2013 Purdue University Combined Research and Extension Plan of Work

Status: Accepted

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I. Plan Overview

1. Brief Summary about Plan Of Work

The planned programs for Indiana are :

* Global food security and hunger
* Climate change
* Sustainable energy
* Childhood obesity
* Food Safety
* Natural resources and environment
* Human, family, and community health and well-being

Planned programs were originally determined through input from stakeholder interviews and community sessions conducted throughout Indiana. Nearly 4600 people participated in the interviews and community sessions. Under-served and under-represented populations were included in the interviews and community sessions. Approximately 10% of the 1700 interview participants were from underserved or under-represented populations. Interviews with stakeholders representing state level organizations and agencies were also conducted to assess the needs of the state. Stakeholders recognized Purdue as a trusted source of information for families, farms, businesses, and communities.. They said that Purdue research and extension should continue to focus efforts to strengthen families, farms, businesses, and communities. As a result of input from stakeholders and faculty, we have focused our research and extension programs and in 2011 we developed strategic themes to describe what we do . Through continuing review provided by stakeholders,the Purdue research and extension themes form the basis for our work for 2012-2016.

Many of the planned programs address issues identified in the State of Indiana's and Purdue University's strategic plans. According to the Indiana Department of Agriculture, Indiana is in a unique position to be a global leader in several food and agriculture areas. This conclusion is based on the state's productive land base, central location to the U.S. population, innovative research, and manufacturing expertise. Agriculture continues to have a significant role in Indiana's economy and represents an area for economic growth and development. In Indiana the food and agricultural sector generates directly or indirectly about twenty percent of the jobs and income in the state. With Indiana's diverse agricultural structure, Purdue research and extension can play a role in helping people become more productive and prosperous. Environmental safety and increases in bio-fuel production are also high priority policy issues in Indiana. Several areas targeted for growth by the State Department of Agriculture are included among the planned programs identified in this plan of work.

Indiana's 2006 strategic plan for economic development stressed the need for a skilled constantly improving workforce, a culture of entrepreneurship, a pro-investment business climate, and strategic leadership development. Purdue's engagement strategic plan focuses on advancing Indiana's economic prosperity, enhancing educational and learning opportunities, and improving the quality of life of Hoosiers. Planned programs for Purdue research and extension include strategies for each of these factors. Five areas within the economic community development planned program focus on entrepreneurship, workforce development, public issues, education, community planning and visioning, and leadership and civic engagement. In addition, several other planned programs include efforts related to economic

prosperity and improving the quality of life.

Stakeholders noted that families face many challenges including financial concerns, health issues, and the need to build positive relationships inside and outside the family. These types of challenges can impede healthy family functioning and decision making. Research and extension programs addressing topics such as effective parenting, caring for older adults, building self-esteem, managing stress, basic money management, and planning for the future will assist families in dealing with these challenges. Stakeholders encouraged Purdue to continue to work with family members across generations and in collaboration with others in the community, including schools and local and state agencies, to strengthen Hoosier families.

Developing Hoosier youth was a key theme stressed by stakeholders. The 4-H Youth Development program provides opportunities, relationships, and support for youth to help them acquire the life skills necessary to meet the challenges of adolescence and adulthood. Youth development programs are aligned with specific mission areas including science, engineering and technology, healthy lifestyles, and citizenship education. With 20,000 volunteers involved in the Indiana 4-H youth development program, volunteer development opportunities are another essential part of this planned program. These volunteers are a vital component to positive youth development because of the on-going relationships that are established.

Improving the health of Hoosiers is another of the state's priorities. Indiana is near the top of the rankings of negative health issues, including obesity, smoking rate and the afflictions that accompany these: diabetes, high blood pressure, cancer, heart disease, and stroke. Purdue research and extension programs focus on the impact of dietary intake and exercise on human health, use and beneficial effects of phytochemicals, cereal processing and nutrition, calcium and bone metabolism, and impact of dietary intake and bone health. Educational programs are provided for the food and health care industries and consumers.

Consumers expect a wholesome and safe food supply yet outbreaks of foodborne illness indicate a need for ongoing research and education in this area. Purdue food safety programs focus efforts toward rapid detection of foodborne pathogens, food processing treatments to reduce pathogens, control of molds and mycotoxins, pest control, and the impact of human intestinal microflora and human disease. Effective educational programs translate the best practices for farmers, retailers, and consumers to help them adopt food-handling procedures that more effectively minimize food-safety risks.

One of the goals of the planned programs is to integrate research, outreach, and educational efforts to effectively address the issues identified. For some issues further integration of research and extension efforts and building more interdisciplinary teams is needed while for other issues those teams are already established. Another key strategy will be to continue to partner with industry, regulatory groups, and other stakeholders to increase the potential impact of the research and extension efforts.

Since one of the objectives of this plan is to provide relevant research and extension programs, continual review of progress toward ultimate goals and outcomes will continue to be an essential part of the process. Teams working on planned programs will provide continual review of progress toward goals and outcomes, including assessing whether additional topics should be added to a specific planned program because of changing needs. County Extension Boards continue to review planned programs on an annual basis to ensure that programs are continuing to address critical needs. PCARET, the Purdue Council on Agricultural Research, Extension and Teaching, meets semi-annually with county, district, and state administrators to discuss needs and how extension and research are addressing or can address them. An annual conference also provides an opportunity for the state PCARET to review progress on planned programs and provide input on expectations of future needs and programs**.** In addition, specific research projects are peer reviewed before they are undertaken.

For 2012 and beyond, we are also increasing our efforts on the priority themes identified by NIFA. These five strategic areas will encompass ongoing research and extension efforts as well as provide opportunities to address critical needs in new ways. Adding planned programs in these strategic areas will help us highlight our work toward Purdue's strategic plan goal of meeting global challenges by enhancing Purdue's presence and impact in addressing grand challenges of humanity. Additionally, in 2010 Purdue Extension embarked on a new strategic plan to address emerging, high priority issues to enhance its

relevance to stakeholders. The initiatives identified through this effort correspond well to the planned programs included in this plan of work.

In its own way, each planned program contributes to Indiana's economic prosperity, enhances educational opportunities, or improves the quality of life of Hoosiers. The benefits of these planned programs extend beyond our Indiana borders to the rest of our nation and our world. These planned programs are even more relevant for 2012 to 2016 than they were when they were first identified.

Estimated Number of Professional FTEs/SYs total in the State.

Year	Extension		Research	
	1862	1890	1862	1890
2013	77.5	0.0	263.1	0.0
2014	77.5	0.0	263.1	0.0
2015	77.5	0.0	263.1	0.0
2016	77.5	0.0	263.1	0.0
2017	77.5	0.0	263.1	0.0

II. Merit Review Process

1. The Merit Review Process that will be Employed during the 5-Year POW Cycle

- Internal University Panel
- External Non-University Panel
- Combined External and Internal University External Non-University Panel

2. Brief Explanation

An internal panel will be appointed by the Director of Extension and Director of Research to review planned programs for relevancy in addressing critical needs. Teams working on various planned programs will provide continual review of progress toward goals and outcomes, including assessing whether additional topics should be added to a specific planned program because of changing needs. County Extension Boards will continue to review planned programs on an annual basis to ensure that programs are continuing to address critical needs. PCARET, the Purdue Council on Agricultural Research, Extension and Teaching, meets semi-annually with county, district, and state administrators to discuss needs and how extension and research are addressing or can address needs. An annual conference also provides an opportunity for the state PCARET to review progress on planned programs and provide input on expectations of future needs and programs.

In addition, Hatch research projects are subject to peer review prior to submission to USDA-NIFA. Review panels consist of at least three scientists that include faculty from at least two disciplines. Faculty members are strongly encouraged to collaborate across departments,

schools, and universities. Multi-state projects are reviewed by regional department head associations and the Multi-State Review Committee composed of agricultural experiment station directors. Reviewers look for relevance, feasibility, building on previous research, approach and methods, scientific, and technical merit.

Academic departments are reviewed every 5 years by an external NIFA team. The research, extension, and teaching components of each department are examined during these reviews.These reviews provide an additional opportunity for merit review of research and extension programming.

III. Evaluation of Multis & Joint Activities

1. How will the planned programs address the critical issues of strategic importance, including those identified by the stakeholders?

