2011 Purdue University Combined Research and Extension Annual Report of Accomplishments and Results

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I. Report Overview

1. Executive Summary

OVERVIEW

At Purdue University, professors, scientists, staff and students focus on expanding existing knowledge and creating impactful methods to transfer this knowledge to local and global communities. The following overview highlights a portion of our efforts in integrated programs, combining achievements in science with service to students and society. These efforts are the result of diverse collaborations among many individuals and organizations from academia, government, industry and community stakeholders. From our University and College Strategic Plans, we:

• Launch tomorrow's leaders by enhancing student success with careers in a dynamic global society, as well as foster intellectual, professional and personal development for lifelong learning.
• Promote discovery with delivery by conducting field-defining research with breakthrough outcomes and catalyze research-based economic development and entrepreneurship.
• Meet global challenges by enhancing Purdue's presence and impact in addressing grand challenges of humanity.

GLOBAL FOOD SECURITY AND HUNGER: Boost US agricultural production, improve global capacity, and foster innovation in fighting hunger

According to the U.S. Department of State, nearly one sixth of the world's population or 1 billion people, suffer from chronic hunger. In 2010, 48.8 million Americans were in food-insecure households including 16.2 million children (www.ers.usda.gov). Purdue researchers are conducting science that extends beyond providing food secure households to include components of a comprehensive food production system that will keep food affordable while reducing the environmental impact from food production.

Purdue's research on "displacement control" (DC) technology is a breakthrough in hydraulic systems demonstrating a huge potential for future fuel savings and reduction of emissions. Researchers developed a prototype DC excavator which utilizes variable displacement pumps to control the motion of linear or rotary actuators. The machine used about 40% less fuel and 13% less time than the standard system while performing the same task. These landmark results demonstrate that the DC system performs nearly 70% more work per unit of fuel consumed. The introduction of this new technology will have significant long-term benefits toward improving food production systems and their impact on the environment.

It is well known that trade policy plays a significant role in the ability to get food to people in need. GTAP (Global Trade Analysis Project), housed within Purdue's Ag Economics department, is a global network of researchers and policy makers conducting quantitative analysis of national and international policy issues within an economy-wide framework. One GTAP related project fills gaps in models and databases for African countries to inform decision-makers on sources of economic vulnerabilities and diversification risks in the sub-Saharan African region. Through the development of poverty and international financial data and model modules, researchers expect to identify optimal policy and programming choices which will contribute to lowering poverty in an uncertain and unstable world.

CLIMATE CHANGE: Provide research and tools that help producers, worldwide and nationally, adapt to

the ever-changing conditions and impacts of climate change and the capacity to make decisions based on sound economic data

Worldwide, livestock producers are bracing for potential mitigation policy requirements given that this sector's management practices can have a significant impact on reducing greenhouse gas (GHG). The primary challenge for the sector will be to adjust to these emerging constraints without compromising food security. Due to their relatively large emissions intensities and limited abatement possibilities, ruminant meat producers face the greatest market adjustments to climate policies. One research study showed that design and coverage of mitigation policy options, both by region and by sector, matters significantly with regard to effectiveness in reducing emissions and also in terms of agricultural production and food security. Countries that applied and enforced mitigation policies saw a reduction in emissions but generally saw an increase in production costs and reduced demand for costly products. Countries without policies or unenforced policies saw a rise in emissions and a reduction in production costs compared to those countries enforcing policies. Rather than focus on reducing emissions, a successful alternative may be to offer forest carbon sequestration incentives. When producers converted livestock production land to forests, emissions from livestock production land were reduced and carbon sequestration increased.

The Central Hardwood Region is considered the largest forest carbon sink in the US. As the forests in the region continue to mature, understanding carbon sequestration becomes increasingly important to understanding carbon flux and its influence on climate change. Carbon sequestered by the old-growth forests of this region is poorly understood and Purdue scientists have initiated data collection efforts in a multi-state region to better understand the nature of this system which can provide valuable information for future research on how to manage this valuable carbon sink.

Turfgrass is estimated to cover more than 50 million acres in the US and contributes $30 billion to the economy. A 50' x 50' turf area absorbs CO_2, ozone, and hydrogen fluoride and releases enough oxygen to meet the needs of a family of 4; and the grasses and trees along the interstate highway system release enough oxygen to support 22 million people per year. These grasses play an important role in the carbon cycle and are under increasing stresses due to changes in environmental conditions including rain/drought cycles. Understanding stress tolerance in turfgrass is critical for managing the overall US carbon sequestration framework. Purdue's researchers are studying the physiological, genetic and molecular mechanisms of perennial ryegrass systems to provide a better understanding of complex traits of stress management. Grass managers will have access to better basic knowledge of whole-plant responses to single stress or stress combinations, allowing for more efficient and effective management that positively contributes to climate change.

SUSTAINABLE ENERGY: Develop biomass used for biofuels, design optimum forest products and crops for bioenergy production, and produce value-added bio-based industrial products.

Specialty herbaceous annuals are a valuable sector of the bedding plant market. Growers receive un-rooted cuttings from offshore cutting production facilities from December to April. The cuttings are rooted in greenhouses, shipped to "finishers" for replanting into consumer friendly containers and then transported to consumer retail outlets. The rooting process occurs when natural light is at its lowest. Purdue researchers are experimenting with high pressure sodium lights and L.E.D. lighting systems to determine how much supplemental light should be applied to speed up the rooting process. By reducing the time between rooting and replanting, greenhouse managers can significantly reduce the costs associated with heating the greenhouse without impacting root quality. Our results indicate that providing a daily light integral of approximately 8 to 12 mol•m-2•d-1 after callusing reduces greenhouse costs while increasing both growth and quality of rooted cuttings.

The United States has embarked on an ambitious program to develop alternative transportation fuels to lessen our dependence on oil imports, reduce greenhouse gas emissions, and provide increased energy security. The Energy Independence and Security Act of 2007 mandates an increase in advanced biofuels production to 21 billion gallons annually (H.R.6 2007). A major challenge for US agriculture is producing these fuels in an environmentally sustainable manner that does not interfere with food production or cause adverse changes in land use. Purdue researchers are developing a regional system

for producing advanced transportation fuels derived from perennial grasses grown on marginal land. Perennial biomass species such as Miscanthus and switchgrass were found to grow well in low P and K soils that have been previously shown to limit growth and yield of maize and alfalfa. This may make these biomass species well-adapted to low fertility soils as significant N transfer from roots and rhizomes to shoots occurs in the spring when growing of perennial species resumes. This feature impacts N requirements and improves the overall N budget of perennial biomass species. Early results also show that the highest biomass yields are found in indeterminant species like Miscanthus and photoperiod-sensitive sorghum. Other major outcomes of the project will include an assessment of the net energy balance of the candidate systems, and development of an optimized perennial feedstock production and ecosystem services for use on marginally productive cropland.

CHILDHOOD OBESITY"Accelerate progress toward preventing and reversing the childhood obesity epidemic." (http://www.nifa.usda.gov/newsroom/news/2010news/02252_nccor.htm)

According to Let's Move (www.letsmove.gov), childhood obesity is not only known to create long-term health problems including heart disease, diabetes, asthma and sleep apnea, but many overweight teens and children are showing these risk factors at earlier ages. In addition to the physical impacts from being overweight many of them experience "social discrimination" which leads to low self-esteem, often resulting in lower grades and the ability to function in social situations. Early research also shows that physical fitness is associated with higher achievement. Purdue research and Extension programs are shoing a consistent impact on altering the behaviors of families and children that could lead to long-term reductions in childhood obesity.

Indiana currently ranks 16thin adult obesity and 27thin childhood obesity according to a Robert Wood Johnson Foundation report released July 2011. The Clay County Extension staff created the "Play in Clay" program whereby each extension program looked for ways to incorporate physical activity into otherwise sedentary groups. Examples of how 609 youth and 26 adults increased their activity levels included playing Ultimate Frisbee at Jr. Leader meetings and garden walking and canoeing during Master Gardener classes. Over a 6-month period, these and other exercises contributed to more than 1355 hours of exercise incorporated into pre-existing extension events, demonstrating the ease with which exercise can be incorporated into everyday activities.

Over 3500 Hendricks County high school students were taught how to find, use and apply MyPyramid to their everyday diet, including school lunch. Two weeks after the training, nearly 100% of the participants reported applying this information to their food intake and making at least one fruit, vegetable and/or calcium dietary improvement. This program demonstrates a powerful impact regarding choice when teens are given control over their school lunch menus.

Language creates another barrier to eating healthy. The Latino population in Marion County has grown 153% in the last decade with 1-in-10 persons being Hispanic (1 2010 Census/PL 94-171 Redistricting data). This population has limited English proficiency and most live at or below the poverty level in this county. These factors make it challenging to buy fresh food and to read labels to know which foods are healthiest. Purdue's Expanded Food and Nutrition Education Program (EFNEP) now includes 3 Spanish speaking professionals living in the Hispanic community providing outreach to 119 families (539 individuals) on 12 topics including basic nutrition, food safety, meal planning, cooking skills and feeding kids. Not only are the families reporting a positive change in nutrition and food handling practices, they have collectively saved over $14,000 per month on groceries or $26 per person.

FOOD SAFETY: Reduce the impact of foodborne diseases on human health and in the food supply chain

According to the Centers for Disease Control and Prevention, one in six people (48 million) in the United States suffer from food-borne illness each year, more than a hundred thousand are hospitalized and thousands die (http://www.cdc.gov/media/pressrel/2010/r101215.html). Purdue continues to build a strong portfolio of research, education and extension activities focused on preventing and reducing the impact of pathogens along the food supply chain.

Our Food Entrepreneur Assistance Response (FEAR) Team delivers annual workshops and direct technical assistance to approximately 125 food entrepreneurs annually with approximately 80% of

participants being from rural Indiana. FEAR provides services including a review of business plans and product testing to ensure safety and regulatory compliance. The extension bulletins that highlight food business activities--food regulations, food testing laboratories, food technology, food safety, and food sanitation-- received over 273,000 hits on the website and over 47,000 downloads.

An increasing number of outbreaks of foodborne illness have been associated with the consumption of fresh produce, particularly leafy greens and sprouts. The disease-causing bacteria are often from species associated with animal products, raising fundamental questions of how these organisms are introduced to the plant environment and how they persist once they arrive. Purdue's scientists have discovered that it is relatively easy for the bacteria to gain access to the internal tissues of the plant and to grow and divide once internalized. Bacteria that become internalized within the plant cannot be eliminated by methods that rely on surface sterilization, including most methods used in the fresh produce industry. For example, seeds that are exposed even briefly to contaminated water are prone to harboring internalized bacteria, which can then end up being distributed throughout the entire plant seedling. Plants (and especially sprouts) grown from contaminated seeds cannot be safely sanitized for human consumption, indicating that more effort has to be placed on detection of human pathogens prior to sale to consumers.

SPECIAL NOTE: Purdue's internal reporting system for faculty, educators and Extension staff began its transition during 2010 to reflect NIFA's five priority areas. The information in the following report for 2010-2011 reflects this continuing transition. Of note, we were unable to capture much of the quantitative information under several program areas, but were able to provide qualitative data to reflect our activities and impacts.

Total Actual Amount of professional FTEs/SYs for this State

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	130.9	0.0	238.5	0.0
Actual	77.5	0.0	263.1	0.0

II. Merit Review Process

1. The Merit Review Process that was Employed for this year

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

2. Brief Explanation

III. Stakeholder Input

1. Actions taken to seek stakeholder input that encouraged 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.

{NO DATA ENTERED}

2(A). A brief statement of the process that was 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.

{NO DATA ENTERED}

2(B). A brief statement of the process that was 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.

{NO DATA ENTERED}

3. A statement of how the input will be considered

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

Brief explanation.

{NO DATA ENTERED}

Brief Explanation of what you learned from your Stakeholders

We have many forms of outreach to our Stakeholders and the input we receive from these diverse groups and individuals is that we continue to be on the right track. Purdue is considered to be a trusted source of information on issues important to Indiana residents such as families, youth and agriculture. They believe that the work of our research and extension programs is a direct reflection of the programs our stakeholders consider to be relevant and that we are using our resources effectively.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
8740495	0	6267963	0

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	8101729	0	6266326	0
Actual Matching	12668975	0	22406543	0
Actual All Other	1748513	0	7599630	0
Total Actual Expended	22519217	0	36272499	0

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous				
Carryover	4369081	0	2374070	0

V. Planned Program Table of Content

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Youth Development

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
806	Youth Development	100%		100%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	13.0	0.0	0.0	0.0
Actual Paid Professional	7.3	0.0	0.1	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
568824	0	11856	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
1130517	0	579687	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
101841	0	224592	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

• Develop curriculum •Conduct evaluation/research •Participate in collaborations that have a youth focus •Conduct educational workshops •Provide youth and volunteer training and development •Develop web sites

2. Brief description of the target audience

- Youth --- Grades K-12 •Volunteers •Public/Private School Teachers

3. How was eXtension used?

Posting resources, webcasts, articles, YouTube videos, calendars, twitter feeds and contributions to Communities of Practice and Ask an Expert.

