water **policy** is an ever-evolving process that includes many institutions, agencies, corporations, and individuals. Understanding the subtleties and significance of water resource policy and the likely impact on local economies and quality of life is a growing need among the state's citizens.

**Native Plant Education (NPE):** Colorado is a dry state. According to the Colorado Climate Center, statewide average annual precipitation is only 17 inches. Sustainable landscapes using site-appropriate native plants can reduce the need for water and maintenance. A five year study of homes that converted non-native turf to water-efficient native and non-native plants in Las Vegas, Nevada found a 39 percent reduction in average summer monthly water use and a 33% reduction in maintenance costs in addition to the water savings. (Source: [http://www.snwa.com/assets/pdf/about\\_reports\\_xeriscape.pdf](http://www.snwa.com/assets/pdf/about_reports_xeriscape.pdf) Xeriscape Conversion Study. Sovocool, K. 2005.) Native plants can also be beneficial because they are environmentally adapted, hardy, provide food and shelter for wildlife and maintain local biological diversity. Invasive, non-native weeds are a concern in many communities and threaten native ecosystems. Management of invasive weeds is critical when maintaining a natural space or a landscaped yard and garden. About 42% of the species on the Threatened or Endangered Species lists are at risk primarily because of alien invasive species. Nonindigenous species in the United States cause major environmental damage and losses totaling approximately \$120 billion per year. (Source: <http://www.sciencedirect.com/science/article/pii/S0921800904003027> Update on the Environmental and Economic Costs Associated with Alien-Invasive Species in the United States, Pimentel et al., Feb. 2005.) Noxious weeds are moving into valued ecosystems displacing natives at an alarming rate. Invasive plants are found on 133 million acres in the US (as big as California and New York combined), in federal, state, and private ownerships. Each year, invasive species advance by 1.7 million acres. (Source: <http://www.fs.fed.us/projects/four-threats/facts/invasive-species.shtml> Invasive Species. U.S. Forest Service, 2006.)

**Environment Horticulture (HORT):** Professional landscape management and homeowner gardening activities contribute significantly to the economy of Colorado. According to a study conducted by Colorado State University (Thilmany et al., 2008; <http://www.greenco.org/downloadables/GreenCO-ExecSumFinal08.pdf>), entitled "The Economic Contribution of Colorado's Green Industry: A 2008 Update", Colorado household and business expenditures on garden, landscape and lawn products and services (including linkage industries such as irrigation systems, botanical gardens, lawn and garden equipment and maintenance services) have averaged almost 10% annual growth since 1993, for a 2007 total of \$1.8 billion. The \$1.8 billion directly contributed to the Colorado economy increases to \$3.3 billion when its impact on broader economic activity and employment generation in the Colorado economy is considered. The authors also found that, in 2007, the green industry provided Coloradoans with over 35,000 jobs, an increase of 12,000 jobs since 1994 (tripling in size in less than 15 years), with \$1.2 billion in payroll (up \$750 million from 1994). The average green industry wage earned in 2007 increased to an average of

complete recovery from the drought restrictions and economic downturn in the early 2000s, but it is not yet clear how the industry will weather the current housing downturn. Colorado ranks 22<sup>nd</sup> of 50 states in its contribution to Gross Domestic Product (Hodges et al., 2011). The quality of a landscape design and maintenance is a major factor in the home and property values. The average household in Colorado spends over \$1,000 annually on landscape care and gardening supplies (<http://www.greenco.org/images/downloadables/GreenCO-ExecSumFinal08.pdf>). Landscaping yields an average of a 109% return on every dollar spent, much more so than other home improvements. (<http://ellisonchair.tamu.edu/emphasis-areas/marketing-economics/economic-benefits-of-plants/>). The primary issues addressed by Environmental Horticulture Extension include: ornamental landscapes, diagnostic services, small-scale food production, and volunteer engagement.

Emerging issues for consideration include:

Sustainable landscaping

"Green" gardening

Organic/natural landscape management

Composting/recycling

Water-wise/water smart gardens

Youth Gardening

Wildlife gardening (birds, butterflies)

Home greenhouses

Local food production

Community gardens and Neighborhood-Supported Agriculture (NSAs)

Community Supported Agriculture (CSAs)

Spanish speaking audiences

Ornamental Landscapes - The Environmental Horticulture Work Team puts statewide efforts into the Colorado Garden and Home Show. This event brings in Colorado residents from across the state and residents and vendors from 20+ states and Canada. The show's estimated annual economic impact on Denver is \$40 million in incremental spending by those attending (<http://www.gardeningcolorado.com>). In 2011, attendance reached approximately 70,000 people, the highest-attended consumer show held at the Colorado Convention Center. Agents, specialists, and volunteers cooperate to design, install, and staff a CSU Extension educational garden and booth at the Colorado Garden and Home Show. Specialists also teach classes at this annual event.

## **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**

Colorado State is in the ideal geographic position to address irrigated agro-ecosystem level issues. Colorado has a wide diversity of water supply/management regimes that include ground water, diverse surface water management in five river systems, and various diversions of West Slope water. Faculty have

an international reputation in agro-ecosystem modeling and soil carbon dynamics and associations with the NSF Long Term Ecological Research Short-Grass Prairie unit near Ault, the USDA-ARS Great Plains Systems Unit in Akron, a five-university dryland agriculture research team, the modeling group at the Natural Resources Ecology Laboratory on campus, atmospheric sciences research programs at CU and CSU, the US Geological Survey, USDA-NRCS, USDA-ERS, a strong set of dryland cropping extension agents, and the dryland crops industries. Colorado State has field research laboratories at Walsh, Rocky Ford, Ft. Collins, Cortez, Center, Orchard Mesa, and Fruita capable of experimentation on cropping systems. State and grant funding will continue at current levels to provide facilities and support required to conduct an applied, field based research and outreach program.

**Water Resources (WR):** Agriculture, industry, homeowners, water providers, and agencies in addition to other educational and research institutions look to Colorado State University Extension to provide research-based information and educational programs on water quality, water quantity, water policy, and other water resource issues. Extension is not the only institution with outreach expertise. Extensions value is in bringing the credibility and continuity of science based land grant institution.

**Native Plant Education (NPE):** Many residents, especially those new to Colorado, are unfamiliar with their state's local environmental conditions such as water availability, soils and elevation. Residents may find it difficult to select plants such as natives that are suited to these conditions with minimal supplemental irrigation. Economic conditions have also created a strong demand for water-efficient plants such as natives that can save residents money. Alien invasive weeds are expanding in native habitats across the state and require increasing expenditures for control. Educational programs can provide research-based information on native plants suitable for sustainable landscaping and noxious weed management that will enable residents to make informed choices. Their choices can result in cost savings from reduced inputs such as water and maintenance and a positive impact on the environment through control of alien invasives that threaten native plant communities.

**Environment Horticulture (HORT):** Colorado State University Extension will collaborate with the entities making up the Green Industries of Colorado and professionals within the green industries, various state and federal government agencies and non-governmental organizations, and the gardening public in order to provide up-to-date, research based information for delivery horticultural programming for both rural and urban audiences.