During 2003, Purdue Extension educators and Extension Board members interviewed more than 2300 stakeholders to determine the programs and directions that Purdue Extension should pursue. In addition, interviews were conducted with key stakeholders representing statewide organizations and agencies. In 2005, additional interviews and community sessions were held throughout Indiana to validate the issues identified during the 2003 interviews. A key focus in the 2005 interviews and community sessions was reaching out to under-represented and underserved populations for their input. Stakeholders identified issues that they felt were critical needs in the state. Their input was essential in determining the planned programs and priorities. Strong families, businesses, and communities were of critical interest to the stakeholders so planned programs have been included to address those critical areas through research and educational programs. Ongoing input from stakeholders reinforces that the issues identified in 2003 and 2005 continue to be critical issues in Indiana. Stakeholder feedback received during the winter 2010 work on the Extension strategic plan also validated these issues as critical issues in Indiana.

Ongoing input from stakeholders is valued by Purdue Extension and Research programs. Annual review of programs occurs through Extension Boards and the Purdue Council on Agricultural Research, Extension, and Teaching (P-CARET) which provide input on critical issues facing the state. Purdue College of Agriculture and departmental advisory groups meet semi-annually and also provide input on critical issues.

2. How will the planned programs address the needs of under-served and under-represented populations of the State(s)?

Underserved and under-represented populations were included in the 2003 and 2005 stakeholder input interviews and community sessions. Their input was valuable in determining the planned programs. As a result, the needs of these populations will be addressed through the research and educational programs related to youth, families, farms, businesses, and communities.

As new initiatives and planned programs have been considered for the plan of work additional stakeholder input has shown that these planned programs remain relevant to underserved and under-represented populations. Continued efforts to identify and reach out to underserved populations is a high priority of our programming for the future.

3. How will the planned programs describe the expected outcomes and impacts?

Planned programs were developed by following the logic model to identify the situation,

priorities, inputs, outputs, outcomes, assumptions, and external factors. Each planned program has specific outputs, outcomes, and impacts that relate to the situations and priorities. Target measures will be documented.

4. How will the planned programs result in improved program effectiveness and/or

Planned programs will enable Purdue University to focus time and energy on issues that are important to stakeholders. This process of determining planned programs helps us focus our efforts on the most critical needs identified by the state and the nation. As a result of preparing an integrated research and extension plan, we better understand where we are integrating research and extension efforts and where we need to strengthen our integration of efforts. Identifying planned programs in this way requires us to assess progress toward the identified needs and enhances our ability to explain that progress to stakeholders.

IV. Stakeholder Input

1. Actions taken to seek stakeholder input that encourages their participation

- Use of media to announce public meetings and listening sessions
- Targeted invitation to traditional stakeholder groups
- Targeted invitation to non-traditional stakeholder groups
- Targeted invitation to traditional stakeholder individuals
- Targeted invitation to non-traditional stakeholder individuals
- Targeted invitation to selected individuals from general public

Brief explanation.

2(A). A brief statement of the process that will be used by the recipient institution to identify individuals and groups stakeholders and to collect input from them

1. Method to identify individuals and groups

- Use Advisory Committees
- Use Internal Focus Groups
- Open Listening Sessions
- Needs Assessments

Brief explanation.

2(B). A brief statement of the process that will be used by the recipient institution to identify individuals and groups who are stakeholders and to collect input from them

1. Methods for collecting Stakeholder Input

- Meeting with traditional Stakeholder groups
- Survey of traditional Stakeholder groups
- Meeting with traditional Stakeholder individuals
- Survey of traditional Stakeholder individuals
- Meeting with the general public (open meeting advertised to all)
- Meeting specifically with non-traditional groups
- Survey specifically with non-traditional groups
- Meeting specifically with non-traditional individuals
- Survey specifically with non-traditional individuals
- Meeting with invited selected individuals from the general public

Brief explanation.

3. A statement of how the input will be considered

- To Identify Emerging Issues
- Redirect Extension Programs
- In the Action Plans
- To Set Priorities

Brief explanation.

V. Planned Program Table of Content

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Global Food Security and Hunger

2. Brief summary about Planned Program

For the 2013-2017 reporting cycle, we have combined several planned programs under Global Food Security and Hunger. The two planned program areas completely folded into this broader program are Animals and Their Systems and Food and Non-Food Products. By combining these cross-cutting themes into one Planned Program, we are better positioned to distinguish and track the impact of our research and extension programs on our stakeholder approved strategic themes.

People building a sustainable and secure food production system. Purdue Agriculture plays a critical role in assuring a safe, nutritious, and sustainable food supply.Our work spans from the farm gate to the dinner plate. We conduct research that increases the quality and productivity of animals and plants, and extend that research by developing methods that further process food, minimize spoilage, and enhance food safety. Our agricultural engineers are focused on developing in-field machinery that can be used worldwide to improve food production, harvesting and storage.

People utilizing molecular approaches to expand the frontiers of agriculture and life sciences. We tackle the most basic problems. We use molecular tools to study wildlife adaptation, disease resistance, abiotic stress in plants, and the epigenetic basis of disease. We examine the arrangement of DNA and genetic selection of traits and track animal and plant populations. We are developing long-term solutions that improve agricultural production, preserve diverse landscapes, and positively affect human health.

People developing a robust bioeconomy to feed and power the world. Renewable resources are critical to sustaining our planet. We are discovering chemical means and developing naturally produced enzymes to digest cell walls in plants to create biofuelsand other bio-products. We use these results to predict the impact of renewable energy sources and bio-products as society transitions to a bio-based economy.

People enhancing food and health. Food safety and value-added processing are essential for our health. We have developed new technologies such as nanoparticles to enhance anti-microbial activity and aseptic packaging, and we have designed methods to improve bacterial detection. Wecontinue to use our expertise in carbohydrates and other nutrients to develop new value-added products. Addressing hunger and malnutrition are on the top of the priority list as our scientists work to develop functional foods that are economically viable in the hunt to address these issues.

People strengthening ecological and environmental integrity in agricultural landscapes. We study land use, crop and animal production, and pest management and push the envelope on using automation to measure such phenomena as carbon and nitrogen fluxes to preserve our diverse landscape and sustain the environment. We address issues of climate change and global sustainability, enabling us to take an ecosystems approach to answer fundamental questions affecting air, land, and water.

People facilitating informed decision making to improve economic and social well-being. Our research affects people and their communities. We help farmers and industry develop solutions to increase economic vitality. We track how youth and adults learn and then use that research to help build capacity within communities. We evaluate new technologies that empower individuals to make informed decisions. In the US, we educate and prepare communities, individuals and families for potential weather-related disasters and are on the front line of recovery efforts when disaster strikes. This knowledge is being adapted for outreach activities in other countries as well.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : No

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	4%		4%	
201	Plant Genome, Genetics, and Genetic Mechanisms	4%		4%	
205	Plant Management Systems	10%		10%	
206	Basic Plant Biology	4%		4%	
302	Nutrient Utilization in Animals	4%		4%	
304	Animal Genome	4%		4%	
305	Animal Physiological Processes	4%		4%	
307	Animal Management Systems	10%		10%	
315	Animal Welfare/Well-Being and Protection	4%		4%	
402	Engineering Systems and Equipment	10%		10%	
501	New and Improved Food Processing Technologies	2%		2%	
502	New and Improved Food Products	2%		2%	
512	Quality Maintenance in Storing and Marketing Non-Food Products	2%		2%	
601	Economics of Agricultural Production and Farm Management	10%		10%	
604	Marketing and Distribution Practices	3%		3%	
606	International Trade and Development	4%		4%	
608	Community Resource Planning and Development	10%		10%	
801	Individual and Family Resource Management	3%		3%	
802	Human Development and Family Well-Being	3%		3%	
805	Community Institutions, Health, and Social Services	3%		3%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

To improve global food security and reduce hunger, researchers and extension staff are focused on understanding the complex web of relationships between livestock & crop management, hunger & malnutrition, economics & community development, the role of non-food products, and the development & packaging of food products.

The global and domestic agricultural economy is facing unprecedented technological, policy, and social/cultural changes. This can have substantial socioeconomic and environmental impacts on Indiana since the food and agricultural sector generates directly or indirectly about 20% of the jobs and income in the state. In addition, the demand for food from a rapidly growing global population will challenge U.S. and international food production capacity.

Row crop producers are facing significant challenges resulting from higher fixed and variable input costs, escalating demands for environmental management and increasing governmental regulation. These producers continually strive to become more efficient and practice more effective environmental management. Research and extension programs assist farmers to produce crops more efficiently, handle pests as well as crop diseases and help producers who are interested develop alternative marketing outlets.

Horticultural crop production is a growing part of the rural economy. Horticultural producers are also looking for greater efficiencies and new niche markets. Additionally, non-traditional producers, such as small land owners, organic producers, local planning and zoning committees, and others are contributing to the local food supply. Priorities: livestock and the environment, productivity & health, animal welfare; crops and the environment, productivity and biotic/abiotic stress.

