

2012 Purdue University Combined Research and Extension Annual Report of Accomplishments and Results

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I. Report Overview

1. Executive Summary

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1. Executive Summary

OVERVIEW

Faculty, staff and students at Purdue University strive to creatively, efficiently and effectively impact local, regional and national communities through its research funded by USDA. We take pride in our long and successful history of working across state, regional, national and international borders and through interdisciplinary relationships to address USDA's priority issues in unique and compelling ways. While these rich multi-disciplinary, multi-institutional relationships are the backbone of the work in College of Agriculture (CoA), a significant portion of the research is foundational in nature and continues to be conducted by smaller, internal teams and individual contributors. This Executive Summary highlights additional novel efforts being undertaken by the CoA's eleven academic departments and Extension beyond the impact statements found later in the document.

The work conducted at Purdue using USDA funds is consistent with the Vision and Mission of the CoA:

Vision: Purdue Agriculture will make the world better through students who are prepared to make a difference, research with purpose leading to discovery with impact and engagement that transforms lives and livelihoods.

Mission: Through leadership and innovation in learning, discovery, and engagement, Purdue Agriculture strives to be at the forefront of sustainable and dynamic agricultural, food, and natural resource systems, helping make a better Indiana, nation, and world.

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

According to Feed the Future, the initiative established in 2009 by President Obama with worldwide partners to address global food issues, 'agricultural growth is on average, at least twice as effective in reducing poverty than growth in other sectors.' When poverty is reduced, people have more income available to feed their families thereby reducing illness and death associated with malnourishment and undernourishment. Purdue researchers focus on domestic food security and hunger issues. At the same time some of this research is also for small farmers in countries like Africa and India to improve their food security.

The summer of 2012 was one of the worst on record for drought, broadly impacting the mid-west and especially Indiana. Purdue campus faculty and Extension educators teamed up to produce numerous drought-related workshops, publications and webinars to provide time sensitive guidance to farmers. For example, the drought conditions provided breeding grounds for *Aspergillus flavus*, a toxin that when ingested, even in parts per million, by humans or livestock can --cause sickness or death. Farmers were provided information on how to manage for this toxin and Purdue Extension provided test kits for corn samples analysis. In addition, the drought caused many farmers to re-evaluate their livestock feeding strategies given that 30% or less of the corn crop was available. Purdue Extension provided farmers information about potential feeding strategies and interacted one-on-one with producers about crop insurance claims, nitrate feeding concerns, forage management, and alternative feedstuffs.

The drought of 2012 was a significant issue for farmers and the entire value chain. It not only affected grain prices for the summer of 2012, but has ramifications through 2013 and possibly beyond. Loss of grain means significantly higher prices for feed which, where possible, will get passed on to the consumer in terms of higher prices or reduced inventory. The drought was the most common topic in events throughout the summer. Field days programs held at Purdue's Agriculture Centers across the state added drought information to their planned activities. Many other scheduled summer events including a crop diagnostic training clinic and a pasture walk added drought updates. Three specific workshops focused solely on the drought were added to the summer schedule and over 300 farmers and producers attended.

Because drought conditions varied greatly across the state of Indiana, Purdue Extension decided against a statewide approach to combating the drought. Instead, efforts were focused on local issues and implementing programs targeted specifically to those local conditions. Purdue Extension conducted a series of teleconferences from June through August of 2012. Extension specialists on campus communicated directly with Extension educators who were in the counties. Extension educators shared how the drought was impacting their local area. Specialists in Botany and Plant Pathology, Animal Science, Agricultural Economics, and Weed Science responded to drought issues for local areas with management information and helped plan local efforts for producers. Extension educators then shared the information to their local farmers and producers. This collaborative approach resulted in farmers and producers getting timely and location-specific information to help them manage their operations during the drought.

A group of Extension Specialists and Educators and Ag Communication staff also generated press releases and other information on everything from weed management and replant/double crop decisions, to forage quality, to water management for turf, to impacts of heat on beef production, to taking care of home gardens. Ag Communications developed a comprehensive web resource (<http://www.purdue.edu/drought>), and a 1-888 hotline for questions was instituted. The drought page had more than 25,000 page views since it went live in late June.

At the height of the drought, Extension Specialists and Educators convened a news conference on the Indiana State Fairgrounds to help our agriculture and non-agriculture media understand the severity of the drought and to bring the process of assessing the implications. Over the course of the summer, the news unit produced more than 45 releases; staff fielded four to five media calls per day on the drought (in addition to those that came directly to Purdue faculty experts), and fielded requests from news organizations across the US and Germany, China, Brazil and Scandinavia. The Ag Communication publishing group created seven Extension publications that were posted on the drought page, and they added a Drought Page to the Education Store, which linked to drought-related publications.

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

One of the issues being researched by Purdue are the impacts that arise from farmers choosing to plant traditional grain crops such as corn for use as biofuel and not feed. One study finds that future climate scenarios may cause significantly greater volatility in corn prices, which would be intensified by the federal biofuels mandate. The findings show that severely hot conditions in corn-growing regions and extreme climate events that are expected to impact supply would cause swings in corn prices. When coupled with federal mandates for biofuel production, the price volatility could increase by about 50 percent over the period from 2020 -2040, as compared to recent history. However, closer integration of the corn and energy markets through the ethanol industry could aid in buffering these shocks, but this would not occur in the presence of a renewable fuel mandate. Under current rules, the federal government requires an increasing amount of ethanol and other biofuels be produced each year and blended with gasoline.

