

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Global Food Security and Hunger - 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%		9%	
302	Nutrient Utilization in Animals	10%		34%	
303	Genetic Improvement of Animals	5%		1%	
304	Animal Genome	5%		7%	
305	Animal Physiological Processes	5%		12%	
306	Environmental Stress in Animals	5%		5%	
307	Animal Management Systems	15%		20%	
308	Improved Animal Products (Before Harvest)	5%		1%	
311	Animal Diseases	10%		6%	
312	External Parasites and Pests of Animals	5%		1%	
313	Internal Parasites in Animals	5%		0%	
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals	5%		2%	
315	Animal Welfare/Well-Being and Protection	10%		1%	
402	Engineering Systems and Equipment	5%		0%	
903	Communication, Education, and Information Delivery	0%		1%	
	Total	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	14.2	0.0	10.0	0.0
Actual Paid	17.5	0.0	24.2	0.0

Actual Volunteer	0.0	0.0	0.0	0.0
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2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
447661	0	794487	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
447661	0	1916275	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	6541918	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Extension personnel will communicate with animal producers and the general public through seminars, workshops, and extension bulletins and newsletters distributed in paper copy and electronically via the internet. Field demonstrations may also be required to encourage acceptance of new practices and methodologies. Results of research projects may also be published in peer-reviewed scientific journals.

2. Brief description of the target audience

The target audience for this program includes animal producers and related industry personnel. Specifically, the target audience includes producers of beef, dairy, swine, equine, forage, catfish, crayfish, freshwater prawns, and commercial poultry.

3. How was eXtension used?

The resources provided through eXtension were used to supplement and enhance our public learning experiences provided by MSU Extension agents and specialists. eXtension was also used as a resource in state-based planning processes. Overall, 230 MSU employees are eXtension users. Further, MSU Extension has 71 employees that serve on one or more of the 66 Communities of Practice (COPs); MSU Extension employees are members of 39 COPs. 10 MSU Extension employees serve as a leader for a COP, leading 7 COPs. 5 MSU Extension personnel are members of the Beef Cattle COP. 3 MSU Extension personnel are members of the Bee Health COP with 1 being a leader. 3 MSU Extension personnel are members of the Freshwater Aquaculture COP. 1 MSU Extension employee is a member of the Livestock and Poultry Environmental Learning Centers COP. 2 MSU Extension personnel are members of the Marine Aquaculture COP. 4 MSU Extension personnel are members of the Community, Local, and Regional Food Systems COP. 1 MSU Extension employee is a member of the Youth Agriculture COP.

V(E). Planned Program (Outputs)

1. Standard output measures

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	65336	97850	0	0

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

Patent Applications Submitted

Year: 2014

Actual: 3

Patents listed

1. In vivo vaginal biomechanics device: insertable probe
2. Utilization of oleaginous microorganism as a nutritional supplement for animals
3. Apparatus and Method for rearing maggots

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2014	Extension	Research	Total
Actual	1	88	89

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of producers attending seminars, workshops, short courses, and demonstrations.

Year	Actual
2014	27198

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of producers adopting new technologies, strategies, or systems.
2	Number of producers increasing production levels.
3	Number of producers optimizing production inputs/expenses.
4	Number of producers improving their environmental stewardship.
5	Number of producers improving overall animal health and/or protection.

Outcome #1

1. Outcome Measures

Number of producers adopting new technologies, strategies, or systems.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	5440

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Timely dissemination of beef cattle research is needed to assist clientele in making operational decisions with updated information. A growing number of cattle industry participants look to internet-based sources including social media for management ideas and recommendations. Much information available via this format is from sources other than land-grant schools. It is critical that experiment stations provide unbiased, relevant, and timely information via this online dissemination method to fill the need for this type of information and for research to achieve application in the field.

What has been done

The North Mississippi Research and Extension Center Prairie Research Unit established a Twitter feed in July 2014. It is accessible online at twitter.com/msuprairie and is shown on msucare.com/nmrec/stations/prairie. Targeted tweets, internet links, and photographs focusing on experiment station activities and research applications have been showcased through this Twitter feed. The feed has been marketed in a variety of ways including via face-to-face contacts at industry association meetings and by way of electronic dissemination. Tweets are posted routinely to attract viewers.