Livestock producers are working to enhance efficiency, marketing and environmental management. In addition, production practices that influence animal well-being are becoming more important to producers and decision-makers. Priorities: livestock environment, livestock productivity and health, animal well-being, biotic/abiotic stress.

The ability to reduce hunger and malnutrition locally and globally requires researchers to develop products that are adapted to the environment, nutrient rich, easily transportable, and cost-effective. Systems for harvesting and storage are critical, especially where fuel costs are high or access to equipment is unreliable. Food packaging to maintain taste, reduce spoilage and waste, and are environmentally friendly are other critical parts of this network. Priorities: product and supply chain development.

Economic and community development involves the development of new food distribution channels, healthy communities and the kinds of organizational development necessary to create a holistic community approach to dealing with hunger and human health. Priority areas: food & production systems, logistics & systems, marketing and retail management, and business development.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

- Hunger and food security will continue to be high priority research areas for at least 5 years
- Economic development locally, nationally and globally will expand as a result of technology advancements and the need for farmers, government officials and the public to understand how to use these effectively
- Continued research will provide farmers with more options to utilize to enhance livestock production and crop management that could improve quality, quantity and conditions.
- Local food production initiatives including organic and backyard farming will continue to grow as consumers continue to want more choice in their food supply
- Food packaging, non-food equipment and logistics plays an important role in delivering quality food products that are safe

2. Ultimate goal(s) of this Program

- Improve livestock health, productivity, environment and welfare
- Improve crop health, productivity, environment, biotic/abiotic stress
- Impact key factors associated with economy and community development: food production sytems, marketing and retail management, logistics and systems, and business development
- Reduce hunger and malnutrition
- Improve non-food products and systems
- Provide effective and timely preparation, education and recovery training and information related to weather and other disasters

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2013	29.9	0.0	89.4	0.0
2014	29.9	0.0	89.4	0.0
2015	29.9	0.0	89.4	0.0
2016	29.9	0.0	89.4	0.0
2017	29.9	0.0	89.4	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Develop publications, workshops, consultations, seminars, certification programs, distance education

modules, field days, and other opportunities.
- Conduct research
- Collaborate with other agencies
- Coordinate meetings with important stakeholders (researchers, industry, organizations, farmers, regulatory, etc.)
- Increase number of participants in life-long learning programs.
- Foster leadership and economic development and facilitate strong partnerships and participation in state, regional, national, and international agencies, organizations, and groups.
- 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

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
● Education Class	● Public Service Announcement
● Workshop	● Newsletters
● Group Discussion	● TV Media Programs
● One-on-One Intervention	● Web sites other than eXtension
● Demonstrations	● Other 1 (Extension publications)
	● Other 2 (Distance learning)

3. Description of targeted audience

National and International:

- Livestock and crop producers
- Livestock and crop industry (entire value chain)
- Elected officials and decision makers
- Agencies
- Extension specialists
- Potential 3rd party partners (NGO's, educational institutions, etc.)
- Consumers

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☐ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Number of workshops conducted
- Number of Extension products (publications, web resources, apps, etc)
- Number of research publications
- Number of volunteers
- Number of workshop participants

☐ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	An impact on livestock resulting from new knowledge related to the environment, productivity, and/or health & welfare.
2	An impact on crops resulting from new knowledge related to the environment, productivity, and/or biotic/abiotic stress.
3	An economic and/or community impact resulting from new knowledge about food production systems, marketing & retail management, logistics & systems, and/or business development.
4	An impact on hunger and/or malnutrition resulting from new knowledge about food products, food quality, and/or food quantity.
5	An impact on non-food products resulting from new knowledge related to non-food products, and/or non-food systems.
6	An impact on disaster preparation, education, and/or recovery.

Outcome # 1

1. Outcome Target

An impact on livestock resulting from new knowledge related to the environment, productivity, and/or health & welfare.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 302 - Nutrient Utilization in Animals
- 304 - Animal Genome
- 305 - Animal Physiological Processes
- 307 - Animal Management Systems
- 315 - Animal Welfare/Well-Being and Protection
- 402 - Engineering Systems and Equipment
- 501 - New and Improved Food Processing Technologies

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 2

1. Outcome Target

An impact on crops resulting from new knowledge related to the environment, productivity, and/or biotic/abiotic stress.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 205 - Plant Management Systems
- 206 - Basic Plant Biology

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 3

1. Outcome Target

An economic and/or community impact resulting from new knowledge about food production systems, marketing & retail management, logistics & systems, and/or business development.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management
- 604 - Marketing and Distribution Practices
- 606 - International Trade and Development
- 608 - Community Resource Planning and Development
- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 805 - Community Institutions, Health, and Social Services

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 4

1. Outcome Target

An impact on hunger and/or malnutrition resulting from new knowledge about food products, food quality, and/or food quantity.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 205 - Plant Management Systems
- 302 - Nutrient Utilization in Animals
- 304 - Animal Genome
- 305 - Animal Physiological Processes
- 307 - Animal Management Systems
- 402 - Engineering Systems and Equipment
- 501 - New and Improved Food Processing Technologies
- 502 - New and Improved Food Products
- 512 - Quality Maintenance in Storing and Marketing Non-Food Products
- 604 - Marketing and Distribution Practices

- 606 - International Trade and Development
- 608 - Community Resource Planning and Development
- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 805 - Community Institutions, Health, and Social Services

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 5

1. Outcome Target

An impact on non-food products resulting from new knowledge related to non-food products, and/or non-food systems.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 402 - Engineering Systems and Equipment
- 501 - New and Improved Food Processing Technologies
- 512 - Quality Maintenance in Storing and Marketing Non-Food Products
- 604 - Marketing and Distribution Practices

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 6

1. Outcome Target

An impact on disaster preparation, education, and/or recovery.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development
- 805 - Community Institutions, Health, and Social Services

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect 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.)

Description

• Public perception of animal welfare will be hot topics for farmers and researchers to manage
• As animal and crop management intensifies, so will the ability of new diseases or other threats to develop and spread rapidly
• Economics is a major driver requiring farmers and researchers to be responsive to rapid and sometimes dramatic changes in economic viability of a product or system
• Climate change has the potential to impact all aspects of the food production system.
• Political situations will continue to make it challenging to deliver food and systems to those most people that are the most hungry

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

The planned programs identified for Indiana are based on input from stakeholders in the state through a variety of mechanisms including a series of formal stakeholder surveys. Stakeholder and participant input continue to be the driver for evaluating the impact and relevance of activities within our planned programs. We continue to monitor the effectiveness of our programs and develop actions to maintain, develop, or redirect our efforts by weighing feedback from several sources. Planned programs result in specific projects that address issues that are guided by stakeholder input. Specific projects are evaluated by appropriate methods including data analysis of pre- and post-participation knowledge and/or attitudes, profitability analyses, changes in behavior or conditions for individual participants and groups, or adoption rates of emerging technologies. Success of our overarching planned programs is subsequently determined using the sum of contributions from individual projects within each program area.

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Climate Change

2. Brief summary about Planned Program

Producers need to be able to plan for and make decisions to adapt to changing environments at the same time that they are trying to sustain economic viability. Research and Extension projects wil be needed to assist producers with these decisions. Policy makers will also need research based information.

3. Program existence : Intermediate (One to five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : No

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 (Situation and Scope)

1. Situation and priorities

Characterizing the potential impacts of global environmental changes is critical for informing decisions and preparing society for the future. Changes in the abundance of, and competition between plant species, composition of plant ecosystems, or changes in land use impact those ecological communities, the neighboring human communities, and the global community. Changing land use patterns in Indiana are representative of changing land use patterns across the globe. This research and Extension effort helps cities, communities, and producers plan for climate change.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

While Federal formula and state funding will be essential to carry-out the applied research and extension aspects of this mission oriented program, large competitive extramural grants will be critical as well.

