V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Animal Production and Protection

☑ 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	0%		10%	
302	Nutrient Utilization in Animals	0%		13%	
303	Genetic Improvement of Animals	0%		10%	
304	Animal Genome	0%		10%	
305	Animal Physiological Processes	0%		10%	
307	Animal Management Systems	50%		13%	
308	Improved Animal Products (Before Harvest)	5%		1%	
311	Animal Diseases	5%		15%	
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals	0%		2%	
315	Animal Welfare/Well-Being and Protection	10%		11%	
605	Natural Resource and Environmental Economics	20%		5%	
806	Youth Development	10%		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	15.4	0.0	6.5	0.0
Actual Paid Professional	14.2	0.0	10.0	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**
619456	0	799372	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
619456	0	830135	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	3774045	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Research programs to:

- Understand the processes that control/influence reproduction at the molecular and genetic level.
- Develop and test new cropping, grazing and feeding strategies for food animals.
- Develop and evaluate management/training strategies for race horses to reduce injuries.
- Add to the understanding of various food animal genomes by improving and integrating genetic maps.
- Understanding of the genetic and molecular processes that control/influence the immune system in food animals to create new disease detection and tracking technologies.
- Develop and evaluate new tools and strategies to detect, prevent and control emerging and reemerging livestock and poultry diseases.
- Understanding of the environmental fate and biological effects of vaccines, steroids and other drugs fed to animals.

Extension activities to:

- Assist beef producers with implementing the mandatory electronic identification system and demonstrate methods to use the system to sharpen management skills.
- Provide livestock producers with knowledge and skills to develop and maintain herd-health systems.
- Provide animal industry with up-to-date animal health information.
- Improve farm-specific environmental stewardship related to manure management, including developing whole-farm nutrient management plans, manure value, land use and neighbor relations.

2. Brief description of the target audience

Michigan animal producers, agriculture and natural resources industry representatives, animal pharmaceutical industry, animal welfare organizations, state agency representatives, state and local elected officials and the interested public.

3. How was eXtension used?

eXtension was a major part of our multi-state effort (along with work with the North Central Region). In this area, 19 educators responded to Ask an Expert on 164 issues.

Members were activiely involved the following Communities of Practice (CoP) for this area:

Animal Welfare
Bee Health
Beef Cattle
Companion Animals
DAIReXNET
Feral Hogs
Goat Industry
HorseQuest
Livestock and Poultry Environmental Learning Centers
Niche Meat Processor Assistance Network
Sheep
Small and Backyard Flocks

An example in this area is:

Feedlot protocol
Is there a publication on feedlot protocol to help new farmers to understand the steps they have to complete in a feedlot operation? Thank you very much
Reply
As you may have discovered, there are few resources that cover all aspects of feedlot production. A basic, general manual can be found at:

Beef Feedlot Systems Manual - Iowa State Univ.
www.extension.iastate.edu/publications/pm1867.pdf

Most land grant universities in cattle feeding areas have specific information regarding both general and regional specific practices. Examples are Kansas, Texas, Nebraska, Iowa, etc.

If by "protocol" you are refering to environmental regulations, etc, these are primarily state specific, so I suggest contacting the Feedlot Beef Extension Specialist in your state.

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	869	2607	15136	45408

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

Patent Applications Submitted

Year:	2013
Actual:	2

Patents listed
MICL02127 - Increasing the efficiency of somatic cell nuclear transfer cloning in bovine - 13/509,111, 11/16/2012. MICL02144 - Functional genomics of probiotic lactobacilli - PCT/SE2013/050646, 6/4/2013.

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	2	24	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of research programs on animal production and protection.

Year	Actual
2013	40

Output #2

Output Measure

- Number of adult participants trained in animal management systems.

Year	Actual
2013	869

Output #3

Output Measure

- Number of youth participants trained in animal management systems.

Year	Actual
2013	15136

Output #4

Output Measure

- Number of adult participants trained in animal diseases.
  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	Number of adult participants with increased knowledge about animal management systems.
2	Number of youth participants with increased knowledge about animal management systems.
3	Number of adult participants with increased knowledge of animal diseases.
4	Number of research programs to understand the processes that control/influence reproduction at the molecular and genetic level.
5	Number of research programs to add to the understanding of various food animal genomes by improving and integrating genetic maps.
6	Number of research programs to develop and evaluate new tools and strategies to detect, prevent and control emerging and reemerging livestock and poultry diseases.
7	Number of research programs to understand the environmental fate and biological effects of vaccines, steroids and other substances fed to animals.
8	Number of research programs to develop and evaluate management/training strategies for horses to reduce injuries.
9	Number of research programs to add to the understanding of animal behavior and welfare.
10	Number of research programs to test new cropping, grazing and feeding strategies for food animals.