## 2. Ultimate goal(s) of this Program

- Conduct natural resources research to develop agricultural and forestry management systems that are compatible with conservation and environmental goals and economically sustainable.
- Study the effects of climate and climate variation on plant, animal and microbial ecosystems to allow an assessment of the impacts of global change on agricultural and natural ecosystems.
- Develop and test technical, institutional, or social solutions to water quality and quantity problems in Colorado.
- Develop technologies for managing agricultural and municipal wastes.
  
- CMG Successful home gardening is fostered by supplying research-based information to the home gardener via the Colorado Master Gardener (CMG) program.
- HORT Landscapes (trees, woody ornamentals, herbaceous ornamentals, food gardening, turfgrass, soil) are sustainably designed, installed and managed.
- NPE 1: Colorado's natural and built landscapes become more sustainable.
- NPE 2: The Colorado economy is healthy.
- SAM 1. Water quality and quantity are protected in wells, local streams, and other water bodies.
- SAM 2. Animals, livestock, and wildlife are managed in a sustainable way on small acreages.
- SAM 3. Small acreage landowners are building healthy soils on their properties.
- SAM 4. Pasture, range, crops, windbreaks, forests, and other plant communities are managed sustainably.

- WR 1) Water Quality that is to the mutual benefit of all uses in Colorado: municipal, agricultural, industrial, recreational, and environmental
- WR 2) Water Quantity that is to the mutual benefit of all uses in Colorado: municipal, agricultural, industrial, recreational, and environmental
- WR 3) Water Policy and Education that is to the mutual benefit of all uses in Colorado: municipal, agricultural, industrial, recreational, and environmental.

**V(E). Planned Program (Inputs)**

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

Year	Extension		Research	
	1862	1890	1862	1890
2014	30.0	0.0	11.0	0.0
2015	30.0	0.0	11.0	0.0
2016	30.0	0.0	11.0	0.0
2017	30.0	0.0	11.0	0.0
2018	30.0	0.0	11.0	0.0

**V(F). Planned Program (Activity)**

**1. Activity for the Program**

- Conduct basic and applied research on environmental and natural resources issues.
- CMG EDUCATION Total hours of Continuing Education reported by all CMG volunteers
- CMG EDUCATION Number of Extension staff (agents, specialists, CMG program assistants) days spent HOSTING or FACILITATING CMG education
  - CMG EDUCATION Number of Extension staff (agents, specialists, CMG program assistants) days spent on CURRICULUM DEVELOPMENT and producing other educational products (websites, etc.) for the CMG program
  - CMG EDUCATION Number of Extension staff (agents, specialists, CMG program assistants) days spent TEACHING CMG volunteers (basic and continuing education)
- CMG OUTREACH One-to-one contacts at the office and in the field - including one-to-one contacts by phone, office walk-ins, diagnostic clinic at the office, e-mails, Ask an Expert questions and house calls
- VOLUNTEER HOURS**
  - CMG OUTREACH Apprentice CMG volunteers: total volunteer HOURS
  - CMG OUTREACH Circulation for newspapers/print media where CMG articles are published
  - CMG OUTREACH Continuing CMG Volunteers: NUMBER
  - CMG OUTREACH Continuing CMG Volunteers: Total volunteer HOURS
  - CMG OUTREACH Emeritus, limited activity, and affiliate CMG volunteers NUMBER OF
  - CMG OUTREACH Estimate PERCENTAGE (%) of total CMG contacts that served minority or underserved (as defined for your county) clientele
    - CMG OUTREACH Food Banks - If your CMG program works with directly or indirectly with local food banks, please record the pounds of fresh produce donated.
    - CMG OUTREACH Number of Apprentice CMGs employed in the Green Industry (information found

on CMG application)

- CMG OUTREACH Number of Fact Sheets, PlantTalk and CMG GardenNotes distributed by CMG volunteers
- CMG OUTREACH TOTAL VOLUNTEER CONTACTS for all CMG activities
- CMG OUTREACH TOTAL VOLUNTEER HOURS for all CMG volunteer activities
- CMG OUTREACH Newsletters - number mailed or emailed
- CMG OUTREACH Website/BLOGS maintained by CMG volunteers - hours spent developing and in maintenance
  - CMG OUTREACH Website/BLOGS maintained by CMG volunteers - number of hits
  - CMG OUTREACH Information booths and clinics (one-to-one and small group contacts in an public setting) - including clinics at nurseries, garden shows (including Colorado Garden Show, and Home and Patio Show), farmers' markets, county fairs, state fairs, and other events where CMGs staff an informational booth. NUMBER OF CONTACTS
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    - CMG OUTREACH One-to-one contacts at the office and in the field - including one-to-one contacts by phone, office walk-ins, diagnostic clinic at the office, e-mails, Ask an Expert questions and house calls NUMBER OF CONTACTS
    - CMG OUTREACH Classes and group presentations - including all classroom type presentations and workshops where instruction is give on a group basis. This includes classes taught by Master Gardeners, and where Master Gardeners assist as room monitors/hosts. It includes classes for general public, green industry, schools, youth groups, and Master Gardeners. (For example: Speakers bureau, ProGreen room monitors, Twilight Garden Series) NUMBER OF CONTACTS
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    - CMG OUTREACH Number of apprentice CMG volunteers
    - CMG OUTREACH Number of Colorado Gardener Certificate, CGC students
    - CMG OUTREACH Print Media - CMG-written newspaper, magazine, and newsletter articles NUMBER WRITTEN
    - CMG OUTREACH Print Media - CMG-written newspaper, magazine, and newsletter articles VOLUNTEER HOURS spent developing/writing
    - CMG OUTREACH Support of CMG Program - including advisory boards, CMG committee meetings (not related to specific projects) office filing and assistance, and other behind the scenes work that does



not directly contact the public. VOLUNTEER HOURS

- CMG OUTREACH Support of CMG Program - including advisory boards, CMG committee meetings (not related to specific projects) office filing and assistance, and other behind the scene work that does not directly contact the public. NUMBER OF CONTACTS

- CMG OUTREACH Radio and TV - number of programs, show or appearances by CMG volunteers

- CMG OUTREACH Radio and TV - programs, show or appearances by CMG volunteers

ESTIMATED AUDIENCE

- CMG OUTREACH Radio and TV programs, show or appearances by CMG volunteers

VOLUNTEER HOURS SPENT

- CMG VOLUNTEER MGT Agent/specialist/program coordinator/Extension staff days spent on CMG volunteer and program management

- CMG Youth - All outreach activities specifically targeting a youth audience NUMBER OF CMG

VOLUNTEERS INVOLVED IN YOUTH PROJECTS

- CMG Youth - All outreach activities specifically targeting a youth audience NUMBER OF YOUTH

CONTACTS

- CMG Youth - All outreach activities specifically targeting a youth audience VOLUNTEER HOURS

DEVOTED TO YOUTH PROJECTS

- CMG Youth - Number of youth gardening projects that received assistance from CMG volunteers (including 4-H, K-12 and any other youth programs/organizations)

- HORT FM - Farmers' Market administration - agent hours

- HORT FM - Farmers' Market administration - FM coordinator and other Extension staff (hours)

- HORT FM - Farmers' Market estimated attendance

- HORT FM - Farmers' Market gross sales (\$)

- HORT FM - Farmers' Market number of participating vendors

- HORT FM - Farmers' Market-specific volunteer hours (OK if these have also been included in TOTAL CMG VOLUNTEER HOURS - don't worry about double-counting!)