2. Ultimate goal(s) of this Program

The ultimate goal is to help farmers adapt to the impact of climate change while continuing to be be profitable and efficient in the production of food and agricultural products, and natural development in a sustainable fashion.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2013	5.9	0.0	12.3	0.0
2014	5.9	0.0	12.3	0.0
2015	5.9	0.0	12.3	0.0
2016	5.9	0.0	12.3	0.0
2017	5.9	0.0	12.3	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Conduct meetings, conferences, workshops
- Publish research and extension publications
- Establish web sites
- Organize field days
- Consultations
- Work with mass media

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
● Workshop	● Public Service Announcement
● Group Discussion	● Newsletters
● One-on-One Intervention	● TV Media Programs
● Demonstrations	● Web sites other than eXtension

3. Description of targeted audience

- Producers
- Consumers
- Youth
- Elected officials and policy makers
- Professionals involved in weather and climate

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☐ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Number of Extension publications, written, new or revised
- Number of research publications
- Number of research projects
- Number of consultations
- Number of educational workshops or seminars conducted
- Number of volunteers

☐ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of observers monitoring weather and climate
2	Number of research-based studies, publications, and reports for policy organization members and legislators on climate change
3	Number of participants who increase their knowledge about climate change
4	Number of participants who reduce pesticide, nutrient and water inputs while maintaining high quality turf
5	Number of participants who increase knowledge of pesticides, nutrients and water inputs for maintaining high quality turf
6	Number of participants who increase knowledge of management practices that maximize environmental stewardship
7	Number of participants who adopt management practices that maximize environmental stewardhip
8	Number of participants who increase their knowledge of opportunities and challenges for agriculture under carbon dioxide emissions policies to address climate change

Outcome # 1

1. Outcome Target

Number of observers monitoring weather and climate

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 132 - Weather and Climate

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 2

1. Outcome Target

Number of research-based studies, publications, and reports for policy organization members and legislators on climate change

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 132 - Weather and Climate
- 610 - Domestic Policy Analysis

4. Associated Institute Type(s)

- 1862 Research

Outcome # 3

1. Outcome Target

Number of participants who increase their knowledge about climate change

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 132 - Weather and Climate
- 610 - Domestic Policy Analysis

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 4

1. Outcome Target

Number of participants who reduce pesticide, nutrient and water inputs while maintaining high quality turf

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 112 - Watershed Protection and Management
- 605 - Natural Resource and Environmental Economics

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 5

1. Outcome Target

Number of participants who increase knowledge of pesticides, nutrients and water inputs for maintaining high quality turf

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 605 - Natural Resource and Environmental Economics

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 6

1. Outcome Target

Number of participants who increase knowledge of management practices that maximize environmental stewardship

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 123 - Management and Sustainability of Forest Resources
- 605 - Natural Resource and Environmental Economics

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 7

1. Outcome Target

Number of participants who adopt management practices that maximize environmental stewardhip

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 112 - Watershed Protection and Management
- 605 - Natural Resource and Environmental Economics

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 8

1. Outcome Target

Number of participants who increase their knowledge of opportunities and challenges for agriculture under carbon dioxide emissions policies to address climate change

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 605 - Natural Resource and Environmental Economics
- 610 - Domestic Policy Analysis

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect 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.)

Description

{NO DATA ENTERED}

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

The planned programs identified for Indiana are based on input from stakeholders in the state through a variety of mechanisms including a series of formal stakeholder surveys. Stakeholder and participant input continue to be the driver for evaluating the impact and relevance of activities within our planned programs. We continue to monitor the effectiveness of our programs and develop actions to maintain, develop, or redirect our efforts by weighing feedback from several sources. Planned programs result in specific projects that address issues that are guided by stakeholder input. Specific projects are evaluated by appropriate methods including data analysis of pre- and post-participation knowledge and/or attitudes, profitability analyses, changes in behavior or conditions for individual participants and groups, or adoption rates of emerging technologies. Success of our overarching planned programs is subsequently determined using the sum of contributions from individual projects within each program area.

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Sustainable Energy

2. Brief summary about Planned Program

Development of economical and technically efficient processes to transform agronomic crops and biomass into liquid fuels is critical for our nation's future. Interdisciplinary teams of scientists are investigating the role of enzymes, chemical interactions, and processing techniques to enhance the conversion of biological materials into fuels for on and off-road vehicles, aircraft, and as heating oil. Enhanced environmental safety and increases in bio-fuels production are high priority policy issues in Indiana. Considerable expertise exists on the Purdue campus to develop alternative fuels from corn, soybeans, and starch. Systems will be designed that integrate agricultural and engineering approaches to optimize efficiency and yield and an economic analysis will be performed to identify appropriate applications

Biotechnology, growing demand for bio-fuels, and increased concentration of livestock production are increasing the opportunities and challenges for farm and business leaders as they seek to maximize profits in an environmentally and consumer sensitive fashion.

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. The knowledge learned from basic and applied research projects will be translated through outreach programs directed to our stakeholders using a wide variety of delivery mechanisms. The overarching goal would be to improve processing efficiency and product quality and to translate this knowledge into practice. Without question, more efforts must be placed on studying and developing novel bio-based systems for alternative energy. The expertise at Purdue is well suited to study bio-based fuels and other opportunities related to production of non-food materials.

3. Program existence : Intermediate (One to five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : No

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%	
131	Alternative Uses of Land	5%		5%	
201	Plant Genome, Genetics, and Genetic Mechanisms	10%		10%	
204	Plant Product Quality and Utility (Preharvest)	15%		15%	
213	Weeds Affecting Plants	5%		5%	
216	Integrated Pest Management Systems	5%		5%	
402	Engineering Systems and Equipment	10%		10%	
511	New and Improved Non-Food Products and Processes	10%		10%	
605	Natural Resource and Environmental Economics	20%		20%	
610	Domestic Policy Analysis	10%		10%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

There is rapidly growing public interest in bio-fuels and sustainable agricultural production systems. To achieve these societal goals, new technologies that embrace both the engineering and life sciences must come together. Purdue University faculty in several departments such as Agricultural and Biological Engineering, Agronomy, Food Science, Agricultural Economics, and others across the campus including several centers in Discovery Park will conduct collaborative research and extend research results to the community. Additional audiences will include groups of faculty and will include the patenting and licensing of discoveries through the Office of Technology Commercialization, to industry leaders, policymakers, and the general public through educational programs, publications, websites, media releases, etc.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

While Federal formula and state funding will be essential to carry-out the applied research and extension aspects of this program, large competitive extramural grants will be critical as well. University laboratories and infrastructure will be committed to efforts ranging from nanotechnology laboratories to more traditional bench science to pilot laboratory scale-ups to field and agronomic studies on the production, harvesting, storage, and transportation of bio-based crops.

2. Ultimate goal(s) of this Program

These research and outreach efforts should reduce U.S. foreign oil dependency, increase the profitability of agriculture, reduce environmental degradation, and create job and economic development opportunities throughout rural America.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2013	11.1	0.0	35.2	0.0
2014	11.1	0.0	35.2	0.0
2015	11.1	0.0	35.2	0.0
2016	11.1	0.0	35.2	0.0
2017	11.1	0.0	35.2	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Conduct meetings, conferences, workshops, seminars
- Conduct research projects
- Publish research and extension publications
- Publish newsletters
- Establish web sites
- Organize field days and demonstrations
- Consultations
- Work with mass media

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods

● Workshop	● Public Service Announcement
● Group Discussion	● Newsletters
● One-on-One Intervention	● TV Media Programs
● Demonstrations	● Web sites other than eXtension

3. Description of targeted audience

- Producers
- Consumers
- Youth
- Professionals related to energy
- Agribusiness
- Elected officials and public policy decision makers

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☐ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Number of Extension publications written, new or revised
- Number of research publications
- Number of research projects
- Number of consultations
- Number of educational workshops or seminars conducted
- Number of volunteers

☐ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of energy producers, farmers, and consumers who increase their knowledge of the technical and economic implications of various Indiana crops being used for biofuels
2	Number of technologies developed and disseminated that will increase the efficiency of bio-fuel production
3	Number of participants who increased their knowledge of policy issues related to sustainable energy
4	Number of research-based studies, publications, and reports for policy organization members and legislators on sustainable energy

Outcome # 1

1. Outcome Target

Number of energy producers, farmers, and consumers who increase their knowledge of the technical and economic implications of various Indiana crops being used for biofuels

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 605 - Natural Resource and Environmental Economics

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 2

1. Outcome Target

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

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 204 - Plant Product Quality and Utility (Preharvest)
- 402 - Engineering Systems and Equipment
- 511 - New and Improved Non-Food Products and Processes
- 605 - Natural Resource and Environmental Economics

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 3

1. Outcome Target

Number of participants who increased their knowledge of policy issues related to sustainable energy

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 610 - Domestic Policy Analysis

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 4

1. Outcome Target

Number of research-based studies, publications, and reports for policy organization members and legislators on sustainable energy

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 610 - Domestic Policy Analysis

4. Associated Institute Type(s)

- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect 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.)

