

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%	20%	15%	15%
302	Nutrient Utilization in Animals	10%	20%	0%	15%
303	Genetic Improvement of Animals	0%	10%	25%	10%
307	Animal Management Systems	35%	25%	25%	20%
308	Improved Animal Products (Before Harvest)	0%	10%	30%	15%
311	Animal Diseases	25%	0%	0%	10%
315	Animal Welfare/Well-Being and Protection	15%	15%	5%	10%
601	Economics of Agricultural Production and Farm Management	5%	0%	0%	5%
	Total	100%	100%	100%	100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	7.5	3.7	1.0
Actual Paid Professional	11.0	8.0	2.8	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
530304	301275	176242	254394
1862 Matching	1890 Matching	1862 Matching	1890 Matching
530304	249254	942947	199594
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Research was conducted in a wide range of areas related to animal health to include insects of veterinary importance, causes of neonatal death in cattle, and animal genomic topics. There was a range of research on enhancing the competitiveness and value of US beef and the number of potential forages available received increased attention and were assessed as to their impact of producing a healthy and profitable product. Research was also underway on the thermal destruction of pathogenic bacteria in rendered animal products.

Extension planned, coordinated, and implemented animal production systems programs, seminars and trainings. The Master Cattleman educational series continues. In this fee-based program multiple topics are covered over a five-week period for area producers. Beef Quality Assurance certification is offered as an optional program at this Master Cattleman series. The Grass Masters program is a multi-night fee-based seminar series covering the basics of forage selection, establishment, and management. Small ruminant workshops were conducted, including Goat Management. Specialists taught National Guardsmen training on Small Ruminants health and bio-security - SC National Guard members were prepared to work with sheep and goats and other agricultural commodities for one year in Afghanistan, including proper bio-security when returning to the United States.

Extension specialists continue to work with producers in developing cost management strategies for rations, budgets and other input costs. Multiple on farm demonstrations are in place to demonstrate controlled grazing, improved forage varieties, novel legumes, etc. Livestock agents and specialists also assist with youth programs by teaching livestock management and managing youth livestock activities when needed. Veterinarians and livestock producers became aware of the new Federal Traceability Rule in SC and its impact on official identification and interstate movement of livestock and poultry.

Confined Animal Manure Management trainings/re-certifications were conducted across the state. Producers attended the re-certification trainings, each obtaining 2 hours of credit for this year. Sessions on Bio-security and Vaccines were conducted to promote awareness to the local equine industry on current and emerging disease issues that have a direct impact on the management of their horses' health.

The Clemson Bull test was conducted. The Clemson test received funding for a new Grow Safe feed monitoring system which allows the measurement of feed efficiency in the testing program. The Clemson test will remain a conventional grain/byproduct based feedlot test in coming years. Extension conducted Feeder Cattle Sale. Producers gained knowledge of beef cattle good management practices which improved production efficiency with higher weaning rate and weights.

Emergency Managers meetings for Animal Emergencies were conducted to instruct a group of veterinary professionals about how they could join groups of pre-designated responders who could assist South Carolina citizens in emergency situation to help lessen the negative effects of disasters in our state.

Extension planned, coordinated, and implemented additional seminars and trainings on Small Farms Workshop, Equine Management, Grazing Management, Alternative Forages Program, Mastitis Management, and Beekeeping.

One 1890 research project's goal was to design and implement a computer-based epidemiological simulation model that combines the traditional herd-based epidemiological methods with the role of a multi-agent framework. The proposed simulation model is capable of representing the behavior of individual animals, in addition to the benefits of stochastic herd-based simulation. It provides accurate and flexible simulation results to assist those who must provide early responses for emergency outbreaks. Designed and implemented the Bridge Module, including extension of the stochastic model, Graphical User Interface (GUI) Module for simulation and a part of the Multi-agent framework using MASON and message-exchange module in Java computer language were used. Deployed a map agent with the study of the "World Wind" package for the system to be capable of displaying the status of agents, as well as results of simulations on a map graphically. As an extension of the research, a grant application was submitted to the National Science Foundation.

2. Brief description of the target audience

Producers, Spanish-speaking employees, Limited-Resource Farmers and agency personnel, etc.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	10937	3414	8	13

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
Actual	2	15	17

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Disclosures

Year	Actual
2013	0

Output #2

Output Measure

- Licenses

Year	Actual
2013	0

Output #3

Output Measure

- Number of people completing educational workshops.

Year	Actual
2013	5932

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 Extension meetings, etc.)
2	Number of persons gaining knowledge as a result of the USDA Animal Disease Traceability Program (ADTP).
3	Number of people reporting increased knowledge and indicating adoption of animal production practices.
4	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 Extension meetings, etc.)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	14

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

One 307 page manuscript was submitted to USDANRCS for publication as part of their Environmental Engineering Series. Articles were submitted for publication in the Applied Engineering in Agriculture. Eleven papers were presented during sessions at the National Extension Conference Waste to Worth Spreading Science & Solutions. Publications were made available on-line.

