

V(A). Planned Program (Summary)

Program # 10

1. Name of the Planned Program

Agricultural, Natural Resources, and Biological Engineering

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
401	Structures, Facilities, and General Purpose Farm Supplies				
402	Engineering Systems and Equipment				
403	Waste Disposal, Recycling, and Reuse				
404	Instrumentation and Control Systems				
405	Drainage and Irrigation Systems and Facilities				
	Total				

V(C). Planned Program (Inputs)

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

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Plan	5.9	0.0	15.5	0.0
Actual	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 Matching	1890 Matching	1862 Matching	1890 Matching
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 All Other	1890 All Other	1862 All Other	1890 All Other
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

V(D). Planned Program (Activity)

1. Brief description of the Activity

NO LONGER REPORTING ON THIS PLANNED PROGRAM

•Energy workshops and educational programs will be conducted throughout the state that involve key research scientists ranging from chemical engineers to logistics experts to economists. •A team of scientists including experts in animal nutrition, soil fertility, and farm management will conduct research and work with farmers to reduce water pollution, especially phosphorus •Food safety experts, along with microbiologists and nanotechnology experts, will develop sensors that will enhance food safety and risks from bioterrorism •Livestock facilities will be designed and analyzed to determine optimal nutrient management systems from an environmental and cropping systems perspective •Electro-hydraulic sensors and off-road machine operation systems will be designed and tested. •Scientists will monitor air quality of selected concentrated livestock systems on farms in multiple states to facilitate the determination of science-based EPA regulatory standards.

2. Brief description of the target audience

NO LONGER REPORTING ON THIS PLANNED PROGRAM

•Indiana livestock producers, especially those managing confined feeding operations •Crop farmers interested in applying animal wastes to enhance yields and reduce water pollution •Stakeholders in the bio-energy industry including Country Mark Cooperative, Indiana State Department of Agriculture, Indiana Soybean Alliance, Indiana Corn Growers, grain processors such as ADM, Cargill, and Tate & Lyle •Officials with federal (EPA) and state (IDEM) regulatory agencies •Off-road farm and industrial equipment manufacturers will be contacted and offered patent licensing opportunities as sensors for machine operation and maintenance are developed and tested.

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	5000	40000	2500	5000
Actual	0	0	0	0

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

Patent Applications Submitted

Year: 2010
 Plan: 3
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Plan	5	20	

Actual	0	0	0
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V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of educational workshops and seminars on nutrient management and air quality
Not reporting on this Output for this Annual Report

Output #2

Output Measure

- Number of research-based educational programs on bio-fuel production, distribution, and policy
Not reporting on this Output for this Annual Report

Output #3

Output Measure

- Number of websites and publications developed
Not reporting on this Output for this Annual Report

Output #4

Output Measure

- Number of patents applied for and licensing arrangements entered into with off-road farm and industrial equipment manufacturers
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 producers who increase awareness and knowledge concerning science-based methods to manage animal wastes so as to minimize potential soil and air pollution
2	Number of environmental pollution incidents caused by inappropriate application of animal wastes to soils or emission of animal odors from production facilities
3	Number of farmers who enhance soil fertility and reduce soil pollution through less reliance on commercial fertilizer and increased reliance on properly applied animal waste
4	Number of energy producers, farmers, and consumers who increase their knowledge of the technical and economic implications of increased use of Indiana produced corn and soybeans in bio-fuels
5	Number of technologies developed and disseminated that will increase the efficiency of bio-fuel production
6	Number of bushels of Indiana produced corn and soybeans used in bio-fuels
7	Number of farmers who increase their knowledge of livestock building designs that are energy efficient as well as more animal welfare friendly
8	Number of farmers who optimize livestock welfare through the design of efficient and animal sensitive farm structures.
9	Number of farmers who increase total livestock production and profitability through the adoption of building designs that are energy efficient as well as more animal welfare friendly
10	Number of livestock facilities designed to minimize odor emissions and potential air pollution
11	Number of turfgrass specialists with increased knowledge of nutrient and soil management

Outcome #1

1. Outcome Measures

Number of producers who increase awareness and knowledge concerning science-based methods to manage animal wastes so as to minimize potential soil and air pollution

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Number of environmental pollution incidents caused by inappropriate application of animal wastes to soils or emission of animal odors from production facilities

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Number of farmers who enhance soil fertility and reduce soil pollution through less reliance on commercial fertilizer and increased reliance on properly applied animal waste

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Number of energy producers, farmers, and consumers who increase their knowledge of the technical and economic implications of increased use of Indiana produced corn and soybeans in bio-fuels

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Number of technologies developed and disseminated that will increase the efficiency of bio-fuel production

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Number of bushels of Indiana produced corn and soybeans used in bio-fuels

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

Number of farmers who increase their knowledge of livestock building designs that are energy efficient as well as more animal welfare friendly

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

Number of farmers who optimize livestock welfare through the design of efficient and animal sensitive farm structures.

Not Reporting on this Outcome Measure

Outcome #9

1. Outcome Measures

Number of farmers who increase total livestock production and profitability through the adoption of building designs that are energy efficient as well as more animal welfare friendly

Not Reporting on this Outcome Measure

Outcome #10

1. Outcome Measures

Number of livestock facilities designed to minimize odor emissions and potential air pollution

Not Reporting on this Outcome Measure

Outcome #11

1. Outcome Measures

Number of turfgrass specialists with increased knowledge of nutrient and soil management

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

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)
- Time series (multiple points before and after program)
- Case Study
- Comparisons between program participants (individuals, group, organizations) and non-participants
- Comparison between locales where the program operates and sites without program intervention
- Other (hits and use of web site)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}