

# 2013 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 Economic Stability**

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.

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 are experiencing change, driven by a need to focus expertise and programs that are available to meet needs of Coloradans. CSU Extension now seeks 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 DollarWorks2 and other curricula relevant to individuals and families in difficult economic times. A search is currently underway for a content specialist to support this work. Work teams in parenting and healthy homes have

been suspended in order to keep attention on the three determined focus areas for programming. AgrAbility programming will continue. Other grant-funded programs in these areas will continue, but will not report under Planned Programs in 2011.

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

### **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.

Extension, AES, or Integrated: Integrated

New Programs, and/or Addressing NIFA Priorities: Food Safety is now a stand-alone Extension Work Team in order to more fully address the NIFA priority. Food Safety research and education may be integrated into other Work Teams so that they are not limited to program delivery by FCS agents, but rather viewed as integral in many aspects of AES and Extension outreach.

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.

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.

### **Global Food Security and Hunger**

Program Goals: Adoption of improved crop production technologies, wheat cultivars and productive and sustainable agriculture systems will assure communities, families, and individuals have enough food to eat, and that hunger is not a factor in their well-being.

Extension, AES, or Integrated: Extension

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 plant, 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. Crop production in the state will benefit from AES and Extension through improved crops which resist environmental and biological pests. Producers will realize increased prices and lower cost of production. Consumers will benefit from higher human nutritional values of food.

Cross-cutting or Cross-disciplinary Initiatives: This work of necessity will include animal and plant production systems and will integrate Extension education in disseminating research results. CSU Extension will:

- Deliver workshops and educational classes for producers;
- Communicate results through demonstration plots and field days;
- Provide individual counseling for producers and clientele on specific animal and plant production problems.

"Wheat Improvement" 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.

Cross-cutting or Cross-disciplinary Initiatives: While recommended by NIFA reviewers, CSU Extension's Work Teams for animal production and plant production systems work teams were combined with the goal of global food security. AES Program in Global Food Security and Hunger is incorporated in Animal Production Systems and Plant Production Systems.

### **Animal Production Systems**

Program Goals: To develop improved animal production systems that are economically and environmentally sound. To develop information and methods to improve reproductive efficiency.

- Extension, AES, or Integrated; Research
- New Programs, and/or Addressing NIFA Priorities; Global Food Security and Hunger
- Ongoing, Consistent, and/or Successful Programs: Research on animal production systems and reproductive efficiency.

Cross-cutting or Cross-disciplinary Initiatives. Global Food Security and Hunger

### **Plant Production Systems**

Program Goals: 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: Research
- 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.

Cross-cutting or Cross-disciplinary Initiatives.

Cross-cutting or Cross-disciplinary Initiatives. Global Food Security and Hunger

### **Natural Resources and Environment**

Program Goals: Programs will sustain and/or improve the quality and quantity of Colorado's natural resources and environment.

Extension, AES, or Integrated: Integrated

New Programs, and/or Addressing NIFA Priorities: 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.

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: Extension

New Programs, and/or Addressing NIFA Priorities: Community Resource Development (CRD), 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.

### **Sustainable Energy**

Program Goals: 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: Extension

New Programs, and/or Addressing NIFA Priorities: Clean energy interests and efforts were organized as an Extension "strategic initiative team" in fall, 2008. Progress by the team is reflected in showing the work as a planned program. While not all clean energy is sustainable, it is an area of high interest to county partners, as documented by a search of county priorities on Web sites throughout the state. The Work Team's objective is to educate a core group of Extension agents about renewable energy options and energy efficiency, and to broadly educate all Extension agents on the basics of renewable energy. Deliverables include:

- Demonstration sites,
- Short term classes,
- Partnerships with campus faculty,
- Green jobs programs for schools,
- School enrichment materials using STEM-based standards.

Ongoing, Consistent, and/or Successful Programs: The long range intention is that Extension will be considered the educational entity of choice in the area of clean energy. These activities and intentions are recognized as outputs, as the planned program is very new and not fully resourced. The Work Team will create its Logic Model and articulate outcomes for the immediate, short, and long term.

Cross-cutting or Cross-disciplinary Initiatives: A newly hired Clean Energy Specialist will more effectively connect Extension's clean energy efforts with multiple research and teaching opportunities that are ongoing in several colleges on campus.

### **Childhood Obesity**

Program Goals: Prevention or reduction of incidence of childhood obesity and improved health outcomes for children.

Extension, AES, or Integrated: Extension

New Programs, and/or Addressing NIFA Priorities: The Nutrition and Health Promotion Work Team is and will be focused on three areas, including Childhood Obesity, which is listed as a planned program in response to the NIFA priorities.

Ongoing, Consistent, and/or Successful Programs: One outcome example is improved healthful dietary and activity habits in children. An associated indicator is increased fruit and vegetable consumption (report improved knowledge, increased consumption or intent to increase consumption.) A second indicator is increased physical activity (report increased knowledge, increased activity [e.g. steps], or intent to increase activity.) Target audiences include children (birth through high school), parents, teachers and other school staff.

Cross-cutting or Cross-disciplinary Initiatives: Some of the outcomes and indicators determined by the work team have significant potential for collaboration across various program areas within Extension, by content or audience, and across campus.

### **Nutrition and Health Promotion**

Program Goals: Reduced 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: The 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.

This will include the establishment of an interdisciplinary research consortium led by plant productions 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.

Ongoing, Consistent, and/or Successful Programs: This work team participated in the FCS focusing activity in June, 2009, and has specific outcome targets and indicators by which they can collect their data.

Cross-cutting or Cross-disciplinary Initiatives: This content was previously developed and delivered together with Food Safety. The two have been separated into planned programs, in part due to NIFA Priorities. And, some work by plant systems professionals has been assigned here, on recommendation of NIFA reviewers.

**Climate Change**

Program Goals: No programs are currently planned that specifically address and/or can be reported under this NIFA priority

Extension, AES, or Integrated: n/a

New Programs, and/or Addressing NIFA Priorities: n/a

Cross-cutting or Cross-disciplinary Initiatives: n/a

NOTE

Extension is in the first full year using an on-line planning and reporting system. Data for FY 2011 were drawn from that system. Work Team Plans of Work were entered into the system by January 31, 2012, and most individual plans are in the system. Adjustments and training are ongoing.

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

Year	Extension		Research	
	1862	1890	1862	1890
2013	150.0	0.0	50.0	0.0
2014	150.0	0.0	50.0	0.0
2015	150.0	0.0	50.0	0.0
2016	150.0	0.0	0.0	0.0
2017	150.0	0.0	0.0	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.

In addition, Extension programs are subject to review by the Program Leadership Team (PLT) and Program Area Leaders (PALs). Extension is identifying, through a focusing effort, areas of emphasis for program delivery. Currently, Extension specialists and agents team together on 20 work teams (WTs), jointly lead by a specialist and an agent. Each WT has completed a Logic Model, including providing a situation statement, identification of inputs, outputs and impacts. The WT Plans of Work (POW) were submitted for entry into the new Colorado Planning and Reporting System (CPRS) early in 2011. All plans were updated and resubmitted by January 31, 2012.

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, the 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

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

Framework for the Future: A Strategic Plan for Cooperative Extension identifies a core value of Colorado Extension as "We are accessible to all constituencies and honor diverse viewpoints." Acting on that value, all Extension individual and work team plans of work must address the issue of reaching out to under-served and under-represented audiences. NIFA reviewers' suggestion that documentation be provided that diverse populations are actually being served is addressed through data collected in the Colorado Planning and Reporting System (CPRS) from all agents. This will be continued; however, there is no obvious reporting rubric for these data. In-service education has and continues to support this programming and reporting requirement. Active 4-H Expansion and Review committees in each county continue to address this issue as it relates to the 4-H program. In addition, the Diversity Catalyst Team (DCT) has identified three goals: Ensuring that diverse communities are served by Extension (Hispanics and the urban core are two examples); increasing the cultural competency of current Extension staff; and improving the organizational profile in regards to underrepresented groups (recruitment, hiring, and retaining). The Team has a strategic plan in place with specific, targeted strategies for accomplishing the goals.

## **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 are increase in knowledge and/or attitude (learning), and change in behavior (action, including intent to change behavior) such as adoption of dietary recommendations or of improved plant/animal systems. Each Work Team 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 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. 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.**

AES and Extension staff meet regularly with advisory committees and other stakeholders to solicit input on program direction, focus, implementation and success. In addition, CSU has required a yearly satisfaction survey of county commissioners regarding the Extension program in their county. That survey has provided valuable information on county needs and the impact/success of the Extension programs. [http://outreach.colostate.edu/docs/2011\\_ExtCtyCommSummaryRptFeb2012.pdf](http://outreach.colostate.edu/docs/2011_ExtCtyCommSummaryRptFeb2012.pdf)

### 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.**

Input from stakeholder groups/individual is expected to be reflected in programming changes - both suggestions for new programs and changes to existing programs at the county/area level. In addition, programmatic suggestions are funneled from county stakeholders to the Colorado Extension Advisory Committee (CEAC) for consideration, recommendation, and implementation. The AES research program is modified based on input from stakeholders. Examples include an evaluation of oilseeds that was initiated to assess bio-energy potential based on stakeholder requests; multi-disciplinary and integrated activities are conducted on invasive plants; and the goals of wheat breeding program that reflect the needs of the wheat industry. In essence, ongoing interaction with stakeholders through formal and informal means is used to insure program relevancy.

