

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Sustainable Animal Production Systems

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
301	Reproductive Performance of Animals	10%	10%	25%	20%
302	Nutrient Utilization in Animals	10%	20%	8%	20%
303	Genetic Improvement of Animals	30%	15%	17%	10%
307	Animal Management Systems	10%	20%	8%	15%
308	Improved Animal Products (Before Harvest)	20%	15%	17%	15%
311	Animal Diseases	15%	10%	17%	10%
315	Animal Welfare/Well-Being and Protection	5%	10%	8%	10%
	Total	100%	100%	100%	100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890
Plan	10.0	7.5	3.5	1.0
Actual Paid	11.0	8.0	5.8	1.0
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
445318	323284	480412	244455
1862 Matching	1890 Matching	1862 Matching	1890 Matching
445318	271926	280295	196465
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	794	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Current Clemson University research is focusing on the development and expanded usage of genomic and proteomic analyses to further improve beef quality and consistency. Also being examined are ways to identify and monitor the prevalence of abortigenic agents in the South Carolina bovine population and compare these results to those of other U.S. regions. Researchers are working to identify the prevalence of four microorganisms, which play a significant role in calf illness and production loss in beef and dairy operations. Data could provide essential information about the effectiveness of control and vaccinations programs currently in place.

Research is underway to determine impacts of varying lengths of pre-breeding exposure to toxic tall fescue (d-28, d-12, and d-8 versus toxic negative control) on conception rates of 2 and 3 year old beef cows. Research is also being conducted to assess bull semen quality and fertility, sperm cell composition, and hormonal response to the toxin found in tall fescue Kentucky 31.

Research has also developed the Atlantic killfish as a model aquatic organism for understanding how environmental carcinogens induce liver tumors and how inflammation may contribute to carcinogenesis. We also generated a tool box of PCR primers and monoclonal antibodies that quantify the expression of pro-inflammatory proteins in association with developing tumors. One of the most important outputs of this project is the understanding that COX-2 is highly expressed in livers of animals with liver tumors resulting from exposure to environmental chemicals.

In Extension, activities conducted included the Bull Test program, the Master Cattleman educational series, the Grass Masters program, an "Advanced Grass Master" / Grazing School, and a forage/beef field day and workshop. A grant was received to develop, demonstrate and distribute mobile applications as tools for cattle operations. Agents worked with producers to develop cost management strategies for rations, budgets and other input costs. Specialists provided eight two hour Confined Animal Manure Management Recertification Classes across the state. Other programs included Master Cattleman, small flock poultry workshops, Pasture Ecology Schools, Bovine Artificial Insemination Schools, beekeeping short course, Beef Quality Assurance certification trainings, biosecurity programs, meat goat workshops, and quality milk initiative surveys.

1890 Research will continue to focus on the use of a multi-agent framework to design and implement a computer-based epidemiological simulation model that combines the traditional herd-based epidemiological methods with the role of transportation and the interferences of individual objects for

herds. Since the proposed simulation model will be capable of representing the behavior of individuals, in addition to the benefits of stochastic herd-based simulation, it will provide more accurate and more flexible simulation results that can be used to facilitate the early responses to emergency outbreaks.

Under the planned program, 1890 Extension conducted the following: 1. workshops, meetings, etc., 2. delivered services, 3. developed resources for the farmers to utilize, 4. provided training and counseling, 5. made assessments of farms and partnered with individuals and agencies.

2. Brief description of the target audience

Producers, Limited-Resource Farmers and agency personnel, etc.

3. How was eXtension used?

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V(E). Planned Program (Outputs)

1. Standard output measures

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	20642	589462	463	260

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

Patent Applications Submitted

Year: 2014

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2014	Extension	Research	Total
Actual	1	24	25

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Disclosures

Year	Actual
2014	1

Output #2

Output Measure

- Licenses

Year	Actual
2014	7

Output #3

Output Measure

- Number of people completing educational workshops.

Year	Actual
2014	10966

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of publications authored or co-authored (fact sheets, papers presented at meetings, etc.)
2	Number of people reporting increased knowledge.
3	Increased income due to producers and growers improved production efficiency of confined animal systems.

Outcome #1

1. Outcome Measures

Number of publications authored or co-authored (fact sheets, papers presented at meetings, etc.)

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Number of people reporting increased knowledge.

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	2141

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Livestock producers are interested in increasing the carrying capacity or stocking rate of their acreage. By increasing the stocking rate, more animals will be available to market, which will increase the profit of the enterprise.

What has been done

A workshop was held focusing on pasture management, management intensive grazing, electric fencing materials and components and constructing temporary portable electric fences. Forty (40) producers attended the workshop.

Results

As a result of attending the workshop, six (6) producers subdivided their large pastures into smaller paddocks by constructing temporary portable electric fencing, which allowed them to increase their stocking rate by 50%. The increased stocking rate resulted in an increase in the number of marketable animals. Therefore, the profit increased by an average of \$7,554 per producer based on current feeder calf prices.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
303	Genetic Improvement of Animals
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)
311	Animal Diseases
315	Animal Welfare/Well-Being and Protection

Outcome #3

1. Outcome Measures

Increased income due to producers and growers improved production efficiency of confined animal systems.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	1200096

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The Sustainable Animal Production Systems program aims to improve the production efficiency, environmental sensitivity, and profitability of animal production systems and reduce the environmental impact of animal waste in South Carolina.

What has been done

Some 270 programs were conducted reaching 8,431 people. Specialists provided eight two hour Confined Animal Manure Management Recertification Classes across the state. Other programs included Master Cattleman, Grass Masters, small flock poultry workshops, Pasture Ecology School, Bovine Artificial Insemination Schools, beekeeping short course, Beef Quality Assurance certification trainings, biosecurity programs, meat goat workshops, and quality milk initiative surveys.

Results

Producers participating in livestock and forage masters programs indicated a 90% rate of knowledge gained. Other programs increased market awareness and marketing strategy, leading producers to sell feeder calves directly from the farm, which increased the value of these cattle by an average of \$96/head compared to traditional marketing options. Increasing the value of 2.5% of South Carolinas total cattle inventory (approximately 360,000) would lead to a \$1,200,096 impact.

4. Associated Knowledge Areas

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

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Producers and growers improved production efficiency of confined animal systems and adopted animal management practices. Programs led to increased market awareness and marketing strategy, leading producers to sell feeder calves directly off the farm, which increased the value of these cattle by an average of \$96/head compared to traditional marketing options. Increasing the value of 2.5% of South Carolina's total cattle inventory (approximately 360,000) would lead to a \$1,200,096 impact.

Key Items of Evaluation