Outcome #1

1. Outcome Measures

Number of adult participants with increased knowledge about animal management systems.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	782

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Meat producers must assure the quality of their food and look for certification programs that maintain and improve both the product and the process.

What has been done
One example in this area is the Pork Quality Assurance program that is a certification program for pork producers. Certification in this program is a requirement for many packing plants and processing facilities and markets are limited if the producers have not achieved PQA Plus certification. MSU Extension educators are the main providers of this program and also providing training for other qualified industry personnel that wish to hold educational sessions.

Results
Evaluation results found that 253 pig producers certified in 2013 protected over $80 million value. This was calculated by the following assumptions:

Number of sows x 23 pigs/sow/year x$150/pig = total protect protected in dollars

23 pigs/sow/year is an average number used

$150 is an approximate value for a market hog sold in 2013

The participants had 23,068 sows in 2013

Note that Quality Assurance programs are renewable on a three year cycle. Regardless of what quality assurance program the operation has received the number of head is only accounted for once in a three year cycle. Numbers are not duplicated.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
311	Animal Diseases

Outcome #2

1. Outcome Measures

Number of youth participants with increased knowledge about animal management systems.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	13622

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Youth and adult leaders need skills and specific information (based on the area-livestock in this example) in teaching others. The continued development and maintenance of the livestock industry requires continued research and education to keep the field vital and healthy.

What has been done
One example is MSU Extension developed the 4-H Beef, Sheep, & Swine Leaders Workshop that was co-sponsored by the Michigan Pork Producers Association and by generous donations to the Michigan 4-H Foundation. This workshop was open to teen (aged 13 and older) and adult leaders involved with beef, sheep, and swine projects. The goals of the workshop were:

Teach skills in areas of practical livestock production and management.

Develop communication skills and leadership techniques for participants in order to more effectively re-teach skills in the county.

Offer an opportunity to share with others, programs that have been successful in other counties.

Develop methods to encourage youth and their families to participate in 4-H clubs and other Extension activities.

Results
Evaluation results found:

100% of the participants agreed or strongly agreed that they were more knowledgeable about livestock sciences.

91% said they felt more knowledgeable about entrepreneurship and career opportunities for youth to pursue in science related fields.

99% plan on applying the science knowledge and skills from this workshop.

51% indicated that this training helped them understand how to teach youth using a hands-on ?learning-by-doing? approach.

55% indicated that after this training they understood how to teach youth using an inquiry ?question-asking? approach.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
311	Animal Diseases
806	Youth Development

Outcome #3

1. Outcome Measures

Number of adult participants with increased knowledge of animal diseases.

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Number of research programs to understand the processes that control/influence reproduction at the molecular and genetic level.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	4

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Unless you are a strict vegetarian or lactose intolerant, chances are that dairy and beef products make up half of your diet. According to the U.S. Department of Agriculture, almost 40 percent of the average American diet is dairy, and beef makes up 10 percent. This makes these products an integral part of our lifestyle and our economy, this sustained productivity and animal health are critical issues to the cattle industry.

What has been done
Research to: understand the impact of animal agriculture on the modern society; develop new methods to improve fertility and reproductive efficiency in livestock; investigate potential effects of exposure to environmental contaminants in humans and animals, with an emphasis on reproductive performance; develop a local/regional pasture-based beef production system encompassing the entire beef production chain; and to assess the impact of Ovsynch on conception rates of lactating dairy cows.

Results
Researchers have demonstrated for the first time that mild undernutrition during early pregnancy did not alter birth weight or growth, but had a marked negative impact on blood pressure and heart anatomy in offspring. This finding is significant because it shows the importance of proper nutrition during early pregnancy on the cardiovascular system in cattle.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
303	Genetic Improvement of Animals
304	Animal Genome
305	Animal Physiological Processes
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals

Outcome #5

1. Outcome Measures

Number of research programs to add to the understanding of various food animal genomes by improving and integrating genetic maps.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	6

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Genetic maps are an integral part of several statistical models that are commonly used to find disease genes. A better understanding of these maps will allow for the development of increasingly accurate models that will provide researchers and producers with reliable estimates in a practical amount of time and will greatly enhance disease prevention and treatment efforts.