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	21689	1986241	16282	12545

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

Patent Applications Submitted

Year: 2011

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of new/revised curriculum topics

Year	Actual
2011	7

Output #2

Output Measure

- Number of evaluations conducted of 4-H Youth Development programs, events and activities

Year	Actual
2011	45

Output #3

Output Measure

- Number involved in youth focused community collaborations

Year	Actual
2011	18233

Output #4

Output Measure

- Number of quality, educational workshops for youth audiences

Year	Actual
2011	6423

Output #5

Output Measure

- Number of volunteer development opportunities

Year	Actual
2011	2520

Output #6

Output Measure

- Number of camp counselors trained
  Not reporting on this Output for this Annual Report

Output #7

Output Measure

- Number of volunteers participating in volunteer development opportunities
  Not reporting on this Output for this Annual Report

Output #8

Output Measure

- Number of youth participating in Career Development Events

Not reporting on this Output for this Annual Report

Output #9

Output Measure

- Number of youth participating in educational workshops
  Not reporting on this Output for this Annual Report

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of youth who increased knowledge of good character traits, goal setting, team work, communication techniques, decision making, and handling conflict
2	Number of 4-H youth who indicate they possess the skills to practice good character, to plan and organize community service activities, and have the skills to be actively engaged in local, state, and national issues
3	Number of youth at the culmination of their 4-H career who report life skills developed through the program, know how to set goals, work cooperatively in a team, communicate effectively, make decisions based on data and the opinions of others, honor individual differences and handle conflict.
4	Number of youth involved in community service activities
5	Number of volunteers who increase their understanding of life skill development, experiential learning, risk management, and group management.
6	Number of volunteers and Extension staff who report improved knowledge and skills in supporting, delivering, and/or managing quality positive youth development experiences and program planning for youth.
7	Number of volunteers reporting management of safe environments in which 4-H youth have the opportunity to learn.

Outcome #1

1. Outcome Measures

Number of youth who increased knowledge of good character traits, goal setting, team work, communication techniques, decision making, and handling conflict

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	44319

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
During this grant year, 21,405 Indiana children of Active Duty, Guard, and Reserve soldiers were identified by military personnel as being in need of community support, especially during military deployments. Research shows that those children who receive community support and participate in related activities adjust better to the separations created when their parents are deployed.

What has been done
This work resulted in the following programs which are still active: 1. The Mobile Technology Lab (MTL) to provide the equipment to create and send cards, pictures, and videos to deployed family and friends. 2. Youth and adult volunteers fill Hero Packs with stuffed animals, books, journals, disposable cameras, and a personal handwritten letter thanking the military youth for the sacrifices they are making. 3. Speak Out for Military Kids (SOMK) is a speakers bureau that teaches youth how to share the message of what it is like to be a child of a military family. 4. SOMK County-Sponsored Events support communities around Indiana with the organization and implementation of events honoring military children and their families.

Results
Indiana military families received public support and understanding through these SOMK efforts: 400 people used the MTL to send soldiers messages and maintain contact between military children and their parents. A total of 1,200 Hero Packs were assembled and distributed. Volunteers indicate they gain as much pride from doing the project as the military children do in receiving them. Fifty youth participated in SOMK to learn military culture, self-confidence, leadership, and presentation skills.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #2

1. Outcome Measures

Number of 4-H youth who indicate they possess the skills to practice good character, to plan and organize community service activities, and have the skills to be actively engaged in local, state, and national issues

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	13491

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Youth who develop decision making skills and positive personal character are more likely to cooperate and work well with others. Learning through team building skills allows youth to begin to recognize and identify needs, concerns and interests of others resulting in success when dealing with others.

What has been done
Programs were conducted in fifth grade classrooms to help students develop skills that prevent antisocial and high risk behaviors. Students are provided with experiences that help them to clarify their roles as citizens, develop decision making skills, interact with positive role models and explore ideas on issues that are relevant to their lives.

Results
4,052 participant evaluations using the Scale of Juvenile Legal Attitudes (pre post test) show that after the program, youth have a better attitude toward laws, law enforcement, the judicial system, and the idea that they must take personal responsibility to abide by laws and report unlawful acts. Additionally, classroom teachers report a positive change in general student attitude after completion.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #3

1. Outcome Measures

Number of youth at the culmination of their 4-H career who report life skills developed through the program, know how to set goals, work cooperatively in a team, communicate effectively, make decisions based on data and the opinions of others, honor individual differences and handle conflict.

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Number of youth involved in community service activities

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	13499

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Learning how to contribute to society to make life better for oneself and others is a valuable life skill. Youth who volunteer are 50% less likely to abuse drugs, alcohol, cigarettes, or engage in destructive behavior (Search Institute, 1995). Youth who volunteer are also more likely to do well in school, graduate, vote, and be philanthropic (UCLA/Higher Education Research Institute, 1991).

What has been done
Indiana 4 H Youth are encouraged to become involved in community by learning to give back to others through community service activities. Activities range from supporting the Operation Military Kids Program by assembling and distributing Hero packs to the children of recently deployed National Guard and Army Reserve units, to conducting events in health care facilities, collecting canned goods for food pantries, providing assistance to community shelters, community beautification and recycling.

Results

Participating teens' presence and involvement in their local communities provides both service and encouragement to individuals who sometimes have difficulty fulfilling basic needs. Teens reported an increased awareness of the level of need in the local community as well as options for serving others. They also indicated they are able to "put a face on poverty" and developed a sense of pride in giving to others. 14,393 youth were directly involved in community service activities.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #5

1. Outcome Measures

Number of volunteers who increase their understanding of life skill development, experiential learning, risk management, and group management.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	6206

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Science literacy is on the decline nationwide; in an effort to address this issue and meet the number of requests that entomology receives annually for insect related presentations and programs, we created Science on Six Legs: An Insectaganza of Education.

What has been done
One thousand students were invited to the Purdue campus from the Tippecanoe, Lafayette and West Lafayette School Corporations, as well as the parochial system. Components of the event were designed to engage the fifth graders in a variety of ways that include Crime Solving Insects, a forensic entomology activity designed to promote an appreciation of the practical applications of entomology in society, Insect Dissection in which graduate and undergraduate student volunteers teamed up to lead pairs of fifth graders through the dissection of a lubber grasshopper, an insect theater piece entitled Insecta-Class Yearbook of Bugville High, which uses theater to communicate information about the biology and benefits associated with insects.

Results

Pre and post surveys were performed with teachers and chaperones, 5th grade students and Purdue students. On a scale of 1 to 5 (5 being excellent) results are as follows: Educational value of topics presented, 4.86, ability of presenters to explain information clearly, 4.56, overall rating of the program, 4.76. 30 adult chaperones responded to the survey. This activity offers a unique opportunity to university level students to experience first-hand the challenges and rewards associated with classroom management and the education of elementary students.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #6

1. Outcome Measures

Number of volunteers and Extension staff who report improved knowledge and skills in supporting, delivering, and/or managing quality positive youth development experiences and program planning for youth.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	6252

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The exchange with Poland grew out of the initial efforts of the Purdue-Poland Extension project in the 1990's. This eight-year collaboration between Purdue University and Agriculture Universities of Krakow, Poznan and Warsaw was funded by the Andrew Mellon Foundation.
There is a primary need to share information about how 4-H is conducted and to learn about another culture and language.

What has been done
Staff and volunteers raised over $10,000 to assist with in state expenses. Host family orientations were held. Topics included: host family tips, insurance, food, health and safety, history, culture and language. During their host family time, the group participated in a wide variety of activities in the 15 participating counties that ranged from visiting Fort Wayne and Louisville to learning about the Amish culture.

Results
Participants reported the following on a voluntary survey: 90% of the responding families indicated that they learned more about their local and regional community because of the experience, 90% of the responding families stated that they become closer as a family by participating as a host, 81% of the responding families reported that they now think more globally when they read, watch, or listen to the world news, 81% of the responding families indicated improved family communication skills by participating in the experience, 81% of the responding families reported that they became a more caring family because of the experience.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #7

1. Outcome Measures

Number of volunteers reporting management of safe environments in which 4-H youth have the opportunity to learn.

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Purdue's College of Agriculture has approximately 300 faculty members and 275 Extension Educators. The breadth and depth of outputs and outcomes they report on annually are consistent with the research and Extension funding they receive and the results they have committed to produce as a result of accepting the funding awards. We have chosen to report success on an individual faculty basis as they are the experts in their

field and are best qualified to determine the appropriateness of measures used to demonstrate success. We are not, at this time, structured to evaluate summative success across a Planned Program because the metrics are diverse and often unrelated.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Food and Non-Food Products: Development, Processing, Quality, and Delivery

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
501	New and Improved Food Processing Technologies	31%		31%	
502	New and Improved Food Products	22%		22%	
503	Quality Maintenance in Storing and Marketing Food Products	18%		18%	
504	Home and Commercial Food Service	2%		2%	
511	New and Improved Non-Food Products and Processes	25%		25%	
512	Quality Maintenance in Storing and Marketing Non-Food Products	2%		2%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	1.4	0.0	9.0	0.0
Actual Paid Professional	0.6	0.0	5.9	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
317870	0	316760	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
880766	0	966275	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
96837	0	278783	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

• conduct research • develop programs and conduct workshops • develop extension curricula • provide outreach training programs • establish distance education programs and web-based programs •coordinate meetings with important stakeholders (researchers, industry, farmers, regulatory, etc.) • work with media

2. Brief description of the target audience

• Farmers •Animal production personnel •Plant production personnel •Biofuels processing industry personnel •Food manufacturing and processing plant personnel •Non-food manufacturing plant personnel •Professional engineers •State and county health departments •Federal regulatory officials •State industry associations

3. How was eXtension used?

Posting resources, webcasts, articles, YouTube videos, calendars, twitter feeds and contributions to Communities of Practice and Ask an Expert.

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	1028612	65638	4371	2567

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

Patent Applications Submitted

Year: 2011

Actual: 1

Patents listed
7,977,952

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	13	76	89

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of programs offered to farmers or production agriculture specialists

Year	Actual
2011	166

Output #2

Output Measure

- Number of programs offered to the food industry

Year	Actual
2011	31

Output #3

Output Measure

- Number of programs offered to the non-food industry

Year	Actual
2011	75

Output #4

Output Measure

- Number of research projects on bioprocessing

Year	Actual
2011	12

Output #5

Output Measure

- Number of research projects on air quality

Year	Actual
2011	1

Output #6

Output Measure

- Number of research projects on grain storage and processing

Year	Actual
2011	8

Output #7

Output Measure

- Number of research projects related to dairy products
  Not reporting on this Output for this Annual Report

Output #8

Output Measure

- Number of research projects related to aquaculture products

Year	Actual
2011	7

Output #9

Output Measure

- Number of research projects related to enology and viticulture

Year	Actual
2011	11

Output #10

Output Measure

- Number of research project related to food processing

Year	Actual
2011	7

Output #11

Output Measure

- Number of research projects related to food quality

Year	Actual
2011	12

Output #12

Output Measure

- Number of workshops offered to the general public

Year	Actual
2011	119

Output #13

Output Measure

- Number of consultations

Year	Actual
2011	5017

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of persons gaining knowledge in bioprocessing
2	Number of products produced using new bioprocessing technologies
3	Nnumber of new products produced by new bioprocessing, bioenergy, and biotechnology
4	Number of new bioprocessing techniques used to increase efficiency
5	Number of persons gaining knowledge in food processing and food processing automation
6	Numbers of persons or companies adopting new food automation technologies
7	Number of food and non-food automation technologies used
8	Number of persons gaining knowledge in air quality control systems
9	Numbers of animal production facilities adopting better air quality practices
10	Number of production facilities with improved air quality
11	Number of persons gaining knowledge in grain processing
12	Numbers of persons and companies adopting better grain processing practices
13	Number of persons gaining knowledge in enology and viticulture
14	Number of persons gaining knowledge of government programs
15	Number of persons gaining knowledge of marketing trends
16	Number of persons gaining knowledge of food packaging applications

Outcome #1

1. Outcome Measures

Number of persons gaining knowledge in bioprocessing

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	136

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In the Great Lakes Region there is an emerging and rapidly growing aquaculture industry. The increased number of farmed fisheries has also increased the amount of underutilized by-products derived from the harvesting of fish.

What has been done
Provided a series of webinars and a two-day workshop covering topics on aquaculture food safety, waste utilization and aquaculture production.

Results
The webinars and workshop provided information needed for the development of sustainable practices necessary for long-term success of the Indiana and the GLR aquaculture industry.

4. Associated Knowledge Areas

KA Code	Knowledge Area
511	New and Improved Non-Food Products and Processes

Outcome #2

1. Outcome Measures

Number of products produced using new bioprocessing technologies

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	3

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
There is a need for educating beginning and existing aquaculture farmers on fish handling and production management techniques to minimize risky practices in fish production, or aquaculture financial management and other risk management decisions tools, for research on markets and market development for aquaculture products.

What has been done
State-wide workshops focusing on risk-minimizing practices in fish production were held; 1 workshop on indoor re-circulating system production, 1 workshop on cage production, and 1 workshop on pond production.

Results
Spreadsheet tools and information sources were developed as financial and investment decision spreadsheets with examples and templates for producers to generate their own profiles. Two aquaponics facilities; 2 indoor shrimp facilities; 1 pond aquaculture; and 3 cage aquaculture facilities were started.

4. Associated Knowledge Areas

KA Code	Knowledge Area
511	New and Improved Non-Food Products and Processes

Outcome #3

1. Outcome Measures

Nnumber of new products produced by new bioprocessing, bioenergy, and biotechnology

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	7

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
There is a need to reduce the amount of enzyme required to enable cellulose to be hydrolyzed to fermentable sugars, also referred to as enzyme loading, in order to sustain efficient biofuels production.

What has been done
We have identified a series of inhibitors released during the pretreatment of various types of lignocellulosic biomass materials, including wood, switchgrass, and corn stover. The phenols or tannic acids that are released either inhibit or deactivate the enzyme components that makeup the cellulolytic enzyme system. Removal of these inhibitors results in enhanced enzyme activity and lower enzyme loadings.

Results
We have been successful in showing that the removal of these inhibitors greatly enhances enzyme activity, resulting in lower enzyme loadings. The cost of producing the sugars, and therefore the ethanol, decreased when enzyme loadings are reduced.

