V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Climate Change

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	10%		10%	
112	Watershed Protection and Management	5%		5%	
123	Management and Sustainability of Forest Resources	10%		10%	
132	Weather and Climate	10%		10%	
135	Aquatic and Terrestrial Wildlife	10%		10%	
201	Plant Genome, Genetics, and Genetic Mechanisms	10%		10%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	10%		10%	
212	Pathogens and Nematodes Affecting Plants	5%		5%	
213	Weeds Affecting Plants	5%		5%	
306	Environmental Stress in Animals	5%		5%	
605	Natural Resource and Environmental Economics	15%		15%	
610	Domestic Policy Analysis	5%		5%	
	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
Actual	5.6	0.0	14.0	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**
582620	0	221780	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
995438	0	1566361	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
176587	0	382887	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Conducted meetings, conferences, workshops, seminars
- Published research articles and Extension publication
- Established web sites
- Organized field days
- Worked with mass media
- Partnered with other interested organizations and associations

2. Brief description of the target audience

- Producers
- Consumers
- Youth
- Elected officials and policy makers
- Professionals

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	{NO DATA	{NO DATA	{NO DATA	{NO DATA
Actual	22244	0	2792	0

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

Patent Applications Submitted

Year: 2010

Plan:

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Actual	10	10	11

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of educational workshops

Year	Target	Actual
2010	{No Data Entered}	2

Output #2

Output Measure

- Number of Extesnion publications written, new or revised

Year	Target	Actual
2010	{No Data Entered}	10

Output #3

Output Measure

- Number of research publications

Year	Target	Actual
2010	{No Data Entered}	10

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of AFO's able to comply with federal regulatory requirements
2	Number of management practices that can have a postive impact on water quality
3	Number of new weed management strategies in organic agriculture

Outcome #1

1. Outcome Measures

Number of AFO's able to comply with federal regulatory requirements

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Several Federal regulations require animal feeding operations to report emissions when a threshold of daily emissions is reached. The evaluation of a given farm to exceed this threshold is based on a small number of short-term gas emissions studies which may not be the best possible baseline.

What has been done
Ten AFO lagoons and basins were measured over the course of 2.5 years to determine the emisssions variability over the day and seasons to provide baseline emissions measurements for the USEPA to develop estimating methods for AFO's.

Results
These results are being incorporated into the measurement methods being developed by USEPA to more accurately estimate AFO emissions and comply with federal regulatory requirements. This approach could achieve compliance with environmental laws much faster than any other enforcement mechanism.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
610	Domestic Policy Analysis

Outcome #2

1. Outcome Measures

Number of management practices that can have a postive impact on water quality

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Land use cover is changing at a rapid pace due to increased urbanization and demand for biofuel production. There is a need to evaluate various management practices that can be implemented to minimize unintended consequences to hydrology and water quality.

What has been done
1. Watershed models (Soil and Water Assessment Tool; GLEAMS-NAPRA) have been developed and applied in various Indiana and Arkansas watersheds.
2. An assessment of Conservation Effectiveness Assessment Programs (CEAP) have been made for one of the USDA-NIFA funded CEAP watersheds.
3. Decision support tools are developed to evaluate effects of land management decisions on hydrology and water quality in agricultural and mixed land use watershed.

Results
Project results have increased knowledge of conservation practices and their impacts on water quality. Decision support tools are now being used to develop total maximum daily loads (TMDLs).

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
112	Watershed Protection and Management
610	Domestic Policy Analysis

Outcome #3

1. Outcome Measures

Number of new weed management strategies in organic agriculture

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
There is a critical threshold period for controlling weeds to protect yields;once the critical threshold has passed, little weeding is conducted; weeds re-emerge and produce prolific seed banks for the subsequent seasons. Closed canopy strategies are ideal for organic crops for supressing germination. Most vegetable crops are planted in widely spaced rows where closed cover canopies are nonexistent. Subsequent prolific weed emergence requires new organic management strategies.

What has been done
Pioneering research is being conducted using intercropping of live cover crops such as buckwheat and clover between crop rows in tomatoes and bell peppers examining the effect of intercrops on weed seedbanks, crop yields. When legumes are intercropped, they also examine soil fertility.

Results
Intercropping plus mowing provided good suppression of weeds that emerge late in season and reduced the seed banks for the following season. The next phase is to look at other potential intercropping species such as red and white clover that provide additional nitrogen into the soil.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
213	Weeds Affecting Plants

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Public Policy changes
- Competing Programmatic Challenges

Brief Explanation

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

1. Evaluation Studies Planned

- After Only (post program)
- Before-After (before and after program)
- During (during program)

Evaluation Results

Key Items of Evaluation