Another topic being evaluated regarding biofuels is the economic and environmental sustainability of collecting corn stover for use as a feedstock. There is an abundance of the stover that remains after grain

is harvested that could be used to meet the cellulosic biofuel mandates of the current Renewable Fuel Standard (RFS). Our researchers integrated the Soil and Water Assessment Tool (SWAT) watershed model and the DayCent biogeochemical model to explore the impact on water quality and greenhouse gas flux. They conducted this investigation considering a corn-soybean rotation and continuous corn crop (with and without tillage). Economic optimization to minimize cost and maximize the supply of corn stover resulted in increased contributions to atmospheric greenhouse gases while reducing nitrate and total phosphorous loading to the watershed. Stover collection was found to increase sediment loading to waterways relative to when no stover is removed for each crop rotation-tillage practice combination considered, but no-till practice in combination with stover collection was capable of reducing sediment loading below baseline conditions without stover collection. The next phase of research will include gathering additional information about the level of nutrient replacement required to maintain grain yields and about cost-effective practices capable of reducing soil erosion associated with corn stover removal.

CHILDHOOD OBESITY Accelerate progress toward preventing and reversing the childhood obesity epidemic)

Leveraging USDA funded research in the area of obesity for adults and children, an interactive exhibit was created focused on MyPlate for use at the Indiana State Fair. The interactive exhibit was one of a variety of Extension exhibits and activities during the Aug. 3-19 fair on the Indiana State Fairgrounds in Indianapolis. This new exhibit "To MyPlate and Beyond" illustrates the USDA's tool that emphasizes the five food groups that are part of a healthy diet: fruits, vegetables, grains, proteins and dairy. Participants "travel" with Max and his dog, Munch, in a flying saucer as they explore simple reminders and other information about eating well. Included in the exhibit was a short quiz that helped them understand the exhibit's key messages, such as make half of your plate fruits and vegetables, switch to fat-free or low-fat milk, and enjoy your food but eat less. The exhibit was created by the Purdue Agricultural Communication Exhibit Design Center and specialists and faculty in the Department of Nutrition Science. It's estimated that between 100,000-130,000 visitors walked through the site and 6982 visitors took the quiz. The exhibit is now traveling around the US.

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.

Indiana fresh fruit and vegetable producers play an important role in the state's agriculture, food systems and local economies. Growers must satisfy consumer, buyer, and government expectations for produce safety to remain competitive. Recent outbreaks of Salmonella at Indiana cantaloupe farms in 2012 closed down many cantaloupe operations across the state leaving farmers looking for information to ensure these issues don't return next year. Purdue Extension offered "Good Agricultural Practices from A to Z" at six locations in Indiana. This 4-6 hour program introduced Good Agricultural Practices for food safety, taught farmers how to identify risky conditions, and covered practical ways to reduce food safety risks on the farm. In addition to learning new practices, it's important to have action plans in place for long-term safety that all employees understand. To meet this need, Purdue Extension offered Food Safety Plan Writing Workshops. These 6 hour programs include a review of key elements to include in food safety plans with time for participants to develop plans tailored to their operations.

More than 300 people attended the Good Agricultural Practices workshop with more than 80% indicating they would be making changes on their farm as a result of this new information that is almost certain to reduce the risk of foodborne illness. Food safety workshops will continue throughout the next growing season.

SUSTAINABLE ENERGY: Develop biomass used for fuels, design optimum forest products crops for bioenergy production, and produce value added bio-based products. Develop or improve technologies that reduce energy use from seed to fork and beyond

Biofuels have been a part of the US energy scene for over 35 years. Significant progress has been

made in their development, yet the current situation is that biofuels progress is impeded by poor economics relative to fossil fuels and lack of a policy environment conducive to private sector investments in biofuels. As a result, there is a compelling need for much more analysis of the economics of different biofuels supply chains and for evaluation of the impact of alternative policy options on biofuels development. We have conducted research on economic and policy issues related to biofuels and identified the key uncertainties impeding investment in second generation biofuels. The consequences of different biofuels policy options were evaluated, including the Renewable Fuel Standard, reverse auction, and military procurement options, among others. Our research has helped clarify the economics of alternative biofuels supply chains and to understand the consequences of different biofuels policy options. We assert that, given today's environment, we will not see much additional investment in second generation biofuels without a better understanding of the economics of different biofuel supply chains and without government support for the industry.

