

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

**Program # 4**

**1. Name of the Planned Program**

Global Food Security and Hunger

Reporting on this Program

**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	20%		0%	
301	Reproductive Performance of Animals	20%		0%	
302	Nutrient Utilization in Animals	10%		0%	
303	Genetic Improvement of Animals	10%		0%	
307	Animal Management Systems	10%		0%	
311	Animal Diseases	5%		0%	
601	Economics of Agricultural Production and Farm Management	10%		0%	
602	Business Management, Finance, and Taxation	10%		0%	
723	Hazards to Human Health and Safety	5%		0%	
	<b>Total</b>	100%		0%	

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

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	23.1	0.0	0.0	0.0
Actual Paid Professional	0.0	0.0	0.0	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
444659	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
444659	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
602043	0	0	0

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

#### 1. Brief description of the Activity

- 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. Brief description of the target audience

Individual agricultural producers, commodity groups, agri-business partners

#### 3. How was eXtension used?

{No Data Entered}

### V(E). Planned Program (Outputs)

#### 1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	4245	32698	1565	294

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

**Patent Applications Submitted**

Year: 2013  
 Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2013	Extension	Research	Total
<b>Actual</b>	5	30	0

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

- ABM 1) Peer Reviewed Publications, including Fact Sheets & Curricula  
 Not reporting on this Output for this Annual Report

**Output #2**

**Output Measure**

- ABM2) Trainings/Classes/Workshops, Field Days, Activity Days

<b>Year</b>	<b>Actual</b>
2013	19

**Output #3**

**Output Measure**

- ABM3) Trainings for Extension Staff

<b>Year</b>	<b>Actual</b>
2013	1

**Output #4**

**Output Measure**

- ABM 4) Community Meetings Facilitated [examples: Focus Group, Citizen Forum, Round Table Dialogue, Strategic Planning Process]  
Not reporting on this Output for this Annual Report

**Output #5**

**Output Measure**

- ABM 5) Community Coalitions, Collaborations, Alliances Formed to Address a Specific Issue [list specific groups/issue]  
Not reporting on this Output for this Annual Report

**Output #6**

**Output Measure**

- ABM 6) Direct Communication/Education by telephone and/or e-mail

<b>Year</b>	<b>Actual</b>
2013	167

**Output #7**

**Output Measure**

- ABM 7) Newsletters (This is number of newsletters, not number mailed or number of Coloradans who received them.)  
Not reporting on this Output for this Annual Report

**Output #8**

**Output Measure**

- ABM 8) Websites (number of Websites, not number of hits)  
Not reporting on this Output for this Annual Report

**Output #9**

**Output Measure**

- ABM 9) Websites hits (number of hits, not number of sites)  
Not reporting on this Output for this Annual Report

**Output #10**

**Output Measure**

- ABM 10) Press/News Release or Column (number submitted)

<b>Year</b>	<b>Actual</b>
2013	1

**Output #11**

**Output Measure**

- ABM 11) External Grant Dollars  
Not reporting on this Output for this Annual Report

**Output #12**

**Output Measure**

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

<b>Year</b>	<b>Actual</b>
2013	0

**Output #13**

**Output Measure**

- LR 3) Trainings for Extension Staff

<b>Year</b>	<b>Actual</b>
2013	0

**Output #14**

**Output Measure**

- LR 4) Community Meetings Facilitated [examples: Focus Group, Citizen Forum, Round Table Dialogue, Strategic Planning Process]

<b>Year</b>	<b>Actual</b>
2013	0

**Output #15**

**Output Measure**

- LR 5) Direct Communication/Education by telephone and/or e-mail

<b>Year</b>	<b>Actual</b>
2013	0

**Output #16**

**Output Measure**

- LR 6) Newsletters (This is number of newsletters, not number mailed or number of Coloradans who received them.)