- HORT Telephone, e-mail, other electronic communication

- HORT Demonstration garden management (total agent/coordinator/volunteer DAYS invested)

- HORT Demonstration gardens built/maintained (Plant Select, High and Dry, Xeriscape, etc)

NUMBER OF GARDENS

- HORT eXtension - Ask an Expert (estimated time spent responding to questions in HOURS)

- HORT Extension Fact Sheets, CMG Notes, PlantTalk Colorado scripts written; other writing for CSU

Extension (number)

- HORT Newspaper, magazine, newsletter articles, blogs written (number)

- HORT Presentations, Trainings, Classes, Workshops, Webinars, Updates, Field Days given/taught

(but NOT CO Master Gardener)

- HORT Presentations, Trainings, Classes, Workshops, Webinars, Updates, Field Days given/taught

(but NOT CO Master Gardener) including participation and planning in events that are partnerships such as symposiums, conferences, garden walks, etc.

- HORT User fees generated (Lawncheck, Tree Team, other fee generation/income) DOLLARS

GENERATED

- HORT Websites, blogs developed and maintained - number of hits

- HORT Websites, blogs maintained (number)

- NPE-1 No. of NPM Certification Courses (1 course = 3 sessions totaling approx 12.5 contact hrs.)

- NPE-10 External Grant Dollars

- NPE-11 User Fees (gross \$ collected from NPM courses and classes, material sales etc.)

- NPE-12 No. of Agencies Partnering/Collaborating

- WR 1) Trainings/Classes/Workshops, Field Days, Activity Days

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

**Extension**

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Education Class</li> <li>● Workshop</li> <li>● Group Discussion</li> <li>● One-on-One Intervention</li> <li>● Demonstrations</li> <li>● Other 1 (Field Days)</li> </ul>	<ul style="list-style-type: none"> <li>● Public Service Announcement</li> <li>● Newsletters</li> <li>● Web sites other than eXtension</li> <li>● Other 1 (Radio spots)</li> </ul>

**3. Description of targeted audience**

Individual agricultural producers, landowners, commodity groups, regulatory agencies, agribusinesses, and local, state, and federal land management agencies.

**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**

- CMG OUTREACH: Apprentice CMG volunteers: Total volunteer HOURS
- CMG OUTREACH: Continuing CMG Volunteers: NUMBER
- CMG OUTREACH: Continuing CMG Volunteers: Total volunteer HOURS
- CMG OUTREACH: Emeritus, limited activity, and affiliate CMG volunteers NUMBER OF
- CMG OUTREACH: Estimate PERCENTAGE (%) of total CMG contacts that served minority or underserved (as defined for your county) clientele
- CMG OUTREACH: Food Banks -- If your CMG program works with directly or indirectly with local food banks, please record the pounds of fresh produce donated.
- CMG EDUCATION: Total hours of Continuing Education reported by all CMG volunteers
- CMG EDUCATION: Number of Extension staff (agents, specialists, CMG program assistants) days spent HOSTING or FACILITATING CMG education
- CMG EDUCATION: Number of Extension staff (agents, specialists, CMG program assistants) days spent on CURRICULUM DEVELOPMENT and producing other educational products (websites, etc.) for the CMG program
- CMG EDUCATION: Number of Extension staff (agents, specialists, CMG program assistants) days spent TEACHING CMG volunteers (basic and continuing education)
- CMG OUTREACH: One-to-one contacts at the office and in the field including one-to-one contacts by phone, office walk-ins, diagnostic clinic at the office, e-mails, Ask an Expert questions and house calls VOLUNTEER HOURS
- CMG OUTREACH: Number of Apprentice CMGs employed in the Green Industry (information found on CMG application)
- CMG OUTREACH: Number of Fact Sheets, PlantTalk and CMG GardenNotes distributed by CMG volunteers
- CMG OUTREACH: TOTAL VOLUNTEER CONTACTS for all CMG activities
- CMG OUTREACH: TOTAL VOLUNTEER HOURS for all CMG volunteer activities
- CMG OUTREACH: Newsletters, number mailed or emailed
- CMG OUTREACH: Website/BLOGS maintained by CMG volunteers, hours spent developing and in maintenance
- CMG OUTREACH: Website/BLOGS maintained by CMG volunteers, number of hits
- CMG OUTREACH: Information booths and clinics (one-to-one and small group contacts in a public setting) including clinics at nurseries, garden shows (including Colorado Garden Show, and Home and

Patio Show), farmers markets, county fairs, state fairs, and other events where CMGs staff an informational booth. NUMBER OF CONTACTS

- CMG OUTREACH: Information booths and clinics (one-to-one and small group contacts in a public setting) including clinics at nurseries, garden shows (including Colorado Garden Show, and Home and Patio Show), farmers markets, county fairs, state fairs, and other events where CMGs staff an informational booth. VOLUNTEER HOURS
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- CMG OUTREACH: Classes and group presentations including all classroom type presentations and workshops where instruction is given on a group basis. This includes classes taught by Master Gardeners, and where Master Gardeners assist as room monitors/hosts. It includes classes for general public, green industry, schools, youth groups, and Master Gardeners. (For example: Speakers bureau, ProGreen room monitors, Twilight Garden Series) NUMBER OF CONTACTS
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- CMG OUTREACH: Community Greening and Gardening Projects including all activities where Master Gardeners are assisting with community gardening projects, community greening projects, or other hands-on gardening activities, i.e., where the Master Gardeners is assisting in actual hands-on gardening projects. Includes demonstration gardens and research plots. (For example, Arbor Day projects, Children's Hospital Garden, community gardens, Earth Day project, Habitat for Humanity, Hudson gardens, jail gardens, Loveland youth garden project, nature centers, PERC Gardens, Praying Hands Ranch, Pueblo Zoo, school garden project, tree plantings, and Victims' Outreach garden) NUMBER OF CONTACTS
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- CMG OUTREACH: Number of apprentice CMG volunteers
- CMG OUTREACH: Number of Colorado Gardener Certificate, CGC students
- CMG OUTREACH: Print Media - CMG-written newspaper, magazine, and newsletter articles NUMBER WRITTEN
- CMG OUTREACH: Print Media - CMG-written newspaper, magazine, and newsletter articles VOLUNTEER HOURS spent developing/writing
- CMG OUTREACH: Support of CMG Program - including advisory boards, CMG committee meetings (not related to specific projects) office filing and assistance, and other behind the scenes work that does not directly contact the public. VOLUNTEER HOURS