SPECIAL NOTE: Over the 2011-2012 year, in an effort to better understand the impacts of USDA funding, we streamlined our Planned Programs from 12 to 7. We did not remove the programs but instead collapsed them into the 7 remaining programs. The streamlined programs were written into the 2013 Plan of Work. We were able to upgrade our systems internally for reporting in this new format for 2012 instead of waiting until 2013. As a result, readers will see that we are only reporting on 7 categories this year rather than 12 program areas. Please note changes below:

2012-2013 Issues/Planned Programs

Changes to include previously used issues/planned programs

Global Food Security and Hunger: Combined Global food security, Animals & their systems, Food and non-food, and Economic and community development

Climate Change: no change

Sustainable Energy: no change

Childhood Obesity: no change

Human, Family and Community Health and Well-being: Combined Human nutrition, Human health & well-being, Family well-being, Youth development, and Economic and community development

Natural Resources and the Environment: no change

Food Safety: no change

Total Actual Amount of professional FTEs/SYs for this State

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	77.8	0.0	277.5	0.0
Actual	73.8	0.0	213.8	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
- Survey of traditional stakeholder individuals
- Survey of the general public

Brief explanation.

In years past, stakeholder opinions regarding Agricultural Research at Purdue has been folded into broader surveys conducted by Extension. While these surveys have always done an effective job at capturing the public's thoughts regarding research, we made the decision to conduct some research specific surveys independent of Extension that would complement the ongoing work of Extension.

The survey focused on such areas as food security/scarcity, crop production and environmental impact, food handling, obesity, alternative fuels, companion animal health and livestock health.

We interviewed individuals that walked through an exhibit sponsored by Purdue at the 2012 Indiana State Fair. These surveys were not intended to produce statistically significant results, but to experiment with different models for gathering information about Purdue's agricultural research. 174 people were surveyed, with 10% being from underserved populations. Of the 174 surveyed, over 75% agreed or strongly agreed with our current research focus.

We also interviewed members of the Purdue Agricultural, Research, Teaching and Extension Committee, a group of volunteer stakeholders who are advocates of Purdue, representing Indiana citizens and come from all walks of life. 21 people were interviewed and more than 60% agreed or strongly agreed with the focus of our research.

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)
- Survey of the general public
- 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

All surveys and discussions with stakeholders confirm that we continue to conduct research consistent with the desires of our stakeholders and the general public.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
8802574	0	6258247	0

2. Totaled Actual dollars from Planned Programs Inputs				
Extension			Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	8788504	0	6387841	0
Actual Matching	12079673	0	22372009	0
Actual All Other	2094244	0	7077037	0
Total Actual Expended	22962421	0	35836887	0

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

V. Planned Program Table of Content

S. No.	PROGRAM NAME
1	Global Food Security and Hunger
2	Climate Change
3	Sustainable Energy
4	Food Safety
5	Childhood Obesity
6	Human, Family, and Community Health and Well-being
7	Natural Resources and Environment
8	Animals and Their Systems
9	Economic and Community Development
10	Family Well-Being
11	Food and Non-Food Products: Development, Processing, Quality, and Delivery
12	Youth Development

V(A). Planned Program (Summary)**Program # 1****1. Name of the Planned Program**

Global Food Security and Hunger

 Reporting on this Program**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	5%		5%	
311	Animal Diseases	5%		5%	
315	Animal Welfare/Well-Being and Protection	5%		5%	
403	Waste Disposal, Recycling, and Reuse	5%		5%	
503	Quality Maintenance in Storing and Marketing Food Products	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: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	30.0	0.0	92.6	0.0
Actual Paid Professional	34.9	0.0	107.0	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
3034147	0	3279400	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
2580151	0	8818658	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
470505	0	1643842	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?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	144915	1747552	32461	43235

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

Patent Applications Submitted

Year: 2012
 Actual: 2

Patents listed
 8191290, 4079292

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	264	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of Extension publications written, new or revised

Year	Actual
2012	343

Output #2

Output Measure

- Number of research publications

Year	Actual
2012	264

Output #3

Output Measure

- Number of research projects

Year	Actual
2012	337

Output #4

Output Measure

- Number of consultations

Year	Actual
2012	12804

Output #5

Output Measure

- Number of educational workshops conducted

Year	Actual
2012	1640

Output #6

Output Measure

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

Output #7

Output Measure

- Number of web page views at Kingcorn.com

Year	Actual
2012	389263

Output #8

Output Measure

- Number of newsletters/publications distributed

Year	Actual
2012	14891

Output #9

Output Measure

- Number of collaborations with other agencies

Year	Actual
2012	504

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
24	Number of tools and technologies that improve productivity
25	Number of research programs that can or will have an impact on understanding input systems to meet the food, fiber, feed and fuel needs of humans.
26	Number of persons and companies increasing knowledge of better grain processing practices
27	Number of farmers, producers, consultants with new knowledge for evaluating the efficiency and/or effectiveness of their operations.

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

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

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

Not Reporting on this Outcome Measure

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

Not Reporting on this Outcome Measure

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

Not Reporting on this Outcome Measure

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

Not Reporting on this Outcome Measure

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

Not Reporting on this Outcome Measure

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

Not Reporting on this Outcome Measure

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

Not Reporting on this Outcome Measure

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

Not Reporting on this Outcome Measure

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 Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

With the significant popularity of farmers markets more people are wishing to produce and sell their own special products directly to consumers. In 2009, the Indiana General Assembly created a home-based vendor exemption for food entrepreneurs - House Enrolled Act (HEA) 1309 created a unique opportunity for individuals to produce products out of their home kitchens for direct sale to the public. While HEA1309 opened a door of opportunity, there are limitations in place to protect consumers from potential health risks with foodborne illness. There is a significant need to increase understanding of opportunities and limitations of HEA1309 and to increase knowledge of science behind regulations and safe/best practices for food production in the home kitchen.