What has been done
Research to: develop methods for producers and consultants to evaluate dairy herd performance and assess trends for herd life and culling rates;develop a new set of tools and reagents to study autologous cell therapy using a new large animal model; and to develop and adapt staistical and computational methods to link phenotypic variation to genomic variation.

Results
Visitor biosecurity practices were used on 5 farms in 2013 as part of the Michigan State University Extension "Breakfast on the Farm" program. This farm tour program provides the public access to modern dairy and crops farms and involved over 11,000 participants. Incorporating visitor biosecurity measures for these tours reduced the possibility of someone returning from a foreign country and coming into contact with livestock and lowered the risk of kids and adults carrying harmful bacteria home. The effort also exposes the public and more producers and agribusiness professionals to visitor biosecurity concepts.Educational farm tours provide the public an opportunity to see modern farm operations first-hand, learn about current animal management practices and technology being used and ask questions of farmers who volunteer to help with these events. For dairy operations, they come away with a better understanding of modern dairy farms and a positive impression about how milk is produced, the environment is cared for and how animals are cared for, housed and managed. In general, the percentage of respondents with positive or very positive impressions increased from 60-65% to 90-97% as a result of their

visit to one of the educational Breakfast on the Farm events. These events provide an opportunity to learn what participants think and what their concerns are after their visit through their comments and responses in exit surveys. On-line surveys indicate that about 20% of of the BOTF participants are purchasing more milk, cheese and yogurt as a result of their participation in a BOTF event.

4. Associated Knowledge Areas

KA Code	Knowledge Area
304	Animal Genome
305	Animal Physiological Processes

Outcome #6

1. Outcome Measures

Number of research programs to develop and evaluate new tools and strategies to detect, prevent and control emerging and reemerging livestock and poultry diseases.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	7

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Animal disease in the United States could seriously damage the livestock and poultry industries. For example, eradication of avian influenza in the United States following an outbreak in the mid-1980's resulted in the destruction of 17 million birds and cost taxpayers nearly $65 million. The collective effort and vigilance of researchers, livestock producers, veterinarians and state and local government officials is needed to ensure adequate disease surveillance and to provide the needed resources to prevent, respond and/or eliminate disease outbreaks.

What has been done
Research to: develop new interventions to reduce antimicrobial resistance when treating animals with antimicrobial drugs and to develop a new non-antibiotic treatment for mastitis in dairy cows; determine the contribution of T2SS to biofilm formation in gram-negative human and plant pathogens' better understand parasitic and mutualistic interactions in a bacteria-nematode insect association; collect and screen for bacterial strains with antagonistic properties for food borne

pathogens and test their efficacy; and improve immune recognition in order to protect against or eliminate viruses and diseases such as Johne's disease.

Results
Researchers detected epizootic hemorrhagic disease virus (EHDV) in cattle showing clinical sign of disease. This virus had not been detected in cattle until this year in Michigan. Detection of that virus in MI is evidence of a recent expansion in the virus range in the US. Characterization of the EHDV detected revealed that it was a serotype 3 virus.

Researchers explored temporal changes in antimicrobial resistance in dairy cattle. Results suggest that the state of production may have an effect on shedding of coliforms and resistant coliforms. They also looked at probiotics as an intervention to reduce antimicrobial resistance in pre-weaned dairy calves. Investigators also looked at manuka honey and oregano as an alternative non-antibiotic treatment for mastitis in dairy cows.

4. Associated Knowledge Areas

KA Code	Knowledge Area
303	Genetic Improvement of Animals
305	Animal Physiological Processes
308	Improved Animal Products (Before Harvest)
311	Animal Diseases
315	Animal Welfare/Well-Being and Protection

Outcome #7

1. Outcome Measures

Number of research programs to understand the environmental fate and biological effects of vaccines, steroids and other substances fed to animals.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	5

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Michiganders are an exceptionally vulnerable population due to their chronic exposure to complex

mixtures of endocrine disruptors, which include legacy environmental contaminants (e.g., dioxin, PCBs, DDT) within the Great Lakes basin. A comprehensive molecular and physiological understanding of the interactions that may occur is critical to human health. Also, vaccines, steroids, antibiotics and other substances are added to animal feed to improve growth rates by controlling parasitic and bacterial diseases. With the recent major expansion in concentrated animal feedlot operations, the potential risks from these operations must be assessed.

