

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Global Food Security and Hunger - Animal Enterprises

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	22%		5%	
302	Nutrient Utilization in Animals	12%		20%	
303	Genetic Improvement of Animals	5%		10%	
304	Animal Genome	0%		10%	
305	Animal Physiological Processes	0%		10%	
306	Environmental Stress in Animals	5%		10%	
307	Animal Management Systems	38%		20%	
308	Improved Animal Products (Before Harvest)	4%		5%	
311	Animal Diseases	10%		5%	
315	Animal Welfare/Well-Being and Protection	4%		5%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Plan	23.0	0.0	5.0	0.0
Actual	24.0	0.0	7.6	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
300000	0	320969	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
300000	0	320969	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
3033000	0	2696072	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Develop research-based information such as peer reviewed journal articles, scientific reviews, and abstracts.

Developed decision aids and management programs developed that assist cattle and forage managers in improved, better informed decisions.

Conducted educational programs to improve the management skills, profitability and other success factors of people managing cattle and forages. Outputs for these activities would include fact sheets, books, and other extension publications, conference proceedings, web sites and conferences.

Identified BVDV infected beef breeding herds and develop a control program including biosecurity and enhanced vaccination programs.

Demonstrated the economic effects of BVDV and BRD to the stocker and feedlot operations.

Addressed BVDV control at the breeding herd for increased economic return.

Worked to identify biological links that exist between the bacteria and/or virus, reduced animal performance, and meat quality in cattle with BVDV, BRD, or both.

2. Brief description of the target audience

Managers, owners and employees of farms, ranches, feedlots, and agribusinesses, research scientists, extension personnel, beef cattle producers, meat goat producers, and the general public.

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	10000	50000	1000	200
Actual	155057	7895227	26394	550000

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

Patent Applications Submitted

Year: 2010

Plan: 1

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Plan	10	10	
Actual	13	43	56

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Conferences, symposiums, and meetings

Year	Target	Actual
2010	14	114

Output #2

Output Measure

- Peered reviewed journal articles

Year	Target	Actual
2010	14	43

Output #3

Output Measure

- Extension publications: fact sheets, proceedings, books, manuals, bulletins

Year	Target	Actual
2010	20	226

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of producers registered with a premise ID
2	Total number of producers certified as Master Cattlemen
3	Number of producers implementing improved management, grazing systems and beef production systems resulting in improved sustainability.
4	Number of producers implementing management programs to decrease the incidence and economic impact of BVDV and BRD
5	Number of producers certified in the Beef Quality Assurance program
6	Number of cattle enrolled in value enhancement programs
7	Alternate Cattle Concentrate Adaptation Programs
8	Youth EID - Electronic Cattle Identification
9	Cow retention study

Outcome #1

1. Outcome Measures

Number of producers registered with a premise ID

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Total number of producers certified as Master Cattlemen

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	500	584

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Beef production accounts for approximately one-third of Oklahoma's agricultural production in most years. Moreover, seventy percent of the state's 86,000 farms have some cattle and over fifty percent of the land area in Oklahoma is pasture or rangeland. Most of the cattle operations are small in size, with seventy-eight percent of the beef cow inventory in herds of fifty head or less. Smaller cattle operations have higher cost of production and are less likely to incorporate best management practices.

What has been done

The Master Cattleman Program is conducted by an interdisciplinary team resulting in a variety of educational products and programs, including the Beef Cattle Manual, benchmarking of cow/calf and stocker producer practices, Master Cattleman programs delivered at the local level and in-service training for Extension educators. An interdisciplinary Beef Cattle Manual was updated and published. The manual contains 41 chapters addressing various business, production, and natural resource topics. Approximately 8,700 manuals have been distributed through local Extension offices, area and state meetings and from the Master Cattleman website. Requests have been filled to 25 states and 5 foreign countries. The manual is being used as a textbook in 8 universities and community colleges. To become a Master Cattleman, a producer completes

twenty eight hours of instruction from the Beef Cattle Manual and associated quizzes. The program has enjoyed wide adoption in the state and it continues to be a popular staple in educational programming.