## V. Planned Program Table of Content

S. No.	PROGRAM NAME
1	4-H Youth Development
2	Family Economic Stability
3	Food Safety
4	Global Food Security and Hunger
5	Plant Production Systems
6	Natural Resources and Environment
7	Community Resource Development
8	Sustainable Energy
9	Childhood Obesity
10	Nutrition and Health Promotion
11	Animal Production Systems

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

**Program # 1**

**1. Name of the Planned Program**

4-H Youth Development

**2. Brief summary about Planned Program**

Colorado State University will enhance outreach to Colorado's youth through 4-H and Youth Development programs in county 4-H clubs, schools, after-school programming, state-wide programs, and special interest learning experiences. This program emphasizes personal growth of young people through experiential learning with well-designed curricula and projects. There is a special emphasis on Science, Technology, Engineering and Math (STEM)-related curriculum and activities, in helping prepare the next generation of scientists. Development of volunteers to provide much of the leadership to this organization and increased private fund-raising are especially important.

**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
802	Human Development and Family Well-Being	5%		0%	
806	Youth Development	95%		0%	
	<b>Total</b>	100%		0%	

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

**1. Situation and priorities**

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 (SET), 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.

Total enrollment in the Colorado 4-H program for the 2010-11 4-H program year was 102,991 with a strong cadre of adult volunteers totaling 11,970.

## **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**

- 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
2013	48.0	0.0	0.0	0.0
2014	49.0	0.0	0.0	0.0
2015	50.0	0.0	0.0	0.0
2016	0.0	0.0	0.0	0.0
2017	0.0	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

- Funding: Increased funding for 4-H Youth Development through private dollars by increasing support from the Colorado 4-H Foundation. (These have been increased based on our 2005-06 actual of \$240,000.)
  - Web Hits: Number of web hits regarding 4-H topics, excluding pages of Agent Resources and Blog areas of the site.
  - Curricula: New and/or revised curriculum to meet changes in needs for youth audiences.
  - Funding: Grant dollars generated to support 4-H Youth Development programs.
  - Volunteers: Value of volunteers' time that Colorado 4-H adult volunteers provide to 4-H programming, based on an average donation of 128 hours/year/volunteer at \$21.62/hour (national average for value of time, adjusted for Colorado)
  - Presentations to Youth: Number of Education Classes, trainings, workshops, field days, educational activities, events, etc. for youth.
  - Community Development: Number of community meetings convened, community meetings facilitated, community coalitions/collaborations/alliances formed.
  - News Releases: Number of press/news releases submitted.
  - Newsletters: Number of newsletters created.
  - One-on-one interventions: Number of trainings for individual volunteers.
  - One-on-one interventions: Number of direct communications by telephone and/or e-mail.
  - Web Sites: Number of web sites.
  - Volunteers: Number of trainings for Volunteers.
  - Extension Staff: Number of trainings for Extension staff.
- 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	Volunteers: Number of participating volunteers reporting increasing effectiveness of Extension programs.
2	STEM: Number of participating youth reporting applying STEM Skills. Survey instrument to measure the outcomes can be found at: <a href="http://www.colorado4h.org/research_impact/surveys/STEM.pdf">http://www.colorado4h.org/research_impact/surveys/STEM.pdf</a>
3	Volunteers: Volunteers apply skills developed through Extension-provided training, supervision, and support to increase their effectiveness in influencing positive youth development for the audience(s) with which they work.
4	Volunteers: Number of participating volunteers who foster life skill development in the youth in their communities.
5	Volunteers: Number of participating volunteers who increase leadership capacity in their communities.
6	Volunteers: Number of participating volunteers reporting they contribute to increased public service in their communities.
7	Youth: Number of participating youth reporting contributing to community improvement.
8	Youth: Number of participating youth reporting they developed goal-setting skills.
9	Youth: Number of participating youth reporting they developed decision-making skills.
10	Youth: Number of participating youth reporting they developed record-keeping skills.
11	Youth: Number of participating youth reporting they developed public-speaking skills.
12	Youth: Number of participating youth reporting they developed responsibility.
13	Youth: Number of participating youth reporting they developed leadership skills.

**Outcome # 1**

**1. Outcome Target**

Volunteers: Number of participating volunteers reporting increasing effectiveness of Extension programs.

**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**

STEM: Number of participating youth reporting applying STEM Skills. Survey instrument to measure the outcomes can be found at: [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**

Volunteers: Volunteers apply skills developed through Extension-provided training, supervision, and support to increase their effectiveness in influencing positive youth development for the audience(s) with 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 # 4**

**1. Outcome Target**

Volunteers: Number of participating volunteers who foster life skill development in the youth in their communities.

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

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

- 806 - Youth Development

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

- 1862 Extension

**Outcome # 5**

**1. Outcome Target**

Volunteers: Number of participating volunteers who increase leadership capacity in their communities.

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

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

- 806 - Youth Development

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

- 1862 Extension

**Outcome # 6**

**1. Outcome Target**

Volunteers: Number of participating volunteers reporting they contribute to increased public service in their communities.

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

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

- 806 - Youth Development

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

- 1862 Extension

**Outcome # 7**

**1. Outcome Target**

Youth: Number of participating youth reporting contributing to community improvement.

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

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

- 806 - Youth Development

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

- 1862 Extension

**Outcome # 8**

**1. Outcome Target**

Youth: Number of participating youth reporting they developed goal-setting skills.

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

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

- 806 - Youth Development

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

- 1862 Extension

**Outcome # 9**

**1. Outcome Target**

Youth: Number of participating youth reporting they developed decision-making skills.

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

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

- 806 - Youth Development

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

- 1862 Extension

**Outcome # 10**

**1. Outcome Target**

Youth: Number of participating youth reporting they developed record-keeping skills.

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

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

- 806 - Youth Development

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

- 1862 Extension

**Outcome # 11**

**1. Outcome Target**

Youth: Number of participating youth reporting they developed public-speaking skills.

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

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

- 806 - Youth Development

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

- 1862 Extension

**Outcome # 12**

**1. Outcome Target**

Youth: Number of participating youth reporting they developed responsibility.

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

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

- 806 - Youth Development

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

- 1862 Extension

**Outcome # 13**

**1. Outcome Target**

Youth: Number of participating youth reporting they developed leadership skills.

**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**

- Economy
- Appropriations changes
- 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 relevant programs in non-rural environments.

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

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

Regular pre-post evaluations are used. An evaluation consultant has guided 4-H Youth Development staff in developing and using instruments state-wide to collect impact data on life skills acquired/increased due to 4-H participation. These learned skills will continue to be practiced and refined so that life skills and Science, Technology, Engineering and Math (STEM) outcomes can be accurately documented and effectively communicated.

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

**Program # 2**

**1. Name of the Planned Program**

Family Economic Stability

**2. Brief summary about Planned Program**

The aim of the Financial Management Work Team is to provide financial education on basic money management and wealth building to Coloradans who are seeking to increase their financial knowledge and skills, prepare for the workforce, plan for retirement and achieve other goals such as debt reduction and increase financial security.

**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
801	Individual and Family Resource Management	100%		0%	
	<b>Total</b>	100%		0%	

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

**1. Situation and priorities**

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>).

## 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

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 as 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.

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

FES 1: Coloradans across the lifecycle, will have increased financial literacy, capability, and stability as a result of family economic stability education programs.

**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
2013	4.2	0.0	0.0	0.0
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

**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.

**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) Number of Trainings/Classes/Workshops, Field Days, Activity Days.
- FES 9) Number of Newsletters (This is number of newsletters, not number mailed or number of Coloradans who received them).
- FES 13) Number of Volunteers (total) in Planned Program.
- FES 15) Number of Agencies Partnering/Collaborating (specify).
- FES 10) Number of Websites (this is number of sites, not number of hits)
- FES 11) Number of Websites (this is number of hits, not number of sites).
- FES 14) Number of Certified Master Volunteers (of those in #FES 13).
- FES 3) Number of Trainings for Volunteers.
- FES 4) Number of Trainings for Extension Staff.
- FES 5) Number of Community Meetings Convened [examples: Advisory Groups, Councils, Coalition Meetings, Boards].
- FES 6) Number of Community Meetings Facilitated [examples: Focus Group, Citizen Forum, Round Table Dialogue, Strategic Planning Process].
- FES 7) Number of Community Coalitions, Collaborations, Alliances Formed to Address a Specific Issue [list specific groups/issue].
- FES 8) Number of Direct Communication/Education by telephone and/or e-mail.
- FES 12) Number Press/News Releases or Columns (number submitted, not number distributed or read by Coloradans).
- 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 participants indicating improvement in financial health due to changes based on skills learned in financial management trainings.
2	FES 1.1a: Number of Participants intending to increase their utilization of successful strategies for financial management (Small Steps financial indicators; 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).
3	FES 1.1b: Participants adopted at least one strategy for financial management (Small Steps financial indicators; 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).
4	FES 1.2a: Number of participants Intending to implement cost-effective energy conservation, efficiency, and/or renewable energy measures.
5	FES 1.3a: Number of Participants intending to increase their utilization of strategies to teach children and youth healthy money decisions and consumer choices.
6	FES 1.4a: Number of Youth who will intend to implement strategies to make healthy money decisions and consumer choices.

**Outcome # 1**

**1. Outcome Target**

Number of participants indicating improvement in financial health due to changes based on skills learned in financial management trainings.

**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**

FES 1.1a: Number of Participants intending to increase their utilization of successful strategies for financial management (Small Steps financial indicators; 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 # 3**

**1. Outcome Target**

FES 1.1b: Participants adopted at least one strategy for financial management (Small Steps financial indicators; 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 # 4**

**1. Outcome Target**

FES 1.2a: Number of participants Intending to implement cost-effective energy conservation, efficiency, and/or renewable energy measures.