<b>Year</b>	<b>Actual</b>
2013	0

**Output #17**

**Output Measure**

- LR 7) Websites (number of Websites, not number of hits)

<b>Year</b>	<b>Actual</b>
2013	0

**Output #18**

**Output Measure**

- LR 8) Websites hits (number of hits, not number of sites)

<b>Year</b>	<b>Actual</b>
2013	0

**Output #19**

**Output Measure**

- LR 9) Press/News Release or Column (number submitted)

<b>Year</b>	<b>Actual</b>
2013	0

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

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 Measures**

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

Not Reporting on this Outcome Measure

**Outcome #2**

**1. Outcome Measures**

Number of new technologies adopted to increase food production

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

Year	Actual
2013	4

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

**Issue (Who cares and Why)**

Adult and youth livestock producers will gain proficiency in producing profitable animal products. never experienced before.

**What has been done**

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.

### **Results**

3524 livestock producers, adult and youth, reported an increased adoption of best management practices, including new technologies, for optimum production and economic sustainability.

#### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
303	Genetic Improvement of Animals
307	Animal Management Systems
601	Economics of Agricultural Production and Farm Management

#### **Outcome #3**

##### **1. Outcome Measures**

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

Not Reporting on this Outcome Measure

#### **Outcome #4**

##### **1. Outcome Measures**

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

Not Reporting on this Outcome Measure

#### **Outcome #5**

##### **1. Outcome Measures**

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

##### **2. Associated Institution Types**

- 1862 Extension

##### **3a. Outcome Type:**

Change in Action Outcome Measure

### 3b. Quantitative Outcome

Year	Actual
2013	41

### 3c. Qualitative Outcome or Impact Statement

#### Issue (Who cares and Why)

The increasing average age of farmers and ranchers brings 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.

#### What has been done

ABM team members share feedback and evaluation results of programs which are used in developing new programs and new and/or more effective teaching methodologies.

#### Results

41 participants reported they intended to develop formal plans regarding the succession of their farms and ranches. NOTE: "marketing" in output is an error.

### 4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation

### Outcome #6

#### 1. Outcome Measures

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

Not Reporting on this Outcome Measure

### Outcome #7

#### 1. Outcome Measures

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

Not Reporting on this Outcome Measure

## **Outcome #8**

### **1. Outcome Measures**

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

Not Reporting on this Outcome Measure

## **Outcome #9**

### **1. Outcome Measures**

ABM 1.7. Participants have improved intra-family communications.

### **2. Associated Institution Types**

- 1862 Extension

### **3a. Outcome Type:**

Change in Action Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2013	145

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

#### **Issue (Who cares and Why)**

Improve the management and communications skills of agricultural and rural business managers and their families so as to increase the competitiveness and sustainability of Colorado farms and ranches.

#### **What has been done**

The ABM Team provides information and education to Colorado's citizens in order that they can make more informed, goal-oriented decisions about their businesses and their families.

#### **Results**

145 participants reported they have improved intra-family communications.

### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
602	Business Management, Finance, and Taxation

**Outcome #10**

**1. Outcome Measures**

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

Not Reporting on this Outcome Measure

**Outcome #11**

**1. Outcome Measures**

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

Not Reporting on this Outcome Measure

**Outcome #12**

**1. Outcome Measures**

ABM 2.3. Participants intend to not pursue alternative enterprises

Not Reporting on this Outcome Measure

**Outcome #13**

**1. Outcome Measures**

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

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

Year	Actual
2013	393

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

**Issue (Who cares and Why)**

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.

**What has been done**

The ABM Team provides information and education to Colorado's citizens in order that they can make more informed, goal-oriented decisions about their businesses and their families.

**Results**

393 participants reported they intend to investigate strategies for increasing the profitability, including changing enterprise mixes, leasing, and use of crop insurance.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation

**Outcome #14**

**1. Outcome Measures**

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

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2013	157

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

**Issue (Who cares and Why)**

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.

**What has been done**

The ABM Team provides information and education to Colorado's citizens in order that they can make more informed, goal-oriented decisions about their businesses and their families.

