V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Animal Health And Production

☑ 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%		15%	
302	Nutrient Utilization in Animals	10%		15%	
303	Genetic Improvement of Animals	10%		15%	
305	Animal Physiological Processes	0%		10%	
307	Animal Management Systems	20%		10%	
311	Animal Diseases	5%		15%	
315	Animal Welfare/Well-Being and Protection	25%		20%	
806	Youth Development	20%		0%	
	Total	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	3.5	0.0	20.0	0.0
Actual Paid Professional	0.0	0.0	10.4	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**
30513	0	1581488	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
30513	0	1581488	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
160068	0	9180697	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Activities included ongoing trials with the goal of determining the influence of different mixtures of biofuel co-products and low quality forage on nutrient availability, palatability, and utilization by beef cattle, a project that resulted in a gain in knowledge with regard to the relationship between feed efficiency measures and other production traits [by understanding the relationship between feed efficiency measures and other production traits, cow/calf operations will be able to improve profitability by improving efficiency through genetic selection], work that will determine whether there are significant differences in the motility and viability of frozen thawed boar semen from multiple boars extended in six different classes of extenders and that will also evaluate the effects of thaw temperature on the viability of frozen boar semen, and a study which found that, when fed an excess calorie, high fat/cholesterol/fructose diet, the Ossabaw pig manifests perturbations in steroidogenesis and folliculogenesis that may make it a good model animal for studying the effects of obesity on reproductive function.

Activities also included a basic research project with the goal of increasing the efficiency of lean meat production in domestic animals, research showing that movement of bovine oocytes between two countries was feasible to produce in vitro fertilized cattle embryos, findings that suggest a correlation between GI architecture, systemic inflammation, and obesity in high-fat, high-sugar fed Ossabaw pigs, work to quantify metabolic and molecular interactions that alter the synthesis of milk components, a project that is the first to examine the effects of early life infection on neuroinflammation and cognition in neonatal piglets [as the piglet has brain growth and development similar to humans, it is an important translational model], a project assessing poultry feedback responses and laying hen preferences for cage furnishings, laying hen responses to atmospheric ammonia, and broiler and turkey responses to atmospheric carbon dioxide, research identifying the factors and signaling pathways that are involved in the cross-talk between the oocyte and the ovarian granulosa cells [recent studies have indicated that a bi-directional communication between cells is critical for female reproductive function], and the identification of ASFV proteins associated with hemadsorption inhibition [HAI] serological group specificity [successful identification and characterization of an ASF protein[s] associated with ASFV sero-specificity will provide critical knowledge of ASFV diversity and the breath of strain variability that will facilitate vaccine design, development and use].

Conference presentations included the Midwest Animal Science Meeting, Illinois Dairy Summit, Four-State Dairy Nutrition and Management Conference, Driftless Region Beef Conference, Dekalb Feeds Summer Seminar Series, Minnesota Nutrition Conference, Plant and Animal Genome XXI, International Embryo Transfer, Society for Molecular Biology and Evolution, Advances in Canine and Feline Genomics and Inherited Diseases, and the National Pork Board.

Drought management was a continuing focus for 2013 regarding pasture management/hay shortages and winter feed ration strategies. Two Extension educators located in research stations provided leadership for a number of programs that focused on beef production including **Beef Quality Assurance certifications**, the **Sire Selection and Management meeting, Illinois Performance Tested Bull Sale and Illinois Beef Exposition,** and producer production meetings. The **Southern Illinois Beef Conference** and inaugural **Driftless Area Beef Conference** were also held with the latter attended by over 160 participants from three states [Illinois, Iowa, and Wisconsin]. Educational workshops for sheep and goat producers were offered in the southern and northeastern parts of the state. Three **Dairy Summit** meetings were held throughout the state for dairy producers and included presentations on feeding drought-stressed forages, transition cow management, feeding updates, and calf and heifer management. The University of Illinois College Of Veterinary Medicine also offered the **Executive Pork Producers Program** which addressed essential skills for excellence in swine business management and the **Executive Veterinary Program in Swine Health Management** which covered the essential aspects of swine production medicine for veterinarians. **Certified Livestock Manager Training Workshops** targeted at manure management are examples of programs that were delivered by Extension staff to audiences at campus and off-campus sites.