4. Associated Knowledge Areas

KA Code	Knowledge Area
511	New and Improved Non-Food Products and Processes

Outcome #4

1. Outcome Measures

Number of new bioprocessing techniques used to increase efficiency

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	4

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Furfural is a value-added chemical from biomass. It's production is hindered by low yields using current technology. Furfural production at higher yields could improve the economics of biorefineries that convert cellulosic biomass to fuels and chemicals.

What has been done
The potential of maleic acid in accelerating biomass conversion to fuel and other chemicals was determined. The effect of maleic acid on the rate of biofuel production, hemicellulose breakdown and yield was measured.

Results
Processing biomass in the presence of maleic acid leads to furfural production at high yields. In conjunction with hydrotreating processing with maleic acid also produces methyl-THF, a compound with added potential value in biofuel production.

4. Associated Knowledge Areas

KA Code	Knowledge Area
511	New and Improved Non-Food Products and Processes

Outcome #5

1. Outcome Measures

Number of persons gaining knowledge in food processing and food processing automation

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	759

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Home fruit production is emerging as a niche interest and /or necessity with many Indiana residents. With the increase in food prices and expansion of local farmers markets more people are interested in the techniques and management strategies surrounding home fruit and vegetable production.

What has been done
Organized by a team of educators, a regional educational program was hosted in Covington, IN. The program consisted of educational topics on home berry production, grape production with a focus on emerging wine industry, and a panel on community gardens to discuss the successes, failures, and impact of community gardens.

Results
When asked if the program taught them at least one new skill they plan to implement to increase production / use of their crop, 65% responded yes. 36% reported they plan on adding an additional type of fruit to their home production. 25% of participants responded they plan on improving or expanding their current fruit production area and 57% plan on making changes to their production system in ways that will improve food quality, food safety or pesticide residues.

4. Associated Knowledge Areas

KA Code	Knowledge Area
501	New and Improved Food Processing Technologies

Outcome #6

1. Outcome Measures

Numbers of persons or companies adopting new food automation technologies

Not Reporting on this Outcome Measure

Outcome #7

1. **Outcome Measures**

   Number of food and non-food automation technologies used

   Not Reporting on this Outcome Measure

Outcome #8

1. **Outcome Measures**

   Number of persons gaining knowledge in air quality control systems

   Not Reporting on this Outcome Measure

Outcome #9

1. **Outcome Measures**

   Numbers of animal production facilities adopting better air quality practices

   Not Reporting on this Outcome Measure

Outcome #10

1. **Outcome Measures**

   Number of production facilities with improved air quality

   Not Reporting on this Outcome Measure

Outcome #11

1. **Outcome Measures**

   Number of persons gaining knowledge in grain processing

2. **Associated Institution Types**

   - 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	2106

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Grain elevator managers storing corn usually have no knowledge of the likelihood that fungal growth will occur in the corn. They prevent fungal growth by keeping it at low moisture contents where fungi do not grow. When shipping corn, they often blend corn from several sources some of which may have a high fungal susceptibility (FS). The purchaser does not know the risk of continuing to store the corn.

What has been done
The CO2 kit test produced by Woods End Laboratories in Mt Vernon, Maine is being tested as a diagnostic tool to determine the fungal susceptibility of corn rail shipments originating from elevators in northwestern Indiana.

Results
Fungal susceptibility testing using the Woods End CO2 test kit appears to provide farmers, grain elevator managers, and others with a means of assessing the risk associated with continuing to store batches of corn.

4. Associated Knowledge Areas

KA Code	Knowledge Area
503	Quality Maintenance in Storing and Marketing Food Products

Outcome #12

1. Outcome Measures

Numbers of persons and companies adopting better grain processing practices

Not Reporting on this Outcome Measure

Outcome #13

1. Outcome Measures

Number of persons gaining knowledge in enology and viticulture

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	1515

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Indiana has a vibrant and growing wine industry that contributes significantly to the economic wealth of our State. Between 1991 when the program started - and 2011, 56 new wineries opened statewide, bringing the total to 64. As wine grape production has increased in Indiana, growers and vintners demand up-to-date information on new grape cultivars, sustainability and pest management, winemaking techniques and marketing strategies.

What has been done
The Purdue Wine Grape Team (PWGT) has conducted research that led to the selection of grape cultivars that match Indiana's growing conditions while exhibiting improved fruit quality. Wine production practices have been improved through winery consultations and analytical services. Extension workshops have been designed to engage stakeholders across the state and deliver the latest scientific information in viticulture and enology.

Results
According to the latest economic impact study, the Indiana wine industry now contributes more than $72 million to the IN State economy. Grape and wine production are the fastest growing segments of Indiana value-added agriculture and agri-tourism. The Purdue Wine Grape Team engages with the Midwestern wine industries through Extension, research, marketing and promotion activities.

4. Associated Knowledge Areas

KA Code	Knowledge Area
502	New and Improved Food Products

Outcome #14

1. Outcome Measures

Number of persons gaining knowledge of government programs

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	212

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Many direct marketers struggle with emerging and changing regulations at the local, state and national level and and generally lack a source of relevant, research based information.

What has been done
In early 2011, a series of three facilitated retreats were organized to help provide for the establishment of an association that would enhance professionalism when direct marketing to consumer vendors. During the series of retreats the members of the steering committee identified key goals and objectives as well as branding and funding strategies.

Results
Of those responding to a survey immediately following the initial series of retreats, 86% indicated that they had increased their knowledge of the needs for an association and 100% indicated that they felt their interest in such an association had also increased. The respondents unanimously agreed that an association would help them make connections with other vendors of similar needs and would enable them to increase their market sales and or access to consumers.

4. Associated Knowledge Areas

KA Code	Knowledge Area
501	New and Improved Food Processing Technologies

Outcome #15

1. Outcome Measures

Number of persons gaining knowledge of marketing trends

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	1476

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Over the last ten years the number of people that raise meat goats has increased in Indiana. During this time period almost every county 4-H program has added a meat goat show. In 4-H livestock judging competition goats have been added as a species. This rapid rise necessitates educational programs on raising this animal. Specifically there are production practices that need to be followed to reduce potential mortality.

What has been done
Purdue Extension, working in conjunction with Kentucky State University and University of Kentucky, conducted a three part webinar series on raising meat goats. This program was broadcast to 20 County Extension sites in Indiana and six in Kentucky. Session topics were: Parasite control in small ruminants; nutrition and forage programs for goats; and health programs for goats and sheep. These sessions were taught by university specialists and a veterinarian.

Results
Participants answering a survey after the program indicated that 48% of them were thinking of expanding their goat herd.

4. Associated Knowledge Areas

KA Code	Knowledge Area
503	Quality Maintenance in Storing and Marketing Food Products

Outcome #16

1. Outcome Measures

Number of persons gaining knowledge of food packaging applications

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	64

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Foods, food ingredients, and dietary supplements must be safe, nutritious, stable, and acceptable throughout the intended shelf-life.
However, some common storage conditions and practices may contribute to faster-than-expected degradation of key nutrients, such as vitamin C. It is important to identify conditions in which nutrients degrade, how fast the degradation occurs, and devise strategies to avoid the degradation.

What has been done
Research to understand the effects of processing and storage conditions on the structure-function relationships of food ingredients and ultimate food shelf-life have been conducted. Researchers have enhanced their focus on the effects and control of water-solid interactions since this is an area that can lead to decreased shelf-life and loss of stability.

Results
This work has resulted in recommendations for inclusion level and storage conditions for non-food sources of key nutrients, including vitamins, to enhance their shelf life and stability.

4. Associated Knowledge Areas

KA Code	Knowledge Area
501	New and Improved Food Processing Technologies

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)
- Other (State & National Priorities)

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Purdue's College of Agriculture has approximately 300 faculty members and 275 Extension Educators. The breadth and depth of outputs and outcomes they report on annually are consistent with the research and Extension funding they receive and the results they have committed to produce as a result of accepting the funding awards. We have chosen to report success on an individual faculty basis as they are the experts in their field and are best qualified to determine the appropriateness of measures used to demonstrate success. We are not, at this time, structured to evaluate summative success across a Planned Program because the metrics are diverse and often unrelated.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Family Well-Being

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
801	Individual and Family Resource Management	26%		26%	
802	Human Development and Family Well-Being	74%		74%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	9.0	0.0	18.0	0.0
Actual Paid Professional	7.4	0.0	13.6	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
612820	0	165275	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
1018435	0	1617484	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
164326	0	386039	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

• Conduct workshops •Provide training •Develop web-based and distance educational materials •Work with the media •Conduct research •Create displays •Collaborate with other agencies

2. Brief description of the target audience

• immigrants •welfare-to-work individuals •job loss individuals •youth •adults •limited resource families •farm families •families in divorce •child care professionals •trainers of child care professionals •policy makers •parents •volunteers that work with parents •elder caregivers •adult children •retirement associations •community leaders •planners

3. How was eXtension used?

Posting resources, webcasts, articles, YouTube videos, calendars, twitter feeds and contributions to Communities of Practice and Ask an Expert.

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	38782	1383346	22678	286185

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

Patent Applications Submitted

Year: 2011

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	4	9	13

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of programs offered to parents, childcare providers, youth, adults, low-wealth households and consumers

Year	Actual
2011	1905

Output #2

Output Measure

- Number of research projects

Year	Actual
2011	12

Output #3

Output Measure

- Number of Extension publications written, new or revised

Year	Actual
2011	912

Output #4

Output Measure

- Number of web sites developed

Year	Actual
2011	3

Output #5

Output Measure

- Number of new partnerships, coalitions, advisory boards created.

Year	Actual
2011	161

Output #6

Output Measure

- Number of research publications

Year	Actual
2011	250

Output #7

Output Measure

- Number of volunteers

Year	Actual
2011	1358

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of participants who increased their knowledge of debt management
2	Number of participants who adopted one or more practices to reduce debt
3	Number of participants reporting decreased debt
4	Number of participants who increased their knowledge of the benefits of saving on a regular basis
5	Number of participants who increased the amount of money they save regularly
6	Number of participants who save regularly as a result of educational programming
7	Number of participants who increased their knowledge of basic personal financial management
8	Number of participants who have established financial goals to guide financial decisions
9	Number of participants who develop a plan for achieving financial security
10	Number of participants who report increased financial security
11	Number of participants who increased their knowledge of child care and how to manage care giving roles and responsibilities
12	Number of participants who increased their knowledge of decision making skills necessary to make quality of life decisions for caregivers and receivers
13	Number of child care professionals who are working toward, who have obtained, or who have renewed the Child Development Associate Credential.
14	Number of participants who increased their knowledge of basic parenting skills
15	Number of participants reporting improved parent-child communication
16	Number of participants reporting significant improvement in satisfaction and quality of parent-child relationships
17	Number of participants who report they will take one or more recommended actions to avoid identity theft

18	Number of participants who developed knowledge of safety and security procedures in an emergency
19	Number of individuals who increased their knowledge about establishing and maintaining healthy indoor air quality
20	Number of adults who have experienced changed attitudes or behaviors in valuing and appreciating differences in others
21	Number of adults who have increased their understanding of human relationships, communications, and leadership styles.
22	Number of adults who have increased their understanding of themselves and others
23	Participants increased saving by $_____
24	Participants reduced debt by $_____
25	Number of participants who report knowing the steps to take if they are a victim of identity theft

Outcome #1

1. **Outcome Measures**

   Number of participants who increased their knowledge of debt management

   Not Reporting on this Outcome Measure

Outcome #2

1. **Outcome Measures**

   Number of participants who adopted one or more practices to reduce debt

   Not Reporting on this Outcome Measure

Outcome #3

1. **Outcome Measures**

   Number of participants reporting decreased debt

   Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Number of participants who increased their knowledge of the benefits of saving on a regular basis

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	4935

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Although Americans are 2-3 years removed from the financial crisis of 2008 we still face a potentially volatile financial future. Market volatility reached nearly unprecedented levels. Consumers without knowledge of stock market swings or investment experience tend to lose money in such markets due to unfounded, emotional decision-making.

What has been done
Created a Where Does Your Money Go program contains built-in, educator-friendly replication which can be taught in one of two formats. First, a single 60-120 minute session discusses: Current Spending; Wants and Needs; Spending and Savings Plans and the second is Spending Leaks; Extra Expenses; and Tracking Expenses.

Results
594 participants in four counties completed single session evaluations. Three fourths of the participants indicated they received resource materials they could use from the session. Ninety percent indicated that they now have ideas they can implement immediately. When asked what they learned at the session, participants said they learned the difference between needs and wants (75%), what their spending leaks are (50%), how to develop a spending-savings plan (75%), and how to track their expenses using the envelope method (63%).

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #5

1. **Outcome Measures**

Number of participants who increased the amount of money they save regularly

Not Reporting on this Outcome Measure

Outcome #6

1. **Outcome Measures**

Number of participants who save regularly as a result of educational programming

Not Reporting on this Outcome Measure

Outcome #7

1. **Outcome Measures**

Number of participants who increased their knowledge of basic personal financial management

2. **Associated Institution Types**

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	42002

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Research shows that kids think their parents stress over finances. Owen County has been impacted by the economic situation and job availability which afflicts the state and nation.

What has been done
A program of four 30 to 45 minute personal finance lessons, was designed at a 3rd/4th grade level, to bring understanding and a feeling of control as elementary school students learn how to manage money now and in the future through fast-moving interactive team-taught sessions. Additionally, the program meets the Indiana Academic Standards for math and social studies, and has been piloted in various areas of Indiana.

