

ANIMAL BIOLOGY, HEALTH, AND PRODUCTION SYSTEMS

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V(A). Planned Program (Summary)

1. Name of the Planned Program

ANIMAL BIOLOGY, HEALTH, AND PRODUCTION 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 | 5% | 5% | 5% | 5% |
| 302 | Nutrient Utilization in Animals | 15% | 15% | 15% | 15% |
| 304 | Animal Genome | 20% | 20% | 20% | 20% |
| 305 | Animal Physiological Processes | 10% | 10% | 10% | 10% |
| 307 | Animal Management Systems | 10% | 10% | 10% | 10% |
| 311 | Animal Diseases | 30% | 30% | 30% | 30% |
| 401 | Structures, Facilities, and General Purpose Farm Supplies | 5% | 5% | 5% | 5% |
| 402 | Engineering Systems and Equipment | 5% | 5% | 5% | 5% |
| Total | | 100% | 100% | 100% | 100% |

V(C). Planned Program (Inputs)

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

| Year: 2007 | Extension | | Research | |
|---------------|-----------|------|----------|------|
| | 1862 | 1890 | 1862 | 1890 |
| Plan | 3.2 | 0.0 | 28.2 | 0.0 |
| Actual | 3.2 | 0.0 | 29.1 | 2.0 |

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

| Extension | | Research | |
|---|----------------------------|----------------------------------|--------------------------------|
| Smith-Lever 3b & 3c 76916 | 1890 Extension 0 | Hatch 766444 | Evans-Allen 120394 |
| 1862 Matching 76916 | 1890 Matching 0 | 1862 Matching 766444 | 1890 Matching 120394 |
| 1862 All Other 595699 | 1890 All Other 0 | 1862 All Other 2215084 | 1890 All Other 20659 |

V(D). Planned Program (Activity)**1. Brief description of the Activity**

Research and extension programs targeted: (1) Poultry Health and Disease Prevention and Control - understanding mechanisms of disease induction, host genetic resistance and immune responses in broiler chickens emphasizing respiratory diseases and oncogenic and immunosuppressive diseases. Disease prevention and control will focus on diagnostic surveillance methodology, vaccination and biocontainment procedures; (2) Poultry Growth and Development - understanding basic molecular and cellular mechanisms regulating poultry growth, development and meat yield; (3) Avian Genomics - development and application of avian microarrays for: disease diagnosis, resistance, and control; growth and development; and optimization of desired production traits; (4) Alternative Production Systems - evaluation of alternative production systems that reduce disease, mortality, and waste production, minimize antibiotic use, and foster compatibility between animal production, environmental quality, and the expanding urban population; (5) Nutrient Utilization in Poultry and Ruminants - increased nutrient utilization from an improved understanding of animal biology via the use of chemical and biological inputs and via improved management techniques to improve milk production, weight gain and feed efficiency; and (6) Equine Health and Management Systems – outreach on equine health and management systems needed for growth of the industry.

2. Brief description of the target audience

Poultry integrators, growers, breeders, trade groups and allied industries; dairy and beef producers and allied industries; livestock commodity groups; forage producers, equine owners, producers and interest groups; state and federal agencies; federal research laboratories; peer scientists, and environmental and community groups.

V(E). Planned Program (Outputs)**1. Standard output measures****Target for the number of persons (contacts) reached through direct and indirect contact methods**

| | Direct Contacts Adults | Indirect Contacts Adults | Direct Contacts Youth | Indirect Contacts Youth |
|-------------|-----------------------------------|-------------------------------------|----------------------------------|------------------------------------|
| Year | Target | Target | Target | Target |
| Plan | 15000 | 15000 | 10000 | 2000 |
| 2007 | 15000 | 15000 | 10000 | 2000 |

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

Year **Target**

Plan: 0

2007: 0

Patents listed**3. Publications (Standard General Output Measure)****Number of Peer Reviewed Publications**

| | Extension | Research | Total |
|-------------|------------------|-----------------|--------------|
| Plan | | | |
| 2007 | 0 | 0 | 20 |

V(F). State Defined Outputs**Output Target****Output #1****Output Measure**

Number of Competitive Grants Submitted

| Year | Target | Actual |
|-------------|---------------|---------------|
| 2007 | 30 | 20 |

Output #2**Output Measure**

Number of Competitive Grants Awarded

| Year | Target | Actual |
|-------------|---------------|---------------|
| 2007 | 16 | 11 |

Output #3**Output Measure**

Number of Research Projects Completed

| Year | Target | Actual |
|-------------|---------------|---------------|
| 2007 | 1 | 15 |

Output #4**Output Measure**

Number of Undergraduate Researchers

| Year | Target | Actual |
|-------------|---------------|---------------|
| 2007 | 22 | 32 |

Output #5**Output Measure**

Number of M.S. Graduate Students

| Year | Target | Actual |
|-------------|---------------|---------------|
| 2007 | 15 | 11 |

Output #6**Output Measure**

Number of Ph.D. Graduate Students

| Year | Target | Actual |
|-------------|---------------|---------------|
| 2007 | 3 | 4 |

Output #7**Output Measure**

Number of Post-doctoral Research Associates

| Year | Target | Actual |
|-------------|---------------|---------------|
| 2007 | 3 | 1 |

Output #8**Output Measure**

Number of Refereed Journal Articles

| Year | Target | Actual |
|-------------|---------------|---------------|
| 2007 | 23 | 18 |