- CMG OUTREACH: Support of CMG Program including advisory boards, CMG committee meetings (not related to specific projects) office filing and assistance, and other behind the scene work that does not directly contact the public. NUMBER OF CONTACTS
- CMG OUTREACH: Radio and TV - number of programs, show or appearances by CMG volunteers
- CMG OUTREACH: Radio and TV - programs, show or appearances by CMG volunteers ESTIMATED AUDIENCE
- CMG OUTREACH: Radio and TV programs, show or appearances by CMG volunteers VOLUNTEER HOURS SPENT
- CMG VOLUNTEER MGT: Agent/specialist/program coordinator/Extension staff days spent on CMG volunteer and program management
- CMG Youth: All outreach activities specifically targeting a youth audience NUMBER OF CMG VOLUNTEERS INVOLVED IN YOUTH PROJECTS
- CMG Youth: All outreach activities specifically targeting a youth audience NUMBER OF YOUTH CONTACTS
- CMG Youth: All outreach activities specifically targeting a youth audience VOLUNTEER HOURS DEVOTED TO YOUTH PROJECTS
- CMG Youth: Number of youth gardening projects that received assistance from CMG volunteers (including 4-H, K-12 and any other youth programs/organizations)
- HORT FM: Farmers Market administration, agent hours
- HORT FM: Farmers Market administration, FM coordinator and other Extension staff (hours)
- HORT FM: Farmers Market estimated attendance
- HORT FM: Farmers Market gross sales (\$)
- HORT FM: Farmers Market number of participating vendors
- HORT FM: Farmers Market-specific volunteer hours (OK if these have also been included in TOTAL CMG VOLUNTEER HOURS, don't worry about double-counting)
- HORT: Telephone, e-mail, other electronic communication
- HORT: Demonstration garden management (total agent/coordinator/volunteer DAYS invested)
- HORT: Demonstration gardens built/maintained (Plant Select, High and Dry, Xeriscape, etc.) NUMBER OF GARDENS
- HORT: eXtension, Ask an Expert (estimated time spent responding to questions in HOURS)
- HORT: Extension Fact Sheets, CMG Notes, PlantTalk Colorado scripts written; other writing for CSU Extension (number)
- HORT Newspaper, magazine, newsletter articles, blogs written (number)

- HORT: Presentations, Trainings, Classes, Workshops, Webinars, Updates, Field Days given/taught (but NOT CO Master Gardener)
- HORT: Presentations, Trainings, Classes, Workshops, Webinars, Updates, Field Days given/taught (but NOT CO Master Gardener) including participation and planning in events that are partnerships such as symposiums, conferences, garden walks, etc.
- HORT: User fees generated (Lawncheck, Tree Team, other fee generation/income) DOLLARS GENERATED
- HORT: Websites, blogs developed and maintained, number of hits
- HORT: Websites, blogs maintained (number)
- NPE-1: Number of NPM Certification Courses (1 course = 3 sessions totaling approx. 12.5 contact hrs.)
- NPE-10: External Grant Dollars
- NPE-11: User Fees (gross \$ collected from NPM courses and classes, material sales etc.)
- NPE-12: No. of Agencies Partnering/Collaborating (specify)
- NPE-13: No. of Newsletters (This is no. of newsletters, not number mailed or number of Coloradans who received them.)
- NPE-14: No. of locally hosted Websites in support of this Plan of Work (enter no. of hits as participants.)
- NPE-15: Number of NPM media-related items published or aired that are educational in nature such as newspaper articles, blogs, radio or television interviews. (This is the no. of publications etc., not the circulation, listenership or viewership.)
- NPE-2: No. of NPM Special Classes (such as basic botany, native plant landscaping, weed management etc. that support NPM courses)
- NPE-3: No. of Trainings for NPM Volunteers
- NPE-4: No. of Trainings for Extension Staff
- NPE-5: No. of NPM Volunteers (total)
- NPE-6: No. of Certified Native Plant Master Volunteers in good standing (of those above in #5)
- NPE-7: No. of Volunteer Trainers that teach NPM courses/classes to public (of those above in #5)
- NPE-8: No. of Adult Educational Contacts made by Volunteers/Agents
- NPE-9: No. of Youth Educational Contacts made by Volunteers/Agents
- NPE-C No. of Trainings for NPM Volunteers.

- WR 1) Trainings/Classes/Workshops, Field Days, Activity Days
  - WR 2) Trainings for Extension Staff
  - WR 3) Community Meetings Convened [examples: Advisory Groups, Councils, Coalition Meetings, Boards]
  - WR 4) Community Meetings Facilitated [examples: Focus Group, Citizen Forum, Round Table Dialogue, Strategic Planning Process]
  - WR 5) Direct Communication/Education by telephone and/or e-mail
  - WR 6) Newsletters (This is number of newsletters, not number mailed or number of Coloradoans who received them.)
  - WR 7) Websites (number of Websites)Can include :Water Quality Interpretation Tool, Anaerobic digestion, decision, Other sites.
  - WR 8) Websites (number of hits) Could include: Water-related fact sheets, Other sites.
  - WR 9) Press/News Release or Column (number submitted)
  - NPE-J External Grant Dollars.
  - NPE-L Number of Agencies Partnering/Collaborating.
- 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**

O. No	Outcome Name
1	HORT Home gardeners and green industry professionals report enhanced plant health and more efficient use of labor, water, fertilizer and pesticides when creating and maintaining landscapes
2	NPE 1.1a: Number of land managers and residents who asked for native plants at a local garden center or by mail order.
3	NPE 1.1b: Number of land managers and residents who began or increased planting of natives in a sustainable landscape.
4	NPE 1.2a: Number of land managers and residents who began or increased weed control efforts.
5	NPE 1.1c: Number of acres impacted by planting of natives in a sustainable landscape
6	NPE 1.2b: Number of acres impacted by alien weed control efforts.
7	NPE 1.3a: Number of land managers and residents who left wild native plants to produce seed rather than collecting or picking wildflowers.
8	NPE 1.3b: Number of land managers and residents who stayed on trails to prevent erosion and damage to native plants.
9	NPE 2.1a: Dollar amount saved by residents from their planting of natives in a sustainable landscape.
10	NPE 2.1b: Dollar amount saved by land managers and residents from control of alien weeds.
11	NPE 2.1c: Number of land managers and residents who retained their current job, got a promotion or got a new job as a result of their program participation.
12	WR 1.1) Number of participants reporting they Perform water quality sampling and analysis in a manner meaningful to the user and regulating agencies.
13	WR 1.2) Adoption of technology and Best Management Practices (BMPs) that prevent and mitigate the effects of point-source and/or non-point source water pollution.
14	WR 2.1) Adoption of tools, technology, and practices that foster conservation of water or optimization of water use in agriculture settings.



### **Outcome # 1**

#### **1. Outcome Target**

HORT Home gardeners and green industry professionals report enhanced plant health and more efficient use of labor, water, fertilizer and pesticides when creating and maintaining landscapes

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

#### **3. Associated Knowledge Area(s)**

- 102 - Soil, Plant, Water, Nutrient Relationships
- 111 - Conservation and Efficient Use of Water
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 213 - Weeds Affecting Plants

#### **4. Associated Institute Type(s)**

- 1862 Extension

### **Outcome # 2**

#### **1. Outcome Target**

NPE 1.1a: Number of land managers and residents who asked for native plants at a local garden center or by mail order.

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

#### **3. Associated Knowledge Area(s)**

- 111 - Conservation and Efficient Use of Water
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 213 - Weeds Affecting Plants

#### **4. Associated Institute Type(s)**

- 1862 Extension

### **Outcome # 3**

#### **1. Outcome Target**

NPE 1.1b: Number of land managers and residents who began or increased planting of natives in a sustainable landscape.