Results
Pre and post tests show that students increased knowledge in 12 concepts related to managing money. A teacher survey showed these results: 1. Identified the most important concept covered as The more you learn, the more you earn; 2. Noted an increased student interest in pursuing higher education, and saving money as a result of participation in the Captain Cash program;3. Stated that students reported talking to their parents/guardians about money management since their exposure to the Captain Cash curriculum.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #8

1. Outcome Measures

Number of participants who have established financial goals to guide financial decisions

Not Reporting on this Outcome Measure

Outcome #9

1. Outcome Measures

Number of participants who develop a plan for achieving financial security

Not Reporting on this Outcome Measure

Outcome #10

1. Outcome Measures

Number of participants who report increased financial security

Not Reporting on this Outcome Measure

Outcome #11

1. Outcome Measures

Number of participants who increased their knowledge of child care and how to manage care giving roles and responsibilities

Not Reporting on this Outcome Measure

Outcome #12

1. Outcome Measures

Number of participants who increased their knowledge of decision making skills necessary to make quality of life decisions for caregivers and receivers

Not Reporting on this Outcome Measure

Outcome #13

1. Outcome Measures

Number of child care professionals who are working toward, who have obtained, or who have renewed the Child Development Associate Credential.

Not Reporting on this Outcome Measure

Outcome #14

1. Outcome Measures

Number of participants who increased their knowledge of basic parenting skills

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	899

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In 2009, children under the age of 18 accounted for 24.7% of the Indiana population. Families, or two or more people living together who are related by birth, marriage, or adoption, make up 66.9% of all households in Indiana. Research demonstrates that parents and families have a significant impact on a child outcome affecting everything from health and development, to school readiness and school attendance. When parents are consistently responsive and involved in their childrens lives, their children fare better physically, cognitively, emotionally, and socially.

What has been done

Health and Human Science (HHS) Extension educators in Dearborn, Fayette, Madison, Ripley, and Shelby counties worked with community partners to offer Parenting Counts, a curriculum with resources designed to support parents and caregivers of young children in order to ensure they raise socially and emotionally healthy children. Program sessions were offered and evaluation tools administered. A total of 242 individual evaluation tools were collected for analysis.

Results
For the Communication lesson focusing on understanding appropriate responses to newborns based on their communication cues, there was an improvement in knowledge from pre-workshop values. The Stress lesson focusing on learning healthy ways to handle stress in order to help children develop healthy emotions also showed an increase in knowledge from pre-workshop evaluations.

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being

Outcome #15

1. Outcome Measures

Number of participants reporting improved parent-child communication

Not Reporting on this Outcome Measure

Outcome #16

1. Outcome Measures

Number of participants reporting significant improvement in satisfaction and quality of parent-child relationships

Not Reporting on this Outcome Measure

Outcome #17

1. Outcome Measures

Number of participants who report they will take one or more recommended actions to avoid identity theft

Not Reporting on this Outcome Measure

Outcome #18

1. **Outcome Measures**

Number of participants who developed knowledge of safety and security procedures in an emergency

Not Reporting on this Outcome Measure

Outcome #19

1. **Outcome Measures**

Number of individuals who increased their knowledge about establishing and maintaining healthy indoor air quality

Not Reporting on this Outcome Measure

Outcome #20

1. **Outcome Measures**

Number of adults who have experienced changed attitudes or behaviors in valuing and appreciating differences in others

Not Reporting on this Outcome Measure

Outcome #21

1. **Outcome Measures**

Number of adults who have increased their understanding of human relationships, communications, and leadership styles.

Not Reporting on this Outcome Measure

Outcome #22

1. **Outcome Measures**

Number of adults who have increased their understanding of themselves and others

Not Reporting on this Outcome Measure

Outcome #23

1. **Outcome Measures**

Participants increased saving by $_____

Not Reporting on this Outcome Measure

Outcome #24

1. **Outcome Measures**

Participants reduced debt by $_____

Not Reporting on this Outcome Measure

Outcome #25

1. **Outcome Measures**

Number of participants who report knowing the steps to take if they are a victim of identity theft

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Purdue's College of Agriculture has approximately 300 faculty members and 275 Extension Educators. The breadth and depth of outputs and outcomes they report on

annually are consistent with the research and Extension funding they receive and the results they have committed to produce as a result of accepting the funding awards. We have chosen to report success on an individual faculty basis as they are the experts in their field and are best qualified to determine the appropriateness of measures used to demonstrate success. We are not, at this time, structured to evaluate summative success across a Planned Program because the metrics are diverse and often unrelated.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Human Nutrition , Human Health and Well-Being

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
701	Nutrient Composition of Food	1%		1%	
702	Requirements and Function of Nutrients and Other Food Components	30%		30%	
703	Nutrition Education and Behavior	11%		11%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	7%		7%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	28%		28%	
721	Insects and Other Pests Affecting Humans	7%		7%	
723	Hazards to Human Health and Safety	16%		16%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	1.4	0.0	9.0	0.0
Actual Paid Professional	0.7	0.0	11.5	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
413611	0	404936	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
835692	0	1167842	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
93837	0	516629	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Research-based programs will focus on conducting research experiments and programs emphasizing our key interest areas including:

- detection and control of foodborne pathogens,
- effects of diet and nutrition on human health,
- beneficial effects of nutrition, functional foods and biomedical research,
- nutritional impact on chronic diseases including diabetes, heart disease, and obesity.

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. Brief description of the target audience

There are a wide variety of intended audiences including:

- Animal production personnel
- Plant production personnel
- Food manufacturing and processing plant personnel
- The transportation industry
- Foodservice and food retail workers
- Consumers
- Healthcare providers
- Day care providers
- Nursing homes
- Youth

- State and county health departments
- Federal regulatory officials
- State industry associations
- First Responders

3. How was eXtension used?

Posting resources, webcasts, articles, YouTube videos, calendars, twitter feeds and contributions to Communities of Practice and Ask an Expert.

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	93531	868577	84931	58859

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

Patent Applications Submitted

Year: 2011

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	0	15	15

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of nutrition related programs offered to consumers

Year	Actual
2011	21614

Output #2

Output Measure

- Number of programs offered to the food industry

Year	Actual
2011	17

Output #3

Output Measure

- Number of research projects on human nutrition and health

Year	Actual
2011	40

Output #4

Output Measure

- Number of nutrition related research publications

Year	Actual
2011	174

Output #5

Output Measure

- Number of nutrition programs offered to foodservice staff

Year	Actual
2011	22

Output #6

Output Measure

- Number of community health coalition events

Year	Actual
2011	370

Output #7

Output Measure

- Number of volunteers

Year	Actual
2011	1507

Output #8

Output Measure

- Number of Extension publications written, new or revised

Year	Actual
2011	1293

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of persons who increased their knowledge of the connection between food choices and risk of chronic disease.
2	Number of persons who increased their knowledge of selection and preparation of foods with reduced fat and/or calories
3	Number of persons who increased knowledge of USDA serving sizes
4	Number of participants consuming appropriate USDA serving sizes
5	Number of participants demonstrating ability to choose or prepare foods with reduced fat and/or calories
6	Number of participants with decreased risk factors for chronic disease (including diabetes, heart disease, obesity)
7	Number of participants with decreased chronic disease complications (including diabetes, heart disease, obesity)
8	Number of persons who increase knowledge of the relationship between nutrition and health
9	Number of persons who increased their knowledge of physical activity recommendations
10	Number of persons who adopt one or more practices to improve food choices and activity levels
11	Number of participants that report reduced medical costs because of changes in food choices and activity levels

Outcome #1

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	25157

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Diabetes adversely impacts the lives of almost 600,000 adults in Indiana dealing with this chronic condition. People with diabetes may experience a shorter life expectancy. Modifiable risk factors associated with diabetes include obesity, physical inactivity, and dietary habits.

What has been done
Purdue Extension specialists and educators are engaged in offering a program to help people learn how to prepare the foods they enjoy in a way that reduces calories, fat and sodium, and increases dietary fiber.

Results
Thirty-one Extension educators presented the program 66 times in 30 counties. A total of 1,174 people attended. Of these, 713 completed a pre and post-program evaluation. There was a significant improvement in responses to the knowledge questions, and a significant improvement in behavior related to exercise, eating fruits and vegetables, and dairy intake from pre compared with post-program evaluation.

4. Associated Knowledge Areas

KA Code	Knowledge Area
702	Requirements and Function of Nutrients and Other Food Components

Outcome #2

1. Outcome Measures

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

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Number of persons who increased knowledge of USDA serving sizes

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	29667

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Obesity rates among 6-11 year olds have increased nearly 500% in the past forty years. The average child today eats fast food at least 2 times a week. Only 3 out of 10 high school seniors report eating green vegetables nearly every day.

What has been done
Responding to the issue of childhood obesity,staff in Owen and Clay Counties partnered with schools in both counties to design and present Tools For Healthy Eaters to 4th and 5th grade classroom-sized groups in these counties. Nurses, PE teachers and principals were active in the planning. Most students in both counties are on free/reduced lunches

Results
In all, 1041 students were engaged in 39 lively classroom presentations. During the past 2 years, 1852 students have participated in the program. Teachers and school nurse actively promote the program as making a difference in student knowledge and behavior, and request it for next year.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

Outcome #4

1. **Outcome Measures**

Number of participants consuming appropriate USDA serving sizes

Not Reporting on this Outcome Measure

Outcome #5

1. **Outcome Measures**

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

2. **Associated Institution Types**

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	4076

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In 2007, diabetes was the seventh leading cause of death in Indiana. The estimated cost incurred by the State of Indiana for annual health care costs specifically attributed to diabetes is $3.94 billion. In 2008, 9.6% of adults (18 years of age or older) in Indiana reported they had been diagnosed with diabetes, while it is estimated another 2.9% have undiagnosed diabetes

What has been done
Purdue Extension specialists and educators are engaged in offering a program, Dining with Diabetes, consisting of four 2-hour sessions and a follow-up session with assistance from other healthcare professionals. The program demonstrates how to prepare healthier options for main dishes, side dishes, beverages, snacks, and desserts, which participants are able to sample during the sessions.

Results

Participants completed pre- and post-tests to measure knowledge gained and behavioral changes made. After the program series, 50% of the participants reported they agreed, or strongly agreed, that they are confident that they can keep their diabetes under control. 73% reported exercising for 20 minutes or more on a daily basis after the cooking school series. Following the June follow-up program, participants reported knowing more about making healthy recipes fit into their diets.

4. Associated Knowledge Areas

KA Code	Knowledge Area
702	Requirements and Function of Nutrients and Other Food Components

Outcome #6

1. Outcome Measures

Number of participants with decreased risk factors for chronic disease (including diabetes, heart disease, obesity)

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

Number of participants with decreased chronic disease complications (including diabetes, heart disease, obesity)

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

Number of persons who increase knowledge of the relationship between nutrition and health

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	48473

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Local Foods is a growing area of consumer interest that impacts local and state economies. There are also potential health benefits in increasing nutrition through educating individuals about eating more fresh fruits and vegetables and other foods that may be produced locally.

What has been done
Purdue Extension is a partner with Indiana's Going Local Week. All educators were encouraged to host programming that relates to Indiana locally raised and processed food as well as publicize the event.

Results
Educators collectively reported: 9 articles written and distributed in their newsletters and/or websites, 8 articles in local newspapers, 5 radio interviews or spots, 1 Going Local Fair, 2 school programs on Eat Your Way to Better Health featuring fresh local produce, 8 food preservation workshops, 1 Master Gardener local foods challenge event, 1 Start your own Food Business workshop, 1 Local producers radio contest, 1 Farm market booth and presentation.

4. Associated Knowledge Areas

KA Code	Knowledge Area
702	Requirements and Function of Nutrients and Other Food Components

Outcome #9

1. Outcome Measures

Number of persons who increased their knowledge of physical activity recommendations

Not Reporting on this Outcome Measure

Outcome #10

1. Outcome Measures

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

Not Reporting on this Outcome Measure

Outcome #11

1. **Outcome Measures**

Number of participants that report reduced medical costs because of changes in food choices and activity levels

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)
- Other (State and National priorities)

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Purdue's College of Agriculture has approximately 300 faculty members and 275 Extension Educators. The breadth and depth of outputs and outcomes they report on annually are consistent with the research and Extension funding they receive and the results they have committed to produce as a result of accepting the funding awards. We have chosen to report success on an individual faculty basis as they are the experts in their field and are best qualified to determine the appropriateness of measures used to demonstrate success. We are not, at this time, structured to evaluate summative success across a Planned Program because the metrics are diverse and often unrelated.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Natural Resources and Environment

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 (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	2.0	0.0	4.0	0.0
Actual Paid Professional	1.4	0.0	6.7	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
378241	0	31838	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
855683	0	955500	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
143410	0	299345	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

• 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. Brief description of the target 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

3. How was eXtension used?

Posting resources, webcasts, articles, YouTube videos, calendars, twitter feeds and contributions to Communities of Practice and Ask an Expert.

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	140777	4818324	37836	15813

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

Patent Applications Submitted

Year: 2011

Actual: 1

Patents listed
7,942,208

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	4	174	178

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of programs offered to producers, land owners, and land managers.

Year	Actual
2011	474

Output #2

Output Measure

- Number of research projects

Year	Actual
2011	229

Output #3

Output Measure

- Number of demonstrations and field days

Year	Actual
2011	545

Output #4

Output Measure

- Number of Extension publications written, new & revised

Year	Actual
2011	117

Output #5

Output Measure

- Number of K-12 Classroom visits

Year	Actual
2011	400

Output #6

Output Measure

- Number of one-on-one consultations

Year	Actual
2011	13321

Output #7

Output Measure

- Number of newsletter or magazine articles written

Year	Actual
2011	608

Output #8

Output Measure

- Number of volunteers trained

Year	Actual
2011	5206

Output #9

Output Measure

- Number of Plan Commission meetings

Year	Actual
2011	197

Output #10

Output Measure

- Number of Extension publications distributed

Year	Actual
2011	374423

Output #11

Output Measure

- Number of research publications

Year	Actual
2011	177

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

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 Measures

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

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	2191

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Issues such as pesticide selection & application rates, management of new diseases and insect pests, water quality and its effect on pesticide efficacy are just a few of the sometimes difficult and potentially costly topics farmers must deal with on a regular basis. Many farmers are not sure who to turn to for reliable, unbiased answers to these types of questions, and end up making

decisions that have the potential to not only negatively impact their bottom line, but may also have environmental consequences as well.