Output #9**Output Measure**

Number of Books and Book Chapters

| Year | Target | Actual |
|-------------|---------------|---------------|
| 2007 | 7 | 2 |

Output #10**Output Measure**

Number of Technical Reports

| Year | Target | Actual |
|-------------|---------------|---------------|
| 2007 | 3 | 10 |

Output #11**Output Measure**

Number of Extension Bulletins and Factsheets

| Year | Target | Actual |
|-------------|---------------|---------------|
| 2007 | 4 | 21 |

Output #12**Output Measure**

Number of Invited Presentations

| Year | Target | Actual |
|-------------|---------------|---------------|
| 2007 | 30 | 80 |

Output #13**Output Measure**

Number of Volunteered Presentations

| Year | Target | Actual |
|-------------|---------------|---------------|
| 2007 | 52 | 38 |

Output #14**Output Measure**

Number of Websites Established

| Year | Target | Actual |
|-------------|---------------|---------------|
| 2007 | 0 | 3 |

Output #15**Output Measure**

Number of Workshops Conducted

| Year | Target | Actual |
|-------------|---------------|---------------|
| 2007 | 5 | 34 |

V(G). State Defined Outcomes

| O No. | Outcome Name |
|-------|---|
| 1 | Increased awareness of the need to produce and utilize diets for all animal species that prevent unnecessary overfeeding of nutrients, especially nitrogen and phosphorus. |
| 2 | Education programs for the livestock and equine industries on equine nutrition and health practices, fiscal management, and beneficial use of the by-products of animal agriculture. |
| 3 | Establishment of an Avian Biosciences Center to conduct research, outreach, and K-12 educational programs on avian disease and production, food safety and technology, and the environmental compatibility of poultry production. |
| 4 | Increased number of poultry producers participating in surveillance, diagnostic testing, and vaccination programs for infectious avian diseases. Implementation of statewide plans to address major outbreaks of avian diseases. |
| 5 | Sustainable production practices for the dairy and beef industries that link forage and pasture production practices with animal health, performance, and meat and milk quality. |
| 6 | Improved economic competitiveness of the poultry and allied industries relative to other poultry producing regions in the U.S. and global competitors. |
| 7 | Increased number of poultry and dairy farmers using feed management practices that increase nutrient utilization, and feeding diets with lower concentrations of nitrogen and phosphorus. |
| 8 | Increased use of air quality best management practices that prevent odor, ammonia, and particulate emissions from poultry farms. |
| 9 | Increased number of diagnostic laboratories capable of using advances in avian genomics and state-of-the-art instrumentation to rapidly diagnose infectious diseases |
| 10 | Disease Prevention and Control: basic and applied research on mechanisms of poultry disease processes will translate into useable tools and strategies for improved disease surveillance, diagnosis, prevention, and control in broiler chicken production. Knowledge will be extended to commercial poultry and allied industries. |
| 11 | Genomics: increased understanding of gene function and expression and targeting of candidate genes affecting economically important traits in broiler chicken growth and production, disease resistance and immunity. Improvements in classical poultry breeding programs by use of marker assisted selection (MAS) and technology transfer. |
| 12 | Nutrition: research will lead to improved understanding of nutritional requirements for poultry and ruminants and adoption of recommended dietary strategies by practicing nutritionists and producers. Specifically, the results of poultry directed research will aim to minimize nutrient contamination of the environment from manure. Results from ruminant based research will lead to improved management of forages to maximize nutritional value, safe use, and minimize spoilage during storage. Research will also result in enhanced collaboration between University and industry partners. Findings will help to increase the efficiency of livestock production and new technology will be transferred to stakeholders. |
| 13 | Environmental Compatibility: poultry industry and commercial nutritionists will adopt and implement recommendations for broiler diet modification – including such practices as reducing diet nutrient concentrations to more closely meet the animal's requirements, utilization of phytase and other diet additives shown to improve nutrient utilization, and incorporation of low phytate grains – in feed formulations to reduce nutrient emissions to the environment. Reduced emissions will be measured by reduced nutrient concentrations in manures and litters, reduced application of nutrients to cropland and other soils, and reduced movement of nutrients from soils to ground and surface waters. Other environmental issues related to animal agriculture include the fate and transport of trace elements (arsenic, copper, zinc) found in poultry manures; widespread national concerns about air quality associated with ammonia, hydrogen sulfide, volatile organic compounds, and fine particulates originating from poultry houses; environmental and human health impacts of endocrine disruptors (estrogen, testosterone) found in manures; the fate and transport of viruses and other pathogens during disease outbreaks and subsequent disposal of poultry mortality, and the environmental and human health effects of antibiotics used in poultry production. |
| 14 | Equine science: contribute to improved equine care, disease prevention, responsible land management, barn safety, and effective business practices using proven outreach channels for the dissemination of peer reviewed knowledge and practices to equine professionals and enthusiasts. |
| 15 | Improved statewide strategies to prevent the spread of avian diseases and dispose of the mortality resulting from disease outbreaks. |

Outcome #1

1. Outcome Measures

Not reporting on this Outcome for this Annual Report

2. Associated Institution Types

3a. Outcome Type:

3b. Quantitative Outcome

| Year | Quantitative Target | Actual |
|------|---------------------|--------|
|------|---------------------|--------|

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

| KA Code | Knowledge Area |
|---------|----------------|
|---------|----------------|

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

Brief Explanation

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

1. Evaluation Studies Planned

Retrospective (post program)

During (during program)

Comparison between locales where the program operates and sites without program intervention

Evaluation Results

Key Items of Evaluation