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

**Program # 4**

**1. Name of the Planned Program**

Livestock & Range

**2. Brief summary about Planned Program**

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

Extension outreach includes direct and indirect contact with land owners, producers, and other stakeholders.

**3. Program existence :** Mature (More then 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 | 50% | | 0% | |
| 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 | 50% | | 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% | |
| | **Total** | 100% | | 100% | |

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

**1. Situation and priorities**

In 2007, the National Ag Census ranked Colorado as 5$^{th}$ in the nation for value of cattle and calves ($3.2 billion) which is over half of the total market value of agricultural products sold in Colorado. During the same period, Colorado ranked 2$^{nd}$ in the nation for sheep and goat sales ($85 million). As of January 2012, there were 2.75 million cattle and calves in the state. This is an increase of 150,000 head since January of 2009. However, due primarily to drought in the state, cattle and calve numbers have dropped

back to 2.6 million head, as of January of 2013. The economic contribution from cattle is greater than 3 times that of grains, oilseeds, dry beans and dry peas ($1.0 billion). Milk cows in the state, during 2013, were estimated at 135,000 head and average milk production per cow per year is 23,430 pounds. Total milk produced for the state is estimated at 3.16 billion pounds per year. The number of sheep estimated in the state in January of 2012 was 460,000. As of December of 2011, the total estimated number of horses and pigs in the state was 720,000. Overall, rangeland and livestock are among the most important agricultural resources in the state.

Background:

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%, approximately, is federally owned, of which a large percentage is leased for agricultural production.

Sources:
http://www.agcensus.usda.gov/
http://www.nass.usda.gov

**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**

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

Members of the Livestock and Range Planning & Reporting Unit (PRU) 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.

**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

The ultimate goals of this Extension Planning & Reporting Unit (PRU) are to promote rangeland health, improved animal health and production, improved policy and regulation awareness, and economic sustainability using a broad array of methodologies that provides information, skills, and technologies to livestock producers, ranchers, and rangeland managers.

## 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 |
| 2015 | 13.0 | 0.0 | 5.0 | 0.0 |
| 2016 | 13.0 | 0.0 | 5.0 | 0.0 |
| 2017 | 13.0 | 0.0 | 5.0 | 0.0 |
| 2018 | 13.0 | 0.0 | 5.0 | 0.0 |
| 2019 | 13.0 | 0.0 | 5.0 | 0.0 |

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

**1. Activity for the Program**

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

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

**Extension**

| Direct Methods | Indirect Methods |
|---|---|

| | |
|---|---|
| ● Education Class<br>● Workshop<br>● Group Discussion<br>● One-on-One Intervention<br>● Demonstrations<br>● Other 1 (Field Days)<br>● Other 2 (Workshop) | ● Public Service Announcement<br>● Newsletters<br>● Web sites other than eXtension |

**3. Description of targeted audience**

Youth and adult livestock producers as well rangeland managers and ranchers.

## 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

- 1. Number of group educational events: classes, trainings, workshops, demonstrations, field days, providing content expertise, fairs, shows, booths, other group events.
- 2. Individual Education: one-on-one direct client contacts by site visit, office drop-in, e-mail, telephone, Ask an eXpert, etc.
- 3. Number of meetings convened and/or facilitated; includes strategic participation that contributes to program development.
- 4. Number of kits or similar resources loaned or provided.
- 5. Number of Extension-related research and assessment projects. External funding proposals, including local, state, federal.
- 6. Number of peer-reviewed publications including fact sheets, decision tools, curricula, multimedia, etc.
- 7. Number of media releases: indirect contacts through media releases, appearances, newsletters, blog posts, other non-peer reviewed publications, kit development, non-peer reviewed curriculum, PowerPoints or videos.
- 8. Number of online posts: Web posts, hits.

☑ 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 | LR Action Outcome 1.1: Livestock and range land managers apply newly gained information, technology, or skills to improve animal health and/or animal production. |
| 2 | LR Action Outcome 1.2: Livestock and range land managers apply newly gained information, technology, or skills to improve range land health. |
| 3 | LR Action Outcome 1.3: Livestock and rangeland managers apply newly gained information, technology, or skills to improve economic sustainability. |
| 4 | LR Action Outcome 1.4: Livestock and rangeland managers develop/write a management plan (i.e. grazing plan, feeding plan, drought plan, business plan, etc.) |
| 5 | LR Action Outcome 1.5: Number of animals where health/production was affected/improved. |
| 6 | LR Action Outcome 1.6: Number of acres on which rangeland health was affected/improved. |
| 7 | LR Action Outcome 2.1: Livestock and range land managers apply newly gained information in their decision making process for following or developing new industry policies and regulations. |
| 8 | Evaluation of Genetic Beef Cattle |

**Outcome #** 1

**1. Outcome Target**

LR Action Outcome 1.1: Livestock and range land managers apply newly gained information, technology, or skills to improve animal health and/or animal production.

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

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

- 307 - Animal Management Systems

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

- 1862 Extension

**Outcome #** 2

**1. Outcome Target**

LR Action Outcome 1.2: Livestock and range land managers apply newly gained information, technology, or skills to improve range land health.

**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 #** 3

**1. Outcome Target**

LR Action Outcome 1.3: Livestock and rangeland managers apply newly gained information, technology, or skills to improve economic sustainability.

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

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

- 121 - Management of Range Resources
- 307 - Animal Management Systems

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

- 1862 Extension

**Outcome #** 4

**1. Outcome Target**

LR Action Outcome 1.4: Livestock and rangeland managers develop/write a management plan (i.e. grazing plan, feeding plan, drought plan, business plan, etc.)

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

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

- 121 - Management of Range Resources
- 307 - Animal Management Systems

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

- 1862 Extension

**Outcome #** 5

**1. Outcome Target**

LR Action Outcome 1.5: Number of animals where health/production was affected/improved.

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

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

- 307 - Animal Management Systems

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

- 1862 Extension

**Outcome #** 6

**1. Outcome Target**

LR Action Outcome 1.6: Number of acres on which rangeland health was affected/improved.

**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 #** 7

**1. Outcome Target**

LR Action Outcome 2.1: Livestock and range land managers apply newly gained information in their decision making process for following or developing new industry policies and regulations.

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

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

- 121 - Management of Range Resources
- 307 - Animal Management Systems

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

- 1862 Extension

**Outcome #** 8

**1. Outcome Target**

Evaluation of Genetic Beef Cattle

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

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

- 303 - Genetic Improvement of Animals

**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**

Livestock and range outcomes are dependent on public policies/regulations, climate, disease outbreaks for forages and livestock, and episodic natural disasters such as drought, flooding, blizzards, and wildfire. Additionally, changes in the stock market as well as increasing input costs (e.g. fuel costs) will affect livestock and range outcomes. These external factors will be addressed when possible in

education and research efforts, but their influence on outcomes is likely to continue into the future.

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

### Description of Planned Evaluation Studies

A statewide survey has been developed for all Livestock and Range Planning & Reporting Unit (PRU) members to use. This survey is divided to represent the four quarters of the state, NE, SE, SW, NW allowing an overall summary and area-specific summary for all livestock and range programming needs. This survey also allows participants to list specific programming needs and delivery method. This survey will also allow the PRU to develop an entire statewide 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).