Description

{NO DATA ENTERED}

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

The planned programs identified for Indiana are based on input from stakeholders in the state through a variety of mechanisms including a series of formal stakeholder surveys. Stakeholder and participant input continue to be the driver for evaluating the impact and relevance of activities within our planned programs. We continue to monitor the effectiveness of our programs and develop actions to maintain, develop, or redirect our efforts by weighing feedback from several sources. Planned programs result in specific projects that address issues that are guided by stakeholder input. Specific projects are evaluated by appropriate methods including data analysis of pre- and post-participation knowledge and/or attitudes, profitability analyses, changes in behavior or conditions for individual participants and groups, or adoption rates of emerging technologies. Success of our overarching planned programs is subsequently determined using the sum of contributions from individual projects within each program area.

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Food Safety

2. Brief summary about Planned Program

Purdue food safety programs focus efforts toward rapid detection of foodborne pathogens, grain processing and control of molds and mycotoxins, non-thermal and thermal food processing treatments to reduce or eliminate pathogens and spoilage organisms, pest control and integrated pest management programs, the impact of human intestinal microflora and human disease, and food safety educational programs for farmers, retailers, and consumers. Examples of food safety integrated multi-disciplinary centers and efforts include the Center for Food Safety Engineering, the Center for Urban and Industrial Pest Management, and the Extension Disaster Education Network. Engineering and life science faculty are collaboratively designing bio-sensors to more efficiently detect food pathogens and contaminants.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : No

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
201	Plant Genome, Genetics, and Genetic Mechanisms	5%		5%	
204	Plant Product Quality and Utility (Preharvest)	5%		5%	
212	Pathogens and Nematodes Affecting Plants	5%		5%	
216	Integrated Pest Management Systems	5%		5%	
308	Improved Animal Products (Before Harvest)	10%		10%	
501	New and Improved Food Processing Technologies	20%		20%	
503	Quality Maintenance in Storing and Marketing Food Products	10%		10%	
504	Home and Commercial Food Service	10%		10%	
607	Consumer Economics	5%		5%	
702	Requirements and Function of Nutrients and Other Food Components	5%		5%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	5%		5%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	15%		15%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

In the United State alone, over 76 million cases of foodborne illness are reported each year, leading to over 5,000 deaths and 325,000 hospitalizations, costing Americans billions of dollars. Of most concern are inherent foodborne pathogens such as Norwalk virus, Campylobacter, Salmonella, E. coli, and Listeria. Since 9/11/2001, a major emphasis for the food industry and regulatory agencies is the threat of intentionally contaminated food systems. Recent passage of the Food Safety Modernization Act has resulted in a need to increase and automate our ability to detect pathogens in food. Research efforts need to focus on detection and control, and educational efforts should translate this information to optimize food handling and detection practices. Our food systems are also exposed to a wide variety of quality degrading challenges from production agriculture practices (i.e. pest control), through transportation systems (i.e. temperature control), at processing (i.e. sanitation), in retail food establishments and at consumer homes (i.e. food handler contamination). Providing best practices and implementing effective educational programs leads to a higher quality and more profitable food system.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

A tremendous amount of food safety and food defense research and outreach programs have been identified nationwide for the next five years. We would expect funding opportunities to increase or remain constant during the five year period although programs may focus on a single pathogen. .To be more effective and more competitive, we recognize the need to further integrate research and extension efforts and to build multidisciplinary teams. Partnering with industry, regulatory agencies, and other stakeholders will also be a key strategic movement to increase our impact.

2. Ultimate goal(s) of this Program

The goal of this overall program is integrate our research, outreach, and educational efforts to enhance the safety and quality of the food supply and to improve human health through development of more nutritious and healthy foodstuffs.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2013	4.5	0.0	7.1	0.0
2014	4.5	0.0	7.1	0.0
2015	4.5	0.0	7.1	0.0
2016	4.5	0.0	7.1	0.0
2017	4.5	0.0	7.1	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Research-based programs will focus on conducting research experiments and programs emphasizing our key interest areas including detection and control of foodborne pathogens.

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A wide variety of programs will be delivered to our targeted audiences. Some programs will

include a complete development of curriculum, while others will involve the use of readily available programs used in other states and/or available for purchase through different organizations. Our output effort will include:

• partnering with important stakeholders,•development of workshop materials and curricula •conducting workshops •development of web-based and distance education materials •working with the media

We expect to increase our offerings through distance education and/or web-based materials. Most programs involve some type of collaboration or partnerships with our stakeholders, with industry, with consumers, or with regulatory agencies. Evaluation tools vary greatly depending on the intended audience and program type ranging from surveys, to pre-and post test, to national certification exams, and intensive follow up surveys to better assess knowledge gain.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
● Education Class ● Workshop ● Group Discussion ● One-on-One Intervention ● Demonstrations	● Public Service Announcement ● Newsletters ● TV Media Programs ● Web sites other than eXtension

3. Description of targeted audience

- Animal production personnel
- Plant production personnel
- Food manufacturing and processing plant personnel
- Food service and food retail workers
- Consumers
- Youth
- State and county health departments
- Federal regulatory officials
- State industry associations
- First Responders

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☐ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Number of food safety programs offered to consumers
- Number of programs offered to the food industry
- Number of research projects on food safety
- Number of research publications related to control of foodborne hazards
- Number of research publications related to detection of foodborne pathogens
- Number of research publications related to food defense and protection
- Number of Extension publications related to food safety
- Number of volunteers
- Number of consultations

☐ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of incidents (reduction is goal) of foodborne illness associated with unsafe food handling practices
2	Number of persons who increased their knowledge of cooking foods adequately
3	Number of persons who increased their knowledge of avoiding cross-contamination
4	Number of persons who increased their knowledge of keeping food at a safe temperature
5	Number of persons who increased their knowledge of storing foods properly
6	Number of persons who increased their knowledge of proper hand washing
7	Number of participants passing food handler certificate
8	Number of participants adopting best management practices related to food safety

Outcome # 1

1. Outcome Target

Number of incidents (reduction is goal) of foodborne illness associated with unsafe food handling practices

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 2

1. Outcome Target

Number of persons who increased their knowledge of cooking foods adequately

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 504 - Home and Commercial Food Service
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 3

1. Outcome Target

Number of persons who increased their knowledge of avoiding cross-contamination

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 504 - Home and Commercial Food Service
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 4

1. Outcome Target

Number of persons who increased their knowledge of keeping food at a safe temperature

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 504 - Home and Commercial Food Service
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 5

1. Outcome Target

Number of persons who increased their knowledge of storing foods properly

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 504 - Home and Commercial Food Service
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 6

1. Outcome Target

Number of persons who increased their knowledge of proper hand washing

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 7

1. Outcome Target

Number of participants passing food handler certificate

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 8

1. Outcome Target

Number of participants adopting best management practices related to food safety

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect 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.)
- Other (state and national priorities)

Description

{NO DATA ENTERED}

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Success and pass rate regulatory certification exams

The planned programs identified for Indiana are based on input from stakeholders in the state through a variety of mechanisms including a series of formal stakeholder surveys. Stakeholder and participant input continue to be the driver for evaluating the impact and relevance of activities within our planned programs. We continue to monitor the effectiveness of our programs and develop actions to maintain, develop, or redirect our efforts by weighing feedback from several sources. Planned programs result in specific projects that address issues that are guided by stakeholder input. Specific projects are evaluated by appropriate methods including data analysis of pre- and post-participation knowledge and/or attitudes, profitability analyses, changes in behavior or conditions for individual participants and groups, or adoption rates of emerging technologies. Success of our overarching planned programs is subsequently determined using the sum of contributions from individual projects within each program area.

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Childhood Obesity

2. Brief summary about Planned Program

Purdue human nutrition and human health programs focus on the impact of dietary intake and exercise on human health. Childhood obesity is a growing problem in our nation. Good nutrition is essential for healthy growth and development of children and adolescents. Families have a key role in influencing the eating habits of children and youth. Research and extension efforts include a wide variety of disciplines across Purdue's campus to address this issue.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : No

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
201	Plant Genome, Genetics, and Genetic Mechanisms	10%		10%	
502	New and Improved Food Products	10%		10%	
607	Consumer Economics	10%		10%	
610	Domestic Policy Analysis	5%		5%	
701	Nutrient Composition of Food	5%		5%	
702	Requirements and Function of Nutrients and Other Food Components	10%		10%	
703	Nutrition Education and Behavior	20%		20%	
806	Youth Development	30%		30%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

In 2007, 13.8% of Indiana's youth were overweight. Good nutrition is vital for good health. In youth, obesity is associated with increased risk for high blood pressure, Type 2 diabetes, and high cholesterol. Poor diet and a sedentary lifestyle contribute to poor health. Overweight youth also have an

increased risk of developing coronary heart disease, some cancers, and other health related problems. The goal of the Healthy People 2010 program is to reduce the percentage of overweight youth to 5%. Research and extension programs can help individuals and families make informed, science-based decisions about their nutrition and physical activity.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Human nutrition research and outreach programs have been identified nationwide for the next five years. We would expect funding opportunities to increase or remain constant during the five year period. To be more effective and more competitive, we recognize the need to further integrate research and extension efforts and to build multidisciplinary teams. Partnering with industry, regulatory agencies, and other stakeholders will also be a key strategic movement to increase our impact.