**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 # 5**

**1. Outcome Target**

FES 1.3a: Number of Participants intending to increase their utilization of strategies to teach children and youth healthy money decisions and consumer choices.

**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 # 6**

**1. Outcome Target**

FES 1.4a: Number of Youth who will intend to implement strategies to make healthy money decisions and consumer choices.

**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

### **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**

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.



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

**Program # 3**

**1. Name of the Planned Program**

Food Safety

**2. Brief summary about Planned Program**

The aim of the Food Safety Education 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.

**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
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals	10%		10%	
503	Quality Maintenance in Storing and Marketing Food Products	20%		30%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	10%		30%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	60%		30%	
	<b>Total</b>	100%		100%	

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

**1. Situation and priorities**

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:

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## 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**

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**

- 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.
- FSAFE 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.
- FSAFE 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.
- FSAFE 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.

**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
2013	13.5	0.0	2.0	0.0
2014	16.0	0.0	2.0	0.0
2015	16.0	0.0	2.0	0.0
2016	0.0	0.0	2.0	0.0
2017	0.0	0.0	2.0	0.0

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

**1. Activity for the Program**

Food Safety 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

**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>• Demonstrations</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 (Multimedia kiosks)</li></ul> |
|--|--|

### 3. Description of targeted audience

Food Safety Education

- 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 Handwashing 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 Class.
- 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) Number of Websites (this is number of Websites, not hits) SafeFood Website Farm to Table Website 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 Master Food Safety Advisor Program; 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.
- Grant dollars received to support Food Safety research
- 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 2.1. Number of Participants reporting they will adopt recommended food safety practices (including food production, preparation, consumption and storage practices) to minimize risk of food borne illness.
6	FSAFE 2.2. Number of Participants reporting they 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 2.4. Number of Participants who will complete food safety training and certification in programs such as ServSafe, Food Safety Works, GAPs, GMPs, HACCP, or on-farm best management practices.
9	FSAFE 3.1. Number of Participants who will plan to implement processes that will minimize microbial and/or chemical threats to the food supply.
10	FSAFE 3.2. Number of Participants who will plan to adopt food safety processes developed through NIFA-funded projects.



**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 2.1. Number of Participants reporting they will adopt recommended food safety practices (including food production, preparation, consumption and storage practices) to minimize risk of food borne 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 2.2. Number of Participants reporting they 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 2.4. Number of Participants who will complete food safety training and certification in programs such as ServSafe, Food Safety Works, GAPs, GMPs, HACCP, or on-farm best management practices.

**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 # 9**

**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 # 10**

**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

### **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**

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**

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**

Global Food Security and Hunger

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

Extension outreach will span the breadth of the topics of research to assure that industry participants have practical knowledge in modern plant, 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.

Reporting under Global Food Security and Hunger are three Extension Work Teams:

1. Small Farms & Specialty Crops
2. Agriculture and Business Management (ABM)
3. Livestock & Range

Associated content areas reporting under the Planned Program Area, Plant Production Systems, are Wheat-based and Other Cropping Systems. Reporting under the Planned Program Area, Natural Resources, are Pest Management, Small Acreage Management, and Water.

**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
121	Management of Range Resources	10%		0%	
301	Reproductive Performance of Animals	10%		0%	
302	Nutrient Utilization in Animals	8%		0%	
303	Genetic Improvement of Animals	7%		0%	
307	Animal Management Systems	8%		0%	
311	Animal Diseases	7%		0%	
315	Animal Welfare/Well-Being and Protection	8%		0%	
601	Economics of Agricultural Production and Farm Management	7%		0%	
602	Business Management, Finance, and Taxation	7%		0%	
603	Market Economics	7%		0%	
610	Domestic Policy Analysis	7%		0%	
723	Hazards to Human Health and Safety	7%		0%	
806	Youth Development	7%		0%	
	<b>Total</b>	100%		0%	

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

## 1. Situation and priorities

**Livestock and Range** - Colorado ranks 5<sup>th</sup> 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>).

### **Agriculture and Business Management (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 37,054 farms in Colorado (NASS 2007) which is an 18 percent increase over the number of Colorado farms in 2002. Colorado continues to have most of its farms and ranches considered as small with 29,673 (80.08%) having annual sales of less than \$50,000. 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, intergenerational transfer issues are becoming ever more important.

As recommended by NIFA reviewers, this Planned Program assumes the previously-named Animal Production Systems Knowledge Areas (KAs) and also many of those of the now differently focused Planned Program, Plant Production Systems. Ag/Business Management Work Team also reports in this Planned Program. Together, these efforts by AES and Extension will address the Global Food Security NIFA priority.

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

- In-State Extension
- Multistate Extension



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

**1. Assumptions made for the Program**

**Livestock and Range**

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 and 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.

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

Adoption of improved productive and sustainable agriculture systems will assure communities, families, and individuals have enough food to eat, and that hunger is not a factor in their well-being.

- ABM 1. More Colorado farms and ranches will be passed onto future generations keeping land in agriculture for future food production in Colorado.
- ABM 2. Agricultural producers having all sized businesses are increasing their opportunities for sustained profits.
- LR 1: Science based information and research contributes to the optimum production and economic sustainability of livestock enterprises, rangeland health, and policy regulations.

**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
2013	23.1	0.0	0.0	0.0
2014	25.0	0.0	0.0	0.0
2015	25.0	0.0	0.0	0.0
2016	0.0	0.0	0.0	0.0

Year	Extension		Research	
	1862	1890	1862	1890
2017	0.0	0.0	0.0	0.0

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

**1. Activity for the Program**

- Conduct extension and outreach programs to enhance animal agriculture in Colorado and the West.
- 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.

- Workshops and educational classes for producers
- Demonstration plots and field days to showcase the results
- Individual counseling on producers specific 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> </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

- ABM 1) Peer Reviewed Publications, including Fact Sheets & Curricula
- ABM2) Trainings/Classes/Workshops, Field Days, Activity Days
- ABM3) Trainings for Extension Staff
- ABM 4) Community Meetings Facilitated [examples: Focus Group, Citizen Forum, Round Table Dialogue, Strategic Planning Process]
- ABM 5) Community Coalitions, Collaborations, Alliances Formed to Address a Specific Issue [list specific groups/issue]
- ABM 6) Direct Communication/Education by telephone and/or e-mail
- ABM 7) Newsletters (This is number of newsletters, not number mailed or number of Coloradans who received them.)
- ABM 8) Websites (number of Websites, not number of hits)
- ABM 9) Websites hits (number of hits, not number of sites)
- ABM 10) Press/News Release or Column (number submitted)
- ABM 11) External Grant Dollars
- 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 5) Direct Communication/Education by telephone and/or e-mail
- LR 6) Newsletters (This is number of newsletters, not number mailed or number of Coloradans who received them.)
- LR 7) Websites (number of Websites, not number of hits)
- LR 8) Websites hits (number of hits, not number of sites)
- LR 9) Press/News Release or Column (number submitted)
- 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, reported in dollars
2	Number of new technologies adopted to increase food production
3	ABM 1.1. Participants have a greater confidence in talking with young people about becoming farmers and ranchers.
4	ABM 1.2. Participants intend to develop formal business plans regarding the succession of their farms and ranches.
5	ABM 1.3. Participants intend to develop formal marketing plans regarding the succession of their farms and ranches.
6	ABM 1.4. Participants intend to develop formal retirement plans regarding the succession of their farms and ranches.
7	ABM 1.5. Participants intend to develop formal estate plans regarding the succession of their farms and ranches.
8	ABM 1.6. Participants intend to develop ?legacy? plans.
9	ABM 1.7. Participants have improved intra-family communications.
10	ABM 2.1. Participants intend to investigate adding a new enterprise to their farms/ranches
11	ABM 2.2. Participants intend to discontinue an existing enterprise on their farms/ranches.
12	ABM 2.3. Participants intend to not pursue alternative enterprises
13	ABM 2.4. Participants intend to further investigate strategies for increasing the profitability of their enterprises. (Action)
14	ABM 2.5. Participants intend to implement management strategies for making more informed decisions to sustain profitability and/or reduce risk.
15	ABM 2.6. Participants intend to investigate agri-tourism and other alternative enterprises for their farm/ranch businesses.
16	ABM 2.7. Participants will have sustained profits due to increased revenues and/or decreased costs.
17	LR 1.1: The number of producers who document range land monitoring activities.
18	LR 1.2: Adult and youth livestock producers will gain proficiency in producing profitable animal products.
19	LR 1.3: Livestock producers, adult and youth will report an increased adoption of best management practices for optimum production and economic sustainability.

**Outcome # 1**

**1. Outcome Target**

Economic impact of the change in behavior reported, reported in dollars

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

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

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 307 - Animal Management Systems
- 311 - Animal Diseases
- 315 - Animal Welfare/Well-Being and Protection
- 601 - Economics of Agricultural Production and Farm Management

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

- 1862 Extension

**Outcome # 2**

**1. Outcome Target**

Number of new technologies adopted to increase food production

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

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

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 307 - Animal Management Systems
- 315 - Animal Welfare/Well-Being and Protection
- 601 - Economics of Agricultural Production and Farm Management

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

- 1862 Extension

**Outcome # 3**

**1. Outcome Target**

ABM 1.1. Participants have a greater confidence in talking with young people about becoming farmers and ranchers.

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

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

- 806 - Youth Development

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

- 1862 Extension

**Outcome # 4**

**1. Outcome Target**

ABM 1.2. Participants intend to develop formal business plans regarding the succession of their farms and ranches.