A number of Extension campus faculty and staff members helped conduct horse, poultry, dairy, meats, and livestock judging contests for 4-H members. Other 4-H activities included the state **Dairy Quiz Bowl**, regional and state **Horse Bowl/Hippology** and speech contests. The Extension faculty specialist in poultry taught teachers how to use the curriculum and incubators for the 4-H chick incubation and embryology project in 311 classrooms that included 11, 368 youth during the 2012-13 school year [also discussed in the 4-H Youth Development planned program]. In addition, Illinois 4-H and FFA members completed the seven modules of the online **Quality Assurance and Ethics Certification** training and quiz for beef, dairy, goats, horses, sheep and swine covering topics related to care and administration of medicine for livestock.

2. Brief description of the target audience

Members of the target audience included cattle producers and scientists, medical, veterinary, industrial and professional scientists and clinicians, breed associations, agricultural production staff, dairy nutritionists, members of the scientific community focusing on animal sciences and muscle biology, nutrition professionals, and veterinary communities focusing on swine infectious diseases. Extension programs targeted livestock producers, custom manure haulers, regulatory agency representatives, livestock commodity group representatives, veterinarians, horse owners and breeders, the livestock feed industry, companion animal owners, community leaders, and youth.

3. How was eXtension used?

Ten Extension staff are members of various animal-related eXtension Communities of Practice including Beef Cattle, Companion Animals, HorseQuest, and Livestock and Poultry Environmental Learning Centers.

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	2274	0	19759	5068

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

Patent Applications Submitted

Year: 2013

Actual: 1

Patents listed

TF 10122-US [Thermostable C. Bescii Enzymes]

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	53	53

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number Of Completed Hatch Research Projects

Year	Actual
2013	7

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Increased Knowledge Of Livestock Care And Management
2	Efforts To Improve Beef Production Efficiency
3	Increasing The Efficiency Of Lean Meat Production In Domestic Animals
4	Investigating The Biological Mechanisms Underlying Germ Cell And Embryonic Development For The Improvement Of Livestock
5	Efforts To Explain The Correlations Between Gut Microbes, Fermentative End-Products And Barrier Function In Growing Pigs
6	Identification Of The Factors And Signaling Pathways That Are Involved In The Cross-Talk Between The Oocyte And The Ovarian Granulosa Cells
7	Reducing The Threat Posed By African Swine Fever Virus
8	Increased Knowledge Of Humane Care Of Animals And Animal Science

Outcome #1

1. Outcome Measures

Increased Knowledge Of Livestock Care And Management

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	21

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Illinois has a number of areas where land is more conducive to grazing animals than row crop production. These are primarily located in Southern and Western Illinois. Priorities in beef cattle production focus on production management [addressing new issues involving health, feeding, reproduction, genetics, and management] that enhance producers profitability and provides quality meat products for consumption.

What has been done
Illinois has historically offered a number of Extension-sponsored beef production programs held annually to address issues facing beef producers and to share the latest research being carried out at the University of Illinois. This past summer the annual Southern Illinois Beef Conference focused on incorporation of cover crops and the implications of the loss of corn by-products on beef production. Afternoon topics addressed maximizing herd pregnancy rates, production regulations, and the National Resources Conservation Service new program for renovating endophyte-infected tall fescue pastures and related cost share opportunities. This last topic was also part of the agenda for the University of Illinois Dixon Springs Agricultural Center Field Day held one month later. Additional field day topics included evaluation of different grazing systems on fescue toxicosis, pyrethroid effects on beef cattle fertility, calf performance following supplementation of cows, and an update on beef cattle reproduction. Evaluations were distributed at the end of both events to the 44 Southern Illinois Beef Conference attendees and 132 Dixon Spring Agricultural Center Field Day attendees and completed by 60 producers.

