V(A). Planned Program (Summary)

Program # 11

1. Name of the Planned Program

Livestock and Meat Quality, Safety, and Productivity

☑ 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%	10%	20%
302	Nutrient Utilization in Animals	25%	20%	15%	0%
303	Genetic Improvement of Animals	5%	0%	5%	0%
304	Animal Genome	0%	0%	10%	20%
305	Animal Physiological Processes	0%	0%	0%	30%
306	Environmental Stress in Animals	5%	0%	5%	0%
307	Animal Management Systems	20%	20%	20%	20%
308	Improved Animal Products (Before Harvest)	20%	0%	20%	0%
311	Animal Diseases	0%	20%	0%	0%
312	External Parasites and Pests of Animals	0%	10%	0%	0%
313	Internal Parasites in Animals	5%	10%	5%	10%
315	Animal Welfare/Well-Being and Protection	10%	0%	10%	0%
	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	45.0	7.0	20.0	27.0
Actual Paid Professional	28.8	12.0	28.4	7.5
Actual Volunteer	0.0	72.0	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**
394354	723106	1617227	1051904
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
394354	409325	2528690	864414
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
3235848	0	3735483	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

AgriLife Extension and AgriLife Research
Research as well as group and individual education were ongoing across the 7 key subject matter/commodity areas. Methods of education include public meetings, individual support, printed and video/DVD materials and web-based materials. Collaboration with breed associations, commodity groups and corporations targeted research and educational needs of a diverse livestock industry across the state, involving both youth and adults. Much of the research was based on animal genomics as a tool to predict performance and to optimize breeding and production strategies.

Cooperative Extension Program
Conducted educational programs
Conducted subject matter workshops/field days/ tours
Provided one-on-one technical assistance/consultations
Conducted training programs
Assisted clients with development of farm plans
Held on-farm demonstrations

Cooperative Agricultural Research Center
Trials were conducted to investigate various forage based production systems and management practices. The effect of forage type (Clover, Winter Peas and native rye grass) and breed (Boer x Boer, Boer x Spanish, Spanish x Spanish, and Spanish x Boer) of kids, and breed of dam, on growth to weaning and from weaning to market size of kids were evaluated. Efficiency of growth and level of kid survival was significantly affected by breed of dam, litter size and forage type. Results will help producers decide on breed combinations and forage qualities in order to most profitable.

Our goal is to increase the efficiency of artificial insemination and embryo transfer by developing genomic based testing and analysis. Artificial insemination and embryo collection and transfer are the most effective techniques utilized in the commercial livestock industry to increase the offspring of genetically superior animals, increase animal production value and disseminate genetics globally.

Two interdependent objectives were initiated. The first characterizes small non-coding RNA (small ncRNA) in spermatozoa and in seminal plasma during the pathogenesis of poor semen quality in bucks. Distinct signatures of small ncRNAs occur in mature haploid spermatozoa and in seminal plasma during the pathogenesis of poor semen quality in dairy goats and are likely important during fertilization and for

the paternal contribution to successful zygotic and early embryonic development.

The second objective is to identifying, quantifying and characterizing RNAs during normal and premature regression of the CL and from endometrium (EN) during the critical stages of pregnancy recognition and initiation of placentation using RNA-Seq analysis. Tissues are being collected to complete the goals of each objective.

These projects are designed to combine generational, genotypic and phenotypic information from the seminal plasma, sperm, and testes to eventually develop diagnostic biomarkers for the fertility status of individual animals during juvenile development. Bioinformatic analysis of RNA-seq data from the goat CL and EN will provide an understanding of endometrial responsiveness to P4 and conceptus secretions and luteolytic mechanisms that is available only in select ruminant species. A long-range goal is to determine whether the process of early regression of the goat CL is controlled by similar mechanism as normal luteolysis or is a consequence of improper follicular development prior to ovulation. These data will provide the foundation for developing techniques to overcome the problem of early regression of the CL in the goat and ultimately increase fertility when assisted reproductive technologies are utilized.

2. Brief description of the target audience

AgriLife Extension and AgriLife Research
The target audience was composed of beef cattle, horse, dairy, sheep, goat and swine producers/owners/users, commodity group leadership, associations and registries, and youth enrolled in 4-H and FFA livestock projects.

Cooperative Extension Program
Small farmers; limited resource farmers; family farmers and socially disadvantaged farmers.

Cooperative Agricultural Research Center
While the University's service area extends throughout Texas and the world, the University's target service area includes the Texas Gulf Coast Region. This includes the surrounding counties and includes the rapidly growing residential and commercial area known as the Northwest Houston Corridor as noted in the original Texas Plan. Therefore, problems associated with agricultural production systems, including those that exist at urban-agricultural interfaces and impact stakeholders will be addressed.