What has been done

38 County and State Extension professionals collaborated on development and production of a 3-part educational series made available live via Adobe Connect Pro to Educators, current and prospective home based vendors and County and state health department officials across Indiana. There were 32 hosted viewing sites across Indiana that were attended by 347 participants (including 124 educators and state health department officials) and 108 offsite viewing participants who took part directly from their homes/offices in either live or recorded format. Program content included presentations by Extension specialists and educators as well as successful home based vendors. Each session was comprised of real time presentations which were received at each site from presenters at various locations. Educator hosts received an array of reference materials for all participants.

Results

48% of responding home-based vendors felt the program would help them make local connections needed to get questions answered about producing food in Indiana. 66% felt the

series would enable them to effectively produce safe food products while 69% felt it would help them legally sell food at farmers markets and roadside stands. Immediately after the series one participant shared, I found the section on how to sanitize your kitchen, very helpful. I never thought that just cleaning something wasn't enough that you have to bleach it to make sure that everything is sanitized as well. Six months after series, participating home based vendors reported 67% had begun or increased their sales of food products, 32% had implemented at least one new skill to increase safety of their product, and 60% had improved their learning relationship with a local health inspector. One entrepreneur reflected, I just really wish this course was required before you could participate in a farmers market. I knew I was compliant, but several around me were not.

4. Associated Knowledge Areas

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

Outcome #24

1. Outcome Measures

Number of tools and technologies that improve productivity

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Midwestern farmers are challenged to find cost effective feedstocks for livestock since corn prices have significantly increased due to an increased demand for them in biofuel production and the drought.

What has been done

Purdue researchers have been exploring the potential of using alternative feeds from modified corn stover and corn ethanol co-products to replace corn silage in rations fed to lactating dairy cows.

Results

Researchers discovered that by pre-blending corn distillers solubles (CDS) with corn stover allows producers to replace at least one-half of the corn silage traditionally used in diets fed to mid-lactation cows, providing an advantage over untreated stover. These findings can influence the decision making process when producers are allocating land to either corn forage (silage) production or corn grain for ethanol.

4. Associated Knowledge Areas

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

Outcome #25

1. Outcome Measures

Number of research programs that can or will have an impact on understanding input systems to meet the food, fiber, feed and fuel needs of humans.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

To meet the demand for food, fiber, feed and fuel of a growing human population, it is important to understand the input-use efficiency between various crops that serve multiple purposes (e.g. corn for food, feed, or fuel; soybean vs corn based on anticipated sales prices, etc.)

What has been done

Purdue researchers, as part of a CAP with Iowa, are comparing input use efficiency of cropping systems for food, feed and bioenergy production. Yield and efficiency of radiation, water and N fertilizer use are being quantified. Impact on water quality and greenhouse gas emissions are being measured. The data are being provided to economist and mechanistic modelers who are doing cost-benefit analysis and extending the findings from research plot to landscape scale.

Results

Early results show that low-input systems like native prairies may generate few greenhouse gasses and little N flows into surface and ground water from these plots, but yields are not sufficient to sustain human populations. Perennial grasses can have high yield and lose little N to the environment. Sorghum appears to have high yield, even in 2012 when severe drought impacted maize and soybean yield. Sorghum performed well on marginal soils, even with limited water, producing high biomass yields and may serve as an intermediate biomass cropping system between grain and stover production and the second generation cellulosic biomass systems dedicated to biomass production.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems
601	Economics of Agricultural Production and Farm Management

Outcome #26

1. Outcome Measures

Number of persons and companies increasing knowledge of better grain processing practices

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Over the past 35 years, Purdue Agricultural Safety Program documented over 1,400 cases of entrapment, engulfment, entanglements, or falls related to agricultural confined spaces in the U.S. About 70% resulted in fatalities. Nearly 1,000 cases involved grain storage and handling facilities. Need for evidenced based training for emergency first-responders was raised after record setting year in 2010 when 52 cases were documented and several of the incidents involved lengthy and complex rescues.

What has been done

Using a U.S. Department of Labor Susan Harwood Grant, Purdue Extension specialists developed evidence-based 8-hour training curriculum for rural emergency first-responders who were likely to respond to incidents at grain storage or handling facilities. The Developing a Curriculum (DACUM) method was used to identify minimum core competencies and build the supporting curriculum content at the Basic Awareness level. Purdue Extension specialists implemented 14 pilot 8-hour classes which were conducted and contents reviewed by Region V OSHA staff and subject matter experts. Extension specialists presented the final curriculum in 42 8-hour classes in Indiana, Ohio, Wisconsin, and Nebraska. In 2011/12, 520 first-responders received 4,160 hours of training. This project also had a grain safety interactive exhibit at 16 state, regional, and national events where 7,500 grain safety publications were distributed among 500,000 attendees.

