V(A). Planned Program (Summary)

Program # 12

1. Name of the Planned Program

Animals and Their Systems

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	6%		6%	
302	Nutrient Utilization in Animals	30%		30%	
303	Genetic Improvement of Animals	7%		7%	
304	Animal Genome	13%		13%	
305	Animal Physiological Processes	3%		3%	
306	Environmental Stress in Animals	3%		3%	
307	Animal Management Systems	9%		9%	
308	Improved Animal Products (Before Harvest)	8%		8%	
311	Animal Diseases	10%		10%	
312	External Parasites and Pests of Animals	1%		1%	
313	Internal Parasites in Animals	1%		1%	
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals	1%		1%	
315	Animal Welfare/Well-Being and Protection	8%		8%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Plan	20.0	0.0	50.0	0.0
Actual	4.1	0.0	69.7	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**
493514	0	457452	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
943534	0	2437079	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
134834	0	3297781	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

•Foster leadership and economic development and facilitate strong partnerships and participation in state, regional, national, and international agencies, organizations, and groups. •Develop collaborative, multidisciplinary approaches that respond to short- and long-term educational needs and issues.
•Encourage participation by extension specialists in:Taskforces, Review Committees, Advisory Boards, Editorial Boards, Commodity committees/boards, Invited presentations, Honors and Awards, Common Interest Groups, Professional Societies •Complete "needs assessment" for each species •Develop publications, workshops, consultations, seminars, certification programs, distance education modules, field days, and other opportunities. •Increase number of participants in life-long learning programs.

2. Brief description of the target audience

• Poultry and Livestock Producers • Farm employees • Nutritionists and consultants
• Veterinarians • Small flock/herd owners •Youth • Consumers • County officials
•Government Officials

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	40000	20000	10000	5000
Actual	1278	0	914	0

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

Patent Applications Submitted

Year: 2010
Plan: 1
Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Plan	25	50	
Actual	3	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of educational workshops and seminars offered to poultry and livestock producers

Year	Target	Actual
2010	50	8

Output #2

Output Measure

- Number of research projects

Not reporting on this Output for this Annual Report

Output #3

Output Measure

- Number of consultations

Not reporting on this Output for this Annual Report

Output #4

Output Measure

- Number of Extension publications written, new or revised; websites developed

Year	Target	Actual
2010	50	3

Output #5

Output Measure

- Number of K-12 classroom visits

Not reporting on this Output for this Annual Report

Output #6

Output Measure

- Number of Extension publications distributed

Year	Target	Actual
2010	100	2000

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of poultry and livestock producers and professionals who increase their knowledge of up-to-date information and technologies, management practices, and value-added opportunities
2	Number of poultry and livestock producers and professionals who adopt up-to-date information and technologies.
3	Number of livestock producers adopting practices to enhance sustainability of their operations.
4	Number of livestock producers expanding their operations.
5	Number of poultry and livestock producers utilizing animal welfare assessments to enhance their management systems.
6	Number of poultry and livestock producers and professionals who increased their knowledge of environmental stewardship practices and environmental regulations.
7	Number of poultry and livestock producers adopting management practices that maximize environmental stewardship.
8	Number of poultry and livestock producers and professionals developing comprehensive nutrient management plans.
9	Number of poultry and livestock producers who enhance soil fertility and reduce soil pollution through properly applied animal waste
10	Number of 4-H member Youth Quality Assurance certified
11	Number of adults Quality Assurance certified
12	Number of livestock tested for reproductive soundness
13	Number of livestock producers who increased tehir knowledge about alternative feedstuffs
14	Number of youth who gained knowledge about the livestock industry, animal feeding, and/or production

Outcome #1

1. Outcome Measures

Number of poultry and livestock producers and professionals who increase their knowledge of up-to-date information and technologies, management practices, and value-added opportunities

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	0	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Developing technologies that improve meat quality without negatively affecting producer profitability is imperative to increasing consumer demand for beef. Many factors can influence an animal's ability to produce highly marbled, tender beef. Previous studies indicate there is a need to address the effects of vitamin D in combination with other growth enhancing technologies on tenderness, the reason for the variable effect of vitamin A on marbling, and the effect of high amounts of distillers grains throughout the calf's lifetime (in utero and pre-weaning) on marbling and tenderness.

What has been done
Researchers have discovered that supplemental vitamin D enhances growth of feedlot cattle fed beta agonists but compounds problems associated with meat tenderness. They have also discovered that, compared with typical gestation diets, large amounts of distillers grains fed to cows during gestation increases calf birth weights and dystocia, as well as increases pre-weaning weight gains in progeny and decreases the number of days it takes for cows to become pregnant. Preliminary results from a recent study also indicated that pro-vitamin A carotenoids negatively affect fat deposition.