**Results**

157 participants reported they intend to implement management strategies for making more informed decisions to sustain profitability and/or manage risk.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation

**Outcome #15**

**1. Outcome Measures**

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

Not Reporting on this Outcome Measure

**Outcome #16**

**1. Outcome Measures**

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

Not Reporting on this Outcome Measure

**Outcome #17**

**1. Outcome Measures**

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

**2. Associated Institution Types**

- 1862 Extension

### 3a. Outcome Type:

Change in Action Outcome Measure

### 3b. Quantitative Outcome

Year	Actual
2013	188

### 3c. Qualitative Outcome or Impact Statement

#### Issue (Who cares and Why)

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

#### What has been done

Members of the work team work closely with animal agriculture and range industry and professionals to determine program goals and objectives. The animal agriculture industry provides valuable partnership opportunities and helps evaluate and expand the scope of Colorado State University Livestock and Range Team.

#### Results

Colorado ranks 5th in the nation for value of cattle and calves (\$3.2 billion) which is over half of the total market value of agricultural products sold in Colorado. There were 2.6 million cattle and calves in 188 producers reported they use rangeland monitoring documentation. 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.

### 4. Associated Knowledge Areas

KA Code	Knowledge Area
121	Management of Range Resources

### Outcome #18

#### 1. Outcome Measures

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

#### 2. Associated Institution Types

- 1862 Extension

### 3a. Outcome Type:

Change in Action Outcome Measure

### 3b. Quantitative Outcome

Year	Actual
2013	4403

### 3c. Qualitative Outcome or Impact Statement

#### Issue (Who cares and Why)

Adult and youth livestock producers will gain proficiency in producing profitable animal products never experienced before.

#### What has been done

Members of the work team work closely with animal agriculture and range industry and professionals to determine program goals and objectives. The animal agriculture industry provides valuable partnership opportunities and helps evaluate and expand the scope of Colorado State University Livestock and Range Team.

#### Results

Colorado ranks 5th in the nation for value of cattle and calves (\$3.2 billion) which is over half of the total market value of agricultural products sold in Colorado. There were 2.6 million cattle and calves in Colorado (livestock and dairy) on January 1, 2009. The contribution from livestock cattle is greater than 3 times that of grains, oilseeds, dry beans and dry peas (\$1.0 billion). According to the 2007 Census of Agriculture, the number of farms in Colorado with livestock cows decreased 6.4% from 1997 to 2007 and the number of farms with all cattle and calves decreased 28.1% during the same 10-year period.

### 4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems

### Outcome #19

#### 1. Outcome Measures

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

#### 2. Associated Institution Types

- 1862 Extension

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2013	3524

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

**Issue (Who cares and Why)**

The livestock industry in Colorado is entering into a time of uncertainty that it's never experienced before, with recent record production and feed cost along with the volatility in the livestock industry.

**What has been done**

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.

**Results**

3524 livestock producers, adult and youth reported an increased adoption of best management practices for optimum production and economic sustainability.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
307	Animal Management Systems

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

### **External factors which affected outcomes**

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Programmatic Challenges

### **Brief Explanation**

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

ABM: 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(I). Planned Program (Evaluation Studies)**

### **Evaluation Results**

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

Evaluations will occur immediately following the educational programs (short term).

Evaluations will occur 6-12 months following the program to determine if changes were incorporated (medium term).

Evaluations will be conducted 2-5 years following the program to determine the sustainability of the change and the economic return gained as a result of the change (long term).

ABM: The ABM Team 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.

### **Key Items of Evaluation**

LR: [from the southeast area of Colorado]

Livestock producers have concern for the level of nitrates in drought stress forage crops. Medium nitrate levels can cause abortions in pregnant cows, losing \$600 to \$700 per calf for the producers. At high levels of nitrates, producers take a chance of losing a \$1000 to \$1500 adult animal as well as her future production loss.

Also, with \$200 to \$300 per ton forage, producers need to know the nutritional level of the feed they provide their livestock. Over feeding animals adds to the producers total cost of production. Under feeding causes animals to decrease production, again affecting the producers profit levels.