Results

484 participants completed pilot training. There was about 12% average gain in knowledge between the pre- and post-tests. The program received national exposure in major agricultural publications including Success Farming, Progressive Farmer, and Farm Progress Publications. Project staff contributed to planning a National Symposium on Grain Safety and to proposed engineering standards on grain storage structures.

4. Associated Knowledge Areas

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

Outcome #27

1. Outcome Measures

Number of farmers, producers, consultants with new knowledge for evaluating the efficiency and/or effectiveness of their operations.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Purdue conducted its 45th Top Farmer Crop Workshop which focused on educating farmers, producers, and consultants from across the country and Canada on their farm and agribusiness managerial skills. This multi-institutional offering, held on Purdue's campus since 1967, doubled in attendance in 2013 as more farmers and producers look for tools and systems to improve their productivity.

What has been done

Purdue partnered with the University of Illinois this year to introduce farmers to U of I's farmdoc. Farmdoc is intended to be a website at the forefront of "harnessing the power of the Internet to bring those answers right to their desktop."

(http://www.farmdoc.illinois.edu/about/project_history.html), Farmers, better armed with up-to-date information can make smarter decisions in shorter time frames.

Results

More than 140 farmers (double attendance in recent years) participated in the workshop with 28 speakers representing agribusiness and academia. Quotes from attendees include "Good idea to bring China into the agenda. We need to know more about what is going on in China." "Sustaining Your Advantage really made me think."

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

- Outcome 23 - post-survey and 6 month follow-up - Home-based vendors
- Outcome 24 - field study - alternate feeds from corn stover and corn ethanol to replace corn silage
- Outcome 25 - cost-benefit analysis - input-use efficiency between crops

- Outcome 26 - pre posttest; formative (pilot) and summative measures - grain rescue

Key Items of Evaluation

- Outcome 23 - 67% increased sales of food products
- Outcome 24 - pre-blended corn distillers solubles with corn stovers replaced at least ½ corn silage to influence decision allocating land to corn forage or corn grain
- Outcome 25 - perennial grasses high yield and lose little N, sorghum high yield even in drought and may serve as intermediate biomass cropping system between grain and stover
- Outcome 26 - 12% increase knowledge among emergency first responders

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Climate Change

Reporting on this Program

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: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	5.6	0.0	14.0	0.0
Actual Paid Professional	1.6	0.0	6.9	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
723872	0	269130	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
1372599	0	1669583	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
218219	0	805648	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?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	1236	1250000	602	0

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

Year: 2012
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	24	24

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of Extension publications, written, new or revised

Year	Actual
2012	17

Output #2

Output Measure

- Number of research publications

Year	Actual
2012	24

Output #3

Output Measure

- Number of research projects

Year	Actual
2012	15

Output #4

Output Measure

- Number of consultations

Year	Actual
2012	66

Output #5

Output Measure

- Number of educational workshops or seminars conducted

Year	Actual
2012	33

Output #6

Output Measure

- Number of volunteers
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 observers monitoring weather and climate
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 participants who reduce pesticide, nutrient and water inputs while maintaining high quality turf
5	Number of participants who increase knowledge of pesticides, nutrients and water inputs for maintaining high quality turf
6	Number of participants who increase knowledge of management practices that maximize environmental stewardship
7	Number of participants who adopt management practices that maximize environmental stewardhip
8	Number of participants who increase their knowledge of opportunities and challenges for agriculture under carbon dioxide emissions policies to address climate change
9	Number of new tools, technologies, research programs or knowledge that can improve decision making regarding climate change.

Outcome #1

1. Outcome Measures

Number of observers monitoring weather and climate

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 Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Corn producers can benefit from incorporating climate information into their strategic and tactical farm management planning. The Useful to Usable project seeks to enhance the usability of climate information for agricultural producers and advisors by developing decision support products that can assist with crop production tasks, infrastructure and equipment investments, and the use of conservation and climate adaptation practices. This is the 2nd year of 5 year project.

What has been done

A cyber-based framework for managing crop and climate model input and output data, model validation activities was created. A study was initiated to identify 15 agroclimatic trends for 15 locations from 1900-2011 plus a time series examining the relationship between field work days, weather, planting, etc. Baseline needs assessment surveys to understand climate change beliefs was conducted among producers and farm advisors to understand what it takes to incorporate climate into planning decisions.

Results

Surveys show that farmers and their advisors think similarly regarding climate issues, how climate

risks are perceived, willingness to use climate info and who they trust for information. Model validation shows that a trend toward greater precipitation in the past 50-60 years resulted in more corn being grown. Increases in precipitation have resulted in higher crop yields beyond the effects of improved technology. While there are areas of dryness, long-term trends suggest a net reduction of drought-related risk for growers.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
132	Weather and Climate
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
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 participants 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 participants 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 stewardship

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

Not Reporting on this Outcome Measure

Outcome #9

1. Outcome Measures

Number of new tools, technologies, research programs or knowledge that can improve decision making regarding climate change.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Climate change poses threats to natural ecosystems and to human welfare. Responses of natural ecosystems are consequential for a variety of reasons. For instance, understanding whether climate change will lead to additional carbon storage in ecosystems is critical to estimating the expected rate of change. If warming leads to carbon release from ecosystems, then climate change will accelerate. Any changes in the abundance of plant species or competition among plant species will have importance for the many species, including humans, that depend on those plants for food and other uses.