**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 # 5**

**1. Outcome Target**

ABM 1.3. Participants intend to develop formal marketing plans regarding the succession of their farms and ranches.

**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 # 6**

**1. Outcome Target**

ABM 1.4. Participants intend to develop formal retirement plans regarding the succession of their farms and ranches.

**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 1.5. Participants intend to develop formal estate plans regarding the succession of their farms and ranches.

**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 1.6. Participants intend to develop ?legacy? plans.

**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 # 9**

**1. Outcome Target**

ABM 1.7. 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 # 10**

**1. Outcome Target**

ABM 2.1. Participants intend to investigate adding a new enterprise to their farms/ranches

**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 # 11**

**1. Outcome Target**

ABM 2.2. Participants intend to discontinue an existing enterprise on their farms/ranches.

**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 # 12**

**1. Outcome Target**

ABM 2.3. Participants intend to not pursue alternative 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

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

- 1862 Extension

**Outcome # 13**

**1. Outcome Target**

ABM 2.4. Participants intend to further investigate strategies for increasing the profitability of their enterprises. (Action)

**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 # 14**

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

ABM 2.5. Participants intend to implement management strategies for making more informed decisions to sustain profitability and/or reduce 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 # 15**

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

ABM 2.6. Participants intend to investigate agri-tourism and other alternative enterprises for their farm/ranch businesses.

**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 # 16**

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

ABM 2.7. Participants will have sustained profits due to increased revenues and/or decreased costs.

**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 # 17**

**1. Outcome Target**

LR 1.1: The number of producers who document range land monitoring activities.

**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 # 18**

**1. Outcome Target**

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

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

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

- 307 - Animal Management Systems
- 603 - Market Economics
- 806 - Youth Development

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

- 1862 Extension

**Outcome # 19**

**1. Outcome Target**

LR 1.3: Livestock producers, adult and youth will report an increased adoption of best management practices for optimum production and economic sustainability.

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

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

- 307 - Animal Management Systems
- 315 - Animal Welfare/Well-Being and Protection
- 603 - Market Economics
- 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 Programmatic Challenges

**Description**

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 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.

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

**Description of Planned Evaluation Studies**

### **Livestock and Range**

A state wide survey has been developed for all Livestock 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 livestock 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 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.

**ABM-** Examples of such research include the 3-state studies of demographic and educational needs of small and large farm/ranch owners and operators in Arizona, Colorado, and Wyoming. The results of these two studies (available at [www.ruralfamilyventures.org](http://www.ruralfamilyventures.org)) have and will continue to help ABM Economists plan and deliver educational programs.

## **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 plan and will report in this Program Area: Wheat and Other Cropping Systems; Small Farms and Specialty Crops; and Pest Management.

The 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-team on Diagnostics and Pest Management      •Plant Introduction and Invasive Species      •Wheat-Based Dryland Cropping Systems

**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>
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%	
202	Plant Genetic Resources	0%		5%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	0%		10%	
204	Plant Product Quality and Utility (Preharvest)	10%		0%	
205	Plant Management Systems	10%		20%	
206	Basic Plant Biology	0%		5%	
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%	
307	Animal Management Systems	10%		0%	
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 2007, wheat generated \$608 million in commodity sales, dry beans \$21 million, potatoes \$181 million, and other agronomic crops and vegetable and fruit crops generated \$1,216 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.

### **Wheat**

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, sugarbeet 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**

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.

## **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**

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 drybeans), 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**

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**

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.

- 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
2013	18.1	0.0	26.0	0.0
2014	15.0	0.0	26.0	0.0
2015	15.0	0.0	26.0	0.0
2016	0.0	0.0	26.0	0.0
2017	0.0	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, not number of hits)
- PM 10) Websites hits (number of hits, not number of sites)
- PM 11) Press/News Release or Column (number submitted)
- PM 12) Volunteers (total) in Planned Program
- PM 13) Certified Master Volunteers (of those in #12)
- PM 15) External Grant Dollars
- PM 16) User Fees
- SFSC 1) Trainings/Classes/Workshops, Field Days, Activity Days
- SFSC 2) Direct Communication/Education by telephone and/or e-mail
- SFSC 3) New Technologies Expected to be Adopted by Producers
- SFSC 4) External Grant Dollars
- 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) Trainings for Extension Staff
- WOCS 4) Community Meetings Convened [examples: Advisory Groups, Councils, Coalition Meetings, Boards]
- WOCS 5) Community Coalitions, Collaborations, Alliances Formed to Address a Specific Issue  
Groups: USDA-ARS at Akron & Ft Collins Units  
CSU Experiment Station  
Colorado Sunflower Association,  
Colorado Conservation Tillage Association  
Colorado Wheat Research Foundation  
Colorado Wheat Administrative Committee  
Colorado Association of Wheat Growers  
BASF Bayer CropScience  
DuPont Syngenta  
Issue: Providing Cropping Systems Education for Producers and their Advisors
- WOCS 6) Direct Communication/Education by telephone and/or e-mail
- 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)
- WOCS 9) Websites hits (number of hits, not number of sites)
- Amount of grant dollars garnered to support crop production systems research
- 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	SFSC 1.1: Participants intend to adopt or have adopted and/or increase usage of production practices which will reduce greenhouse gas emissions, increase carbon sequestration, reduce carbon footprint and/or reduce ground water pollutants
5	SFSC 2.1: Participants intend to develop or have developed formal plans regarding succession
6	SFSC 3.1: Participants intend to further investigate alternative marketing strategies for their crop and/or livestock products
7	SFSC 3.2: Participants develop and use business, marketing and production plans
8	SFSC 3.3: Participants have implemented strategies for increasing the profitability of their crop and/or livestock enterprises (Action)
9	SFSC 3.4: Participants have implemented strategies for improving crop yield and quality
10	SFSC 3.5: Participants project they will have increased revenues and/or decreased costs
11	SFSC 4.1: Participants use a record-keeping system for financial and production records
12	SFSC 5.1: Participants have accessed resources, information and networks to improve their production enterprises
13	WOCS 1.1: % wheat (or other crop) acres planted to CSU and other recently released improved varieties.
14	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)
15	WOCS 1.3: % of producers using new marketing and/or management techniques for enhancing enterprise efficiency and optimizing net profits
16	WOCS 1.4: % of producers using research based nutrient management practices for cropping systems
17	WOCS 1.5: % of producers using research based integrated pest management practices for field crops
18	WOCS 2.1: % of farmed acreage planted to diversified cropping systems.
19	WOCS 2.2: % of farmed acreage managed with research based best management practices for water use crop efficiency
20	Adoption of crop production technology as measured by agricultural statistics



**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
- 202 - Plant Genetic Resources
- 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**

SFSC 1.1: Participants intend to adopt or have adopted and/or increase usage of production practices which will reduce greenhouse gas emissions, increase carbon sequestration, reduce carbon footprint and/or reduce ground water pollutants

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

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

- 205 - Plant Management Systems

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

- 1862 Extension

#### **Outcome # 5**

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

SFSC 2.1: Participants intend to develop or have developed formal plans regarding succession

**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 # 6**

**1. Outcome Target**

SFSC 3.1: Participants intend to further investigate alternative marketing strategies for their crop and/or livestock products

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

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

- 604 - Marketing and Distribution Practices

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

- 1862 Extension

**Outcome # 7**

**1. Outcome Target**

SFSC 3.2: Participants develop and use business, marketing and production plans

**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 # 8**

**1. Outcome Target**

SFSC 3.3: Participants have implemented strategies for increasing the profitability of their crop and/or livestock enterprises (Action)

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

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

- 601 - Economics of Agricultural Production and Farm Management
- 604 - Marketing and Distribution Practices

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

- 1862 Extension

**Outcome # 9**

**1. Outcome Target**

SFSC 3.4: Participants have implemented strategies for improving crop yield 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 # 10**

**1. Outcome Target**

SFSC 3.5: Participants project they will have increased revenues and/or decreased costs

**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 # 11**

**1. Outcome Target**

SFSC 4.1: Participants use a record-keeping system for financial and production records

**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 # 12**

**1. Outcome Target**

SFSC 5.1: 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

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

- 1862 Extension

**Outcome # 13**

**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
- 202 - Plant Genetic Resources

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

- 1862 Extension

**Outcome # 14**

**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 # 15**

**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 # 16**

**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 # 17**

**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 # 18**

**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 # 19**

##### **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 # 20**

##### **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

### **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:** For this Planned Program, evaluation will be performed by [for example, distributing written surveys to all program participants.]

- 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).

.

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.

### **Small Farms**

- 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:**

- 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.

**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%		15%	
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%		5%	
	<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**

Adequate **supplies** of clean water are essential to the health and well being 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**

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**

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 Coloradans 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 \$35,318 annually, up from \$26,159 in 2001. It appears that the green industry has made an almost 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 m

**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 Arkon, 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**

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**

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**

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.

#### **Small Acreage**

- 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**

- 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
2013	28.0	0.0	11.0	0.0
2014	30.0	0.0	11.0	0.0
2015	30.0	0.0	11.0	0.0
2016	0.0	0.0	11.0	0.0
2017	0.0	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 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
  - 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
  - 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) VOLUNTEER HOURS

- 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 Victim's Outreach garden) NUMBER OF CONTACTS

- 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 Victim's Outreach garden) VOLUNTEER HOURS

- 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, show1 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 (specify)
- NP

**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 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

- 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
- 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 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
- 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) VOLUNTEER HOURS
- 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 Victim's Outreach garden) NUMBER OF CONTACTS
- 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 Victim's Outreach garden) VOLUNTEER HOURS
- 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, show1 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 a 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 Coloradoans 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
- Number of different agencies you partnered with in this program effort. Include employers/agencies of NPM volunteers and any other collaborating agencies which cosponsor NPM in your county.