What has been done
Research to: achieve a better understanding of the impact of animal agriculture on society by integrating the risks and benefits related to economics, environmental protection and human health; develop multistage hierarchical models to facilitate greater efficiency of inference in general mixed model microarray experiments; and to identify the environmental transformations undergone by animal feed additives and determine their environmental fate.

Results
Researches have been promoting better stewardship of antibiotic use on dairy farms, focusing on reducing unwarranted use of antibiotic therapy for the treatment of mastitis. They have created a dedicated website, seminars and presentations for dairy producers and veterinary practitioners.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
315	Animal Welfare/Well-Being and Protection

Outcome #8

1. Outcome Measures

Number of research programs to develop and evaluate management/training strategies for horses to reduce injuries.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	3

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Due to improvements in nutrition, management and health care, horses are living longer, more useful lives. It's not uncommon to find horses and ponies living well into their 20s and 30s. Although genetics play a determining role in longevity, providing proper care and nutrition plays a key role in horses' health, performance and overall well-being.

What has been done
Research to: investigate ways to manipulate bone density and strength through mechanical loading to help prevent injuries to performance horses and increase the longevity of livestock; identify ways to manipulate the equine diet to optimize skeletal health and improve the overall welfare of horses; and to define the role that EHV-5 plays in the development of spontaneous equine multinodular pulmonary fibrosis.

Results
Researches found that mature exercising horses free from osteoarthritis do not exhibit physiological anti-inflammatory benefits when supplemented with a low dose of omega-3 fatty acids over a 21-d period. This study suggests a higher dose of DHA may need to be offered. Based on this study and prior work completed by this laboratory, we can conclude that NSAIDs substantially contribute to EGUS and an unknown level of gastric permeability but no difference between organic and inorganic minerals in the prevention or healing rate of EGUS was detected.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
315	Animal Welfare/Well-Being and Protection

Outcome #9

1. Outcome Measures

Number of research programs to add to the understanding of animal behavior and welfare.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Our society has placed increased emphasis on the welfare of research and exhibit animals. U.S. law now requires attending to exercise requirements for dogs and the psychological well-being of non-human primates. Animal welfare without knowledge is impossible. Animal behavior researchers look at the behavior and well-being of animals in lab and field. Good animal welfare requires solid science that informs and directs policies and practices related to disease prevention and veterinary treatment, appropriate shelter, management, nutrition, humane handling and humane slaughter.

What has been done
Research to: maintain and improve skeletal health in livestock and companion animals; identify management practices and environmental conditions, particularly for young animals, that allow expression of positive natural behaviors while improving animal welfare in the context of environmentally sustainable production systems; and to examine ethical issues in agriculture.

Results
With the long term goal of identifying management practices and environmental conditions, particularly for young animals, that allow expression of positive natural behaviors while improving animal welfare in the context of environmentally sustainable production systems, researchers explored laying hen behavior in aviaries as well as sensor development for monitoring hen behavior. They are also examining the impact of stocking rate in dairy cattle.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
315	Animal Welfare/Well-Being and Protection

Outcome #10

1. Outcome Measures

Number of research programs to test new cropping, grazing and feeding strategies for food animals.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	11

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
As production costs rise, environmental concerns increase and consumer expectations become higher, those involved in the agrifood industry are looking for ways to maximize reproductive and performance efficiencies in a way that is economically and environmentally sustainable, and that protects human and animal health.

What has been done
Research to: develop a local/regional pasture-based beef production system encompassing the entire beef production chain; investigate strategies to maximize milk production output and ecosystem functions in grazing dairy systems; mitigate the environmental footprint of animal systems; develop a local/regional pasture-based beef production system encompassing the entire beef production chain; investigate strategies to maximize production output (milk)and ecosystem functions (processes and services) in grazing systems managed under various scenarios for the optimization of automatic milking and pasture systems; better understand the mineral needs of the pig; and to evaluate the effectiveness of mannaniligosaccharides on egg production, egg weight and bird livability of laying hens.

Results
Iron in drinking water: There was no main effect of treatment on any response variables. There was an effect of hour pooled across treatments on serum iron, UIBC, percent iron saturation; and, for liver Cu and Zn concentrations. There was a treatment by time interaction for serum Zn concentration and a tendency for liver Cu concentration. Results indicate that infusion of ferrous iron at rates used in this study do not have major impacts on short-term iron status of lactating dairy cows.