2. Ultimate goal(s) of this Program

The goal of this overall program is integrate our research, outreach, and educational efforts to improve human health through development of more nutritious and healthy foodstuffs and consumers who can make wise choices related to nutrition and health.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2013	1.2	0.0	11.0	0.0
2014	1.2	0.0	11.0	0.0
2015	1.2	0.0	11.0	0.0
2016	1.2	0.0	11.0	0.0
2017	1.2	0.0	11.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Conduct research
- Conduct educational workshops, seminars, short courses, conferences
- Partner with other agencies interested in childhood obesity
- Work with the media
- Develop curricula, publications, web sites, distance education materials

- Publish research and Extension articles

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
● Education Class	● Public Service Announcement
● Workshop	● Newsletters
● Group Discussion	● TV Media Programs
● One-on-One Intervention	● Web sites other than eXtension
● Demonstrations	

3. Description of targeted audience

- Parents
- Youth
- Children
- Consumers
- Day Care Providers
- Healthcare Providers
- State and county health departments
- Professional organizations

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☐ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Number of Extension publications written, new or revised
- Number of research publications
- Number of research projects
- Number of consultations
- Number of educational workshops or seminars conducted
- Number of volunteers

☐ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of persons who adopt one or more practices to improve food choices
2	Number of participants who have increased their knowledge of how to raise healthy eaters
3	Number of persons who increased their knowledge of selection and preparation of foods with reduced fat and/or calories
4	Number of persons who increased knowledge of USDA serving sizes
5	Number of participants consuming appropriate serving sizes
6	Number of participants demonstrating ability to choose or prepare foods with reduced fat and/or calories
7	Number of youth who increased knowledge of the importance of physical activity
8	Number of participants who adopt increased physical activity levels
9	Number of participants who increased their knowledge of the connection between food choices and risk of chronic disease
10	Number of participants who increased their knowledge of the relationship between nutrition and health
11	Number of participants who adopt one or more practices to improve food choices and activity levels

Outcome # 1

1. Outcome Target

Number of persons who adopt one or more practices to improve food choices

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 2

1. Outcome Target

Number of participants who have increased their knowledge of how to raise healthy eaters

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 3

1. Outcome Target

Number of persons who increased their knowledge of selection and preparation of foods with reduced fat and/or calories

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 701 - Nutrient Composition of Food

- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 4

1. Outcome Target

Number of persons who increased knowledge of USDA serving sizes

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 5

1. Outcome Target

Number of participants consuming appropriate serving sizes

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 6

1. Outcome Target

Number of participants demonstrating ability to choose or prepare foods with reduced fat and/or calories

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 7

1. Outcome Target

Number of youth who increased knowledge of the importance of physical activity

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 8

1. Outcome Target

Number of participants who adopt increased physical activity levels

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 9

1. Outcome Target

Number of participants who increased their knowledge of the connection between food choices and risk of chronic disease

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 701 - Nutrient Composition of Food
- 703 - Nutrition Education and Behavior
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 10

1. Outcome Target

Number of participants who increased their knowledge of the relationship between nutrition and health

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 11

1. Outcome Target

Number of participants who adopt one or more practices to improve food choices and activity levels

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect 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.)

Description

{NO DATA ENTERED}

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

The planned programs identified for Indiana are based on input from stakeholders in the state through a variety of mechanisms including a series of formal stakeholder surveys. Stakeholder and participant input continue to be the driver for evaluating the impact and relevance of activities within our planned programs. We continue to monitor the effectiveness of our programs and develop actions to maintain, develop, or redirect our efforts by weighing feedback from several sources. Planned programs result in specific projects that address issues that are guided by stakeholder input. Specific projects are evaluated by appropriate methods including data analysis of pre- and post-participation knowledge

and/or attitudes, profitability analyses, changes in behavior or conditions for individual participants and groups, or adoption rates of emerging technologies. Success of our overarching planned programs is subsequently determined using the sum of contributions from individual projects within each program area.

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Human, Family, and Community, Health and Well-being

2. Brief summary about Planned Program

For the 2013-2017 reporting cycle, we have combined several planned programs into a new area called Human, Family and Community Health and Well-Being. The former planned program areas folded into this new program include Human Health, Human Nutrition and Well-being, Family Well-being, Youth Development, and Economic and Community Development. By combining these cross-cutting themes into one Planned Program, we are better positioned to distinguish and track the impact of our research and extension programs on our stakeholder approved strategic themes.

Provide producers and consumers a more complete, science-based understanding of our food systems. We will develop educational programs that help consumers make the most informed food choices possible, and help farmers better respond to customer needs and demands. Specific focus areas include improving nutrition & wellness, helping stakeholders adjust their diet for chronic diseases, and the role of environmental factors in this complex area.

Prepare children for academic success through programs and partnerships that strengthen families. We will develop tools that Indiana families need to prepare children to succeed in kindergarten and beyond with programs that improve nutrition, health, and literacy.

Reduce human obesity across Indiana through community-based programs. We will enhance community health coalitions that can help Hoosiers reduce obesity, make healthy food choices, and increase physical activity.

Help regions, communities, and neighborhoods plan and prepare for a sustainable future. We will help community and organization leaders develop planning and decision-making strategies that improve long-term viability.

Develop and support leaders throughout Indiana. Our goal is to deliver programs that help youth and adults from all segments of the community develop the knowledge, skills, and confidence to be more effective leaders.

Facilitating informed decision making to improve economic and social well-being

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : No

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
608	Community Resource Planning and Development	12%		12%	
610	Domestic Policy Analysis	3%		3%	
611	Foreign Policy and Programs	3%		3%	
701	Nutrient Composition of Food	3%		3%	
702	Requirements and Function of Nutrients and Other Food Components	10%		10%	
703	Nutrition Education and Behavior	10%		10%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	3%		3%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	10%		10%	
721	Insects and Other Pests Affecting Humans	3%		3%	
723	Hazards to Human Health and Safety	3%		3%	
801	Individual and Family Resource Management	12%		12%	
802	Human Development and Family Well-Being	12%		12%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	10%		10%	
805	Community Institutions, Health, and Social Services	3%		3%	
806	Youth Development	3%		3%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

It is a challenge to pinpoint where to declare that families, individuals and communities are healthy along the health and well-being continuum. The concepts of Health and Well-being are intertwined across gender, age, race and socio-economic status. They are not only a function of food consumed and activity levels, but also a function of stress associated with job losses, inability to effectively manage household finances to get out of debt or build wealth, medical issues and taking care of parents. In addition, many families continue to live in poverty and are at risk of going hungry.

At Purdue, we are focused on understanding the relationship among these many factors and taking these research results into the community to help the people of Indiana improve their lifestyles such that their health and well-being improve. Once people have the sense that it is possible to improve their

current health or financial situation, they are positioned to continue making improvements along the health and well-being continuum. Priorities: Nutrition & Wellness, chronic diseases, environmental factors, family resource management, parenting and relationships, and child development and obesity.

Positive youth development should not be left to chance. The youth of today are impacted significantly by their family situation in addition to the influences of school, peer groups and technology. Purdue's 4-H Youth development programs provide opportunities for youth to acquire the life skills necessary to meet the challenges of adolescence and adulthood. 4-H Youth Development uses hands-on, research-based educational opportunities that help youth become competent, caring, confident, connected, and contributing citizens. As a result, they are better positioned to become well-rounded and healthy individuals that are able to accept new challenges, expect success, establish and maintain relationships at many levels, and respond to the needs and concerns of others. Priorities: leadership skills, life skills, volunteers, and career development.

Many of our community leaders and elected officials enter into their new roles with enthusiasm and a bountiful list of ideas to improve their communities, but many have little training in what it takes to be a leader with such diverse constituencies to manage, how to assess the potential economic impact of a policy or new regulation, or how to improve the day-to-day operations of their office. Our Extension leaders provide group trainings to community leaders to support their leadership efforts to improve the overall health and well-being of its citizens. Priorities: leadership, economic development, government operations, community development, and policy/regulations.