- Number of volunteer trainings conducted for volunteer NPM trainers
- Number of web hits for individual water-related fact sheets
- SAM 1. Trainings/Classes/Workshops, Field Days, Activity Days (Including all Workshops, Educational Classes, webinars, demonstrations)
- SAM 10. Volunteers (total) in Planned Program
- SAM 11. External Grant Dollars
- SAM 12. User Fees
- SAM 13. Agencies Partnering/Collaborating (specify) NRCS, County Weed Divisions, CO State Forest Service
- SAM 14. The number of acres on which small acreage landowners have established a weed management and monitoring plan and/or have reported active management of noxious/ unwanted weeds. (includes workshops, classes, demonstrations, one-on-one intervention, and webinars, etc).
- SAM 15. The number of acres on which small acreage landowners have successful grass establishment.
- SAM 16. The number of acres on which small acreage landowners have established proper grazing and pasture management.
- SAM 17. The number of acres on which small acreage landowners are implementing a forest management plan which includes insect/disease issues, proper stand health, and/or creating defensible space.
- SAM 2. Trainings for Volunteers (Including all Workshop, Educational Classes, webinars, demonstrations)
- SAM 3. Trainings for Extension Staff (includes webinars, workshops, demonstrations, and group discussions).
- SAM 4. Community Meetings Convened [examples: Advisory Groups, Councils, Coalition Meetings, Boards].
- SAM 5. Direct Communication/Education by telephone and/or e-mail
- SAM 6. Newsletters (This is number of newsletters, not number mailed or number of Coloradoans who received them.)
- SAM 7. Websites (number of Websites, not number of hits)
- SAM 8. Website Hits (number of hits, not number of sites)
- SAM 9. Press/News Release or Column (number submitted)
- 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 site
- WR 8) Websites (number of hits)Could include:Water-related fact sheets, Other sites
- WR 9) Press/News Release or Column (number submitted)
- Amount of grant dollars to support natural resource and environmental research
- 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	SAM 1.1a. The number of small acreage landowners who conducted a well water test.
13	SAM 1.1b. The number of small acreage landowners who report having their septic system checked/pumped
14	SAM 1.2. The number of small acreage landowners who report water conservation by planting drought tolerant plants and/or implementing efficient irrigation techniques.
15	SAM 2.1. The number of small acreage landowners who report implementation of proper manure management including storage, composting, and/or proper disposal.
16	SAM 2.2. The number of small acreage landowners who report utilizing techniques to deter unwanted wildlife.
17	SAM 2.3a. The number of small acreage landowners who report having a plan in place which addresses livestock and animal diet and supplements, emergency veterinary care, emergency evacuation, and death.
18	SAM 2.3b. The number of feed stores who were sent emergency messages from the Animal Health Network or some other system to advise landowners of state veterinary emergency reports.
19	SAM 2.4. The number of small acreage landowners who report successfully attracting pollinators and/or other desired wildlife.
20	SAM 3.1a. The number of small acreage landowners who report implementation of composting and/or vermicomposting.
21	SAM 3.1b. The number of small acreage landowners who utilize soil tests on their property.
22	SAM 3.1c. The number of small acreage landowners who reduced soil erosion by using windbreaks, cover crops, and/or other techniques.
23	SAM 4.1. The number of small acreage landowners who have established a weed management and monitoring plan and/or have reported active management of noxious/ unwanted weeds.
24	SAM 4.2. The number of small acreage landowners who have implemented proper grazing and pasture management.
25	SAM 4.3. The number of small acreage landowners who have successfully established grass.
26	SAM 4.5. The number of small acreage landowners who have identified existing vegetation on their property, including grasses, weeds, forbs, shrubs, and/or trees.
27	SAM 4.4. The number of small acreage landowners who have planted and/or properly maintained windbreaks or snow fences on their property.

28	SAM 4.6a. The number of small acreage landowners who are implementing a forest management plan which includes insect/disease issues, proper stand health, and/or creating defensible space.
29	SAM 4.6b. The number of small acreage landowners who report having an evacuation plan in place in case of wildfire.
30	WR 1.1) Number of participants reporting they Perform water quality sampling and analysis in a manner meaningful to the user and regulating agencies.
31	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.
32	WR 2.1) Adoption of tools, technology, and practices that foster conservation of water or optimization of water use in agriculture settings.
33	Economic impact of the change in behavior reported
34	Change in knowledge
35	Change in condition outcome

**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**

SAM 1.1a. The number of small acreage landowners who conducted a well water test.

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

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

- 112 - Watershed Protection and Management

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

- 1862 Extension

**Outcome # 13**

**1. Outcome Target**

SAM 1.1b. The number of small acreage landowners who report having their septic system checked/pumped

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

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

- 112 - Watershed Protection and Management



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

- 1862 Extension

#### **Outcome # 14**

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

SAM 1.2. The number of small acreage landowners who report water conservation by planting drought tolerant plants and/or implementing efficient irrigation techniques.

##### **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 # 15**

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

SAM 2.1. The number of small acreage landowners who report implementation of proper manure management including storage, composting, and/or proper disposal.

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

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

- 102 - Soil, Plant, Water, Nutrient Relationships
- 403 - Waste Disposal, Recycling, and Reuse

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

- 1862 Extension

#### **Outcome # 16**

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

SAM 2.2. The number of small acreage landowners who report utilizing techniques to deter unwanted wildlife.

##### **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 # 17**

**1. Outcome Target**

SAM 2.3a. The number of small acreage landowners who report having a plan in place which addresses livestock and animal diet and supplements, emergency veterinary care, emergency evacuation, and death.

**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 # 18**

**1. Outcome Target**

SAM 2.3b. The number of feed stores who were sent emergency messages from the Animal Health Network or some other system to advise landowners of state veterinary emergency reports.

**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 # 19**

**1. Outcome Target**

SAM 2.4. The number of small acreage landowners who report successfully attracting pollinators and/or other desired wildlife.

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

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

- 136 - Conservation of Biological Diversity
- 211 - Insects, Mites, and Other Arthropods Affecting Plants

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

- 1862 Extension

**Outcome # 20**

**1. Outcome Target**

SAM 3.1a. The number of small acreage landowners who report implementation of composting and/or vermicomposting.

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

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

- 102 - Soil, Plant, Water, Nutrient Relationships
- 403 - Waste Disposal, Recycling, and Reuse

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

- 1862 Extension

**Outcome # 21**

**1. Outcome Target**

SAM 3.1b. The number of small acreage landowners who utilize soil tests on their property.

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

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

- 101 - Appraisal of Soil Resources

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

- 1862 Extension

**Outcome # 22**

**1. Outcome Target**

SAM 3.1c. The number of small acreage landowners who reduced soil erosion by using windbreaks, cover crops, and/or other techniques.

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

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

- 101 - Appraisal of Soil Resources

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

- 1862 Extension

**Outcome # 23**

**1. Outcome Target**

SAM 4.1. The number of small acreage landowners who have established a weed management and monitoring plan and/or have reported active management of noxious/ unwanted 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 # 24**

**1. Outcome Target**

SAM 4.2. The number of small acreage landowners who have implemented proper grazing and pasture 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 # 25**

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

SAM 4.3. The number of small acreage landowners who have successfully established grass.

**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 # 26**

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

SAM 4.5. The number of small acreage landowners who have identified existing vegetation on their property, including grasses, weeds, forbs, shrubs, and/or trees.

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

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

- 121 - Management of Range Resources
- 213 - Weeds Affecting Plants

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

- 1862 Extension

#### **Outcome # 27**

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

SAM 4.4. The number of small acreage landowners who have planted and/or properly maintained windbreaks or snow fences on their property.

**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 # 28**

**1. Outcome Target**

SAM 4.6a. The number of small acreage landowners who are implementing a forest management plan which includes insect/disease issues, proper stand health, and/or creating defensible space.

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

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

- 123 - Management and Sustainability of Forest Resources

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

- 1862 Extension

**Outcome # 29**

**1. Outcome Target**

SAM 4.6b. The number of small acreage landowners who report having an evacuation plan in place in case of wildfire.

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

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

- 121 - Management of Range Resources
- 123 - Management and Sustainability of Forest Resources
- 124 - Urban Forestry

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

- 1862 Extension

**Outcome # 30**

**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 # 31**

**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 # 32**

**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

#### **Outcome # 33**

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

Economic impact of the change in behavior reported

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

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

- 101 - Appraisal of Soil Resources
- 102 - Soil, Plant, Water, Nutrient Relationships
- 103 - Management of Saline and Sodic Soils and Salinity
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 121 - Management of Range Resources
- 123 - Management and Sustainability of Forest Resources
- 132 - Weather and Climate
- 403 - Waste Disposal, Recycling, and Reuse
- 605 - Natural Resource and Environmental Economics

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

- 1862 Research

#### **Outcome # 34**

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

Change in knowledge

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

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

- 101 - Appraisal of Soil Resources
- 102 - Soil, Plant, Water, Nutrient Relationships
- 103 - Management of Saline and Sodic Soils and Salinity
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management



- 121 - Management of Range Resources
- 123 - Management and Sustainability of Forest Resources
- 132 - Weather and Climate
- 403 - Waste Disposal, Recycling, and Reuse
- 605 - Natural Resource and Environmental Economics

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

- 1862 Research

### **Outcome # 35**

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

Change in condition outcome

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

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

- 101 - Appraisal of Soil Resources
- 102 - Soil, Plant, Water, Nutrient Relationships
- 103 - Management of Saline and Sodic Soils and Salinity
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 121 - Management of Range Resources
- 123 - Management and Sustainability of Forest Resources
- 132 - Weather and Climate
- 403 - Waste Disposal, Recycling, and Reuse
- 605 - Natural Resource and Environmental Economics

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

- 1862 Research

### **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 Resource Development

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

Community Development 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 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.