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

**3. Associated Knowledge Area(s)**

- 213 - Weeds Affecting Plants

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 4**

**1. Outcome Target**

NPE 1.2a: Number of land managers and residents who began or increased weed control efforts.

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

**3. Associated Knowledge Area(s)**

- 213 - Weeds Affecting Plants

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 5**

**1. Outcome Target**

NPE 1.1c: Number of acres impacted by planting of natives in a sustainable landscape

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

**3. Associated Knowledge Area(s)**

- 102 - Soil, Plant, Water, Nutrient Relationships
- 213 - Weeds Affecting Plants

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 6**

**1. Outcome Target**

NPE 1.2b: Number of acres impacted by alien weed control efforts.

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

**3. Associated Knowledge Area(s)**

- 213 - Weeds Affecting Plants

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 7**

**1. Outcome Target**

NPE 1.3a: Number of land managers and residents who left wild native plants to produce seed rather than collecting or picking wildflowers.

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

**3. Associated Knowledge Area(s)**

- 102 - Soil, Plant, Water, Nutrient Relationships
- 213 - Weeds Affecting Plants

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 8**

**1. Outcome Target**

NPE 1.3b: Number of land managers and residents who stayed on trails to prevent erosion and damage to native plants.

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

**3. Associated Knowledge Area(s)**

- 102 - Soil, Plant, Water, Nutrient Relationships

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 9**

**1. Outcome Target**

NPE 2.1a: Dollar amount saved by residents from their planting of natives in a sustainable landscape.

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

**3. Associated Knowledge Area(s)**

- 102 - Soil, Plant, Water, Nutrient Relationships
- 213 - Weeds Affecting Plants

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 10**

**1. Outcome Target**

NPE 2.1b: Dollar amount saved by land managers and residents from control of alien weeds.

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

**3. Associated Knowledge Area(s)**

- 213 - Weeds Affecting Plants

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 11**

**1. Outcome Target**

NPE 2.1c: Number of land managers and residents who retained their current job, got a promotion or got a new job as a result of their program participation.

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

**3. Associated Knowledge Area(s)**

- 605 - Natural Resource and Environmental Economics

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 12**

**1. Outcome Target**

WR 1.1) Number of participants reporting they Perform water quality sampling and analysis in a manner meaningful to the user and regulating agencies.

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

**3. Associated Knowledge Area(s)**

- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 13**

**1. Outcome Target**

WR 1.2) Adoption of technology and Best Management Practices (BMPs) that prevent and mitigate the effects of point-source and/or non-point source water pollution.

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

**3. Associated Knowledge Area(s)**

- 133 - Pollution Prevention and Mitigation

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 14**

**1. Outcome Target**

WR 2.1) Adoption of tools, technology, and practices that foster conservation of water or optimization of water use in agriculture settings.

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

### **3. Associated Knowledge Area(s)**

- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management

### **4. Associated Institute Type(s)**

- 1862 Extension

## **V(J). Planned Program (External Factors)**

### **1. External Factors which may affect Outcomes**

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

#### **Description**

Local, state, and federal funding changes will impact ability to conduct programs. Significant changes in regulatory environment could dramatically alter the scope and goals of both research and extension programs. This is most notable in Colorado with respect to policies affecting use of public lands and both surface and ground water. Both water quantity and water quality are critical issues to the future of agriculture in the semi-arid west. More and more agricultural producers are operating in a market-oriented, individual-responsibility environment, with less reliance on price supports. Producers are moving toward differentiated, consumer-oriented products.

## **V(K). Planned Program - Planned Evaluation Studies**

### **Description of Planned Evaluation Studies**

Regular pre-post evaluations are used. Formative evaluations are often used during programs to adjust focus and direction. Case studies are used to clearly demonstrate impact.

## **V(A). Planned Program (Summary)**

### **Program # 7**

#### **1. Name of the Planned Program**

Community Development

#### **2. Brief summary about Planned Program**

Two Extension Work Teams (WT) plan in this Planned Program: Community Development (CD) and Food Systems (FSYS).

**Community Development (CD)** Work Team (WT) outreach will be targeted to municipal, county, state, and federal agencies, nongovernmental organizations, and citizens to create dynamic processes that address local and regional needs/issues. Our efforts will focus on facilitating community planning processes that engage all stakeholders affected by an issue in ways that lead to better informed decisions and help communities understand and deal with change. It will include providing information and resource connections, which might include community impact analysis of economic activity or evaluation of the drivers of local economies. Our work will encourage collaboration to build regional economies and create entrepreneur/business friendly communities. Innovative and collaborative leadership activities/training will be provided to engage new diverse leaders and strengthen community organizations

The **Food System (FSYS)** plan of work exists to bring an interdisciplinary focus on a few key topics and efforts that have emerged as important agriculture, food and community issues. Drawing from a diverse set of personnel with backgrounds in agriculture, horticulture, food safety, nutrition, community development, public health and youth education, this team will work to increase quality of public discussion on food and ag issues, facilitate community discussions and assessments on ag and food issues, provide technical assistance to an increasingly diverse set of food producers and support new market opportunities to promote food systems in Colorado that foster stronger supply chain networks for farmers, ranchers and food producers, as well as making a positive impact on food access, community development, environmental stewardship, and public health.

Research programs emphasize basic and applied research in areas exploring the interface between agribusiness, rural development, and natural-resource-amenity-based opportunities. Research and outreach will be targeted to municipal, county, state, and federal agencies, nongovernmental organizations, and citizens to provide information and analysis promoting community development. This will include community impact analyses of economic activity, community organization for progress, evaluation of the drivers of local development, and workforce professional and personal development.

**3. Program existence :** Intermediate (One to 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

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
601	Economics of Agricultural Production and Farm Management	0%		20%	
602	Business Management, Finance, and Taxation	5%		0%	
603	Market Economics	2%		0%	
604	Marketing and Distribution Practices	4%		0%	
605	Natural Resource and Environmental Economics	1%		30%	
607	Consumer Economics	5%		0%	
608	Community Resource Planning and Development	63%		20%	
610	Domestic Policy Analysis	5%		10%	
704	Nutrition and Hunger in the Population	10%		0%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	5%		20%	
	<b>Total</b>	100%		100%	

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

## 1. Situation and priorities

**Community Development (CD): Overall Situation** -Colorado communities are changing rapidly as a result of many factors, including loss of agricultural water, influx of retirement populations, development of gas and oil industries, incidence of military deployment, and changes in cultural composition of residents. Colorado has some unique needs due to: dense populations along the central area of the Front Range and more sparse populations throughout the remainder of the state, a high natural amenity base (and share of public lands), a more transitory population and relatively low public service provision. Communities and urban neighborhoods struggle to develop and maintain resources; human, financial, physical, social, environmental and political. They also are challenged to provide the organizational capacity to assess, plan and implement activities to address resource development and management. Knowledge to evaluate resource base of a community, their economic and social service alternatives, and their futures is also critical to Colorado communities. Many of these issues are especially acute in smaller rural communities where there is a sparse population, marginal internet access, and limited public funds and public transportation. More specifically, rural areas of the US and Colorado are facing challenges due to marked differences in economic, educational, health and social opportunities relative to more urban areas. People in rural areas tend to be older, more likely to be uninsured, and less educated than their urban counterparts. Youth in rural communities tend to leave the community for better educational and work opportunities and do not return, despite their stated desire to return to raise their families in their home town. Lack of good job opportunities in rural areas, continues the "brain-drain" of potential community members and future community leaders.