When disaster strikes Indiana, people turn to Purdue Extension as well as emergency management officials, health department officials, the American Red Cross, Salvation Army, police and United Way for up-to-the-minute information regarding the disaster and for recovery information following the event. Steve Cain serves as the Point-of-Contact for the Purdue EDEN (Extension Disaster Education Network) and is frequently the first on the scene of a disaster or emergency. Mr. Cain has led the development of First Steps to Flood Recovery as well as PEAT, the Purdue Extension Agrosecurity Team.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

- Improving health and well-being is an on-going issue that needs continued research in both the basic sciences and social science realm and must partner with Extension to try to impact behavior in the community.
- Doctors and researchers will continue to uncover possible new ways of treating chronic illnesses that need to be tested and then shared with the public through Extension
- Even if there is a significant, consistent upsurge in the economy, there will be a need to educate individuals and families on how to manage money and build wealth
- The success of our future society depends on today's youth and it is wise to find ways to support them in skill development for academics, career and personal relationships

• Community leaders will change and the need for leadership training will continue to exist to support these leaders in managing diverse constituencies under myriad situations.

2. Ultimate goal(s) of this Program

* Improve human health
* improve family well-being
* Expand youth development
* Impact economic and community development

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2013	53.3	0.0	190.8	0.0
2014	53.3	0.0	190.8	0.0
2015	53.3	0.0	190.8	0.0
2016	53.3	0.0	190.8	0.0
2017	53.3	0.0	190.8	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

• Develop, workshops, consultations, seminars, certification programs, distance education modules, field days, and other opportunities
• Develop and implement curriculum
• Conduct evaluation/research
• Provide youth and volunteer training and development
• Develop web sites
• Provide staff development
• Collaborate with other agencies/stakeholders
• Publish research and extension articles
• Increase number of participants in life-long learning programs.
• Foster leadership and economic development and facilitate strong partnerships n state, regional, national, and international agencies, organizations, and groups.
• 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

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
● Education Class ● Workshop ● Group Discussion ● One-on-One Intervention ● Demonstrations	● Public Service Announcement ● Newsletters ● TV Media Programs ● Web sites other than eXtension ● Other 1 (Extension publications) ● Other 2 (Distance learning programs)

3. Description of targeted audience

Families, parents, youth, 4H youth/volunteers/administration/parents, children, appointed and elected public officials, Commodity boards and committees,

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☐ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Number of programs offered to parents, childcare providers, youth, adults, low-wealth households and consumers
- Number of research publications
- Number of Extension publications written, new or revised
- Number of new partnerships, coalitions, advisory boards created
- Number of new/revised curriculum topics (youth)
- Number involved in community collaborations (youth)
- Number of volunteer development opportunities
- Number of quality, educational workshops for youth
- Number of youth participating in Career Events
- Number of youth participating in educational workshops

☐ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	An impact on human health resulting from new knowledge about nutrition & wellness, chronic diseases, and/or environmental factors
2	An impact on family well-being resulting from new knowledge about family resources management, parenting & relationships, and/or child development.
3	An impact on youth development resulting from new knowledge about youth leadership, life skills, volunteers, and/or career development.
4	An impact on economic and/or community development resulting from new knowledge about leadership, economic development, government operations and/or community development
5	An impact on policy and/or regulation related to human, family and community, health and well-being.

Outcome # 1

1. Outcome Target

An impact on human health resulting from new knowledge about nutrition & wellness, chronic diseases, and/or environmental factors

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development
- 610 - Domestic Policy Analysis
- 611 - Foreign Policy and Programs
- 701 - Nutrient Composition of Food
- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
- 721 - Insects and Other Pests Affecting Humans
- 723 - Hazards to Human Health and Safety
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities
- 805 - Community Institutions, Health, and Social Services
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 2

1. Outcome Target

An impact on family well-being resulting from new knowledge about family resources management, parenting & relationships, and/or child development.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 701 - Nutrient Composition of Food
- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and

Other Sources

- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
- 721 - Insects and Other Pests Affecting Humans
- 723 - Hazards to Human Health and Safety
- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities
- 805 - Community Institutions, Health, and Social Services
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 3

1. Outcome Target

An impact on youth development resulting from new knowledge about youth leadership, life skills, volunteers, and/or career development.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 805 - Community Institutions, Health, and Social Services
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 4

1. Outcome Target

An impact on economic and/or community development resulting from new knowledge about leadership, economic development, government operations and/or community development

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development
- 610 - Domestic Policy Analysis
- 611 - Foreign Policy and Programs
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
- 721 - Insects and Other Pests Affecting Humans
- 723 - Hazards to Human Health and Safety
- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities
- 805 - Community Institutions, Health, and Social Services
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 5

1. Outcome Target

An impact on policy and/or regulation related to human, family and community, health and well-being.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development
- 610 - Domestic Policy Analysis
- 611 - Foreign Policy and Programs
- 701 - Nutrient Composition of Food
- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
- 721 - Insects and Other Pests Affecting Humans
- 723 - Hazards to Human Health and Safety

- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities
- 805 - Community Institutions, Health, and Social Services
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect 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.)

Description

{NO DATA ENTERED}

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

The planned programs identified for Indiana are based on input from stakeholders in the state through a variety of mechanisms including a series of formal stakeholder surveys. Stakeholder and participant input continue to be the driver for evaluating the impact and relevance of activities within our planned programs. We continue to monitor the effectiveness of our programs and develop actions to maintain, develop, or redirect our efforts by weighing feedback from several sources. Planned programs result in specific projects that address issues that are guided by stakeholder input. Specific projects are evaluated by appropriate methods including data analysis of pre- and post-participation knowledge and/or attitudes, profitability analyses, changes in behavior or conditions for individual participants and groups, or adoption rates of emerging technologies. Success of our overarching planned programs is subsequently determined using the sum of contributions from individual projects within each program area.

V(A). Planned Program (Summary)

Program # 7

1. Name of the Planned Program

Natural Resources and Environment

2. Brief summary about Planned Program

The integrated research and extension programs in Natural Resources and Environment include faculty and staff from 8 departments within the College of Agriculture and is designed to address a broad spectrum of environmental issues that occur as a result of either natural or developed environments. One of the primary segments of the program involves increasing knowledge of the relationship between soils, nutrients, and plants. Another goal is increasing and improving the productivity and sustainability of forest resources, particularly hardwoods. Programs will teach landowners and land managers to evaluate the condition of lands and undertake management and restoration activities that increase their quality of life while providing natural resources benefits for society. A number of activities are aimed at preventing or mitigating pollution of natural resources, whether from natural causes or as a result of human activity. These include the Animal Manure Management Group which provides current, scientifically sound information and technologies that are economically sound, feasible for implementation and promote environmental stewardship to livestock and poultry producers, technical service providers and consultants, government officials and the general public. The Water Quality Group will address non-point sources of water pollution and loss of riparian habitat by working with land owners and managers to participate in collaborative watershed planning exercise . Urban and suburban environments that will result in sustainable land use, enhancement of natural components, and increased quality of life for residents will be targeted.

3. Program existence : Mature (More then five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : No

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
101	Appraisal of Soil Resources	1%		1%	
102	Soil, Plant, Water, Nutrient Relationships	18%		18%	
104	Protect Soil from Harmful Effects of Natural Elements	5%		5%	
111	Conservation and Efficient Use of Water	2%		2%	
112	Watershed Protection and Management	6%		6%	
121	Management of Range Resources	1%		1%	
123	Management and Sustainability of Forest Resources	18%		18%	
125	Agroforestry	1%		1%	
131	Alternative Uses of Land	10%		10%	
132	Weather and Climate	4%		4%	
133	Pollution Prevention and Mitigation	24%		24%	
135	Aquatic and Terrestrial Wildlife	10%		10%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Indiana residents want to live in aesthetically pleasing urban and rural environments, with ready access to well managed forests andother natural resources. Air and water resources should be free from pollution. At the same time, the production of crops and livestock and harvesting of timber, especially hardwoods, are important contributors to the economy of the state. Research is necessary to generate the knowledge that will allow these agricultural enterprises to flourish while providing Indiana residents with the quality of environment that they desire. Extension programs will provide assistance to farmers, ranchers, land owners, and land managers that will enable them to maintain their enterprises in a profitable, yet environmentally sustainable manner.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension

- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

The increasing urban/rural interface will require that farmers, ranchers, and land owners learn to coexist with urban and rural residents. Research and Extension programs will provide producers with the knowledge and skills they need to maintain their enterprises in an economically viable manner, while minimizing negative impacts on the environment and their neighbors. Extension programs can also successfully teach urban and rural residents about the importance of agricultural production to the economy of the state and encourage dialogue between these two groups.