We have been able to determine the presence of Zn transporters in pigs and will be able to use this information to more accurately quantify their Zn requirement. Additionally, we now know more about the requirement of pigs fed agents that promote increased muscling. The interaction of nutrients is important in meeting the animal's needs.

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)

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

The ongoing economic challenges being faced by Michigan -- including the recent federal funding sequestration process -- continue to affect this planned program area. Consequences have included fewer new hires, delaying the award of new financial obligations, reducing levels of continued funding, and renegotiating or reducing the current scope of assistance through formula funds or block grants. Although overall research FTEs only decreased by one -- from 65 FTEs to 64 FTEs this past year, we are down from 77.1 FTEs just two years ago.

Specifically, a 15 percent decreases in state funding FY2011-2012 coupled with a flat federal funding line for two consecutive years resulted in the elimination of 72 Extension educator positions across 83 counties, 22 academic and faculty positions on campus and 15 support staff. Administrative positions were reduced from 45 to 19 FTEs. Impacts on AgBioResearch came largely in the form of reductions in research infrastructure support. Investments in facility maintenance and equipment were postponed in an effort to avoid eliminating more than 45 research positions (faculty, support staff and graduate assistants) and one research facility had to be closed in light of the reductions. There were also fewer funds to seed research on emerging issues.

These reductions caused some stakeholders to question the commitment of Extension and AgBioResearch to Michigan agriculture. In an effort to address these concerns, leaders from both organizations participated in a series of 13 open forum meetings held throughout Michigan in 2013. Stakeholders and community members asked questions and had the opportunity to learn more about the past decisions and future plans of Extension, AgBioResearch and the MSU College of Agriculture and Natural Resources. It was a valuable exchange between the organizations' leaders and industry stakeholders across Michigan, and helped to ease some tension caused by the cutbacks.

Together, Extension and AgBioResearch continue to serve as the primary research and development arm for the agriculture and food industries in Michigan, valued at more than $91 billion annually.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

As Hatch dollars are base funding for faculty salaries, there is a built-in evaluation mechanism through annual reviews of overall performance, research productivity and the leveraging of additional research dollars. In addition, many of the research projects have an evaluative element that is required by state and federal-level funding sources that provides documentation related to project assumptions, goals and outcomes. This information is used to determine the overall success of research initiatives; their contribution to providing practical, real-world solutions and resources to address challenges and problems; and whether continuation funding and/or new dollars are appropriate and necessary as funds are available.

Additional MSU Extension Evaluation results include:

State 4-H Veterinary Science Leaders Workshop

Issue (who cares and why)?

Youth and adult leaders need skills and specific information (based on the area-livestock in this example) in teaching others. The continued development and maintenance of the livestock industry requires continued research and education to keep the field vital and healthy.

What has been done

One example is MSU Extension developed the State 4-H Veterinary Science Leaders Workshop.This workshop was open to teenss (aged 13 and older) and adult leaders interested in veterinary sciences. Sponsorship was made possible by generous donations to the Michigan 4-H Foundation.

This conference is designed to:

· To present new ideas, activities, and approaches to the 4-H Veterinary Science Program.

· To give conference participants opportunities to explore new ideas in-depth and get a "hands-on" experience.

Participants had 7 contact hours with 18 MSU faculty along with 6 industry representatives and other volunteer resource people.

The students spent 2 days exploring ideas, research and hands-on activities related to veterinary science. Youth and adult participants were given the opportunity to attend a variety of sessions: Real Situations in Veterinary Medicine, Animal Care and Welfare: Why Should You Care?, Science, Animals, Medicine and You, Critical Health, Welfare, and Care with Endurance Horses, Skeletal Problems in Dogs and Cats, How Do I Get Into Vet School?, Artificial Insemination with Beef and Dairy Cattle, Top Ten Cattle Health Achievements of the Past Decade, Dissection: What is That Organ?, How Do I Become A Veterinary

Technician?, Transporting Your Animals: What Tests Do They Need?, Ask the Vets and Vet Students.

Results

142 total participants attended - 25 males and 117 females representing 29counties. 91 youth participated along with 51 adults. 60% were first-time participants and 40% have attended 2 or more times.

Impacts from the evaluation were:

· 99% of the participants agreed or strongly agreed that they were more knowledgeable about veterinary sciences.