Results

Paper presentations expand the knowledge base in animal production efficiency and environmental sensitivity. Papers presented covered topics such as Solid Liquid Separation Alternatives for Manure Handling and Treatment, Using Broiler Litter as an Energy Source Energy Content and Ash Composition, Feasibility Analysis of Using Anaerobic Digestion to Replace Fuel Used in Fleet Truck, Combustion of Poultry Litter A Comparison of Using Litter for On-Farm Space Heating Versus Generation of Electricity, Benefits of Using Liquid Solid Separation with Manure Treatment Lagoons, Production of Fuel Crops to Make Biodiesel Using Animal Manure, Overview of SolidLiquid Separation Alternatives for Manure Handling and Treatment, Efficient Utilization of Equine Manure, South Carolinas Confined Animal Manure Manager Program, Combustion of Poultry Litter A Comparison of Using Litter for OnFarm Space Heating Versus Generation of Electricity, Benefits of Using LiquidSolid Separation with Manure Treatment Lagoons,Production of Fuel Crops to Make Biodiesel Using Animal Manure,Overview of SolidLiquid Separation Alternatives for Manure Handling and Treatment, Efficient Utilization of Equine Manure.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
307	Animal Management Systems

Outcome #2

1. Outcome Measures

Number of persons gaining knowledge as a result of the USDA Animal Disease Traceability Program (ADTP).

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	30

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Small scale livestock producers in the Greenwood Cluster were interested in the rules and guidelines of the USDA Animal Disease Traceability Program (ADTP) to improve the traceability of diseases throughout the livestock industry. Livestock producers must be made aware of the guidelines, rules and recordkeeping requirements of the program, in order to remain in compliance with the law when marketing their animals.

What has been done

A workshop was held to make livestock producers aware of the benefits of the Animal Disease Traceability Program (ADTP), classes of livestock affected, guidelines and recordkeeping requirements. A chart was provided to assist livestock producers in complying with the rules process.

Results

As a result of attending the workshop, producers who had premises ID for their operation were eligible to obtain free brite tags from the USDA Animal and Plant Health Inspection Service (APHIS) to identify their animals. The brite tags satisfied the requirements of the Animal Disease Traceability Program's identification requirements. One hundred percent (100%) of the producers who did not have premises ID were issued an application to obtain one, so they would be eligible to receive free brite tags.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
307	Animal Management Systems
315	Animal Welfare/Well-Being and Protection

Outcome #3

1. Outcome Measures

Number of people reporting increased knowledge and indicating adoption of animal production practices.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1211

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Labor management and worker training have been identified as areas of concern among many dairymen and represent an opportunity for improved performance, workforce stability and retention. Language barriers and inconsistent levels of experience make continuous training essentials; however communicating with Spanish speaking employees can be a challenge for English speaking dairymen. With this in mind, Clemson Extension developed programs that would increase the efficiency of the dairy labor force through bilingual training.

What has been done

Ten herds with 35 total employees participated in the on-farm training sessions.

Results

Six of the farms have reported a decrease in somatic cell counts with four farms now receiving quality milk premiums resulting in an increase of over \$90,000 per year on those farms. Overall, of those participating in Extension animal educational programs, 91% reported knowledge gain and 22% reported adopting a practice.

4. Associated Knowledge Areas

KA Code **Knowledge Area**
307 Animal Management Systems

Outcome #4

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 Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	50285

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The Extension 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. Cattle producers in South Carolina are frequently seeking methods to enhance profitability of their cattle operations. One method is to market cattle in uniform truckload lots of properly vaccinated, preconditioned cattle. Calves marketed using this method sell at higher prices compared to calves sold through traditional marketing venues.

What has been done

The area Extension livestock agent coordinated an area feeder calf sale of preconditioned truckload lots. Thirteen producers marketed 776 calves in truckload lots. Of the 776 calves sold, 540 were sold directly off farm and 236 were sold in commingled truckloads comprised of cattle from small farmers. Cattlemen selling on the commingled loads averaged 21 head per farmer, allowing small producers the opportunity to maximize profitability by selling in truckload lots.

Results

This year source and age verified truckload lots sold for \$0.09 per pound more than traditional weekly livestock auctions resulting in \$50,285 in additional income for area cattle farms (\$3,868 per farm).

4. Associated Knowledge Areas

KA Code **Knowledge Area**
302 Nutrient Utilization in Animals

307	Animal Management Systems
601	Economics of Agricultural Production and Farm Management

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

Brief Explanation

For Extension, language barriers and inconsistent levels of experience resulted in the realization that continuous training was needed.

All livestock producers had to implement the APHIS ID tag, in order to sell their livestock. It was an agriculture policy change initiated by USDA. The 30 livestock producers represented one cooperative, which was the first group to participate in the program. Eventually, other cooperatives of small livestock producers will be educated and included in the program.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Producers and growers improved production efficiency of confined animal systems and adopted animal management practices.

The evaluation results were that livestock producers were able to receive their USDA Animal and Plant Health Inspection Service (APHIS) tags for their animals.

Key Items of Evaluation