2. Ultimate goal(s) of this Program

• Watershed stakeholders will collaborate effectively to develop and implement plans to protect and restore water resources. •Owners of forestlands and wildlands and their professional advisors will have the skills necessary to meet the objectives of the owners in a sustainable and ecologically sound manner. •To equip the livestock and poultry producers with the knowledge and current information to comply with regulations, make wise decisions for manure management systems design, and management and implementation of new scientifically and economically sound technologies for operation. •To inform crop and livestock producers in the value of optimal use of manure nutrients as fertilizer in crop production. •The urban and suburban communities of Indiana will provide their residents with aesthetically pleasing environments in which to live and work.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2013	1.4	0.0	6.7	0.0
2014	1.4	0.0	6.7	0.0
2015	1.4	0.0	6.7	0.0
2016	1.4	0.0	6.7	0.0
2017	1.4	0.0	6.7	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

• Workshops •Extension publications •Public service announcements •Research projects •Web site development •Home and farm visits •Displays •IP video programs •Demonstrations and field days •One-on-one consultations •Collaboration with other agencies

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
● Education Class ● Workshop ● Group Discussion ● One-on-One Intervention ● Demonstrations	● Public Service Announcement ● Newsletters ● Web sites other than eXtension ● Other 1 (Extension publications)

3. Description of targeted audience

• Agricultural producers •Rural and urban residents •Elected officials and other decision-makers •Owners of private and public forestlands and wildlands •Natural resource professionals •Technical service providers •Tree care providers •Right of way managers •Urban planners •Youth

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☐ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Number of programs offered to producers, land owners, and land managers.
- Number of research projects
- Number of demonstrations and field days
- Number of Extension publications written, new & revised
- Number of K-12 Classroom visits
- Number of one-on-one consultations
- Number of newsletter or magazine articles written
- Number of volunteers trained
- Number of Extension publications distributed
- Number of research publications

☐ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of participants who increase knowledge of practices to protect water resources
2	Number of participants who improve decision making for use of water resources
3	Number of participants who increase knowledge of proper application of fertilizer, manure and waste products to soil and potential for environmental consequences of misapplication
4	Number of participants who increased adoption of proper application of fertilizer, manure and waste products to soil
5	Number of participants who increase knowledge of best management practices for optimal manure nutrient utilization with on- and off-site agricultural lands
6	Number of participants who adopt best management practices for optimal manure nutrient utilization with on- and off-site agricultural lands
7	Number of participants who increase knowledge of the value of ponds in landscapes and methods for installing and managing ponds
8	Number of participants who increase value of landscapes through better installation and management of ponds
9	Number of participants who increase knowledge of on-site wastewater treatment siting and maintenance needs
10	Number of participants who make more informed decisions for on-site wastewater treatment siting and maintenance
11	Number of water quality violations related to animal production and land application in the state of Indiana
12	Number of tree care providers in Indiana who become certified arborists.
13	Number of professional natural resource advisors who have the skills necessary to assess the health of the wildlands
14	Number of wildlands owners who have a relationship with knowledgeable professional natural resource advisors and have developed and implemented a management plan
15	Number of natural resource professionals and wildland owners who have worked with landowners to develop and implement management plans
16	Number of owners of wildlands who will have assessed the health of their lands and developed and implemented management plans
17	Number of landowners with knowledge of proper tree planting and management techniques
18	Number of participants who increased their knowledge of natural resource management
19	Number of participants who increased their knowledge of proper application of pesticides
20	Number of participants who increased their knowledge of topsoil importance
21	Number of participants who increased their knowledge of Indiana's diverse wildlife
22	Number of woodlot owners who improved their management skills

Outcome # 1

1. Outcome Target

Number of participants who increase knowledge of practices to protect water resources

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 133 - Pollution Prevention and Mitigation

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 2

1. Outcome Target

Number of participants who improve decision making for use of water resources

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 133 - Pollution Prevention and Mitigation

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 3

1. Outcome Target

Number of participants who increase knowledge of proper application of fertilizer, manure and waste products to soil and potential for environmental consequences of misapplication

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 112 - Watershed Protection and Management
- 133 - Pollution Prevention and Mitigation

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 4

1. Outcome Target

Number of participants who increased adoption of proper application of fertilizer, manure and waste products to soil

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 112 - Watershed Protection and Management
- 133 - Pollution Prevention and Mitigation

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 5

1. Outcome Target

Number of participants who increase knowledge of best management practices for optimal manure nutrient utilization with on- and off-site agricultural lands

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 112 - Watershed Protection and Management
- 133 - Pollution Prevention and Mitigation

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 6

1. Outcome Target

Number of participants who adopt best management practices for optimal manure nutrient utilization with on- and off-site agricultural lands

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 112 - Watershed Protection and Management
- 133 - Pollution Prevention and Mitigation

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 7

1. Outcome Target

Number of participants who increase knowledge of the value of ponds in landscapes and methods for installing and managing ponds

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 133 - Pollution Prevention and Mitigation
- 135 - Aquatic and Terrestrial Wildlife

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 8

1. Outcome Target

Number of participants who increase value of landscapes through better installation and management of ponds

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 111 - Conservation and Efficient Use of Water
- 133 - Pollution Prevention and Mitigation
- 135 - Aquatic and Terrestrial Wildlife

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 9

1. Outcome Target

Number of participants who increase knowledge of on-site wastewater treatment siting and maintenance needs

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 131 - Alternative Uses of Land
- 133 - Pollution Prevention and Mitigation

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 10

1. Outcome Target

Number of participants who make more informed decisions for on-site wastewater treatment siting and maintenance

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management
- 131 - Alternative Uses of Land
- 133 - Pollution Prevention and Mitigation

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 11

1. Outcome Target

Number of water quality violations related to animal production and land application in the state of Indiana

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 133 - Pollution Prevention and Mitigation

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 12

1. Outcome Target

Number of tree care providers in Indiana who become certified arborists.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 123 - Management and Sustainability of Forest Resources
- 125 - Agroforestry

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 13

1. Outcome Target

Number of professional natural resource advisors who have the skills necessary to assess the health of the wildlands

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 121 - Management of Range Resources
- 123 - Management and Sustainability of Forest Resources
- 135 - Aquatic and Terrestrial Wildlife

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 14

1. Outcome Target

Number of wildlands owners who have a relationship with knowledgeable professional natural resource advisors and have developed and implemented a management plan

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 121 - Management of Range Resources
- 123 - Management and Sustainability of Forest Resources
- 135 - Aquatic and Terrestrial Wildlife

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 15

1. Outcome Target

Number of natural resource professionals and wildland owners who have worked with landowners to develop and implement management plans

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 121 - Management of Range Resources
- 123 - Management and Sustainability of Forest Resources
- 135 - Aquatic and Terrestrial Wildlife

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 16

1. Outcome Target

Number of owners of wildlands who will have assessed the health of their lands and developed and implemented management plans

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 121 - Management of Range Resources
- 123 - Management and Sustainability of Forest Resources
- 135 - Aquatic and Terrestrial Wildlife

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 17

1. Outcome Target

Number of landowners with knowledge of proper tree planting and management techniques

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 123 - Management and Sustainability of Forest Resources

- 125 - Agroforestry

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 18

1. Outcome Target

Number of participants who increased their knowledge of natural resource management

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management
- 121 - Management of Range Resources
- 123 - Management and Sustainability of Forest Resources

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 19

1. Outcome Target

Number of participants who increased their knowledge of proper application of pesticides

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 133 - Pollution Prevention and Mitigation

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 20

1. Outcome Target

Number of participants who increased their knowledge of topsoil importance

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 21

1. Outcome Target

Number of participants who increased their knowledge of Indiana's diverse wildlife

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 135 - Aquatic and Terrestrial Wildlife

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 22

1. Outcome Target

Number of woodlot owners who improved their management skills

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 123 - Management and Sustainability of Forest Resources
- 125 - Agroforestry

4. Associated Institute Type(s)

- 1862 Extension

V(J). Planned Program (External Factors)

1. External Factors which may affect 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.)

Description

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

The planned programs identified for Indiana are based on input from stakeholders in the state through a variety of mechanisms including a series of formal stakeholder surveys. Stakeholder and participant input continue to be the driver for evaluating the impact and relevance of activities within our planned programs. We continue to monitor the effectiveness of our programs and develop actions to maintain, develop, or redirect our efforts by weighing feedback from several sources. Planned programs result in specific projects that address issues that are guided by stakeholder input. Specific projects are evaluated by appropriate methods including data analysis of pre- and post-participation knowledge and/or attitudes, profitability analyses, changes in behavior or conditions for individual participants and groups, or adoption rates of emerging technologies. Success of our overarching planned programs is subsequently determined using the sum of contributions from individual projects within each program area.