Results

The @msuprairie Twitter feed has had promising initial interest and continues to gain followers. Tweets posted to this Twitter account have been routinely retweeted, favorited, or referenced in other tweets showing evidence of user engagement with the feed. Comments about particular tweets have also been relayed online. User engagement reflects recognition that research-based recommendations can be effectively applied in real-world settings in advantageous ways to the

industry user. For every 100 users, online beef cattle research application showcasing through social media contributes an estimated \$187,500 in improved Mississippi beef cattle operation annual net returns by way of educational information sharing and best management practice adoption.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
303	Genetic Improvement of Animals
304	Animal Genome
305	Animal Physiological Processes
306	Environmental Stress in Animals
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)
311	Animal Diseases
312	External Parasites and Pests of Animals
313	Internal Parasites in Animals
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
315	Animal Welfare/Well-Being and Protection
402	Engineering Systems and Equipment
903	Communication, Education, and Information Delivery

Outcome #2

1. Outcome Measures

Number of producers increasing production levels.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
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2014

2263

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Many producers did not have the knowledge to maximize profit potential within their respective cattle operation. The average cow/calf producer in Jasper County has less than 50 cows and works another full-time job. Most producers did not know the value of a herd sire to improve genetics, needed training on nutrition and forage management, and knew little of the value of a good vaccine program. They lacked knowledge of soil science when it came to forage production and sufficient livestock handling facilities to support livestock protocols needed to improve herd health.

What has been done

The Jasper County Calf Producers have capitalized on the group dynamic of purchases and marketing. Analyzing bull purchase power through our local economic development, the group purchased bulls then leased them to individuals in the program. Most producers have less than 50 cows, so we used research data for the small group to develop training and set goals for the group. Group purchases of vaccine through the local economic development organizations were a great fit within the group. Like the bull lease program, this was economical at first, then producers saw the value.

Results

Producers have completely changed their approach to their methods of cattle production. After 5 years in the program all producers have purchased bulls that are top quality. Each year the calves have graded consistently higher. Quality has improved with 90% of calves in the program moving up at least one grade in quality and with 45% moving up two grades in quality. Herd health has improved exponentially. Overall herd sickness has dropped below 1% since the start of the program. Producers initially were using the working chute purchased by the Jasper County Cattleman's Association for loan and use by its membership but have purchased or constructed adequate facilities to accommodate their herd. All are Beef Quality Assurance certified at the basic level at least.

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
306	Environmental Stress in Animals
307	Animal Management Systems
315	Animal Welfare/Well-Being and Protection
402	Engineering Systems and Equipment

Outcome #3

1. Outcome Measures

Number of producers optimizing production inputs/expenses.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	2089

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Many cattle operations in MS are extensive and have limited or no access to working facilities. As such, proper management practices, such as deworming or vaccinations, may only occur at sporadic times when facilities are available. Additionally, when these facilities are available to use, it is unclear to what extent the cost to rework the animals is both economically and on the productivity of the animal. To address these issues some products have been developed that have a long acting potential; however, little data has been generated examining the efficacy of these products.

What has been done

Studies have been initiated at the MAFES White Sand Branch Unit examining the use of long acting animal health technologies (de-wormers and growth promoting implants) that have the potential to reduce the added cost of reworking livestock and to help producers increase their return and ensure sustainability.

Results

Studies have indicated that long acting technologies seem to provide similar benefit compared to their shorter term counterparts. However, when examining the added cost of reworking the animals, the long acting technologies seem to have benefit in that less money is spent re-working animals. Additionally, in one instance it has been documented that re-working animals might result in significant weight loss and might impair overall performance. Cattle treated with long acting technologies have observed a \$50/head increase in profitability. Producers who do not have access to facilities and are dependent upon other people to work their animals will benefit from the adoption of these technologies in that it will reduce the number of times they have to use

others to work their cattle.

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals
305	Animal Physiological Processes
306	Environmental Stress in Animals
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)
311	Animal Diseases
312	External Parasites and Pests of Animals
313	Internal Parasites in Animals
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
315	Animal Welfare/Well-Being and Protection

Outcome #4

1. Outcome Measures

Number of producers improving their environmental stewardship.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	1132

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Agricultural insecticides pose risks to honey bees. Whether deserved or not, much attention has focused on some insecticides (e.g., neonicotinoids) as being particularly dangerous to bees despite lack of consensus within the scientific community on the long term effects of these chemicals on bees. Recent episodes of high mortality of bee hives in the U.S. have resulted in

many people (including beekeepers) blaming losses on use of insecticides. The potential conflict between beekeepers and farmers in the Mississippi Delta is particularly high because of high honey production from soybeans.