Results
All eighteen [41% of the 44 attendees] who completed the evaluation of the Southern Illinois Beef Conference indicated that their knowledge of beef cow and calf management increased and also felt that the content of this conference met their expectations. On a scale of 1-5 [five being high], all speakers' scores averaged 4.3 or higher with the highest rating given to the session on

incorporation of cover crops and maximizing herd pregnancy rates. When asked to list one or more management techniques learned at this conference that they plan to implement, three-fourths of them addressed plans to respond to new cover crop opportunities. Other changes mentioned included using rye grass, establishing endophyte-free fescue, bull management, and increasing wean weight.

Twenty-nine [88%] of the 33 Dixon Springs Agricultural Center Field Day respondents indicated that their knowledge of beef cow and calf management increased and 93% thought the content of the field day met their expectations. When asked to list one or more management technique that they learned at the field day and plan to implement, five of the fifteen who responded planned to improve/renovate their pasture and three planned to change their fescue management with another indicating improving fescue management. Two producers are considering early weaning, and two will follow the researcher's advice with respect to providing feed supplements.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
307	Animal Management Systems
311	Animal Diseases

Outcome #2

1. Outcome Measures

Efforts To Improve Beef Production Efficiency

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The future of a viable, sustainable beef industry in the U.S. depends on continued improvements in production efficiency. The National Cattlemen's Beef Association identified cost efficiencies as a major profitability driver for beef production in the U.S., with a focus on programs to improve production efficiency that use benchmarking systems which allow objective comparisons of

production costs and performance efficiencies among producers. Feed costs within an operation account for 40 to 70 percent of the total costs of the production of livestock. Therefore, obtaining a better understanding of feed efficiency across a spectrum of existing production operations can greatly impact overall feed costs. Approximately 60% to 70% of overall energy costs for beef production go into the cow herd. Of that amount approximately 70% goes for maintenance energy. This is the energy that a cow needs to just to stay alive. It does not include energy for growth, lactation, or gestation. Thus, 46% [0.7 x 0.65 = .455] of all energy required to produce a pound of beef is used to simply keep the cows alive and maintain their body weight. Identifying and understanding the nutritional, metabolic, genetic, and endocrinological differences among animals will aid in the determination of why certain animals are more feed efficient than others. This knowledge will allow producers to manage beef cattle production systems in a manner that minimizes feed consumption relative to output.

What has been done
Activities focused on improving our understanding of variation in efficiency of feed utilization as quantified by traits like residual feed intake, determining the relationships between RFI and efficiency of feed utilization in stocker, feedlot and cow-calf sectors, examining the effects of selection for RFI on other economically relevant traits, and developing expected progeny differences [EPDs], multi-trait selection indices and decision-support tools to facilitate selection for improved feed efficiency in beef cattle.

Results
The primary impact of this project was the gain in knowledge of the relationship of feed efficiency measures and other production traits. By understanding the relationship between feed efficiency measures and other production traits, cow/calf operations will be able to improve profitability by improving efficiency through genetic selection.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
303	Genetic Improvement of Animals
305	Animal Physiological Processes
307	Animal Management Systems
315	Animal Welfare/Well-Being and Protection

Outcome #3

1. Outcome Measures

Increasing The Efficiency Of Lean Meat Production In Domestic Animals

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Choline, an essential nutrient, plays a key role in regulating growth and brain development. It is unclear, however, whether prenatal or postnatal deficiency in choline can alter skeletal muscle growth.

What has been done
Treatments were arranged in a 2x2 factorial design with factors of choline status [deficient vs sufficient] and timing of treatment [prenatal vs postnatal]. Sows were fed diets either deficient or sufficient in choline, and piglets were raised artificially on milk replacer deficient or sufficient in choline. Gene expression was analyzed in the longissimus dorsi muscle while cell size was measured in the semitendinosus muscle.

Results
Expression of IGF1, IGF2, and myogenin were unaffected by treatment, while postnatal choline deficiency increased the expression of MyoD. Both prenatal and postnatal choline deficiency resulted in an increase in myostatin expression. Furthermore, MHC1 gene expression was increased and MHC2b expression was decreased in postnatal choline-deficient animals. Expression of MHC2a and MHC2x were unaltered by treatment. Additionally, choline deficiency did not alter average muscle cell size.