· 91% said they felt more knowledgeable about entrepreneurship and career opportunities for youth to pursue in science related fields

· 97% plan on applying the science knowledge and skills from this workshop

· 58% of participants indicated that this training helped them understand how to teach youth using a hands-on "learning-by-doing" approach.

· 45% shared that they teach youth using a hands-on "learning-by-doing" approach.

· 58% indicated that after this training they understood how to teach youth using an inquiry "question-asking" approach.

· 55% said they teach youth using an inquiry "question-asking" approach.

Comments from Participants

"This workshop taught me more about animals and different careers in veterinarian medicine."
~Clare County

"I found this workshop to be extremely beneficial. I was excited by how much hands-on work we got."
~Gratiot County

"I really enjoyed this workshop. It gave me hands-on experience in a field I would love to pursue."
~Missaukee County

Feeding the Beef Cow Herd in 2013 and Beyond

Issue (who cares and why)?

Beef farmers need up-to-date information on managing risks and new practices to help profitability.

What has been done

MSU Extension developed several sessions to help beef producers that included: The Changing Face of the Michigan Cow Calf industry; Industry Perspective; Simple Methods to Estimate Winter Beef Cow Feed Needs; and Keeping the Beef Cow Feed Budget under Control with Alternative Feeds.

Results

Evaluation results found:

83% planned to adopt new managment practices. The most common explanations for a yes answer had to do with managing feeding practices. Thirteen of the respondents mentioned feed specifically, with details ranging from the addition of cornstalk and alternative feed sources to testing feed or lowering the cost of feed. Some participants mentioned cover-cropping and double or triple cropping or checking on what the neighbors are setting aside. Finally, some mentioned new practices or managing of cattle.

72% responded they would implement new technology. Participants mentioned they would be using the "cowculator," use of computer programs, and spreadsheets. Other technology listed included smart phone apps and feed testing.

55% planned to make management changes to protect against risks that included: planning ahead, testing feed and using cornstalks.

62% planned to adopt technology or tools to manage risks by testing feed and balancing rations as well as use of the cowculator and spreadsheets.

Key Items of Evaluation

The European Union passed a law in 2012 that requires all commercial eggs to be produced in free-range barns or enriched cages, thus essentially banning conventional housing for hens. Several U.S. states have already passed legislation to change hen housing. The Michigan Animal Industry Act, passed in 2009, gives producers 10 years to adopt the new standards. The law doesn't ban conventional housing, but says hens need to be able to stretch their wings without coming into contact with the cage, freely movearound and lie down. Researchers looked at hen health and behavior in the cage-free aviary systems. For this aspect of the project, researchers studied two large flocks of hens over two years at a commercial egg-laying operation.

Preliminary findings show that workers in the cage-free aviary houses were exposed tohigher levels of dust and bacteria than those working in the conventional cage or enriched colony housing. This increased exposure is due in part to the effects of litter that accumulates on the floor in aviary housing. Egg quality was

the same in all housing systems. The next steps include assembling guidelines describing the positives and negatives of what researchers observed, as well as additional computer tools to help producers decide

which housing system works best in their operations.

Locally produced foods are a small but growing facet of U.S. agricultural sales. The U.S. Department of Agriculture (USDA) estimates that the farm-level value of local food sales totaled $4.8 billion in 2008, less than 2 percent of the U.S. market for agricultural products. An estimated 107,000 farms are engaged in local food systems, or about 5 percent of all U.S. farms. Researchers are looking at ways to beef up those numbers -- literally. Although consumers are increasingly demanding locally sourced food products, they have little choice at the supermarket, especially in protein selection. In fact, a mere handful of
corporations control about 90 percent of global meat distribution. Researchers have developed a local
food system model in the Lake City area that includes 20 local cattle producers who will each provide 10 steers as part of the project. Three of the participating producers are working to convert more than 1,000 acres to a pasture-based model, As part of the local food system model, researchers have also partnered with a local family-owned grocery store where some of the cattle will be sold. Called a "pasture-to-plate" concept with substantial potential to benefit the local economy. A University of Kentucky study that reveals that every $1 spent on beef cattle production returns $3.50 to the local community. Using that multiplier, the 200-steer project could equate to as much as $500,000 to the surrounding area.

Enhance Michigan's First Green Industry: Agriculture and Agribusiness Institute

Indicator
Reported
# of farms adopting practices that manage risks
1,119
# of farms adopting technology or tools to manage risks
293
# of animal units adopting practices to increase yield, improve quality, or decrease inputs
6,741