What has been done

The Boston-Area Climate Experiment (BACE), directed by Purdue, subjects grassland plots to different climatic regimes: four temperate treatments in each of three precipitation regimes. Seedlings of four tree species have been planted in each plot. The plots are warmed with the use of heater elements suspended above the plots, and precipitation is manipulated through the use of rainout shelters and sprinklers. The researchers describe it as a "time machine" that moves different plots of land into different futures based on precipitation and heat.

Results

Some early findings show that red maple leaves accumulate about twice as much tannin when exposed to hot, drought-like conditions. Tannins defend leaves from herbivores and pathogens and this abundance of tannins was shown to interfere with the function of common enzymes in soil. This can slow the decomposition process and impact soil quality, plant growth and nutrient uptake.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
112	Watershed Protection and Management
123	Management and Sustainability of Forest Resources
132	Weather and Climate
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants

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

- Outcome 2 - baseline needs assessment, time series - agroclimatic trends 1900-2011
- Outcome 9 - treatment plots - grasslands subjected to 4 temperate treatments in

each of 3 precipitation regimes

Key Items of Evaluation

- Outcome 2 - increased in precipitation results higher crop yields beyond effect of improved technology, and net reduction of drought-related risk for growers
- Outcome 9 - red maple leaves accumulate about twice as much tannin when exposed to hot, drought-like conditions

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Sustainable Energy

Reporting on this Program

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: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	10.5	0.0	36.6	0.0
Actual Paid Professional	5.4	0.0	22.4	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
1005144	0	543988	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
1577802	0	2544594	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
258177	0	1073115	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?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	5217	12731	2157	250

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

Year: 2012
 Actual: 5

Patents listed

8216644, 8118582, 8137418, 8070834, 8118582

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	59	59

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of Extension publications written, new or revised

Year	Actual
2012	9

Output #2

Output Measure

- Number of research publications

Year	Actual
2012	59

Output #3

Output Measure

- Number of research projects

Year	Actual
2012	48

Output #4

Output Measure

- Number of consultations

Year	Actual
------	--------

2012

202

Output #5

Output Measure

- Number of educational workshops or seminars conducted

Year

Actual

2012

86

Output #6

Output Measure

- Number of volunteers
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 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
5	Number of tools developed to improve agricultural productivity

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 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

One of the major barriers to using biomass for products such as ethanol is the breakdown of lignin or plant cell walls to get access to the sugars. Its fairly common knowledge that termites can digest wood (cellulose) but the process by which they do this has not been understood.

Researchers exploring the digestion mechanism for degrading the cellulose in termite gut believe that process can have a significant impact on biofuel development.

What has been done

In most animal and human digestion, the enzymes in gut digestion require a bacteria to be effective. The team created synthetic enzymes based on termite digestion and learned that these synthetic enzymes can work mostly without bacteria to release sugars from biomass feedstock conversion process.

Results

This basic research shows that synthetic termite gut enzymes have the potential to more effectively convert agricultural and forest biomass into useful materials that include ethanol (from fermented sugars) and fossil fuel additives (from lignin-derived hydrocarbons). Two provisional

patents were submitted and/or appended to in 2012 and one of which was licensed by industry. The patented technology has the potential to provide licensees competitive advantages in biofuel production.

4. Associated Knowledge Areas

KA Code	Knowledge Area
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, publications, and reports for policy organization members and legislators on sustainable energy

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Number of tools developed to improve agricultural productivity

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
------	--------

2012

0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The majority of tools and machines used in agricultural settings use non-renewable fossil fuel. Purdue is working to develop new tools, systems and sensors that improve the efficiency and reliability of machines used on-road, off-road, in agricultural and food processing applications.

What has been done

In 2012, new computer tools (sensors and systems) were developed that enabled rapid simulation, prototyping and optimization of innovative solutions, and the new systems increase the efficiency, productivity and reliability of machines used in agricultural applications.

Results

This research has produced several sensors, some of which are in the process of being commercialized, multi-domain coupled simulation of components and systems plus experimental results for a new digitally controlled four quadrant pump motor. A new high performance valve is also under development which would improve efficiency of off-road vehicles and more effective use of biofuels. Two patents have been issued (U.S. Patent Application 20120186659 Filed on January 24, 2012. Published on July 26, 2012 and U.S. Patent Application 20120233997 Filed on September 29, 2010. Published on September 20, 2012) and a provisional patent filed (Newell, B., Krutz, G., Electroactive Sealing. Provisional Patent March 2012).