3. How was eXtension used?

AgriLife Extension and AgriLife Research
The Texas AgriLife EDEN disaster management website is linked to the National EDEN website and the eXtension network. Animal Science faculty continues to update and develop educational materials dealing with management of livestock during and following catastrophic events such as wildfires, drought and floods.

Cooperative Extension Program
Agents and Specialist were able to download publications customized with PVAMU-CEP logo to share with Producers. Agents also direct producers to the eXtension website to search for information.

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	51556	410778	10188	0

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	0	722	722

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- # of group educational sessions conducted.

Year	Actual
2013	2843

Output #2

Output Measure

- # of research-related projects.

Year	Actual
2013	123

Output #3

Output Measure

- # of one-on-one technical assistance/consultations.

Year	Actual
2013	115

Output #4

Output Measure

- # of graduate/undergraduate students involved in research projects.
  Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	% of livestock owners/producers that adopt or plan to adopt best management practices to improve quality and profitability.
2	% of livestock owners/producers/commodity group representatives that report increased knowledge of best management practices to improve quality and profitability.
3	% of livestock owners/producers that report a savings in money or increased profit by best management practices adopted.

Outcome #1

1. Outcome Measures

% of livestock owners/producers that adopt or plan to adopt best management practices to improve quality and profitability.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	80

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Best management practices to ensure quality, profitability, productivity and optimal utility help clientele make changes to improve livestock, management, resources and time to increase income and improve profit opportunities

What has been done
Programs conducted include TAMU Beef Cattle Short Course, Texas Beef Quality Producer, Beef and Pork 101, Beef 706, Grassfed Beef Conference, Pasture Management Workshops, Bull Selection, Low-Stress Livestock Handling, Stockmanship schools, Southwest Dairy Conference, livestock restocking programs. Youth programs included the 39th Annual Summer Horsemanship Schools, Lamb/Goat Camps and Judging camps for Beef Cattle, Horses, and Sheep. In addition to specialist driven programs listed above Animal Science Extension faculty support producer education through delivery of educational programs at 261 county programs.

Results
From measures including beef/dairy cattle, sheep/goats, horses and meats, 62% to 100% reported intent to adopt of at least one best management practice. 60% to 94% expected to increase income or profitability by adoption of best management practices. 66% to 83% of respondents indicated they would implement changes to their livestock and resource management practices as they rebuild their livestock inventories. 60% to 92% reported elimination of non-productive practices. 67% implemented financial plans, 74% hay analysis, 82% reported use of cost/lb of nutrient strategies for alternative feedstuffs and 91% use body condition scoring as a management tool.

4. Associated Knowledge Areas

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

Outcome #2

1. Outcome Measures

% of livestock owners/producers/commodity group representatives that report increased knowledge of best management practices to improve quality and profitability.

2. Associated Institution Types

- 1862 Extension
- 1890 Extension
- 1862 Research
- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	87

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
AgriLife Extension and Research
Increased knowledge prompts adoption of best management practices to ensure quality, profitability, productivity and utility of livestock, management, resources and time. Knowledge of best management prompts time savings, increased confidence in management decisions and problem solving for producer and youth involved in the livestock industry.

Cooperative Extension Program and CARC
Livestock production, more specially cattle production is the number one enterprise on more agricultural operation in Texas. Small Scale landownership is growing in popularity as more and more leisure farms are added to the landscape. Many producers we work with are part time

and/or absentee owners and cattle fit well into their production model because they require minimal daily care. One of the key challenges facing livestock producers is parasite control. Goat producers are challenged by the fact that goats appear to have less natural immunity to internal parasite which can result in high mortality. We often see very poor parasite management in horses raised by Small scale Livestock producers as well.

What has been done

AgriLife Extension and Research

Programs conducted include TAMU Beef Cattle Short Course, Texas Beef Quality Producer, Beef and Pork 101, Beef 706, Grassfed Beef Conference, Retail Beef Boot Camps, Rebuilding Texas Herds, Retail Beef Boot Camps, Pasture Management Workshops, Bull Selection, Low-Stress Livestock Handling, Stockmanship schools, Southwest Dairy Conference, Livestock management during drought. Youth programs included the 39th Annual Summer Horsemanship Schools, Lamb/Goat Camps and Judging camps for Beef Cattle, Horses, and Sheep. In addition to specialist driven programs listed above Animal Science Extension faculty support producer education through delivery of educational programs at 261 county programs.