**Economic Development** - Communities must find ways to thrive in a diverse and rapidly changing economic environment. Over the past decade, 2000 - 2010, Colorado has experienced:

- Increased gap between population change, labor growth, and job creation.
- Unimpressive job growth that was mixed across regions with western slope showing greatest job growth while eastern region experienced losses.
- High unemployment in south central region, while the rates being the lowest in the western slope and eastern regions.
- Stagnation of household wellbeing and flat income/wage growth.
- Continued population growth despite mundane economic performance.

(Source: [http://outreach.colostate.edu/docs/state\\_economic\\_update](http://outreach.colostate.edu/docs/state_economic_update) Did the Great Recession Wipe Out a Decade of Economic Progress in Colorado? Assessing the State of the State's Economy. Shields, M. and Marturan, M. March 2011.)

The challenges facing Colorado are multi-faceted and demand more than a one-size fits all solution. Current data and trends continue to demonstrate the complexities of the state's economic situation.

- While the employment rate in the rest of Colorado is slated to increase, the employment rate in Eastern and Southern Colorado are estimated to decrease by almost 2%. Central Colorado is the only area in Colorado that is expected to have significantly increased employment rates. (Source: Colorado Department of Labor and Employment)

- The population of most Eastern counties in Colorado has already had very low population growth and many have had a decline in population. The exception being Weld County. (Source: 2010-2011 Colorado Economic Development Data-book, Colorado Office of Economic Development and International Trade)

- Colorado's economy is stabilizing in 2010, but is still projected to experience job losses of about 1%" (Source: 2010-2011 Colorado Economic Development Data-book, Colorado Office of Economic Development and International Trade).

- Entrepreneurial activity continues to be a foundation for Colorado's economic vitality. Colorado ranks 2nd in business start-ups per capita, 2nd in patents issued per 1,000 workers, as well as 3rd in percent of high tech firms. Colorado also ranks 8th in total share of Inc. 500 companies. The Inc. 500 annual list of the 500 fastest growing private companies in the U.S. included 14 Colorado companies in 2009." (Source: 2010-2011 Colorado Economic Development Data-book, Colorado Office of Economic Development and International Trade).

**Participatory Community Process:** Communities are increasingly confronted with complex, controversial issues. Issues such as economic development, taxes and public finance, land use, environmental issues, county health plans, local educational issues, to name just a few, are complex issues because there are no simple solutions. Many individuals, groups and organizations have a "stake" in the decision and, because the stakes are high, the issues can quickly become controversial. Conflicts emerge as stakeholders place different values on what is important and what the solution should be. Too many times in community decision making and problem solving process we see the following emerge:

- Individuals who have much stronger skills for adversarial democracy rather than for deliberative democracy.
- Individuals lack judgment, decision-making, or critical-thinking skills.
- There is a lack of trust and understanding between perspectives.
- Organizations fight for financial support from the same governmental or philanthropic sources, thus a culture of competition rather than cooperation may dominate.
- There is a general lack of coordination and collaboration between organizations working on similar issues.
- Individual "silos" develop between organizations or issue efforts that severely limit the potential impact of combined efforts
- Individuals with a passion for a community issue may essentially reinvent the wheel rather than join with other likeminded individuals to make a broader impact.

(Source: The Goals & Consequences of Deliberation: Key Findings and Challenges for Deliberative Practitioners. Prepared for the Kettering Foundation. Carcasson, M. and Christopher, E. August, 2008).

Communities need high quality community participatory processes to overcome these challenges and engaging citizens by providing effective problem solving /decision making experiences. Communities need opportunities that provided these important components for success:

- Education to improve the quality of public choices and provide different ways of knowing about an issue. It fosters continues learning for creative and critical thinking that leads to informed decisions.
- Processes that ensure significant participation in the decision making process, of all people whose lives are affected by the decision. There needs to be a balance of power and equal access to relevant information. All need an opportunity to participate.
- A civil dialogue among people with diverse backgrounds and viewpoints to enhance the quality of public decisions.
- A willingness to negotiate, share power and explore collaborative action to get to innovative solutions.

**Leadership Development:** Leadership is essential for communities to move forward because, without local citizens who have skills and feel confident they can make a difference, a community seldom will be successful. Many communities have residents who want to see positive outcomes in their communities but may lack the required skills or have a perception that they could not be successful planning and implementing community programs.

## **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**

#### **Community Development (CD)**

- The competencies of CRD have been around for a long time and are still appropriate.
- Program planning is not always a one-time process. What is developed will need constant monitoring and adjustment.
- CSU and Extension are experiencing financial and political stress that requires us to engage new and expanding audiences.
- Extension has the organizational capacity to facilitate team building, situation assessment, and prioritize applied research needs in communities of Colorado.

#### **Food Systems (FSYS)**

1. Current work teams do not fully address the system-oriented issues facing agriculture and food production.
2. There is a need for more policy, assessment, and community development activities directed at food systems that vary from the conventional system used to handle high volume commodity foods.
3. Extension is being asked to play a more significant role in food system planning, including facilitating discussions between consumers, producers and organizations interested in ag and food issues.
4. There will continue to be local, state and federal resources targeted at food system programming.

**2. Ultimate goal(s) of this Program**

Colorado State University is in a strong position to assist with the economic development of Colorado's agricultural and rural communities, as well as evolving industries related to these communities. Our role will be to educate professionals within communities with knowledge of community development and modern business practices, as well as researching technical and economic issues related to differentiated agricultural products in the ever-changing domestic and international market place. By being actively involved with agricultural industry personnel, rural communities, and governmental agencies, Extension and Research can assure that land managers, individual business owners, and community residents can evaluate a broad range of opportunities to enhance viability.

- CD 1: Economic Development Communities create, retain, and expand sustainable economic opportunities to contribute to community health and vitality.
- CD 2: Participatory Community Processes Community members take shared responsibility for the health and vitality of their community.
- CD 3: Leadership Development Communities have skilled leadership and an engaged public, representative of the diversity of the community, building the health and vitality of their community.
- CD 4: Organizational Development Non-profit and community organizations' efforts support and contribute to overall health and vitality of the community.
- FSYS 1) Strong supply chain networks for farmers, ranchers and food producers, as well as increased engagement on food access, community development, environmental stewardship, and public health.

**V(E). Planned Program (Inputs)**

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

Year	Extension		Research	
	1862	1890	1862	1890
2014	3.5	0.0	6.0	0.0
2015	2.8	0.0	6.0	0.0
2016	2.8	0.0	6.0	0.0
2017	2.8	0.0	6.0	0.0
2018	2.8	0.0	6.0	0.0

**V(F). Planned Program (Activity)**

**1. Activity for the Program**

- Training for Extension personnel in community mobilization, facilitation, economic development.
- Working with rural communities on a regional approach to small town tourism including making optimal use of environmental resources, respecting the socio-cultural authenticity of host communities while conserving their built and living cultural heritage and traditional values, and ensuring viable, long-term economic operations, including stable employment and income-earning opportunities.
  - Conducting basic and applied research in areas exploring the interface between agribusiness, rural development, and natural-resource-amenity-based opportunities.
  - Conducting workshops and other educational activities with Extension professionals and community

stakeholders.