4. Associated Knowledge Areas

KA Code	Knowledge Area
402	Engineering Systems and Equipment
511	New and Improved Non-Food Products and Processes

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

- Outcome 2 - lab study - termite gut enzymes to break down lignin
- Outcome 5 - simulation and field study - efficiency, productivity and reliability of machines in agricultural applications

Key Items of Evaluation

- Outcome 2 - 2 provisional patents on technology for lignocellulose-digesting organism (termite) to digest plant biomass
- Outcome 5 - 2 patents, commercialization, - several sensors, digitally controlled four quadrant pump motor and high performance valve

V(A). Planned Program (Summary)**Program # 4****1. Name of the Planned Program**

Food Safety

 Reporting on this Program**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: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	5.1	0.0	7.9	0.0

Actual Paid Professional	3.4	0.0	13.5	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
958480	0	443129	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
1383106	0	1970063	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
231595	0	853898	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.

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?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	13622	418977	1895	185

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

Patent Applications Submitted

Year: 2012
 Actual: 1

Patents listed

8114622

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	130	130

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of food safety programs offered to consumers

Year	Actual
2012	173

Output #2

Output Measure

- Number of programs offered to the food industry

Year	Actual
2012	97

Output #3

Output Measure

- Number of research projects on food safety

Year	Actual
2012	32

Output #4

Output Measure

- Number of research publications related to control of foodborne hazards

Year	Actual
2012	44

Output #5

Output Measure

- Number of research publications related to detection of foodborne pathogens

Year	Actual
2012	59

Output #6

Output Measure

- Number of research publications related to food defense and protection

Year	Actual
2012	27

Output #7

Output Measure

- Number of Extension publications related to food safety

Year	Actual
2012	34

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
2012	362

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
9	New tools, technology, research programs, knowledge that can or has the potential to improve food safety.
10	Number of persons increasing knowledge of food processing 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

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

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

Not Reporting on this Outcome Measure

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

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

Number of participants adopting best management practices related to food safety

Not Reporting on this Outcome Measure

Outcome #9

1. Outcome Measures

New tools, technology, research programs, knowledge that can or has the potential to improve food safety.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Improving sensitivity and specificity detection of foodborne pathogens is a major focus within Food Science at Purdue. We continue to improve assay procedures with light scattering sensors that detect foodborne pathogens using pathogen-specific selective growth media. We now understand the pathogenic mechanism of *Listeria monocytogenes* during intestinal phase of infection. This is important for developing a disease prevention strategy in high risk populations.

What has been done

We have built a laser-based optical light scattering sensor to directly detect and identify bacterial colonies as they grow on agar surface in Petri-dish. Upon shining of the laser on the bacterial colony, it generates a unique scatter signature for each colony that is captured by a CCD camera. Image analysis software allows identification and classification of bacteria at genus, species and even at serovar level in minutes. Selective and chromogenic agar media help generate unique differential scatter signatures for bacteria and it is highly reproducible and specific. Bacterial Rapid Detection using Optical light scattering Technology (BARDOT). BARDOT has been extensively studied for use in foodborne bacterial identification including *Listeria*, *Salmonella*, *Escherichia coli*, *Vibrio*, *Bacillus* and other pathogens. BARDOT is licensed to Advanced Bioimaging Systems, LLC (West Lafayette, IN). Our pathogenesis studies revealed that a specific domain within an adhesion protein of *Listeria* is crucial for interaction with the hosts cell receptor. A probiotic strain was engineered to express *Listeria* adhesion protein for controlling *Listeria* infection.

Results

These studies revealed that a specific domain within an adhesion protein of *Listeria* is crucial for interaction with the hosts cell receptor. A probiotic strain was engineered to express *Listeria* adhesion protein for controlling *Listeria* infection. Two significant impacts have come from this work. First, the improved assay procedures are highly sensitive for detecting serovars of *Salmonella* and Shiga-toxigenic *E. coli* (STEC) and will aid in the detection of these in food in a cost-effective manner. Second, the knowledge gained from the pathogenesis study helped develop a bioengineered probiotic strain that reduced pathogenesis *Listeria monocytogenes* infection by 90% in mice. Such a probiotic, which is Generally Regarded as Safe (GRAS) has the potential to be further developed for use as a dietary supplement to prevent *L. monocytogenes* infection in high risk humans.

4. Associated Knowledge Areas

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

Outcome #10

1. Outcome Measures

Number of persons increasing knowledge of food processing safety

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Food safety is critical to the health of Indiana residents. Those who inspect food processing need to have skills for accurate assessment.

What has been done

Purdue Extension specialists delivered a program to Food Processing and Technology for Federal and State food inspectors. This 5-day program focused on food preservation including canning/thermal processing, freezing, cooling, drying, and non-thermal methods.

Results

245 food inspectors completed training in 2012 and were trained on all the key elements critical to completing the required FDA-administered test for their job assignment with the FDA.