What has been done
To assist farmers with making difficult management decisions, the Purdue Extension Agriculture & Natural Resource Educators in Area 7, along with the Davis Purdue Ag Center (DPAC) superintendent met together to organize a field day at DPAC in Randolph County. In 2011, 180 producers and representatives from Agribusinesses in the area attended the day-long event. Participants had the opportunity to hear an Extension Specialist and the DPAC farm superintendent discuss the effectiveness of their herbicide treatments, and were invited to walk through corn and soybean herbicide demonstration plots.

Results
When surveyed after the program, ninety-nine percent of respondents indicated the information they heard would influence their weed management decisions next year. This will allow farmers to make better informed decisions when purchasing and using pesticides, which will save time and money while also protecting the environment. When asked about the insect pest portion of the program, 95% indicated they felt better prepared to manage them. This will help farmers who struggle with insect issues make more informed decisions, and minimize losses. Finally, 100% of respondents indicated that they had a better understanding of how water quality affects pesticide efficacy, and 92% planned to have their water tested as a result of what they learned.

4. Associated Knowledge Areas

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

Outcome #3

1. Outcome Measures

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

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

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

Not Reporting on this Outcome Measure

Outcome #5

1. **Outcome Measures**

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

Not Reporting on this Outcome Measure

Outcome #6

1. **Outcome Measures**

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

Not Reporting on this Outcome Measure

Outcome #7

1. **Outcome Measures**

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

Not Reporting on this Outcome Measure

Outcome #8

1. **Outcome Measures**

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

Not Reporting on this Outcome Measure

Outcome #9

1. **Outcome Measures**

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

Not Reporting on this Outcome Measure

Outcome #10

1. **Outcome Measures**

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

Not Reporting on this Outcome Measure

Outcome #11

1. **Outcome Measures**

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

Not Reporting on this Outcome Measure

Outcome #12

1. **Outcome Measures**

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

Not Reporting on this Outcome Measure

Outcome #13

1. **Outcome Measures**

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

Not Reporting on this Outcome Measure

Outcome #14

1. **Outcome Measures**

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

Not Reporting on this Outcome Measure

Outcome #15

1. **Outcome Measures**

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

   Not Reporting on this Outcome Measure

Outcome #16

1. **Outcome Measures**

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

   Not Reporting on this Outcome Measure

Outcome #17

1. **Outcome Measures**

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

   Not Reporting on this Outcome Measure

Outcome #18

1. **Outcome Measures**

   Number of participants who increased their knowledge of natural resource management

   Not Reporting on this Outcome Measure

Outcome #19

1. **Outcome Measures**

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

2. **Associated Institution Types**

   - 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	14212

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Pesticide drift can cause significant economic losses to crop and livestock producers, as well as applicators. Not only can drift harm crops, it can damage at-risk habitats. Pesticide applicators need to know where sensitive fields and areas are located to help minimize drift and the problems it can cause.

What has been done
Our team developed the Driftwatch.org website to help protect pesticide-sensitive crops and habitats. The site helps pesticide applicators, specialty crop growers, and stewards of at-risk habitats in Indiana communicate more effectively to protect pesticide-sensitive areas. Driftwatch is not intended to be a registry for homeowners or sites less than half an acre. Driftwatch has been presented at 16 Private Applicator Recertification Programs in 25 counties with 379 attendees. The site has been enhanced to make it easier for applicators to find the information they need and for registrants to mark their fields.

Results
In 2011, more than 300 Indiana producers registered more than 560 pesticide-sensitive areas. During the same time, 187 commercial applicators used the site to locate sensitive areas. This has translated into saving thousands of dollars in crop losses. A commercial tomato processor indicated that drift incidents fell by 50 percent and damage claims fell 90 percent since their growers began participating in Driftwatch. Not only were the protected areas (and crops) saved from damages, but insurers have not had to pay claims against damages, and applicators have not had to pay as much in fines.

4. Associated Knowledge Areas

KA Code	Knowledge Area
133	Pollution Prevention and Mitigation

Outcome #20

1. Outcome Measures

Number of participants who increased their knowledge of topsoil importance

Not Reporting on this Outcome Measure

Outcome #21

1. **Outcome Measures**

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

Not Reporting on this Outcome Measure

Outcome #22

1. **Outcome Measures**

Number of woodlot owners who improved their management skills

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Purdue's College of Agriculture has approximately 300 faculty members and 275 Extension Educators. The breadth and depth of outputs and outcomes they report on annually are consistent with the research and Extension funding they receive and the results they have committed to produce as a result of accepting the funding awards. We have chosen to report success on an individual faculty basis as they are the experts in their field and are best qualified to determine the appropriateness of measures used to demonstrate success. We are not, at this time, structured to evaluate summative success across a Planned Program because the metrics are diverse and often unrelated.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Animals and Their Systems

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
301	Reproductive Performance of Animals	6%		6%	
302	Nutrient Utilization in Animals	30%		30%	
303	Genetic Improvement of Animals	7%		7%	
304	Animal Genome	13%		13%	
305	Animal Physiological Processes	3%		3%	
306	Environmental Stress in Animals	3%		3%	
307	Animal Management Systems	9%		9%	
308	Improved Animal Products (Before Harvest)	8%		8%	
311	Animal Diseases	10%		10%	
312	External Parasites and Pests of Animals	1%		1%	
313	Internal Parasites in Animals	1%		1%	
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals	1%		1%	
315	Animal Welfare/Well-Being and Protection	8%		8%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	3.0	0.0	35.0	0.0
Actual Paid Professional	3.4	0.0	65.8	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
458183	0	396712	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
1048154	0	2642897	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
111488	0	3286394	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

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

2. Brief description of the target audience

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

3. How was eXtension used?

Posting resources, webcasts, articles, YouTube videos, calendars, twitter feeds and contributions to Communities of Practice and Ask an Expert.

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	21689	1968241	16282	12545

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

Patent Applications Submitted

Year: 2011
Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	24	103	127

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

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

Year	Actual
2011	237

Output #2

Output Measure

- Number of research projects

Year	Actual
2011	131

Output #3

Output Measure

- Number of consultations

Year	Actual
2011	2252

Output #4

Output Measure

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

Year	Actual
2011	69

Output #5

Output Measure

- Number of K-12 classroom visits

Year	Actual
2011	101

Output #6

Output Measure

- Number of Extension publications distributed

Year	Actual
2011	19318

Output #7

Output Measure

- Number of research publications

Year	Actual
2011	103

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of livestock producers adopting practices to enhance sustainability of their operations.
2	Number of poultry and livestock producers utilizing animal welfare assessments to enhance their management systems.
3	Number of poultry and livestock producers and professionals who increased their knowledge of environmental stewardship practices and environmental regulations.
4	Number of poultry and livestock producers adopting management practices that maximize environmental stewardship.
5	Number of poultry and livestock producers and professionals developing comprehensive nutrient management plans.
6	Number of poultry and livestock producers who enhance soil fertility and reduce soil pollution through properly applied animal waste
7	Number of 4-H member Youth Quality Assurance certified
8	Number of adults Quality Assurance certified
9	Number of youth who gained knowledge about the livestock industry, animal feeding, and/or production

Outcome #1

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	1698

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Nutrient management record keeping is important for all sizes of livestock farms. Maintaining records are required for permitted livestock farms, record keeping is also important for smaller livestock in order to protect the environment. Record keeping systems are needed that are easy to implement and encourage producers to keep and maintain appropriate environmental records for their farms.

What has been done
A nutrient management record keeping calendar was developed for livestock farmers. The calendar is designed to serve as a reminder and a means of keeping the records that need to be kept by livestock farmers on a daily, weekly, monthly, and yearly basis.

Results
The Indiana nutrient management record-keeping calendars were distributed to over 2500 people in the state of Indiana and to livestock farmers from 20 other states around the U.S. Nutrient management record-keeping calendars were also developed for Nebraska livestock farmers, with 750 calendars being distributed throughout the state.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
305	Animal Physiological Processes
306	Environmental Stress in Animals

307	Animal Management Systems
308	Improved Animal Products (Before Harvest)
311	Animal Diseases
312	External Parasites and Pests of Animals
313	Internal Parasites in Animals
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals

Outcome #2

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	449

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
As economic and environmental circumstances change for swine operations in the region, new technologies and management practices must continually be explored while consumer and community confidence in a safe and wholesome animal food supply needs to also be expanded for these operations to successfully continue.

What has been done
The Southern Indiana Pork Conference was developed to 1.) address locally identified pork production needs, 2.) present research based information to regional clientele, and 3.) expose producers to key specialists or industry personnel who can assist producers with their swine concerns.

Results
37 individuals attended the event. In addition to the transfer of basic swine production information to those attending, 17 persons received Pork Quality Assurance Plus (PQA+) training to improve economic, environmental and animal welfare aspects of their swine operations.

4. Associated Knowledge Areas

KA Code	Knowledge Area
315	Animal Welfare/Well-Being and Protection

Outcome #3

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	1173

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Information on dairy farming from credible, scientific based sources is needed for both the general public and for dairy farmers. As technology advances, new opportunities and methods of sharing information beyond print media have become available. Podcasts provide a way of sharing information using an audio format. Podcasts allow the user to hear a person's voice and provide a more personal means of communicating the information.

What has been done
Starting in June of 2010 a weekly 2 minute podcast on a dairy topic has been produced. The podcasts provide information on a wide variety of dairy topics. The podcasts are targeted for a variety of audiences, from those completely unfamiliar with the dairy industry and farming to dairy farmers themselves. The podcasts are available on a website and on iTunes by Wednesday of each week. Many are produced in Spanish and in English.

Results
Over 100 individual podcasts have covered topics from general information on dairy farming, nutrition and dairy cow diet information, transition cow health issues, calf and heifer feeding and management, and manure and environmental issues. The Purdue Dairy Digest has been one of the featured podcast series on iTunes when the term "dairy" is searched for over 6 months. The Purdue Dairy Digest provides a credible source of dairy information on a routine basis to both the general public and dairy farmers.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
303	Genetic Improvement of Animals
305	Animal Physiological Processes
306	Environmental Stress in Animals
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)
311	Animal Diseases
315	Animal Welfare/Well-Being and Protection

Outcome #4

1. Outcome Measures

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

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

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

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	247

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Fertilizer costs have increased substantially and there is concern for the environment when over application of nutrients occurs. There is a need for forage producers and fertilizer dealers to provide up-to-date soil test data and correct recommendations for fertilizer application.

What has been done
Inquiries initiated by forage and livestock producers about the results of forage fertility practices, soil test laboratory data have been cross referenced with the recommendations originating from fertilizer dealers and linked to forage fertility needs. This activity permitted comparison of industry recommendations with true needs of producers.

Results
Results show that proactive education of soil testing at educational events promotes appropriate application of nutrients so forage production can be optimized without negative impact to the environment. This work demonstrates a mismatch of fertilizer application recommendations and fertilizer needs based on soil fertillity and agronomic needs. More work needs to be done to ensure that fertilizer dealers provide timely information that is based on recommendations that are derived from research.

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals
307	Animal Management Systems

Outcome #7

1. Outcome Measures

Number of 4-H member Youth Quality Assurance certified

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

Number of adults Quality Assurance certified

Not Reporting on this Outcome Measure

Outcome #9

1. **Outcome Measures**

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

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Purdue's College of Agriculture has approximately 300 faculty members and 275 Extension Educators. The breadth and depth of outputs and outcomes they report on annually are consistent with the research and Extension funding they receive and the results they have committed to produce as a result of accepting the funding awards. We have chosen to report success on an individual faculty basis as they are the experts in their field and are best qualified to determine the appropriateness of measures used to demonstrate success. We are not, at this time, structured to evaluate summative success across a Planned Program because the metrics are diverse and often unrelated.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 7

1. Name of the Planned Program

Economic and Community Development

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	80%		80%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	3%		3%	
805	Community Institutions, Health, and Social Services	17%		17%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	2.0	0.0	3.0	0.0
Actual Paid Professional	4.0	0.0	4.5	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
443791	0	11856	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
1105450	0	1112200	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
126409	0	244738	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

• Workshops •Extension publications •Research projects •Website Development •Adobe Connect Programs •One-on-One Consultation •Collaboration with other agencies

2. Brief description of the target audience

• Local elected officials •Staff and volunteers of nonprofits/NGOs •Consumers

3. How was eXtension used?

Posting resources, webcasts, articles, YouTube videos, calendars, twitter feeds and contributions to Communities of Practice and Ask an Expert.

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	84548	2065495	30952	24611

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

Patent Applications Submitted

Year: 2011

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	7	32	39

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

● number of workshops conducted

Year	Actual
2011	125

Output #2

Output Measure

- number of research projects

Year	Actual
2011	16

Output #3

Output Measure

- Number of Extension publications written, new or revised

Year	Actual
2011	7

Output #4

Output Measure

- number of collaborations with other agencies

Year	Actual
2011	10

Output #5

Output Measure

- number of Adobe Connect programs

Year	Actual
2011	16

Output #6

Output Measure

- number of one-on-one consultations

Year	Actual
2011	220

Output #7

Output Measure

- number of web sites developed

Year	Actual
2011	1

Output #8

Output Measure

- Number of research publications

Year	Actual
2011	32

Output #9

Output Measure

- Number of external presentations and/or media interviews

Year	Actual
2011	11

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of communities that increase knowledge of how to identify and address critical issues for citizens
2	Number of communities engaged in issue identification and action planning
3	Number of communities who improve their capacity to identify and address critical issues that impact the lives of its citizens
4	Number of communities increasing knowledge related to creating sustainable and competitive local economic development systems
5	Number of communities creating more sustainable and competitive local economic development systems.
6	Number of participants who are building their community leadership skills and becoming more active in community problem-solving.
7	Number of participants becoming more active in community problem-solving efforts
8	Dollar value of grants obtained as a result of participation in grant writing program

Outcome #1

1. Outcome Measures

Number of communities that increase knowledge of how to identify and address critical issues for citizens

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Number of communities engaged in issue identification and action planning

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Number of communities who improve their capacity to identify and address critical issues that impact the lives of its citizens

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	322

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Communities face the challenges of competing uses for their land and natural resources. An additional challenge is to balance property rights with the protection of the community health and welfare.