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals
305	Animal Physiological Processes
307	Animal Management Systems
315	Animal Welfare/Well-Being and Protection

Outcome #4

1. Outcome Measures

Investigating The Biological Mechanisms Underlying Germ Cell And Embryonic Development For The Improvement Of Livestock

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

It has been previously demonstrated that Panama is applying the biotechnology of in vitro embryo production [IVP] into their bovine reproduction management systems. This present work demonstrates the ability to apply the IVP technology across two distant country borders. We here demonstrate that a country [Dominican Republic, DR] that does not have a bovine IVP lab can take advantage of fresh bovine IVP embryos for transfer using distant IVP facilities in another country [Panama, ~1,500km away]. The objective of this study was to demonstrate that a model system for large-scale commercial in vitro bovine embryo production for beef and dairy producers, that do not have IVP technology in their home country, could be developed producing comparable results. Since the same laboratory provides IVP services to both countries, a special sanitary protocol was developed in order to legalize the exchange of biological materials [oocytes/embryos].

What has been done

The data obtained in the Dominican Republic was compared to Panamanian client data because identical conditions were utilized for IVP. Cattle production systems were similar as Brahman [a Zebu type of cattle] is the most popular breed in both countries. Oocytes were collected from ten different herds in Panama and four different herds in the DR. The oocytes were transported in a oocyte transporter in both instances. However, oocytes from the DR were transported in InVitro Brasil maturation medium from 12-18 hours and in Panama from 6-12 hours before they were placed in a standard CO2 incubator. In both cases the oocytes were matured for 24 hours before fertilization with conventionally frozen Brahman semen in InVitro Brasil fertilization medium followed by culture up to 7 days in InVitro Brasil embryo culture medium. The embryos were transferred on day 7, either in Panama or the DR. They were transported by car in Panama and via airplane back to the DR. A comparison of oocyte number and quality, cleavage, embryo production, and pregnancy rate was made using the same in vitro production system for Brahman Donors from September 2012 until May 2013. The difference between sites in the relative number

of viable oocytes, relative number of cleaved oocytes among viable oocytes, relative number of embryos produced among cleaved oocytes and relative number of embryos produced among viable oocytes was tested using Fisher's exact test. Pregnancy rate was analyzed with X2.

Results
We realize that these results represent field data, however we believe the present work is a significant step in demonstrating the potential for wide commercial-scale dissemination of the IVP technology between distant countries. The number of embryos produced in Panama was slightly but significantly higher than those produced in the DR but this is likely due to the larger number of donors and oocytes from the Panama herds. However, the pregnancy rate was higher in the DR likely due to the health status of the DR recipients. These data illustrate that in vitro embryo production using Brahman donors could be used as a tool to improve and spread superior genetics. Furthermore, this technique can serve as a model for other Central American and Caribbean countries under similar management systems. We showed that movement of bovine oocytes between two countries was feasible to produce in vitro fertilized cattle embryos.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
303	Genetic Improvement of Animals
305	Animal Physiological Processes
307	Animal Management Systems

Outcome #5

1. Outcome Measures

Efforts To Explain The Correlations Between Gut Microbes, Fermentative End-Products And Barrier Function In Growing Pigs

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Intestinal health is critical to the health of growing pigs and the success of swine operations. Few mechanisms explaining the correlations between gut microbes, fermentative end-products and

barrier function, however, have been adequately described.

What has been done
A pilot study was undertaken to characterize gastrointestinal [GI] differences in obese Ossabaw pigs vs. lean controls. Ossabaw gilts [n=8] were fed a high-fat, high-sugar diet ad libitum until 12 months of age and compared to lean Yorkshire controls [n=9]. Plasma inflammatory markers [TNF-alpha, IL-6, and LPS-binding protein] and intestinal morphology, tight junction protein gene expression, and mucosal microbiota populations were assessed.

Results
Preliminary results indicate that LPS-binding protein concentrations tended to be greater [P=0.08] in obese vs. lean pigs. Blood TNF-alpha concentrations were numerically, but not significantly, increased in obese vs. lean pigs [39 vs. 29 ng/L; P=0.24]. Obese pigs had greater [P=0.03] cecal crypt depth [494 vs. 430 um] and tended to have greater [P=0.09] ileal villus height [477 vs. 400 um] compared to lean controls. Our findings suggest a correlation between GI architecture, systemic inflammation, and obesity in high-fat, high-sugar fed Ossabaw pigs.