What has been done

A set of behavioral standards were developed to help foster better relationships between beekeepers and farmers in the MS Delta. MSU apiculture worked in collaboration with Extension specialists, the MS Farm Bureau, MS Department of Agriculture and Commerce, and various farm commodity groups and agricultural pilots associations to develop the MS Honey Bee Stewardship Program in late summer 2013. The written standards provide best management practices that each partner (beekeeper and farmer) can use to provide the best protection of honey bees that are kept on farms for honey production.

Results

Presentations and articles in mass media about the program have increased awareness of the issues related to keeping honey bees in agricultural environments. Requests for information about the program from individuals and Extension agents from other states peaked in mid-spring 2014. Several neighboring states modeled their pollinator protection plans from our program. Awareness of the program should lead to better protection of honey bees. In late September the Environmental Protection Agency sent several officials from Washington, D.C. to tour the MS Delta and meet participants in the honey bee stewardship program. The EPA saw how a voluntary program could protect bees and allow farmers to manage pests effectively. This input may help them develop strategies for the entire U.S.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
312	External Parasites and Pests of Animals
313	Internal Parasites in Animals
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
315	Animal Welfare/Well-Being and Protection

Outcome #5

1. Outcome Measures

Number of producers improving overall animal health and/or protection.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2014	1044

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The number of small ruminant producers is steadily growing in Greene County. A needs assessment survey performed in August 2014 illustrates this growth. Responses from 17 producers represented approximately 700 goats and sheep owned by producers, a sample of producers in the county. In the last year Extension has compiled a list containing 42 known small ruminant producers. Along with this increase in number comes a greater need for education on small ruminant management practices particularly internal parasite management. Generally, producers can expect a 20% loss.

What has been done

Extension increased educational opportunities for small ruminant producers by facilitating training sessions to enhance knowledge and skills concerning management practices for small ruminants. This program educated producers on topics such as rotational grazing, forages, and culling practices as an effort to combat parasites. Through work with this group, Extension also helped organize a breeders' sale which will benefit Greene and surrounding counties. This sale will increase marketing outlets for producers and educate them on practices that will help with future marketing.

Results

During 2014, 271 small ruminant producers attended programs offered in Greene County. Knowledge concerning management practices in small ruminant production and where to locate potential sources of assistance has increased. According to program evaluations, 100% of survey respondents indicated that they would employ practices learned in their operations. According to data collected from evaluations, producers have drastically decreased the amount of medication given to small ruminants. After implementing strategic deworming practices, administration of medications has decreased to as little as twice a year reducing unnecessary treatments and costs. Average mortality losses for producers have also decreased due to implementation of learned 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
311	Animal Diseases
312	External Parasites and Pests of Animals
313	Internal Parasites in Animals
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
315	Animal Welfare/Well-Being and Protection
903	Communication, Education, and Information Delivery

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

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

MSU Extension agents and specialists, as well as MAFES faculty, used a variety of recommended methods to gather needed information. Specific strategies were initiated and utilized for collecting evaluation information to determine program outputs and outcomes (see impact statements for examples). In FY 2014, MSU Extension agents and specialists were required to submit four quarterly reports (January, April, July, and September). This quarterly report collects information about the number of contacts, types of contacts, and number of programs conducted in each Planned Program Area. In addition, two narrative Accomplishment Reports are required from each MSU Extension employee each year. Finally, a specific request for impact statements from MSU Extension and MAFES faculty and staff is also made. The evaluation results shared through our impact statements are a combination of this quantitative and qualitative data.

Late in the 2014 program year, we introduced a Standardized Extension Evaluation Survey. The Standardized Extension Evaluation Survey was designed for use in any MSU Extension Service program, workshop, or event with adults. The survey assesses program process, participant satisfaction, knowledge and/or skill change, and behavioral intentions. It provides a ready-made evaluation for agents and specialists to use and will allow us to aggregate data across the state. A small number of agents and specialists have utilized the survey to date, but we hope use will increase over time.

Key Items of Evaluation