**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%		40%	
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%		0%	
704	Nutrition and Hunger in the Population	10%		0%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	5%		10%	
	<b>Total</b>	100%		100%	

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

1. Situation and priorities

Community Development

**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 well being 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 who's 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

## **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**

- 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**

- 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
2013	6.5	0.0	6.0	0.0
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	0.0	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**

- Number of training opportunities for community members
- 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.
- Amount of grant dollars garnered to support community development research and outreach
  
- 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 influenceing 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 influenceing 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

- 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.

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

### Description of Planned Evaluation Studies

#### Community Development

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

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.

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

### **Program # 8**

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

Sustainable Energy

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

The goals of this Work Team team are to:

- educate a core group of extension agents about renewable energy options and energy efficiency.
- broadly educate all extension agents on the basics of renewable energy.

Ultimately, we hope Extension will be seen as the educational entity of choice in the area of clean energy.

Strategies include developing fact sheets for the general public, identifying additional outside resources to support this work and partnering with community agencies to deliver educational programming.

Long term deliverables include:

- develop demonstration sites
- deliver short term classes
- partner with campus faculty
- develop green jobs program for schools
- develop school enrichment materials using STEM based standards

**3. Program existence :** Intermediate (One to five years)

**4. Program duration :** Medium Term (One to 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
132	Weather and Climate	1%		0%	
402	Engineering Systems and Equipment	1%		0%	
605	Natural Resource and Environmental Economics	1%		0%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	97%		0%	
	<b>Total</b>	100%		0%	

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

1. Situation and priorities

**Ag Energy**

Energy costs for common agricultural operations in Colorado can range from just over 30% of total operating costs (sugar beets) to over 50% of total operating costs (wheat) (<http://www.ers.usda.gov/AmberWaves/April06/Features/Energy.htm>). At the same time, a 2009 regional survey of western agricultural and natural resource Extension educators identified energy efficiency on farms and ranches as one of five priority needs for more information ([http://wsare.usu.edu/news/pdf/WS10\\_2010\\_133734.pdf](http://wsare.usu.edu/news/pdf/WS10_2010_133734.pdf)). A 2008 survey of Extension agents in Colorado showed that 74% of agents rated their assessment of interest by the general public in renewable energy in their communities to be high or very high. At the same time, less than 10% of agents thought that "a great deal of assistance" was provided for energy-related services by entities in Colorado, and 47% of agents thought that Extension was providing "very little assistance" (Western Region Extension Energy Survey, 2008). A 2011 survey of agricultural producers in the San Luis valley showed that 89% of these producers were interested in learning more about renewable energy, yet only 9% felt they had the technical and financial information to make a decision about renewable energy for their operation. In that same survey, 66% of respondents would "have an energy audit done by a professional at a reasonable price" (Paluzzi, 2011).

The importance of expanding education and research efforts in agricultural energy is further validated in that the Association of Public and Land Grant Universities (APLU) identified "creat[ing] pathways to energy independence" as one of seven Strategic Programming Opportunities for Extension at the national level for 2010 and beyond (<http://www.aplu.org/NetCommunity/Document.Doc?id=2019>).

The Ag Energy work team allows CSU faculty to better communicate and collaborate on research and education projects related to ag energy as well as apply for grants and develop outside partnerships when opportunities arise. This will result in more effective energy information services provided to rural Colorado residents with agricultural operations.

**Consumer Energy**

Energy issues have gained prominence in recent years due to the economic crisis, climate change, the BP oil spill, and otherwise. In Colorado, one of the most aggressive renewable portfolio standards in the nation has been adopted as part of the state's move toward a New Energy Economy.

In addition, a 2008 survey of Extension agents in Colorado showed that 74% of agents rated their assessment of interest by the general public in renewable energy in their communities to be high or very



energy-related services by entities in Colorado, and 47% of agents thought that Extension was providing "very little assistance" (Western Region Extension Energy Survey, 2008).

In response, the Consumer Energy team strives to provide unbiased information on energy issues of most relevance to consumers in order to help them make environmentally and financially sound energy decisions.

### **Colorado Energy Masters**

Energy issues have gained prominence in recent years due to the economic crisis, climate change, the BP oil spill, and otherwise. In Colorado, one of the most aggressive renewable portfolio standards in the nation has been adopted as part of the state's move toward a New Energy Economy. With 59 offices in Colorado, staff expressing a high level of interest in energy issues, and a wealth of clean energy research being generated on campus, CSU Extension is well positioned to provide unbiased, timely energy information to Colorado residents and small businesses.

That said, demands on Extension staff are increasing due to budget shortfalls and otherwise and staff in general cannot devote much time to becoming local energy experts. Therefore in order to be effective at fulfilling Extension's mission of disseminating locally relevant, research-based information to the public throughout the state, Extension must engage a network of citizens and volunteers.

The Colorado Energy Master program has been developed in order to help Colorado residents and small businesses make educated energy decisions. This occurs through the participation of both volunteers and non-volunteers in the program coursework. The program can also provide some degree of training and exposure for those interested in a career in the clean energy field, particularly in the field of home energy audits.

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

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

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

### **1. Assumptions made for the Program**

#### **Assumptions:**

##### **Ag Energy**

- Agricultural professionals and producers will continue or increase their levels of interest in clean energy issues.
  - There is value in conducting outreach to help these constituents better understand clean energy options and the plethora of ever-changing financial incentives related to them.
  - Producers will implement low- or no-cost energy conservation, energy efficiency, and renewable energy measures if provided with needed information.
  - The costs of clean energy will continue to become more attractive and competitive versus fossil fuel energy sources.

##### **Consumer Energy**

Individuals, businesses, and local governments will continue or increase their levels of interest in clean energy issues.

There is value in conducting outreach to help these constituents better understand clean energy

options and the plethora of ever-changing financial incentives related to them.

Residents will implement low- or no-cost energy conservation, energy efficiency, and renewable energy measures if provided with needed information.

The costs of clean energy will continue to become more attractive and competitive versus fossil fuel energy sources.

**Colorado Energy Masters**

- Interest in clean energy in Colorado communities will be maintained or increase.
- Home and small business owners can benefit from unbiased information and tools on energy efficiency and renewable energy in terms of reducing fossil fuel energy use in a cost-effective manner.
- Volunteers receiving 30 hours of training on energy efficiency and renewable energy in Colorado will be capable of and effective at conducting basic home energy assessments and serving as energy educators in their communities.

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

- Ag Energy 2) Agricultural producers in Colorado are empowered to make decisions for growing crops to be used as biofuel
- Clean Energy 1) - Coloradans are empowered to make environmentally and financially sound energy decisions.
- Energy Masters 2) Colorado citizens have a broad, research-based context for understanding energy issues.

**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
2013	4.9	0.0	0.0	0.0
2014	0.7	0.0	0.0	0.0
2015	0.7	0.0	0.0	0.0
2016	0.7	0.0	0.0	0.0
2017	0.0	0.0	0.0	0.0

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

**1. Activity for the Program**

- Clean Energy - Ag - "Plug and play" media presentations made available to Extension agents
- Clean Energy - Ag - Agricultural energy audits conducted
- Clean Energy - Ag - Agricultural energy research projects
- Clean Energy - Ag - Gallons of on-farm biofuels consumed

- Clean Energy - Ag - Graduate students working in bioenergy labs
- Clean Energy - Ag - Increased revenue estimated from bioenergy crops and/or production (in dollars)
- Clean Energy - Ag - Number of acres for oilseed crops as biofuels
- Clean Energy - Ag - Undergraduates working in bioenergy labs
- Clean Energy - Ag - Number of variety trials for crops as biofuels
- Clean Energy - Annual savings estimated from investments in energy efficiency and/or renewable energy (in dollars)
  - Clean Energy - Capital invested in energy efficiency and/or renewable energy (in dollars)
  - Clean Energy - Certified Master Volunteers (of those related to Volunteers)
  - Clean Energy - Community Coalitions, Collaborations, Alliances Formed to Address a Specific Issue [list specific groups/issue]
    - Clean Energy - Community Meetings Convened [examples: Advisory Groups, Councils, Coalition Meetings, Boards]
    - Clean Energy - Community Meetings Facilitated [examples: Focus Group, Citizen Forum, Round Table Dialogue, Strategic Planning Process]
  - Clean Energy - Direct Communication/Education by telephone and/or e-mail
  - Clean Energy - Educational materials distributed
  - Clean Energy - Energy Masters - Certificates of completion for teacher license renewals
  - Clean Energy - Energy Masters - CEUs earned by realtors in the Colorado Association of Realtors
  - Clean Energy - Energy Masters - Counties offering the Colorado Energy Master program
  - Clean Energy - Energy Masters - Educational contacts
  - Clean Energy - Energy Masters - Energy block parties
  - Clean Energy - Energy Masters - Home energy assessments
  - Clean Energy - Energy Masters - Non-volunteers successfully completing all Energy Master coursework
    - Clean Energy - Energy Masters - Value of volunteer hours
    - Clean Energy - Energy Masters - Volunteer hours
    - Clean Energy - Energy Masters - CEUs earned by US Green Building Council LEED professionals
    - Clean Energy - External Grant Dollars
    - Clean Energy - New Technologies Expected to be Adopted by Producers
    - Clean Energy - Newsletters (This is number of newsletters, not number mailed or number of Coloradoans who received them.)
      - Clean Energy - Peer Reviewed Publications, including Fact Sheets & Curricula
      - Clean Energy - Press/News Release or Column (number submitted)
      - Clean Energy - Trainings for Extension Staff
      - Clean Energy - Trainings for Volunteers
      - Clean Energy - Trainings/Classes/Workshops, Field Days, Activity Days
      - Clean Energy - User Fees
      - Clean Energy - Volunteers (total) in Planned Program
      - Clean Energy - Websites (number of hits)
      - Clean Energy - Websites (number of Websites)

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

**Extension**

Direct Methods	Indirect Methods
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<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></ul>	<ul style="list-style-type: none"><li>• Public Service Announcement</li><li>• Newsletters</li><li>• TV Media Programs</li><li>• Web sites other than eXtension</li></ul>
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### 3. Description of targeted audience

1) We have two main audiences - agricultural professionals such as Extension agents and NRCS personnel as well as the agricultural producers they serve.