What has been done
Four land-use update webinars were conducted at as many as 20 viewing sites around the state. Presenters in the program included Extension Educators, Extension Specialists, planning

consultants, planning staff, citizens, and elected officials. Participants were able to ask specific questions of the presenters.

Results
193 individuals participated in the land-use update webinars. As a result of participating in the programs, participants said they have a better understanding of the parties involved in the planning process and how to work together for the good of the community. 95 % of the participants would recommend these programs to others.

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
805	Community Institutions, Health, and Social Services

Outcome #4

1. Outcome Measures

Number of communities increasing knowledge related to creating sustainable and competitive local economic development systems

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Number of communities creating more sustainable and competitive local economic development systems.

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Number of participants who are building their community leadership skills and becoming more active in community problem-solving.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	1254

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Property tax reform, national economic trends, and other factors make budgeting for local government services more difficult than ever. Local government officials need accurate information, insightful education, and an opportunity to learn from each other to more effectively do their budget planning.

What has been done
Purdue Extension Educators and ECD program leadership worked with Larry DeBoer, Professor of Agricultural Economics to develop and deliver the On Local Government program. Several times each year this program is delivered via IP Video and hosted by Extension Educators from across the state. The audience for the program is local elected officials and others involved in the local budgeting process.

Results
Over 310 participants were present during the workshops conducted during the reporting timeframe. 99% found distance learning to be an effective mode of delivery, 98% gained a better understanding of the local government budgeting process, 98% indicated the program helped them identify issues related to their local government budget, 99% indicated that the program provided new knowledge or tools to help them better prepare their budgets, 97% would recommend the program to others, 94% indicated that their participation would impact the fiscal well-being of their community.

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
805	Community Institutions, Health, and Social Services

Outcome #7

1. Outcome Measures

Number of participants becoming more active in community problem-solving efforts

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

Dollar value of grants obtained as a result of participation in grant writing program

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	121700

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Community leaders must be effective in writing grants to capture funds for special projects yet many lack this ability and experience.

What has been done
The Beginner's Guide to Grant Writing Program has been established to deliver a 16-hour grant writing program via distance learning to community leaders.

Results
After completing the workshop, participants feel more confident in their grant writing skills, understand how to develop a project idea into a proposal, and know where to find information for available funding. Reports of funds awarded to program participants indicate over $375,000 added to the cumulative total of $8 million during this program year.

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development
805	Community Institutions, Health, and Social Services

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Purdue's College of Agriculture has approximately 300 faculty members and 275 Extension Educators. The breadth and depth of outputs and outcomes they report on annually are consistent with the research and Extension funding they receive and the results they have committed to produce as a result of accepting the funding awards. We have chosen to report success on an individual faculty basis as they are the experts in their field and are best qualified to determine the appropriateness of measures used to demonstrate success. We are not, at this time, structured to evaluate summative success across a Planned Program because the metrics are diverse and often unrelated.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 8

1. Name of the Planned Program

Global Food Security & Hunger

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%	
201	Plant Genome, Genetics, and Genetic Mechanisms	10%		10%	
205	Plant Management Systems	20%		20%	
212	Pathogens and Nematodes Affecting Plants	10%		10%	
213	Weeds Affecting Plants	5%		5%	
301	Reproductive Performance of Animals	5%		5%	
302	Nutrient Utilization in Animals	10%		10%	
311	Animal Diseases	5%		5%	
315	Animal Welfare/Well-Being and Protection	5%		5%	
403	Waste Disposal, Recycling, and Reuse	5%		5%	
601	Economics of Agricultural Production and Farm Management	10%		10%	
604	Marketing and Distribution Practices	5%		5%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	51.0	0.0	206.0	0.0
Actual Paid Professional	29.9	0.0	89.4	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
2331932	0	3202186	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
1781393	0	6411185	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
343477	0	1114328	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Conduct educational workshops
- Conduct research
- Develop Extension curricula
- Establish distance education programs and web-based programs
- One-on-one consultations
- Develop research publications and Extension publications
- Collaborate with other agencies

2. Brief description of the target audience

- Producers
- Elected officials and decision makers
- Youth
- Consumers

3. How was eXtension used?

Posting resources, webcasts, articles, YouTube videos, calendars, twitter feeds and contributions to Communities of Practice and Ask an Expert.

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	1095488	547141	11162	13530

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

Patent Applications Submitted

Year: 2011

Actual: 3

Patents listed

200400143; 4688126; 4686603

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	65	98	163

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of Extension publications written, new or revised

Year	Actual
2011	128

Output #2

Output Measure

- Number of research publications

Year	Actual
2011	183

Output #3

Output Measure

- Number of research projects

Year	Actual
2011	173

Output #4

Output Measure

- Number of consultations

Year	Actual
2011	10617

Output #5

Output Measure

- Number of educational workshops conducted

Year	Actual
2011	964

Output #6

Output Measure

- Number of volunteers

Year	Actual
2011	2875

Output #7

Output Measure

- Number of Extension pubs distributed

Year	Actual
2011	67617

Output #8

Output Measure

- Number of page views at KingCorn.com and Plant Pest Diagnostic Web sites

Year	Actual
2011	367332

Output #9

Output Measure

- Number of K-12 children who increased their knowledge of plant diseases

Year	Actual
2011	2500

Output #10

Output Measure

- Number of plant disease diagnoses provided to Plant and Pest Diagnostic Lab clientele

Year	Actual
2011	2253

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of poultry and livestock producers and professionals who increase their knowledge of up-to-date information and technologies, management practices, and value-added opportunities
2	Number of poultry and livestock producers and professionals who adopt up-to-date information and technologies.
3	Number of livestock producers expanding their operations.
4	Number of livestock producers who increased their knowledge about alternative feedstuffs
5	Number of livestock tested for reproductive soundness
6	Number of farm and commodity organization members who increase their knowledge of the potential economic impacts of alternative farm commodity program provisions such as implications for exports, domestic utilization and price, farm income, and government farm program expenditures
7	Number of farmers who enhance soil fertility and reduce soil pollution through less reliance on commercial fertilizer and increased reliance on properly applied animal waste
8	Number of farmers who optimize livestock welfare through the design of efficient and animal sensitive farm structures
9	Number of farmers who increase their knowledge of livestock building designs that are energy efficient as well as more animal welfare friendly
10	Number of participants with increased knowledge of nutrient and soil management
11	Number of participants who increase knowledge of new and appropriate technologies and effective cropping practices to produce high quality products while protecting, preserving and sustaining their land and the regional environment
12	Number of participants who adopt new and appropriate technologies and effective cropping practices to produce high quality products while protecting, preserving and sustaining their land and the regional environment
13	Number of crop producers who increase knowledge of integrated pest management practices
14	Number of acres of field crops (corn, soybeans, forage, small grains) in which pests are managed using an integrated pest management system.
15	Number of crop producers who increase knowledge of best management practices in crop, nutrients, and related soil/water decisions.
16	Number of producers who adopt best management practices in crop, nutrient, and related soil/water decisions.

17	Number of volunteers who increase knowledge of consumer horticulture to serve as first detectors for symptoms of invasive species.
18	Number of participants who increase their knowledge of commodity markets and marketing contracts
19	Number of producers who increase the use of commodity markets and marketing contracts to reduce price risk and increase profitability
20	Number of research-based studies, publications, and reports for policy organization members and legislators on the consequences of their international trade and farm commodity program choices in Farm Bill and related federal legislation
21	Number of food and agribusiness firms, private investors, commodity organization leaders, and government officials who increase their knowledge of the economic potential to increase the number and size of new and current value-added agricultural industries such as grain and livestock processing.
22	Number of farmers generating additional farm income from additional market opportunities for grain, livestock, and specialty crops
23	Number of food and agribusiness managers who increase their knowledge of marketing and sales strategies, general business management, and making decisions under highly uncertain situations

Outcome #1

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	633

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
With increasing competition of feed versus fuel, the poultry industry is utilizing byproduct ingredients for feed. However, nutrient use and thus environmental impacts of nutrients and emittants from feeding these diets is uncertain.

What has been done
Turkey experiments were conducted in collaboration with Michigan State University to determine impact of feeding on air emissions.

Results
By decreasing dietary crude protein from 110% to 100% of the amount recommended by the National Research Council (NRC), and adding Threonine to an AA supplementation of Lysine and Methionine, nitrogen and cumulative ammonia losses were measurably reduced from turkey facilities with no differences in tom growth or feed conversion.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
311	Animal Diseases
315	Animal Welfare/Well-Being and Protection
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

Outcome #2

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	533

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
With the near record costs of traditional feed stuffs, corn and soybean meal, pork producers are utilizing cheaper by-products from other industries to reduce feed costs. Many of these by-products have a lower nutrient availability than corn or soybean meal and may reduce pig

performance.

What has been done
Several research studies with nursery and grow-finish pigs have been completed to evaluate some of the enzymes available to the pork producer to use in the hopes of improving nutrient availability to pigs.

Results
Two enzymes, mannanase and glucanase, have shown promise to improve pig performance and feed efficiency in diets high in the by-product, dried distillers grains with solubles (DDGS). These enzymes could be added to pork producer diets and provide several dollars per pig of improved profitability.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
311	Animal Diseases
315	Animal Welfare/Well-Being and Protection
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

Outcome #3

1. Outcome Measures

Number of livestock producers expanding their operations.

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Number of livestock producers who increased their knowledge about alternative feedstuffs

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	144

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Biofuel production is driving an unprecedented change in animal agriculture. The corn ethanol and soy-diesel industries provide significant benefits to grain producers, but projected increases in feed prices and lack of suitable alternative energy-dense feedstuffs present challenges for traditional livestock production.

What has been done
Research studies have been designed and executed to determine the potential replacement of corn grain and corn silage in the diets of lactating dairy cows with byproduct feeds and crop residues.

Results
Studies using corn byproducts indicate that the use of corn milling solubles combined with stover is a viable substitute for corn silage. Related work indicates that treating corn stover with calcium oxide improves digestibility and enhances the value and potential use of corn stover in diets for mid- and late-lactation dairy cows.

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals
601	Economics of Agricultural Production and Farm Management

Outcome #5

1. Outcome Measures

Number of livestock tested for reproductive soundness

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Number of farm and commodity organization members who increase their knowledge of the potential economic impacts of alternative farm commodity program provisions such as implications for exports, domestic utilization and price, farm income, and government farm program expenditures

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	527

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Farmers need the latest crop management information to make decisions for their farming operation.

What has been done
Crop Production Clinics were held to offer recommendations for producers to help them make decisions related to their farming operation.

Results
A post-program evaluation was conducted to solicit voluntary, anonymous responses from the participants. The questions and answers include: 1. The information I heard today will help me improve weed control practices for my farming operation or agribusiness. (98% answered yes) 2. The information presented to me increased my understanding of the regulations regarding direct supervision as a licensed private applicator. (98% answered yes) 3. The information I heard today will help me make sound marketing decisions related to my farming operation or agribusiness. (89% answered yes)

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

Outcome #7

1. Outcome Measures

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

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

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

Not Reporting on this Outcome Measure

Outcome #9

1. Outcome Measures

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

Not Reporting on this Outcome Measure

Outcome #10

1. Outcome Measures

Number of participants with increased knowledge of nutrient and soil management

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	7270

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Producers rely on agribusiness professionals to identify and inform them of existing or potential pest problems on their farms and to assist with appropriate management tactics and issues related to pesticides. The better informed these agribusiness personnel are, the greater their ability to guide producers toward economically and environmentally sound pest management

decisions.

What has been done
The Purdue Pest Management Program coordinates an interdisciplinary team of specialists from the Departments of Agronomy, Botany and Plant Pathology, and Entomology to produce and publish the weekly Pest and Crop newsletter (weekly during the growing season, monthly otherwise). This newsletter gives forecasted and up-to-date information on pests and their damage throughout the state.

Results
The newsletter is available for free on the internet and a weekly email publication notification is sent to over 1,900 pest managers (subscribers). By on-line evaluation, readers indicated that the newsletter was useful (98%), timely (98%), helped them improve their pest management decision making ability (89%), saved/made them money (63%), and was considered their main source of pest information (59%).

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships

Outcome #11

1. Outcome Measures

Number of participants who increase knowledge of new and appropriate technologies and effective cropping practices to produce high quality products while protecting, preserving and sustaining their land and the regional environment

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	15482

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Crop producers need fact-based information in order to remain productive and competitive in agriculture. Researchers and Extension specialists need a forum at which to share their practical research with farmers who can then benefit from adoption of the results.

What has been done
The Pinney Purdue Field Day, collaboration between Pinney PAC, Area Educators, Purdue Extension Specialists, and some outside partners was held to provide information on up to date production practices for corn, soybean, cover crops, N, road safety & insect pests.