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

<b>Extension</b>	
<b>Direct Methods</b>	<b>Indirect Methods</b>
<ul style="list-style-type: none"> <li>● Education Class</li> <li>● Workshop</li> <li>● Group Discussion</li> <li>● One-on-One Intervention</li> <li>● Other 1 (Tourism rallies)</li> </ul>	<ul style="list-style-type: none"> <li>● Public Service Announcement</li> <li>● Newsletters</li> <li>● Web sites other than eXtension</li> </ul>

**3. Description of targeted audience**

Community members, general public, consumers, community organizations. The intuitive success of Extension professionals in community/economic development will be enhanced for formalized training and opportunities to accurately report these on-going efforts.

**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**

- FSYS 19) Number of Agencies Partnering/Collaborating (Colorado Dept. of Ag, CO Dept. of Public Health, RealFood Colorado, LiveWell Colorado, Rocky Mountain Farmers Union, Colorado Farm Bureau, USDA Rural Development)
- Number of new technologies adopted by participants/communities.
- Number of collaborative projects implemented.
- CD 2) Number of Trainings for Volunteers (Educational Classes, Workshops, Group Discussions).
- CD 20) Number of times Presented and translated information to increase public understanding and use data more strategically.
- CD 10) Number Website hits (not number of sites)
- CD 11); FSYS 14) Number of Press/News Releases or Columns submitted
- CD 12) Number of Volunteers (total) in Planned Program
- CD 13); FSYS 17) External Grant Dollars
- CD 14); FSYS 18) User Fees
- CD 15) Number of times Providing coaching and/or individual consulting.
- CD 16) Number of web-based resources and/or learning modules developed.
- CD 17) Number of community assessments, surveys or other community analysis tools developed.
- CD 18) Number of community assessments, surveys, asset mapping and other analysis processes, including secondary data and trend analysis, conducted.
- CD 19) Number of community actions plans, developed, coordinated, and implemented.
- CD 2) Number of Trainings for Volunteers (Educational Class, Workshop, Group Discussion.
- CD 21) Number of white papers, reports, summaries, etc. (not peer reviewed) developed.
- CD 3); FSYS 2) Number of Trainings for Extension Staff (Education Class, Workshop, Group Discussion.
- CD 4); FSYS 3) Number of Community Meetings Convened [examples: Advisory Groups, Councils, Coalition Meetings, Boards].
- CD 5); FSYS 4) Number of Community Meetings Facilitated [examples: Focus Group, Citizen Forum, Round Table Dialogue, Strategic Planning Process]

- CD 6); FSYS 5) Number of Community Coalitions, Collaborations, Alliances Formed to Address a Specific Issue [list specific groups/issue]
  - CD 7); FSYS 6) Number of Direct Communications/Education by telephone and/or e-mail
  - CD 8); FSYS 11) Number of Newsletters (This is number of newsletters created and sent, not number mailed or number of Coloradans who received them.)
  - CD 90; CD 9) Websites (number of Websites, not number of hits)
  - FSYS 1) Number Trainings/Classes/Workshops, Field Days, Activity Days
  - FSYS 10) Number of times CSU personnel led or partnered in efforts to build a stronger community and networks of those involved in more localized food systems (producers, resource providers, policy makers, input providers, marketing partners).
  - FSYS 7) Number of times Extension staff facilitate community discourse that includes ag producers and other food system stakeholders to improve public understanding about the food system
  - FSYS 8) Number of times CSU Extension provides training, publications and leads discussions on nutrition, food safety and public health implications of marketing, production and policy innovations in the food system
  - FSYS 9) Number of times CSU Extension personnel provide tools, publications and assistance in developing and translating applied research to food system planning activities.
  - CD 19) External Grant Dollars.
- 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**

O. No	Outcome Name
1	CD 1.1: The number of Communities that assess community needs, assets and available resources.
2	CD 2.6: Number of Community members participating in community decision making processes <u>shaping natural and built environments.</u>
3	CD 2.1: Number of Community members actively influencing the development of their communities through engagement in participatory community processes. (public issue deliberation, decision-making processes, <u>action planning and evaluation</u> )
4	CD 1.2: Number of Community members engaging in community and economic development, <u>planning and action.</u>
5	CD 1.3: Number in Communities who network and partner with others in community and economic development. <u>planning and action (regional approach).</u>
6	CD 1.4: Number of Communities that develop plans targeting specific interests, actions and <u>community resources towards maintaining and growing economic base.</u>
7	CD 1.6: Number of Entrepreneurs who are coached in development and initiation of new small <u>business ventures.</u>
8	CD 1.8: Number of Jobs that are created.
9	CD 2.2: Number of Community members reporting increased connections with other community <u>residents and organizations.</u>
10	CD 2.3: Number of Communities where plans are developed using participatory community processes.
11	CD 2.4: Number of Communities where plans are implemented following participatory community <u>processes.</u>
12	CD 2.5: Number of Community members who are actively involved in the development of public policy <u>to effect positive change for a healthy and vital community.</u>
13	CD 2.7: Number of Communities that promote diverse, healthy, and sustainable environments through <u>community design and plans.</u>
14	CD 3.1: Number of Communities that provide leadership development training, programs or activities.
15	CD 3.2: Number of communities in which Diversity of community leadership is increased.
16	CD 3.3: Number of Community members reporting increased connection to, and relationship with, <u>local and state government.</u>
17	CD 4.10: Number of Volunteer community members reporting they contribute to increased public <u>service in their communities.</u>
18	CD 4.12: Number of Volunteer community members reporting they increase the social, emotional, and <u>learning skills in the audience with which they work.</u>
19	CD 4.1: Number of Communities providing organizational development training for non-profits and <u>community organizations in planning, decision making, management, and evaluation efforts.</u>
20	CD 4.4: Number of Non-profits and community organizations report increased revenue generated <u>through grant dollars.</u>
21	CD 4.5: Number of Non-profits and community organizations increase partnerships and connections.
22	CD 4.6: Number of Non-profits and community organizations reporting increased number of volunteers <u>involved in organization activities.</u>
23	CD 4.8: Number of Volunteer community members reporting they foster life skill development in the <u>youth in their communities.</u>
24	CD 4.9: Number of Volunteer community members reporting they increased the effectiveness of <u>Extension and other community programs.</u>
25	FSYS 1.1) Colorado food systems stakeholders report they have increased capacity to dialogue and <u>plan for more effective food systems</u>
26	FSYS 1.2) Number of Food system stakeholders who report participating in more education and professional development to improve their understanding of linkages between public health and food <u>safety and emerging food models</u>

27	FSYS 1.3) Number of Food system stakeholders reporting they will engage CSU as a partner in determining data, research, resource partners and other program needs for assessment and strategic planning exercises related to agriculture or food.
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**Outcome # 1**

**1. Outcome Target**

CD 1.1: The number of Communities that assess community needs, assets and available resources.