Results

Approximately 834 students have enrolled in the Master Cattleman program and 584 have graduated with 41 having graduated during 2010. Currently, 130 students are enrolled and actively participating in the program. Graduates average response to their estimate of annual improvement in their cattle operation's profitability is \$3,500 for a total annual impact of \$2 million. On average, graduates indicate that they use the Beef Cattle Manual at least once monthly and that they have referred 5 additional people to the Beef Cattle Manual and three people to the Master Cattleman program.

4. Associated Knowledge Areas

KA Code	Knowledge Area
121	Management of Range Resources
302	Nutrient Utilization in Animals
303	Genetic Improvement of Animals
306	Environmental Stress in Animals
307	Animal Management Systems
315	Animal Welfare/Well-Being and Protection

Outcome #3

1. Outcome Measures

Number of producers implementing improved management, grazing systems and beef production systems resulting in improved sustainability.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	4000	6270

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Hay ranks as the second largest crop grown and harvested in Oklahoma. Tremendous effort and expense goes into growing, cutting, baling, storing, transporting, and feeding hay in cow/calf enterprises across the state. In fact, recent data surveying 729 Oklahoma producers (Vestal et al., 2007) indicates that only 10% of cow/calf operations have a hay feeding season of 60 days or less. Most rely on harvested forages as the primary source of dietary nutrients for the majority of the winter (90 to 150 days).

What has been done

Our preliminary work showed that 12% of the hay offered was actually wasted when a high quality hay feeder was used. Therefore, the group designed an experiment to determine the effects of a range of hay feeder design on hay feeding waste. We discovered an incredible range of waste due to feeder type, with the lowest cost, economy feeder (most popular feeder style in OK) wasting 21% of the hay fed, and a higher cost modified cone feeder generating only 6% waste.

Results

Assuming a 5 year life of service for both feeder types, we calculate that the modified cone feeder type would generate a savings of approximately \$1,000 over the economy feeder. If only 5% of cattle producers adopt the use of a more efficient bale feeder design, the economic impact to the state is \$1.5 million dollars per year.

4. Associated Knowledge Areas

KA Code	Knowledge Area
121	Management of Range Resources
302	Nutrient Utilization in Animals
306	Environmental Stress in Animals
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)
311	Animal Diseases
315	Animal Welfare/Well-Being and Protection

Outcome #4

1. Outcome Measures

Number of producers implementing management programs to decrease the incidence and economic impact of BVDV and BRD

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	50	125

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Bovine respiratory disease is the most common disease among feedlot cattle in the United States, accounting for approximately 75 percent of feedlot morbidity and 50 percent to 70 percent of all feedlot deaths. BRD causes 1 billion dollars annually in economic losses from death, decreased performance, and antimicrobial treatment costs. With increasing scrutiny related to animal welfare and antimicrobial utilization in livestock, methods to more accurately detect BRD in cattle are warranted.

What has been done

Initial work has been conducted using remote monitored rumen temperature boluses to identify naturally occurring BRD. We determined that providing therapeutic antimicrobial treatments based on rumen temperature monitoring resulted in calves gaining 11.5 lb more during a 56 day receiving period than visually evaluating newly received calves. In fact, rumen temperature monitoring was as effective at maintaining performance of newly received calves as providing metaphylactic treatment at arrival.

Results

Assuming a rumen bolus cost of \$6 per use, rumen temperature monitoring is resulting in improved animal welfare, efficacious therapeutic use of antimicrobials, and a 2:1 return on investment when used in high-risk, newly-received calves. Use of the rumen temperature monitoring system in 10% of the cattle finished in Oklahoma would result in an economic benefit of \$900,000 annually.

4. Associated Knowledge Areas

KA Code	Knowledge Area
308	Improved Animal Products (Before Harvest)
311	Animal Diseases

Outcome #5

1. Outcome Measures

Number of producers certified in the Beef Quality Assurance program

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	50	251

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)
315	Animal Welfare/Well-Being and Protection

Outcome #6

1. Outcome Measures

Number of cattle enrolled in value enhancement programs

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	2500	9262

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Cattle sickness costs the cattle industry millions of dollars each year. These losses negatively impact producer profitability and they impact each and every level of the beef production chain.

What has been done

In order to facilitate the adoption of best management practices that should result in reduced sickness and associated adverse effects, the Oklahoma Quality Beef Network (OQBN) was initially developed in 2001 and redefined in 2009. This is a joint program between the Oklahoma Cooperative Extension Service and Oklahoma cattle producers. The objective is to add value to Oklahoma's calf crop and capture at least part of the added value. In 2010, 181 Oklahoma beef producers enrolled 9,262 calves in the OQBN program. Ten regional OQBN Vac-45 calf sales were conducted in seven livestock markets.