Results
Field Day participants who responded to a survey during both the daytime program (64 responses) and twilight program (19 responses) said that they raised a total of over 71,500 acres of crops in northern Indiana, including 37,400 acres of corn, 30,500 acres of soybean, 1,275 acres of wheat, 1,250 acres of alfalfa, and lesser amounts of seed corn, cucumbers, green beans, & grass hay. Respondents agreed or strongly agreed that they had gained knowledge from the presentations and 83% indicated that they would make changes or use the information gained in their crop production or pest management practices.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

Outcome #12

1. Outcome Measures

Number of participants who adopt new and appropriate technologies and effective cropping practices to produce high quality products while protecting, preserving and sustaining their land and the regional environment

Not Reporting on this Outcome Measure

Outcome #13

1. Outcome Measures

Number of crop producers who increase knowledge of integrated pest management practices

Not Reporting on this Outcome Measure

Outcome #14

1. Outcome Measures

Number of acres of field crops (corn, soybeans, forage, small grains) in which pests are managed using an integrated pest management system.

Not Reporting on this Outcome Measure

Outcome #15

1. **Outcome Measures**

Number of crop producers who increase knowledge of best management practices in crop, nutrients, and related soil/water decisions.

Not Reporting on this Outcome Measure

Outcome #16

1. **Outcome Measures**

Number of producers who adopt best management practices in crop, nutrient, and related soil/water decisions.

Not Reporting on this Outcome Measure

Outcome #17

1. **Outcome Measures**

Number of volunteers who increase knowledge of consumer horticulture to serve as first detectors for symptoms of invasive species.

Not Reporting on this Outcome Measure

Outcome #18

1. **Outcome Measures**

Number of participants who increase their knowledge of commodity markets and marketing contracts

2. **Associated Institution Types**

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	459

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Women operate 23% of farms in Indiana according to the 2007 USDA Census of Agriculture. The number of farms with women listed as the principal operator increased by 41 percent since 2002. There is a need to supply information on cost of production ad benchmarking, business and strategic planning, and financial records and analysis.

What has been done
The Purdue Extension Women in Agriculture team partnered with specialists and agri-business professionals to develop the Annie's Project II, Risk Management Education for Farm Women consisting of 3 independent workshops:Financial Workshop, Succession Planning Workshop, and Commodity Marketing Workshop.

Results
Sixty-two percent of the survey respondents shared they have become more involved in the decision making processes for the farm since the workshops. One attendee indicated being better able to explain current hedges needed to the president. Another shared she is now examining legal documents and looking at insurance risks and managing them. Furthermore, attendees have begun communicating about succession planning with family and business partners, contacted or met with an accountant or estate planning attorney, and reconsidered the titling of business assets.

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

Outcome #19

1. Outcome Measures

Number of producers who increase the use of commodity markets and marketing contracts to reduce price risk and increase profitability

Not Reporting on this Outcome Measure

Outcome #20

1. Outcome Measures

Number of research-based studies, publications, and reports for policy organization members and legislators on the consequences of their international trade and farm commodity program choices in Farm Bill and related federal legislation

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	6

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Global economic analyses of climate policy face a challenging future. While comprehensive, top-down policies such as those foreseen under the Kyoto Protocol are highly amenable to analysis by global economic models, these policies have largely failed to get traction in the political arena.

What has been done
This project developed a method to analyze global impacts of a clean energy system (CES) for the U.S. power sector by combining a variant of the dynamic global trade analysis project (GTAP) model, nicknamed GDyn-E, with a detailed model of the U.S. energy sector: a version of the National Energy Modeling System (NEMS-PI). The CES analyzed in this paper is consistent with design principles proposed by President Obama in his State of the Union address in January 2011. This policy sets rising targets in the U.S. for the percentage of electricity that must be produced from qualified energy sources, including renewable energy, doubling this share from 40% today to 80% by 2035.

Results
Results of this study shed light on the implication of the Clean Energy Standard policy for international investment and trade flows, quantifying the extent of investment and trade leakage associated with such a policy. Imposition of the CES reduces the economic efficiency of the power sector (not accounting for the externalities associated with coal combustion) and raises costs of electricity and natural gas in the U.S. economy. These factors serve to lower rates of return to capital in the economy, resulting in leakage of investment to other countries. Consistent with the overall improvement in the U.S. trade balance, net exports rise for other sectors, with the largest increases coming in services, light manufactures, agriculture, food and energy products.

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management

Outcome #21

1. Outcome Measures

Number of food and agribusiness firms, private investors, commodity organization leaders, and government officials who increase their knowledge of the economic potential to increase the number and size of new and current value-added agricultural industries such as grain and livestock processing.

Not Reporting on this Outcome Measure

Outcome #22

1. Outcome Measures

Number of farmers generating additional farm income from additional market opportunities for grain, livestock, and specialty crops

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	1001596

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Over the last ten years the number of people that raise meat goats has increased in Indiana but the knowledge base for best management practices has not kept pace with the growth of the industry. Consequently there is a need of educational programs on raising goats particularly with regard to production practices that reduce mortality.

What has been done
Purdue Extension working in conjunction with Kentucky State University and University of Kentucky conducted a three part webinar series on raising meat goats. This program was broadcast to 20 County Extension sites in Indiana and six in Kentucky. Session topics were: Parasite control in small ruminants; nutrition and forage programs for goats; and health programs for goats and sheep. These sessions were taught by university specialists and a veterinarian.

Results

Attendance for this program was at least 212 people in Indiana. One of the sites in Kentucky hosted a National Guard troop that was nearing deployment in Afghanistan. Participants answering a survey after the program indicated that 48% of them were thinking of expanding their herd.

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

Outcome #23

1. Outcome Measures

Number of food and agribusiness managers who increase their knowledge of marketing and sales strategies, general business management, and making decisions under highly uncertain situations

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	536

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
As Indiana family farm operations get more complex, strategic management decision making skills are more critical for long term business competitiveness.

What has been done
The Purdue Management Academy was developed to provide Indiana agricultural producers with strategic risk management tools to be competitive in a volatile agriculture industry. The program provides information on labor, production, price, legal, and financial risk management.

Results
Over 67% of the participants shared they would change the way they operate their farm operations immediately after the academy. Six months later, participants shared that they were already implementing standard operating procedures for difficult tasks on the farms so that each employee understood how to perform the task in the same manner. The specific goals and

planning being done afforded better communication with the community and potential landlords. They also estimated these new ideas or tools helped them to increase their farm income anywhere from priceless up to $20,000 and helped to reduced expenses.

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Purdue's College of Agriculture has approximately 300 faculty members and 275 Extension Educators. The breadth and depth of outputs and outcomes they report on annually are consistent with the research and Extension funding they receive and the results they have committed to produce as a result of accepting the funding awards. We have chosen to report success on an individual faculty basis as they are the experts in their field and are best qualified to determine the appropriateness of measures used to demonstrate success. We are not, at this time, structured to evaluate summative success across a Planned Program because the metrics are diverse and often unrelated.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 9

1. Name of the Planned Program

Climate Change

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	10%		10%	
112	Watershed Protection and Management	5%		5%	
123	Management and Sustainability of Forest Resources	10%		10%	
132	Weather and Climate	10%		10%	
135	Aquatic and Terrestrial Wildlife	10%		10%	
201	Plant Genome, Genetics, and Genetic Mechanisms	10%		10%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	10%		10%	
212	Pathogens and Nematodes Affecting Plants	5%		5%	
213	Weeds Affecting Plants	5%		5%	
306	Environmental Stress in Animals	5%		5%	
605	Natural Resource and Environmental Economics	15%		15%	
610	Domestic Policy Analysis	5%		5%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	10.6	0.0	21.0	0.0
Actual Paid Professional	5.9	0.0	12.3	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
606830	0	405686	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
1032746	0	1533806	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
171443	0	292872	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

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

2. Brief description of the target audience

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

3. How was eXtension used?

Posting resources, webcasts, articles, YouTube videos, calendars, twitter feeds and contributions to Communities of Practice and Ask an Expert.

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	686	1	445	29

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

Patent Applications Submitted

Year: 2011
Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	1	16	17

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of Extension publications, written, new or revised

Year	Actual
2011	1

Output #2

Output Measure

- Number of research publications

Year	Actual
2011	16

Output #3

Output Measure

- Number of research projects

Year	Actual
2011	17

Output #4

Output Measure

- Number of consultations

Year	Actual

2011	3

Output #5

Output Measure

- Number of educational workshops or seminars conducted

Year	Actual
2011	30

Output #6

Output Measure

- Number of volunteers

Year	Actual
2011	3

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of observers participating in weather and climate monitoring efforts
2	Number of reseach-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 turf managers who reduce pesticide, nutrient and water inputs while maintaining high quality turf
5	Number of turf managers 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 Measures

Number of observers participating in weather and climate monitoring efforts

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
To date, legislative analysis of potential of greenhouse gas (GHG) abatement has been based on economic potential, and not market potential. The economic potential captures technological and market conditions, but does not capture delivery risk, transaction costs, policy programmatic and institutional requirements and constraints.

What has been done
The goal of this project is to analyze the market potential of global land-based GHG mitigation opportunities. To estimate market potential, adjusted agriculture and forestry marginal abatement cost curves (MACs) that reflect investment risk and transactions cost for representative projects are incorporated into global economic GTAP-AEZ-GHG model. The risk and transaction costs adjustments to MACs are based on data on more than 1000 offset projects evaluated for investment. The data were provided by the largest buyer of carbon offsets on behalf of its customers. A set of baseline and climate policy scenarios are then analyzed with the recalibrated model and compared to the economic GHG mitigation potential.

Results
Preliminary results of this study indicate that for many offsets technologies there is a huge gap

between market realities and economic potential abatement supply.

4. Associated Knowledge Areas

KA Code	Knowledge Area
132	Weather and Climate
610	Domestic Policy Analysis

Outcome #3

1. Outcome Measures

Number of participants who increase their knowledge about climate change

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

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

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

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

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

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

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

Number of participants who adopt management practices that maximize environmental stewardhip

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	20

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Recent research on livestock's role in climate change has raised awareness about the contribution that livestock can make to global mitigation efforts, and has increased the likelihood that mitigation policies will eventually be imposed on the sector. The overriding challenge for the sector is to adjust to these emerging carbon constraints without compromising food security and livelihood improvement priorities in developing countries.

What has been done
This study investigates effects of GHG mitigation policies on livestock sectors. Changes in livestock emission profiles, production, regional sector competitiveness and food consumption are analyzed under a range of global mitigation polices that are broadly aligned with the different responsibilities of developed and developing countries. The study also examines emission leakage effects, impacts on food security in developing countries, and the implications of large informal livestock sectors in regions such as Sub Saharan Africa for both the effectiveness of mitigation policies in livestock sectors and food consumption impacts of climate policy.

Results

This study has shown that design and coverage of mitigation policy options, both by region and by sector, matter a great deal in terms of effectiveness, but also in terms of impacts on agricultural production and food security. Targeting Annex I countries and exempting non-Annex I countries from land-based carbon policies on equity or food security grounds is shown to result in significant leakage rates for livestock production and agriculture as a whole. We find that such leakage can be eliminated by supplying forest carbon subsidies to non-Annex I countries.

4. Associated Knowledge Areas

KA Code	Knowledge Area
605	Natural Resource and Environmental Economics
610	Domestic Policy Analysis

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Purdue's College of Agriculture has approximately 300 faculty members and 275 Extension Educators. The breadth and depth of outputs and outcomes they report on annually are consistent with the research and Extension funding they receive and the results they have committed to produce as a result of accepting the funding awards. We have chosen to report success on an individual faculty basis as they are the experts in their field and are best qualified to determine the appropriateness of measures used to demonstrate success. We are not, at this time, structured to evaluate summative success across a Planned Program because the metrics are diverse and often unrelated.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 10

1. Name of the Planned Program

Sustainable Energy

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 (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	15.1	0.0	40.9	0.0
Actual Paid Professional	11.1	0.0	35.2	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
1077604	0	785935	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
1155613	0	3223584	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
144282	0	403251	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- 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. Brief description of the target audience

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

3. How was eXtension used?

Posting resources, webcasts, articles, YouTube videos, calendars, twitter feeds and contributions to Communities of Practice and Ask an Expert.

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	2993	11240	12	200

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

Patent Applications Submitted

Year: 2011

Actual: 1

Patents listed

7,968,764

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	29	69	98

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of Extension publications written, new or revised

Year	Actual
2011	29

Output #2

Output Measure

- Number of research publications

Year	Actual
2011	69

Output #3

Output Measure

- Number of research projects

Year	Actual
2011	57

Output #4

Output Measure

- Number of consultations

Year	Actual
2011	499

Output #5

Output Measure

- Number of educational workshops or seminars conducted

Year	Actual
2011	79

Output #6

Output Measure

- Number of volunteers

Year	Actual
2011	5

Output #7

Output Measure

- Number of research-based educational programs on bio-fuel production, distribution, and policy

Year	Actual
2011	19

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of energy producers, farmers, and consumers who increase their knowledge of the technical and economic implications of increased use of Indiana produced corn and soybeans in bio-fuels
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, publicaitons, and reports for policy organization members and legislators on sustainable energy

Outcome #1

1. Outcome Measures

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

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	7

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Information is needed on biomass yields, needs and harvesting equipment, policy and environmental issues related to woody biomass availability and logistics.

What has been done
Individuals were assembled with interest in woody biomass for a presentation at the Ohio Valley Woodlands and Wildlife workshop. Presentations included woody biomass availability and logistics; policy issues; environmental issues; biomass yields including existing uses and harvesting equipment.

Results
Forest landowners are better informed about opportunities and problems in generating and using biomass from woody plants.