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

**3. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 2**

**1. Outcome Target**

CD 2.6: Number of Community members participating in community decision making processes shaping natural and built environments.

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

**3. Associated Knowledge Area(s)**

- 605 - Natural Resource and Environmental Economics
- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 3**

**1. Outcome Target**

CD 2.1: Number of Community members actively influencing the development of their communities through engagement in participatory community processes. (public issue deliberation, decision-making processes, action planning and evaluation)

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

**3. Associated Knowledge Area(s)**



- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 4**

**1. Outcome Target**

CD 1.2: Number of Community members engaging in community and economic development, planning and action.

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

**3. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 5**

**1. Outcome Target**

CD 1.3: Number in Communities who network and partner with others in community and economic development, planning and action (regional approach).

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

**3. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 6**

**1. Outcome Target**

CD 1.4: Number of Communities that develop plans targeting specific interests, actions and community resources towards maintaining and growing economic base.

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

**3. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 7**

**1. Outcome Target**

CD 1.6: Number of Entrepreneurs who are coached in development and initiation of new small business ventures.

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

**3. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 8**

**1. Outcome Target**

CD 1.8: Number of Jobs that are created.

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

**3. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 9**

**1. Outcome Target**

CD 2.2: Number of Community members reporting increased connections with other community residents and organizations.

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

**3. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 10**

**1. Outcome Target**

CD 2.3: Number of Communities where plans are developed using participatory community processes.

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

**3. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 11**

**1. Outcome Target**

CD 2.4: Number of Communities where plans are implemented following participatory community processes.

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

**3. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 12**

**1. Outcome Target**

CD 2.5: Number of Community members who are actively involved in the development of public policy to effect positive change for a healthy and vital community.

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

**3. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development
- 610 - Domestic Policy Analysis

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 13**

**1. Outcome Target**

CD 2.7: Number of Communities that promote diverse, healthy, and sustainable environments through community design and plans.

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

**3. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 14**

**1. Outcome Target**

CD 3.1: Number of Communities that provide leadership development training, programs or activities.

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

**3. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 15**

**1. Outcome Target**

CD 3.2: Number of communities in which Diversity of community leadership is increased.

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

**3. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 16**

**1. Outcome Target**

CD 3.3: Number of Community members reporting increased connection to, and relationship with, local and state government.

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

**3. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 17**

**1. Outcome Target**

CD 4.10: Number of Volunteer community members reporting they contribute to increased public service in their communities.

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

**3. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 18**

**1. Outcome Target**

CD 4.12: Number of Volunteer community members reporting they increase the social, emotional, and learning skills in the audience with which they work.

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

**3. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 19**

**1. Outcome Target**

CD 4.1: Number of Communities providing organizational development training for non-profits and community organizations in planning, decision making, management, and evaluation efforts.

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

**3. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 20**

**1. Outcome Target**

CD 4.4: Number of Non-profits and community organizations report increased revenue generated through grant dollars.

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

**3. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 21**

**1. Outcome Target**

CD 4.5: Number of Non-profits and community organizations increase partnerships and connections.

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

**3. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 22**

**1. Outcome Target**

CD 4.6: Number of Non-profits and community organizations reporting increased number of volunteers involved in organization activities.

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

**3. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 23**

**1. Outcome Target**

CD 4.8: Number of Volunteer community members reporting they foster life skill development in the youth in their communities.

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

**3. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 24**

**1. Outcome Target**

CD 4.9: Number of Volunteer community members reporting they increased the effectiveness of Extension and other community programs.

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

**3. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 25**

**1. Outcome Target**

FSYS 1.1) Colorado food systems stakeholders report they have increased capacity to dialogue and plan for more effective food systems

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

**3. Associated Knowledge Area(s)**

- 604 - Marketing and Distribution Practices
- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1862 Extension



**Outcome # 26**

**1. Outcome Target**

FSYS 1.2) Number of Food system stakeholders who report participating in more education and professional development to improve their understanding of linkages between public health and food safety and emerging food models

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

**3. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1862 Extension

**Outcome # 27**

**1. Outcome Target**

FSYS 1.3) Number of Food system stakeholders reporting they will engage CSU as a partner in determining data, research, resource partners and other program needs for assessment and strategic planning exercises related to agriculture or food.

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

**3. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development

**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

### Community Development (CD)

- With new emerging opportunities in communities, programs may shift in response to community need.
- Extension role in community development is emerging and it may take three to five years to establish strong programs with measurable outcomes.

#### Food Systems (FSYS)

USDA has Global Food Security as a National priority, and not all the activities needed to support such a goal are addressed through production-oriented teams. One consideration listed in national outcomes is the need for food system resiliency, and given current global market pressures, pest pressures, supply chain risks (food safety, transportation costs), it would suggest a more diverse set of food production models is needed. So, the planning activities and efforts to build stronger networks across all agricultural stakeholders (beginning or established, small or large) address the resiliency issue.

USDA food security priorities also address natural resources and the long-term management of ag lands. Some of the policy discussions, assessment activities and facilitation of community processes to develop economic development and community development plans that may include land use will address this issue. Finally, there a number of Colorado, statewide efforts, to address food system issues, including the Food Systems Advisory Council, new Economic Development cluster focused on agricultural and food sectors, Farm to School and Farmers Market working groups. All of these processes seek CSU's voice at the table, and members of this team will represent our organization, and be able to better serve in those roles because of discussions among the group about concerns and priorities emerging in different communities.

## V(K). Planned Program - Planned Evaluation Studies

### Description of Planned Evaluation Studies

#### Community Development (CD)

Pre-assessment, focus groups, interviews, and surveys will be conducted to provide base line data. Metrics will be tracked for number of trainings, participants, consulting sessions, partnerships, grant \$, etc. Pre-and post-surveys of workshop participants will be conducted to capture immediate changes in knowledge and attitudes, short-term changes based on identified indicators of this plan of work. A combination of case studies, community visits, and focus groups will be conducted to measure longer-term impacts.

#### Food Systems (FSYS)

Evaluation for this team will fall in three key categories:

- 1) Surveys of CSU Extension staff to determine the types, depth and changes in engagement from food system partnership they are a part of, as facilitator, moderator or convener. This will allow us to evaluate whether work by team members is being valued and recognized among community members, even if the main purpose of CSU is as convener or facilitator, not in a traditional educator role.
- 2) Surveys of program participants on any workshops, panels, speakers or courses where CSU Extension has at least a 25% planning role will allow us to evaluate knowledge and behavioral change, immediately post program. On rare occasions, on programs where CSU investment is high, follow up surveying at 3, 6 or 12 months may also be undertaken. For programs where CSU is more lightly involved, the team will simply collect information that is collected by the lead organization in their

evaluation, but provide assistance in developing such materials. (For example, being a panelist for an Ag organization conference, where CSU may ask to have one question asked in the organization's evaluation.)

3) Targeted case studies and ad hoc evaluations will be used in cases where CSU Extension is engaged fairly rapidly in a community priority discussion (for instance a food safety outbreak). These evaluations will be necessarily less structured, but allow us to describe how CSU provided technical assistance, facilitation or moderating support for a community-wide food issue or event.