Results
As a result of presentations on this research, feedlot producers have made decisions about adding vitamin D to the diet to improve tenderness in cattle fed beta agonists. It has also impacted the decisions that cow/calf producers make about including distillers grain in gestation diets. Nutritionists have altered their recommendations for improving tenderness in cattle fed beta agonists. Purdue beef specialists have also increased the recommended lower limit of distillers grains that they suggest producers include in cow/calf diets.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
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

Outcome #2

1. Outcome Measures

Number of poultry and livestock producers and professionals who adopt up-to-date information and technologies.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	0	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Indiana has experienced significant growth in animal agriculture, much of it in the form of farms classified as CAFOs. Consumers, producers, and community leaders need the ability to make well-informed decisions regarding issues that may coincide with the expansion of food animal production.

What has been done
Purdue formed the CAFO team to provide scientific information and research on different CAFO-

related topics. The team has produced 20 issue papers and posted them on the Purdue CAFO web site. The team coordinated a 'state of the research' conference attended by stakeholders from commodity groups, regulatory agencies, and local and state government. A small group of the team conducted a study of 50 CAFOs in eight Indiana counties examining owner/operator and labor characteristics, fiscal impact, land use, and environmental issues. The results were presented in a webinar to over 35 sites.

Results
Indiana residents now have a clearinghouse of information regarding CAFOs and their impact on the communities. Planning commission members have used the information in their decision making processes. State agencies regularly use and cite the information. The number of visits and downloads has proven that presenting the topic in a web-based format is very effective at disseminating information.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
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

Outcome #3

1. Outcome Measures

Number of livestock producers adopting practices to enhance sustainability of their operations.

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Number of livestock producers expanding their operations.

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Number of poultry and livestock producers utilizing animal welfare assessments to enhance their management systems.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	8	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Meeting the U.S. consumer demand for white meat and rapid weight gains of broilers have made meat-type fowl more susceptible to metabolic disorders such as leg abnormalities. Skeletal integrity problems are a major welfare issue because lameness is a source of bird discomfort. It also results in economic losses for the meat industry. Condemnations and downgrades at harvesting due to leg problems range from 1.2 to 5.6%.

What has been done
Researchers conducted a study to determine if differences in skeletal traits exist among several purebred lines of meat-type chickens and to identify genetic lines that could possibly be used in the development of progeny with improved bone mineralization. The variability of bone traits was assessed in 6 week-old male and female birds of 3 purebred commercial lines and 6 experimental purebred lines.

Results
Researchers found that differences in bone traits exist among purebred lines of meat-type chickens. The results suggest that the potential exists to genetically select birds for increased bone mineralization. This is the first study reporting bone mineralization and bone size traits for purebread lines of meat type chickens.

4. Associated Knowledge Areas

KA Code	Knowledge Area
303	Genetic Improvement of Animals
315	Animal Welfare/Well-Being and Protection

Outcome #6

1. **Outcome Measures**

Number of poultry and livestock producers and professionals who increased their knowledge of environmental stewardship practices and environmental regulations.

Not Reporting on this Outcome Measure

Outcome #7

1. **Outcome Measures**

Number of poultry and livestock producers adopting management practices that maximize environmental stewardship.

Not Reporting on this Outcome Measure

Outcome #8

1. **Outcome Measures**

Number of poultry and livestock producers and professionals developing comprehensive nutrient management plans.

Not Reporting on this Outcome Measure

Outcome #9

1. **Outcome Measures**

Number of poultry and livestock producers who enhance soil fertility and reduce soil pollution through properly applied animal waste

Not Reporting on this Outcome Measure

Outcome #10

1. **Outcome Measures**

Number of 4-H member Youth Quality Assurance certified

Not Reporting on this Outcome Measure

Outcome #11

1. **Outcome Measures**

   Number of adults Quality Assurance certified

   Not Reporting on this Outcome Measure

Outcome #12

1. **Outcome Measures**

   Number of livestock tested for reproductive soundness

   Not Reporting on this Outcome Measure

Outcome #13

1. **Outcome Measures**

   Number of livestock producers who increased tehir knowledge about alternative feedstuffs

   Not Reporting on this Outcome Measure

Outcome #14

1. **Outcome Measures**

   Number of youth who gained knowledge about the livestock industry, animal feeding, and/or production

   Not Reporting on this Outcome Measure

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

{No Data Entered}

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- Retrospective (post program)
- Before-After (before and after program)
- During (during program)
- Case Study
- Comparisons between program participants (individuals, group, organizations) and non-participants

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}