Cooperative Extension Program and CARC

The Cooperative Extension Program conducted a one day workshop on parasite control in small ruminants for agents and producers. The focus was on identifying what parasites were present and developing a program which included management to control them. One-On-One interaction between extension staff and producers to conduct parasite screening in cattle, goats, and horses were conducted through the year. Agents teamed with specialist to conduct horse health clinic with trail ride groups in the state including one conducted on campus. Extension teamed with the IGRC to conduct programs at two field days on campus and another in South Texas.

Results

AgriLife Extension and Research

74% to 100% reported improved decision making ability. 70% to 100% reported increased confidence in management ability. 93% indicated knowledge gains of 52% to 87% for livestock management following extreme drought and loss of forage production potential, cattle handling, food safety control, environmental management, financial management during drought, livestock evaluation and general livestock and ranch management.

Cooperative Extension Program and CARC

More than 30 producers and Agents attended the one day small ruminant workshop, 140 producers attended Ag Field Day, held on campus and South Texas. Agents and specialist contacted over 100 cattle, goat, and horses producers on matters relating to heard health focusing on parasite control.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
303	Genetic Improvement of Animals
306	Environmental Stress in Animals
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)
313	Internal Parasites in Animals

315 Animal Welfare/Well-Being and Protection

Outcome #3

1. Outcome Measures

% of livestock owners/producers that report a savings in money or increased profit by best management practices adopted.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	64

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Animal management systems must go beyond striving to improve quality of life, quality of production and increased knowledge to achieve a level of sustainability. For production systems to be sustainable they must be profitable. To improve profitability income needs to increase and costs need to be lowered or controlled. A continued push was made through programming to encourage producers to look at enterprise diversification and adding stocking rate flexibility into their production systems.

What has been done
Economic benefit was measured from responses from participants in the TAM Beef Cattle Shortcourse, Small Landowner Conferences, Beef Quality Assurance programs, Rebuilding Texas Herds, Southwest Beef Symposium, Beef 706, Reproductive Management Shortcourse, Cattle Handling and Dairy Programs.

Results
51% to 100% of the participants in these programs indicated they would benefit economically through adoption of management practices outlined in these programs. Participants in the small landowner programs indicated an expected increase in income of $12.60 per head. Participants in Quality Assurance programs indicated increased income from $20 to $80 per head. Of the Beef 706 participants 81% indicated they would benefit economically by an estimated $26.00. Reproductive management practices on beef and dairy operations indicated returns of $30 to $85 per head. Economic impact across the livestock sector is projected to be between and $1.5 and $20 million from adoption of management practices.

4. Associated Knowledge Areas

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

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Public Policy changes
- Government Regulations
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

AgriLife Extension and Research

Livestock ownership, production and use in Texas continues to be influenced by natural disasters. 2013 followed two tough production years for livestock production. 2011 was the driest year on record and the second hottest year on record. 2012 saw only regional and periodic relief to the devastation of the 2011 production year. Recovery in 2013 was limited to non-existent across most of Texas with only the eastern third of the state seeing measureable improvement. Weather related challenges continue to alter program delivery and adoption of some management practices. Routine management of livestock has been influenced and significant need exists for education in emergency and alternative management plans. Production costs and incentives for livestock production, management, and use are influenced by economic changes. Input prices, agriculture valuation, and health care costs are all factors. Public policy changes and government regulations challenge educators to provide up-to-date, neutral information that helps livestock participants make decisions. Population shifts and use of available land for productive and meaningful livestock production bring opportunities and challenges to livestock owners/producers/users and the associations/corporations/groups that make up this diverse industry.

Cooperative Extension Program

Small Farmers are often hesitant to seek assistance form federal or state agencies, and rely on inherited knowledge, neighbors, or trial and error. Extension programs can be beneficial to landowners who are willing to take advantage of our services.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

AgriLife Extension and Research

Outcome measures include pre-post knowledge assessment, adoption of best management practices and elimination of non-beneficial practices, and change in confidence/competence. Changes in time and money spent/saved/invested for livestock production were measured in selected areas.

Cooperative Extension Program

Agents conducted an initial participant survey to gauge producer's level of understanding and the likelihood of adoption of the information being presented. Each Participant was contacted using the enrollment list to follow up on their interest and adopting the information. Agents worked with one-on-one with those producers who were interested in adopting new practices. One-on-one evaluations were conducted to monitor progress of each producer and to determent economic impact.

Key Items of Evaluation

AgriLife Extension and Research

No additional information to report.

Cooperative Extension Program

Number of producers adopting new practices and technology.
Number of producers reporting increased income or cost savings
Number of producers reporting increased understanding of subject matter