Results

OQBN cattle received a premium of \$7.84/cwt, based on the weighted average price of all lots, over non-preconditioned cattle. The average price premium is an additional \$47.04 per head, while the added value of weight gain during the preconditioning period averaged \$64 per head for a gross increase in revenue of \$111 per calf. Average cost to participate in the program was \$47.60 per head, resulting in a net increase in income of \$63.40 per head or total net increase in income of \$587,211 for the calves enrolled in the program in 2010. However, the educational program and example given by the OQBN is stimulating growth in adoption of these management, certification and marketing practices throughout the state. Therefore, the impact is much higher than can be measured by direct participation in the program.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)
315	Animal Welfare/Well-Being and Protection

Outcome #7

1. Outcome Measures

Alternate Cattle Concentrate Adaptation Programs

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Feedlot cattle have traditionally been adapted to high-concentrate finishing diets using sequential step-up diets (increasing concentrate level, decreasing roughage level) over a period of 14 to 28 days. In order to successfully adapt cattle to high concentrate finishing diets while optimizing operational efficiencies in feedlot mills, compromises are made in respect to the number of rations fed during the adaptation period. Current industry surveys indicate that the mode number of adaptation diets used by feedlots is 4 rations.

What has been done

We evaluated a concentrate adaptation program that used only a starter ration (high roughage) and a finisher ration (high concentrate). With only two rations needing to be milled and fed, operational efficiency of cattle feeding operations would be improved. Our research indicated that modifying feeding management to use only two rations to adapt cattle to high concentrate diets does not impact cattle performance or carcass characteristics.

Results

Depending upon previous grain adaptation programs, implementing a 2 ration adaptation program can result in a 15% increase in milling and feeding.

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals
307	Animal Management Systems

Outcome #8

1. Outcome Measures

Youth EID - Electronic Cattle Identification

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

One of the largest threats to the livestock industry is the natural or intentional disease outbreak that affects the marketing of livestock products. The regular comingling and dispersion of livestock that occurs with youth livestock projects creates a risk not only to the youth projects, but to the family and neighboring livestock enterprises.

What has been done

We have developed computer program that is capable of managing youth livestock show data from entries to show ring placing and sale orders. The unique component of this program is that the program has been developed to operate with wireless electronic identification tag readers. This combination provides for paperless show management that eliminates duplicate hand entry of data and results in an electronic file that provides accurate and easily accessible information in the event that a disease outbreak would be associated with a youth livestock event.

Results

Both major Oklahoma livestock shows have participated in adoption of this program through utilizing electronic identification tags for their market livestock programs. The Oklahoma Department of Agriculture, Food, and Forestry has recognize the high value of the program and participation of the livestock shows by allowing the show tags to substitute for scrapie program tags in the sheep youth projects. To date over 140,000 youth market livestock project have been tagged with electronic tags and entered into the program over a 5 year period. In addition to the increased show management efficiency and biological security that has evolved, the visibility of these programs being run by county educators is providing for practical demonstration of electronic identification use for managing livestock information to current and future livestock producers.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
311	Animal Diseases
315	Animal Welfare/Well-Being and Protection

Outcome #9

1. Outcome Measures

Cow retention study

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

A three year study of cull cow retention and feeding indicates that cows with lower beginning body condition scores (BBCS) at culling (less than 4.5) generated higher net returns in a retention setting than did cows with higher BBCS. Cows with low BBCS averaged returns of \$69 per head across when held 90 to 120 days past culling in a pasture/forage system, while cows with BBCS between 4.5 and 6 averaged \$39 when held for the same time period. Cows with body condition scores of 6 or greater had the highest net return if marketed at culling time rather than retaining and feeding them.

Results

On average, it is estimated that Oklahoma cow-calf producers could have collectively added roughly \$777,400 to their bottom line by retaining only 10% of their culled cows on pasture or forage for 90 to 120 days before marketing.

4. Associated Knowledge Areas

KA Code	Knowledge Area
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 Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

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

Evaluation Results

Key Items of Evaluation