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals
305	Animal Physiological Processes
315	Animal Welfare/Well-Being and Protection

Outcome #6

1. Outcome Measures

Identification Of The Factors And Signaling Pathways That Are Involved In The Cross-Talk Between The Oocyte And The Ovarian Granulosa Cells

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In line with the goals of this project we proposed to identify the factors and signaling pathways that are involved in the cross-talk between the oocyte and the ovarian granulosa cells. Our approach involved microarray-based gene expression profiling to identify factors that are expressed in the ovary prior to ovulation. For our experiments we used the well-characterized rodent superovulation model in which oocytes are released from the follicle in a controlled time-dependent manner. This allowed us to identify factors and signaling molecules that are involved in cell-cell communication between oocytes and ovarian granulosa cells immediately prior to ovulation. We injected mice with pregnant mare serum gonadotropin and 48 hours later with human chorionic gonadotropin [hCG]. Mice were euthanized at 0 hours and 12 hours post hCG treatment. Total RNA was isolated from the ovaries of cohorts of animals with pooling of the RNAs from each cohort. Each cohort represented a replicate for the microarray analysis. The RNA was labeled and hybridized to the Affymetrix arrays by the Functional Genomics Core Facility at the University of Illinois.

What has been done

This microarray analysis uncovered approximately three hundred genes whose expression was significantly altered in the ovaries 12 hours after hCG administration, at a time that shortly precedes follicular rupture. When these microarray-derived genes were classified according to their known biological functions, they were found to encode diverse molecules such as proteases, transcription factors, growth factors, cell-adhesion molecules, modulators of vascular activities, and regulators of inflammation. These pathways are, therefore, linked to diverse biological processes, reflecting the overall complexity at the cellular and molecular levels that governs ovulation. Among these diverse molecules, we focused our studies on signaling factors that might be potentially involved in oocyte-granulosa cell communication. We were particularly interested in several members of the IL-6-type cytokine family, including IL-6, interleukin-11, leukemia inhibitory factor, and endothelin 2, a vasoactive peptide. The expressions of these factors are dramatically induced in PMSG-primed ovaries at 12 hours following hCG treatment. We initially addressed the role of endothelin 2 in ovarian function.

Results

When we examined the spatial expression of ETR-A and ETR-B proteins in the ovary by immunohistochemistry, we found that the mural and cumulus granulosa cells and the ovarian blood vessels are the major sites of endothelin receptor expression. These expression profiles of endothelin receptors in the mural and cumulus granulosa cells present possible mechanisms of endothelin 2 action during ovulation. It is conceivable that endothelin 2 secreted by the granulosa cells of the preovulatory follicles acts on these cells in an autocrine manner. Although it is unknown how endothelins regulate follicular rupture, one can envision that increased permeability in response to endothelin signaling drives the exudation of serum proteins and allows transmigration of leukocytes out of the blood vessels, primarily neutrophils and macrophages, to the interior of the preovulatory follicles. In an inflamed tissue, migrating leukocytes secrete proteases, damaging tissue. In the same way, intrafollicular leukocytes may produce proteolytic enzyme that may contribute to disruption of the follicular wall at the time of rupture. Collectively, these ideas raise the interesting possibility that endothelin 2 and its receptor signaling may have a direct stimulatory effect on the rupture of ovarian follicle at the time of ovulation.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
303	Genetic Improvement of Animals
305	Animal Physiological Processes

307 Animal Management Systems
315 Animal Welfare/Well-Being and Protection

Outcome #7

1. Outcome Measures

Reducing The Threat Posed By African Swine Fever Virus

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The objective of this study is to identify ASFV proteins associated with hemadsorption inhibition [HAI] serological group specificity. Successful identification and characterization of an ASF protein[s] associated with ASFV sero-specificity will provide critical knowledge of ASFV diversity and the breath of strain variability that will facilitate vaccine design, development and use.