4. Associated Knowledge Areas

KA Code	Knowledge Area
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

Outcome #3

1. **Outcome Measures**

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

Not Reporting on this Outcome Measure

Outcome #4

1. **Outcome Measures**

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

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Purdue's College of Agriculture has approximately 300 faculty members and 275 Extension Educators. The breadth and depth of outputs and outcomes they report on

annually are consistent with the research and Extension funding they receive and the results they have committed to produce as a result of accepting the funding awards. We have chosen to report success on an individual faculty basis as they are the experts in their field and are best qualified to determine the appropriateness of measures used to demonstrate success. We are not, at this time, structured to evaluate summative success across a Planned Program because the metrics are diverse and often unrelated.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 11

1. Name of the Planned Program

Food Safety

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 (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	9.4	0.0	25.2	0.0
Actual Paid Professional	4.5	0.0	7.1	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
539697	0	199248	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
973193	0	1169054	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
157325	0	288018	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

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. Brief description of the target 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

3. How was eXtension used?

Posting resources, webcasts, articles, YouTube videos, calendars, twitter feeds and contributions to Communities of Practice and Ask an Expert.

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	8846	240437	802	92

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

Patent Applications Submitted

Year: 2011

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	9	49	58

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of food safety programs offered to consumers

Year	Actual
2011	219

Output #2

Output Measure

- Number of programs offered to the food industry

Year	Actual
2011	145

Output #3

Output Measure

- Number of research projects on food safety

Year	Actual
2011	16

Output #4

Output Measure

- Number of research publications related to control of foodborne hazards

Year	Actual
2011	9

Output #5

Output Measure

- Number of research publications related to detection of foodborne pathogens

Year	Actual
2011	36

Output #6

Output Measure

- Number of research publications related to food defense and protection

Year	Actual
2011	25

Output #7

Output Measure

- Number of Extension publications related to food safety

Year	Actual
2011	9

Output #8

Output Measure

- Number of volunteers
  Not reporting on this Output for this Annual Report

Output #9

Output Measure

- Number of consultations

Year	Actual
2011	452

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of incidents 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 Measures**

Number of incidents of foodborne illness associated with unsafe food handling practices

Not Reporting on this Outcome Measure

Outcome #2

1. **Outcome Measures**

Number of persons who increased their knowledge of cooking foods adequately

Not Reporting on this Outcome Measure

Outcome #3

1. **Outcome Measures**

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

2. **Associated Institution Types**

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	1382

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The United States has one of the safest food supplies, yet several thousand Americans die every year from foodborne illness. Each year Americans are increasingly spending their food dollars on meals away from home. With this increase, public concern about food safety has never been greater. This means an increased need for food safety training for those serving the public to ensure the safety of our food supply.

What has been done

To assist food establishments in meeting the state mandatory training/certification requirement, the Purdue Health and Human Sciences Extension Educators from Clark, Floyd, and Orange Counties and Health Department Environmental Specialists from Clark County in partnership with the Indiana Restaurant Association provided 2 ServSafe one-day certification opportunities in Clark County. The Food Safety Team taught the ServSafe curriculum which focuses on food safety all along the flow of food through a food service operation, while concentrating on critical areas where contamination is most likely to occur.

Results
Through ServSafe, a nationally recognized food safety program, participants learned how to trace the flow of food through the foodservice operation, concentrating on those critical areas where contamination is most likely to occur. The participants gained knowledge of avoiding cross-contamination, cooking foods adequately, keeping food at a safe temperature, proper hand washing, and storing foods properly. The bottom line is that consumers are more likely to receive safe food due to the food safety knowledge and skills that the participants gained through the ServSafe food handlers certification program.

4. Associated Knowledge Areas

KA Code	Knowledge Area
504	Home and Commercial Food Service
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #4

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	1775

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In Indiana, the Food Code requires that one individual per establishment be certified in food safety.

What has been done
The Purdue Extension Service in 23 counties provided Serv Safe training and exam, Serve Safe recertification training and exam, Food Safety Day training, and/or proctored Serv Safe exams only on line or in the classroom. These trainings are done in partnership with the local Boards of Health, the Indiana Restaurant Association, and the National Restaurant Association. The Serv Safe training is two days of review of the textbook information before the exam. The Serv Safe recertification training is a four hour refresher course before the exam.

Results
A 3 month impact survey indicated: 61% of participants washed hands more frequently during food preparation and service. 58% of participants checked the temperature of food to make sure that it was cooked to safe temperatures. 60% of participants took the temperature of food to make sure that it was cooled quickly to safe temperatures. 56% of participants kept raw foods separate from ready-to-eat foods to prevent cross contamination. 54% of participants made sure that all work surfaces, equipment and utensils were cleaned and sanitized before preparing and serving foods.

4. Associated Knowledge Areas

KA Code	Knowledge Area
504	Home and Commercial Food Service
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #5

1. Outcome Measures

Number of persons who increased their knowledge of storing foods properly

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Number of persons who increased their knowledge of proper hand washing

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

Number of participants passing food handler certificate

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	867

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Research indicates that effective and proactive food safety and sanitation programs can help prevent foodborne illnesses and deaths. In an effort to ensure the safety of the retail food supply, Indiana Food Code requires that each retail food establishment must have at least one person on staff trained and certified in food safety and sanitation practices. Employers and employees prefer to obtain this certification locally. This is a convenience for the employee and a cost savings for the employer

What has been done
In collaboration with their local health departments, a team of six Extension Educators organized and taught 18 ServSafe certification classes in southwestern Indiana. Six were half-day re-certification classes and 12 were two-day trainings. In addition 3 on-line exams were proctored. The trainings were advertised statewide on the Indiana Restaurant and Hospitality Association website. Food sanitarians helped market the classes through mailings and personal contacts.

Results
A total of 127 individuals participated in the classes and 120 passed the certification exam with an average score of 85.45%. Three individuals were certified by passing the on-line exam with an average score of 87.5%. As a result of these trainings, 123 persons were certified in safe food handling practices and their employers are now in compliance with this Indiana Food Code requirement.

4. Associated Knowledge Areas

KA Code	Knowledge Area
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

Outcome #8

1. Outcome Measures

Number of participants adopting best management practices related to food safety

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	621

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Indiana fresh fruit and vegetable producers play an important role in the states agriculture, food systems and local economies. Growers must satisfy consumer, buyer, and government expectations for produce safety in order to remain competitive. Many growers have not had education about food safety practices for the farm and are not prepared to address current or potentially mandated food safety expectations.

What has been done
The Indiana-Illinois Food Safety Initiative for Fresh Fruits and Vegetables has developed and presented educational programs to fruit and vegetable farmers in the two states. Single presentations introducing food safety and Good Agricultural Practices, or covering one key topic, have been included in other events. Four to 8-hour sessions have been held in conjunction with the Indiana Horticultural Congress, and also as independent events.

Results
Educational programs have informed 400 people about Good Agricultural Practices and on-farm food safety. Over 90% of the participants who returned evaluations at longer food safety programs planned to make changes on their farm based on something they learned from the presenters. Over 35% of people who heard a food safety presentation as part of a multi-topic program said they planned to make changes based on what they learned about food safety. All participants at webinars and the food safety plan writing workshop who responded indicated that because of interactions with Extension in the last year, their knowledge about food safety issues in the fresh produce industry has increased, and they have begun to assess food safety risks on their farm.

4. Associated Knowledge Areas

KA Code	Knowledge Area
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

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)
- Other (state and national priorities)

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Purdue's College of Agriculture has approximately 300 faculty members and 275 Extension Educators. The breadth and depth of outputs and outcomes they report on annually are consistent with the research and Extension funding they receive and the results they have committed to produce as a result of accepting the funding awards. We have chosen to report success on an individual faculty basis as they are the experts in their field and are best qualified to determine the appropriateness of measures used to demonstrate success. We are not, at this time, structured to evaluate summative success across a Planned Program because the metrics are diverse and often unrelated.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 12

1. Name of the Planned Program

Childhood Obesity

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 (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2011	Extension		Research	
	1862	1890	1862	1890
Plan	3.6	0.0	18.0	0.0
Actual Paid Professional	1.2	0.0	11.0	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
352326	0	334038	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
851333	0	1027029	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
93838	0	264641	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

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

2. Brief description of the target audience

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

3. How was eXtension used?

Posting resources, webcasts, articles, YouTube videos, calendars, twitter feeds and contributions to Communities of Practice and Ask an Expert.

V(E). Planned Program (Outputs)

1. Standard output measures

2011	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	1354	1100	1964	1564

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

Patent Applications Submitted

Year: 2011

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2011	Extension	Research	Total
Actual	2	2	4

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of Extension publications written, new or revised

Not reporting on this Output for this Annual Report

Output #2

Output Measure

- Number of research publications

Not reporting on this Output for this Annual Report

Output #3

Output Measure

- Number of research projects

Not reporting on this Output for this Annual Report

Output #4

Output Measure

- Number of consultations

Year	Actual
2011	31

Output #5

Output Measure

- Number of educational workshops or seminars conducted

Year	Actual
2011	97

Output #6

Output Measure

- Number of volunteers

Year	Actual
2011	48

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of persons who adopt one or more practices to improve food choices
2	Number of parents who have increased their understanding 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 USDA 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 physcial activity levels

Outcome #1

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	707

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Hectic lifestyles result in reduced exercise and poor eating habits. Public schools have a need for a nutrition program to educate children on healthy food choices.

What has been done
Professor Popcorn was developed to meet the need for a nutrition program on healthy food choices.

Results
Pre and Post test were given to the students at 13 elementary schools. The results are as follows:90% of youth reported that they are physically active, 81% of youth identified a healthy snack choice, 76% of youth reported they eat whole grains,(a 15% improvement),92% reported they ate breakfast, 77% reported they tried new foods which is a 23% improvement, 78% identified MyPyramid concepts.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
806	Youth Development

Outcome #2

1. Outcome Measures

Number of parents who have increased their understanding of how to raise healthy eaters

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Many children are developing Type 2 diabetes related to being overweight. High levels of cholesterol and high blood pressure, primary risk factors for heart disease, are found in most obese children. Other risks include sleep apnea, liver diseases, orthopedic problems and asthma. Over 70% of obese children retain their overweight and obese conditions during adulthood.

What has been done
Responding to the issue of childhood obesity, extension staff partnered with schools in both counties to design and present Tools For Healthy Eaters to 4th and 5th grade classroom-sized groups in these counties. Nurses, PE teachers and principals were active in the planning. Most students in both counties are on free/reduced lunches.

Results
Three to six months after the last program teaching staff were asked to assess value and reported: 100% - Students learned more about how healthy food choices affect health, 100% - Students learned more about choosing food with less fat/calories, 100% - Students learned more

about a healthy serving size of food, 90% - Students learned more about the connection between food and chronic disease, 90% - of teachers stated the program was helpful in teaching health and nutrition to students, 100% - would like to use the program again in the coming school year

4. Associated Knowledge Areas

KA Code	Knowledge Area
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
806	Youth Development

Outcome #4

1. Outcome Measures

Number of persons who increased knowledge of USDA serving sizes

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Childhood Obesity is the number one youth health issue in the United States.

What has been done
Munchy Adventures is a five part nutrition/fitness series for elementary age youth. Extension staff adapted the program concept to meet the need to educate youth on nutrition and fitness. Program topics include food safety, my pyramid, portion sizes, and fitness. Program series were presented to 4 second grade classrooms

Results
At the conclusion of Munchy Adventures, participants indicated they can now make healthy snack choices and incorporate physical activity into their daily lives.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
806	Youth Development

Outcome #5

1. Outcome Measures

Number of participants consuming appropriate USDA serving sizes

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Studies have shown that when students plant and harvest their own fruits and vegetables, they are more likely to eat them. Children who eat more fruits and vegetables also build a foundation for lifelong healthy eating habits and reduce the risk of diet-related chronic disease.

What has been done
Youth grew quick-growing vegetables, such as radishes, lettuce, peas, and beans, so they were able to harvest produce within the limited length of the program. Take-home activity materials were built into the curriculum to initiate conversations between youth and their parents/guardians regarding healthy eating. Packages of recipe cards, consisting of 14 fruit and vegetable recipes, were provided to youth and parents/guardians after completion of the program.

Results
The mean number of reported fruit consumption rose from a baseline of 5.08 fruit types per week in the pre-survey to 5.74 fruit types per week in the post-survey.The mean number of reported vegetable consumption rose from a baseline of 5.08 vegetable types per week to 5.85 vegetable types per week

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
806	Youth Development

Outcome #7

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2011	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Obesity is on a rise throughout the United States. Indiana currently ranks 16th in Adult Obesity and 27th in Childhood Obesity according to the Trust for Americas Health and the Robert Wood Johnson Foundation report released in July 2011. Obesity can be combated through healthy eating and exercising. Many individuals do not like the idea of exercising and often avoid it when they do not have a support system motivating them to exercise

What has been done
Extension staff utilized exercise as a way to combat obesity among all age groups in Clay County through Play in Clay. Extension field staff were asked to find a way to incorporate exercise into their normal programming to show participants how they can have fun learning by doing.

Results

During a six month period a total of 609 youth and 26 adults participated in 1,355 hours of exercise through activities incorporated into pre-existing Extension events. Examples of activities that were held include playing ultimate Frisbee at Jr. Leader meetings, going on a garden walk during a Master Gardener class, and canoeing. By incorporating these activities into pre-existing Extension events, Purdue Extension was able to provide a support system to motivate individuals to have fun and improve their overall lifestyle by incorporating fitness in their daily lives in an effort to combat obesity.

4. Associated Knowledge Areas

KA Code	Knowledge Area
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior
806	Youth Development

Outcome #8

1. Outcome Measures

Number of participants who adopt increased physcial activity levels

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Purdue's College of Agriculture has approximately 300 faculty members and 275 Extension Educators. The breadth and depth of outputs and outcomes they report on annually are consistent with the research and Extension funding they receive and the results they have committed to produce as a result of accepting the funding awards. We

have chosen to report success on an individual faculty basis as they are the experts in their field and are best qualified to determine the appropriateness of measures used to demonstrate success. We are not, at this time, structured to evaluate summative success across a Planned Program because the metrics are diverse and often unrelated.

Key Items of Evaluation