2) The program is available to all adults as well as to high school juniors and seniors so as to offer youth an opportunity to get involved in their communities and pursue a topic not traditionally taught in school.

- The program offers professional development credits (CEUs) for realtors, LEED professionals, and teachers. In addition to these groups, retirees (particularly retired engineers), sustainability professionals, environmental educators, other CSU "Master" volunteers, and community college, University, and high school students will be targeted.

- The program will be capable of training individuals with little prior knowledge of energy issues in the basics of energy efficiency and renewable energy as well as how to conduct a basic home energy assessment, possibly to include a home "solar audit" using utility bill history, a rooftop analysis, a Solar Pathfinder, and web-based analysis tools.

3) In the Western Region Extension Survey of 2008, energy efficiency/conservation on the farm/ranch, wind energy, and bioenergy were identified as the three most common requests for information among Colorado agents. These requests were closely followed by energy efficiency/conservation in the home, solar PV, and energy costs and comparisons. Based on survey results, it is clear that our primary audiences are 1) rural energy users and 2) residents

### **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**

- Number of volunteers supporting clean energy
- Number of partnering agencies/organizations around clean energy
- Number of Extension Agents trained
- Clean Energy - Energy Masters - CEUs earned by realtors in the Colorado Association of Realtors
- Clean Energy - Energy Masters - Certificates of completion for teacher license renewals
- Clean Energy - Energy Masters - Number of Counties offering the Colorado Energy Master program
- Clean Energy - Energy Masters - Number of Non-volunteers successfully completing all Energy Master coursework
- Clean Energy - Energy Masters - CEUs earned by US Green Building Council LEED professionals
- Clean Energy - Number of Community Coalitions, Collaborations, Alliances Formed to Address a Specific Issue
- Clean Energy - Number of Community Meetings Convened [examples: Advisory Groups, Councils, Coalition Meetings, Boards]
- Clean Energy - Number of Community Meetings Facilitated [examples: Focus Group, Citizen Forum, Round Table Dialogue, Strategic Planning Process]
- Clean Energy - Energy Masters - Number of Energy block parties
- Clean Energy - Number of Press/News Releases or Columns submitted
- Clean Energy - Number of Newsletters (This is number of newsletters, not number mailed or number of Coloradans who received them.)
- Clean Energy - Ag - Number of Agricultural energy audits conducted
- Clean Energy - Number of Direct Communications/Education by telephone and/or e-mail
- Clean Energy - Number of Educational materials distributed
- Clean Energy - Energy Masters - Number of Home energy assessments
- Clean Energy - Energy Masters - Value of volunteer hours (hours x \$21.62 nationally recognized value of volunteer time/hour, adjusted for Colorado)
- Consumer - Number of Loans of energy audit equipment

- Consumer - Number of Loans of power monitors
  - Clean Energy - Energy Masters - Number of Educational contacts
  - Clean Energy - Energy Masters - Number of Volunteer hours
  - Clean Energy - Amount of External Grant Dollars
  - Clean Energy - Amount of User Fees Collected
  - Clean Energy - Number of Websites (not number of Website hits)
  - Clean Energy - Number of Websites hits (not number of Websites)
  - Consumer and Ag Energy - Number of Uploads of multimedia
  - Consumer and Energy Masters - Number of Entries using social media
  - Clean Energy - Annual savings in dollars) estimated from investments in energy efficiency and/or renewable energy
  - Clean Energy - Capital invested in energy efficiency and/or renewable energy (in dollars)
  - Clean Energy - Number of Certified Master Volunteers (of those related to Volunteers)
  - Clean Energy - Number of New Technologies Expected to be Adopted by Producers
  - Clean Energy - Number of Trainings for Extension Staff
  - Clean Energy - Number of Trainings for Volunteers
  - Clean Energy - Number of Trainings/Classes/Workshops, Field Days, Activity Days
- 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	Clean Energy 1.1) Participants analyze options for cost-effective energy conservation, efficiency, and/or renewable energy measures.
2	Clean Energy 1.2) Participants take advantage of financial incentives for energy efficiency and/or renewable energy.
3	Clean Energy 1.3) Participants conduct a basic energy assessment.
4	Clean Energy 1.4) Participants implement cost-effective energy conservation, efficiency, and/or renewable energy measures.
5	Energy Masters 2.1) Participants more closely follow and better comprehend energy-related news.



**Outcome # 1**

**1. Outcome Target**

Clean Energy 1.1) Participants analyze options for cost-effective energy conservation, efficiency, and/or renewable energy measures.

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

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

- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities

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

- 1862 Extension

**Outcome # 2**

**1. Outcome Target**

Clean Energy 1.2) Participants take advantage of financial incentives for energy efficiency and/or renewable energy.

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

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

- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities

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

- 1862 Extension

**Outcome # 3**

**1. Outcome Target**

Clean Energy 1.3) Participants conduct a basic energy assessment.

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

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

- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities

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

- 1862 Extension

#### **Outcome # 4**

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

Clean Energy 1.4) Participants implement cost-effective energy conservation, efficiency, and/or renewable energy measures.

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

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

- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities

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

- 1862 Extension

#### **Outcome # 5**

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

Energy Masters 2.1) Participants more closely follow and better comprehend energy-related news.

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

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

- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities

#### **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**

Economic conditions and changes in public policy could drive outcomes up or impede success, depending on the direction of the changes. This work was organized as a "strategic initiative team" in fall, 2009. NIFA priorities and progress by the team are reflected in showing the work as a planned program for 2011. A new Clean Energy specialist, hired for a three-year fixed term position, leads this work.

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

**Description of Planned Evaluation Studies**

Specific indicators will guide program evaluation in the coming year.

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

**Program # 9**

**1. Name of the Planned Program**

Childhood Obesity

**2. Brief summary about Planned Program**

Reduction of factors that contribute to obesity in children.

**3. Program existence :** New (One year or less)

**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
703	Nutrition Education and Behavior	50%		0%	
724	Healthy Lifestyle	50%		0%	
	<b>Total</b>	100%		0%	

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

**1. Situation and priorities**

While Colorado is considered the leanest state in the nation for adults, that is not true for children. Colorado ranks 23rd nationally for child obesity rates. Currently 14.2% of youth in Colorado are considered obese, with an additional 12.8% categorized as overweight. Efforts to address childhood obesity have increased in recent years, and in particular with First Lady Michelle Obama's 'Let's Move' campaign. In the past two years obesity prevention programs and policies have increased exponentially in number, strength and breadth. A new poll shows that 80% of Americans now recognize that obesity is a significant and growing challenge for the country. Furthermore, 50% of Americans believe that childhood obesity carries such importance that more should be invested immediately to prevent it.

**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**

Some activities conducted through Extension's Nutrition and Health Promotion Work Team are reportable under Childhood Obesity as well as Global Food Security. One outcome example is improved healthful dietary and activity habits in children. An associated indicator is increased fruit and vegetable consumption (increased consumption or intent to increase consumption.) A second indicator is increased physical activity (report increased activity [e.g. steps], or intent to increase activity.)

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

Healthy physical activity levels are defined by national physical activity guidelines: Children - 60 minutes or more of PA daily

**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
2013	5.0	0.0	0.0	0.0
2014	5.0	0.0	0.0	0.0
2015	5.0	0.0	0.0	0.0
2016	0.0	0.0	0.0	0.0
2017	0.0	0.0	0.0	0.0

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

**1. Activity for the Program**

Programming to parents and care givers so they can learn and convey the importance of healthful dietary and activity habits to children.

**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> </ul>	<ul style="list-style-type: none"> <li>• Newsletters</li> <li>• Web sites other than eXtension</li> </ul>

### 3. Description of targeted audience

Target audiences include children (birth through high school), parents, teachers and other school staff.

### 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

- Number of Trainings/Classes/Workshops, Field Days, Activity Days delivered to parents and/or care givers concerning healthful dietary and activity habits in children.
- Number of participants in workshops
- Number of volunteers engaged in this work
- Number of external grant dollars generated for this work
- Number of agencies partnering in this work

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 participants who, after learning the importance of healthful dietary and activity habits, convey that to children.
2	Number of participants who change behavior in order to improve healthful dietary and activity habits in children.

**Outcome # 1**

**1. Outcome Target**

Number of participants who, after learning the importance of healthful dietary and activity habits, convey that to children.

**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 # 2**

**1. Outcome Target**

Number of participants who change behavior in order to improve healthful dietary and activity habits in children.