What has been done
We have used a collection of serologically-grouped ASFV isolates and a large and diverse collection of ASF viruses to identify genetic signature[s] for ASFV serologic group specificity and to further define ASFV strain variability. We have demonstrated through gene sequencing and comparative analysis of ASFV strains a correlation between the genotype of the ASFV CD2v gene and virus grouping based on serospecificity. Overall, the concordance between CD2v region phylogenetic data and serogroup-specific typing provides a predictive value of CD2v locus genotyping in predicting serologic, and potentially cross protective, virus groups.

Results
Results obtained will have a broad impact on vaccine-orientated approaches for ASF disease control, thus reducing the threat posed by this high-consequence viral disease. Knowledge of ASFV strain diversity and the breath of strain variation in nature as well as rapid genotyping methods to serotype viruses and to predict efficacy of a given vaccine to provide cross protection for a newly identified field isolate will facilitate vaccine design, development and emergency use.

4. Associated Knowledge Areas

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

Outcome #8

1. Outcome Measures

Increased Knowledge Of Humane Care Of Animals And Animal Science

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	7964

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Humane care of animals is as important a concern as insuring a safe food supply. Opportunities for youth to care for livestock allow them to gain knowledge to ensure humane treatment of animals, production of meat products that are safe for consumption, and the development of their social skills and interest in science.

What has been done
Training was provided to 4-H youth enrolled in livestock projects via an online module on ethical treatment of animals that also included an examination to certify that they have the required knowledge. In addition, face-to-face training is offered in some locations that combines ethics and actual livestock production basics. This past year all counties made completion of the training a requirement for those youth enrolled in dairy, swine, beef, horses, rabbits, sheep, goats, and poultry. In addition, a survey was distributed and collected from 446 youth participants in animal science events this past year that included fourteen questions related to interest in science now and in the future and the value of caring for and exhibiting livestock projects in 4-H. Youth were asked to respond to the 14 questions using a 1-4 scale with 1 being 'Strongly Disagree' and 4 being 'Strongly Agree'.

Results

Ninety-five percent or more of the 446 youth who responded to the surveys distributed and collected at 4-H Animal Science events this past year indicated that they agree or strongly agree that caring for and exhibiting livestock projects has: [1] Taught them responsibility and ethics; [2] Built confidence and social skills; and [3] Provided a better understanding of biological sciences. In addition, with respect to other findings related to science, 94% affirmed that they get to do hands-on activities in the program/project and 88% or more: [1] Think that science, engineering, or technology will be important in their future job; [2] Think science is useful for solving everyday problems; and [3] Want to learn more about science. Additional information can be found in the 4-H Youth Development planned program Evaluation Section.

4. Associated Knowledge Areas

KA Code	Knowledge Area
305	Animal Physiological Processes
315	Animal Welfare/Well-Being and Protection
806	Youth Development

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)

Evaluation Results

Evaluations were distributed at the end of both events to the 44 **Southern Illinois Beef Conference** attendees and 132 **Dixon Springs Agricultural Center Field Day** attendees and completed by 60 producers.

All eighteen [41% of the 44 attendees] who completed the evaluation of the **Southern Illinois Beef Conference** indicated that their knowledge of beef cow and calf management increased and also felt that the content of this conference met their expectations. On a scale of 1-5 [with five being high], all speakers' scores averaged 4.3 or higher with the highest rating given to the session on incorporation of cover crops and maximizing herd pregnancy rates. When asked to list one or more management techniques learned at this conference that they plan to implement, three-fourths of them addressed plans to respond

to new cover crop opportunities. Other changes mentioned included using rye grass, establishing endophyte-free fescue, bull management, and increasing wean weight. In addition, 29 [88%] of the 33 **Dixon Springs Ag Center Field Day** respondents indicated that their knowledge of beef cow and calf management increased and 93% thought the content of the field day met their expectations.

Key Items of Evaluation

When asked to list one or more management techniques learned at the **Southern Illinois Beef Conference** that they plan to implement, three-fourths of them addressed plans to respond to new cover crop opportunities [National Resources Conservation Service new program for renovating endophyte-infected tall fescue pastures and related cost share opportunities].