**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

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

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

- Public Policy changes
- Competing Programmatic Challenges

**Description**

Extension recognizes this critical need in Colorado and we are watching the development of NIFA priorities for policy and funding. Some of the outcomes and indicators for childhood obesity prevention have great potential for collaboration across various program areas within Extension, by content and/or by audience.



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

**Description of Planned Evaluation Studies**

**Standard survey methods will be utilized, including pre-post, retrospective pre-post, and post-only surveys.**

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

**Program # 10**

**1. Name of the Planned Program**

Nutrition and Health Promotion

**2. Brief summary about Planned Program**

The Nutrition and Health Promotion 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.

**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
701	Nutrient Composition of Food	0%		30%	
702	Requirements and Function of Nutrients and Other Food Components	0%		30%	
703	Nutrition Education and Behavior	45%		10%	
704	Nutrition and Hunger in the Population	10%		0%	
724	Healthy Lifestyle	45%		30%	
	<b>Total</b>	100%		100%	

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

**1. Situation and priorities**

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.

**2. Scope of the Program**

- In-State Extension
- In-State Research
- Multistate Research

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

**1. Assumptions made for the Program**

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.

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

Reduced incidence of chronic diseases (such as diabetes, heart disease, obesity and cancer), thus reducing health insurance premiums and mortality rates, and increasing employee productivity.

**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
2013	12.0	0.0	2.0	0.0
2014	12.0	0.0	2.0	0.0
2015	12.0	0.0	2.0	0.0
2016	0.0	0.0	2.0	0.0
2017	0.0	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/Chronic Disease Prevention 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

**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> </ul>	<ul style="list-style-type: none"> <li>• Newsletters</li> </ul>

**3. Description of targeted audience**

Adults in Colorado

**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

- NH 13) Grant funding (external).
- NH 14) User fees generated through these programs.
- NH 10) Number of websites (this is sites, not hits)
- NH 11) Number of website hits (this is number of hits, not number of sites.
- NH 12) Number of press releases/columns submitted.
- NH 15) EFNEP 1) Adult: Paraprofessional educators provide [Number of]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 [Number of] 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 [Number of]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 2) Number of Trainings/Classes/Workshops, Field Days, Activity Day America on the MoveDining with DiabetesFood Friends/LEAP StudyHealthy YouHealthy KidsSmall Steps to Health and Wealth COStrong Women Strong BonesStrong Women Healthy Hearts
- NH 3) Number of Trainings for Volunteers.
- NH 4) Number of Trainings for Extension Staff.
- NH 5) Number of Community Meetings Convened [examples: Advisory Groups, Councils, Coalition Meetings, Boards].
- NH 6) Number of Community Meetings Facilitated [examples: Focus Group, Citizen Forum, Round Table Dialogue, Strategic Planning Process].
- NH 7) Number of Community Coalitions, Collaborations, Alliances Formed to Address a Specific Issue [list specific groups/issue].
- NH 8) Number of Direct Communication/Education by telephone and/or e-mail.
- NH 9) Number of Newsletters (This is number of newsletters created/written, not number mailed or number of Coloradans who received them.)Family Matters, Other Newsletters.

- 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	NH 1.1a: The number of Coloradans that reported eating more of healthy foods.
2	NH 1.1b: The number of Coloradans that reported an intention to eat more of healthy foods.
3	NH 1.2a: The number of Coloradans that reported eating less of foods/food components which are commonly eaten in excess.
4	NH 1.2b: The number of Coloradans that reported an intention to eat less of foods/food components which are commonly eaten in excess.
5	NH 1.3a: The number of Coloradans that reported adopting healthy eating patterns.
6	NH 1.3b: The number of Coloradans that reported an intention to adopt healthy eating patterns.
7	NH 2.1a: The number of Coloradans that reported engaging in the recommended amount of physical activity.
8	NH 2.1b: The number of Coloradans that reported increasing their physical activity and/or reducing sedentary time.
9	NH 2.1c: The number of Coloradans that reported an intention to increase their physical activity and/or reducing sedentary time.
10	NH 3.1a: The number of Coloradans that reported knowing individual information on specific health indicators (e.g. blood pressure, cholesterol level, BMI, blood glucose, A1C, etc.).
11	NH 3.1b: The number of Coloradans that reported an intention to find out one or more risk factors (e.g. blood pressure, cholesterol level, BMI, blood glucose, A1C, etc.).
12	NH 4.1a. EFNEP 1) Upon completion of the class, the number of participants reporting improvement in one or more nutrition practices.
13	NH 4.1b. EFNEP 2) Upon completion of the classes, the number of participants showing improvement in one or more food resource management practices.
14	Percent of participants indicating an increase in knowledge regarding health promotion and/or disease prevention
15	Percent of participants reporting a change in behavior following participation in a health promotion/disease prevention program

**Outcome # 1**

**1. Outcome Target**

NH 1.1a: The number of Coloradans that reported eating more of healthy foods.

**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 # 2**

**1. Outcome Target**

NH 1.1b: The number of Coloradans that reported an intention to eat more of healthy foods.

**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 # 3**

**1. Outcome Target**

NH 1.2a: The number of Coloradans that reported eating less of foods/food components which are commonly eaten in excess.

**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 # 4**

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

NH 1.2b: The number of Coloradans that reported an intention to eat less of foods/food components which are commonly eaten in excess.

**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 # 5**

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

NH 1.3a: The number of Coloradans that reported adopting healthy eating patterns.

**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 # 6**

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

NH 1.3b: The number of Coloradans that reported an intention to adopt healthy eating patterns.

**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 # 7**

**1. Outcome Target**

NH 2.1a: The number of Coloradans that reported engaging in the recommended amount of physical activity.

**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 # 8**

**1. Outcome Target**

NH 2.1b: The number of Coloradans that reported increasing their physical activity and/or reducing sedentary time.

**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 # 9**

**1. Outcome Target**

NH 2.1c: The number of Coloradans that reported an intention to increase their physical activity and/or reducing sedentary time.

**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 # 10**

**1. Outcome Target**

NH 3.1a: The number of Coloradans that reported knowing individual information on specific health indicators (e.g. blood pressure, cholesterol level, BMI, blood glucose, A1C, etc.).

**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 # 11**

**1. Outcome Target**

NH 3.1b: The number of Coloradans that reported an intention to find out one or more risk factors (e.g. blood pressure, cholesterol level, BMI, blood glucose, A1C, etc.).

**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 # 12**

**1. Outcome Target**

NH 4.1a. EFNEP 1) Upon completion of the class, the number of participants reporting improvement in one or more nutrition practices.

**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 # 13**

**1. Outcome Target**

NH 4.1b. EFNEP 2) Upon completion of the classes, the number of participants showing improvement in one or more food resource management practices.

**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 # 14**

**1. Outcome Target**

Percent of participants indicating an increase in knowledge regarding health promotion and/or disease prevention

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

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

- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle

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

- 1862 Research

#### **Outcome # 15**

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

Percent of participants reporting a change in behavior following participation in a health promotion/disease prevention program

##### **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 Research

### **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**

- 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.

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

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

In general, impacts and outcomes will be assessed by the method of instruction:

- o Class series - Pre/Post knowledge, reported behaviors, and intent to change; demographics at pre-only; and class feedback (post only) maybe collected. Type of information gathered will be specific to the program offered.
- o Extended single events (Single session with multiple hours and lessons) - Pre/Post data collected for knowledge, reported behavior intention, and demographics; and class feedback (post only). Type of information gathered will be specific to the program offered.
- o Single events - demographics and varied outcome measures depending on program content.

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

**Program # 11**

**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.

**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
301	Reproductive Performance of Animals	0%		10%	
302	Nutrient Utilization in Animals	0%		10%	
303	Genetic Improvement of Animals	0%		20%	
307	Animal Management Systems	0%		30%	
311	Animal Diseases	0%		10%	
315	Animal Welfare/Well-Being and Protection	0%		10%	
601	Economics of Agricultural Production and Farm Management	0%		10%	
	<b>Total</b>	0%		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 2006, live meat animal sales were valued at \$4.062 billion and the value of dairy production was \$327 million. Livestock and livestock products accounted for 72% 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.

**2. Scope of the Program**

- In-State Research
- Multistate Research

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

**1. Assumptions made for the Program**

Research in beef production management systems and nutrition is conducted on 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, as well as a ram test. The University has several significant assets, including the Western Center for Integrated Resource Management, the Center for Genetic Evaluation of Livestock, the congressionally sponsored National Beef Cattle Evaluation Consortium 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.

**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.

**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
2013	0.0	0.0	5.0	0.0
2014	0.0	0.0	5.0	0.0
2015	0.0	0.0	5.0	0.0
2016	0.0	0.0	5.0	0.0
2017	0.0	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**

<b>Extension</b>	
<b>Direct Methods</b>	<b>Indirect Methods</b>
<ul style="list-style-type: none"> <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**

- Amount of grant dollars garnered to support animal research and outreach programs
- Number of workshops presented
- 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	Change in knowledge with respect to animal production systems and reproductive efficiency

**Outcome # 1**

**1. Outcome Target**

Economic impact of the change in behavior reported

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

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

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 307 - Animal Management Systems
- 311 - Animal Diseases
- 315 - Animal Welfare/Well-Being and Protection
- 601 - Economics of Agricultural Production and Farm Management

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

- 1862 Research

**Outcome # 2**

**1. Outcome Target**

Change in knowledge with respect to animal production systems and reproductive efficiency

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

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

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 307 - Animal Management Systems
- 311 - Animal Diseases
- 315 - Animal Welfare/Well-Being and Protection
- 601 - Economics of Agricultural Production and Farm Management

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

- 1862 Research

## **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.

## **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.