4. Associated Knowledge Areas

KA Code	Knowledge Area
503	Quality Maintenance in Storing and Marketing Food Products
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources

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

- Outcome 9 - lab study - detection and differentiation serovars of Salmonella and Shiga-toxigenic E. coli and Bacillus
- Outcome 10 - posttest - FDA food inspectors

Key Items of Evaluation

- Outcome 9 - improved assay procedures highly sensitive for detecting serovars of Salmonella, Shiga-toxigenic E. coli; bioengineered probiotic strain reduced Listeria monocytogenes infection by 90% in mice.
- Outcome 10 - FDA food inspectors prepared to take required test for job placement

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Childhood Obesity

Reporting on this Program

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: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	1.6	0.0	11.5	0.0
Actual Paid Professional	0.7	0.0	8.4	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
639513	0	296095	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
1359954	0	1603680	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
222118	0	796403	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 interested in childhood obesity
- Work with the media
- Develop curricula, publications, web sites, distance education materials

- Publish research and Extension articles

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?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	755	4006	3731	2161

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

Patent Applications Submitted

Year: 2012
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	37	37

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of Extension publications written, new or revised

Year	Actual
2012	14

Output #2

Output Measure

- Number of research publications

Year	Actual
2012	37

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
2012	105

Output #5

Output Measure

- Number of educational workshops or seminars conducted

Year	Actual
2012	207

Output #6

Output Measure

- Number of volunteers
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 persons who adopt one or more practices to improve food choices
2	Number of participants who have increased their knowledge of how to raise healthy eaters
3	Number of persons who increased their knowledge of selection and preparation of foods with reduced fat and/or calories
4	Number of persons who increased knowledge of USDA serving sizes
5	Number of participants consuming appropriate serving sizes
6	Number of participants demonstrating ability to choose or prepare foods with reduced fat and/or calories
7	Number of youth who increased knowledge of the importance of physical activity
8	Number of participants who adopt increased physical activity levels
9	Number of participants who increased their knowledge of the connection between food choices and risk of chronic disease
10	Number of participants who increased their knowledge of the relationship between nutrition and health
11	Number of participants who adopt one or more practices to improve food choices and activity levels
12	New tools, technologies, research programs or knowledge that can or has the potential to impact childhood obesity.

Outcome #1

1. Outcome Measures

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

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Number of participants who have increased their knowledge 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

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Number of persons who increased knowledge of USDA serving sizes

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

Number of participants consuming appropriate 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

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

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

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

Number of participants who adopt increased physical activity levels

Not Reporting on this Outcome Measure

Outcome #9

1. Outcome Measures

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

Not Reporting on this Outcome Measure

Outcome #10

1. Outcome Measures

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

Not Reporting on this Outcome Measure

Outcome #11

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Youth establish lifelong food, nutrition and physical activity habits during early years. Well-nourished children are more likely to perform better in school and have more energy to stay alert and engage in learning. Skills and knowledge children learn at a young age help guide their food choices into adulthood. Establishing healthy eating patterns early is important in preventing chronic disease.

What has been done

Extension staff taught and provided evaluation data for Exploring with Professor Popcorn program in 63 Indiana counties. 27,188 youth in 1066 groups were taught the curriculum: 10,735 youth in 429 groups in grades 1-2; 13,576 youth in 523 groups in Grades 3-4; and, 2,877 youth in 114 groups in grades 5-6. Major curriculum concepts - healthy eating, physical activity and food safety have been linked to Indiana health and science education standards. Lessons provide nutrition and health information, an opportunity to practice new skills, and emphasize good health is about food and physical activity choices made daily.

Results

13,576 youth in grades 3-4 reported these behavior changes: 80% practiced one or more healthy food selection habits, a 12% increase; and 91% practiced healthy physical activity habits, a 6% increase. 2,877 youth in grades 5-6 reported these behavior changes: 80% practiced one or more healthy food selection habits at least most days of the week, a 12% improvement; 92% practiced healthy physical activity habits, at least most days of the week, a 7% increase. 10,735 youth in grades 1-2 reported these knowledge changes: 96% knew one or more nutrition, food choices and/or food preparation facts, a 20% improvement; and 95% knew safe food handling, a 7% increase.

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 #12

1. Outcome Measures

New tools, technologies, research programs or knowledge that can or has the potential to impact childhood obesity.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Overweight teens are at risk for bone fracture because they usually have low bone mineral content for weight. Calcium is the dominant mineral in bone and the mineral most likely to contribute to increased bone strength. Therefore, it is critical to investigate the potential retention of calcium in this population compared to normal weight teens with increased intakes of calcium.

What has been done

Purdue has published an analysis of the combined data from our controlled calcium studies with approximately 300 teen boys and girls. In comparison to normal weight teens, those with higher body weight exhibited increased calcium retention, especially at higher calcium intakes. Additional data indicated that an increase in calcium intake from dairy or calcium supplements had no effect on weight gain or weight loss in the overweight population.

Results

The data was incorporated by the Institute of Medicine (IOM) into its calcium recommendations for teens. If overweight and obese teens will increase their calcium intake from an average of 800 mg/day to 1300 mg/day--the equivalent of 4.5 cups of milk per day--they could increase their bone mineral content to be equivalent to what is predicted for their body weight and possibly reduce the risk of bone fracture.

4. Associated Knowledge Areas

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

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

- Outcome 11 - pre posttest knowledge, behaviors - children in grades 1-6 eating and physical activity
- Outcome 12 - controlled study - calcium intake in teens

Key Items of Evaluation

- Outcome 11 - increased healthy food selection habits, increased healthy physical activity habits, increased food choices and/or food preparation knowledge, increased safe food handling knowledge
- Outcome 12 - obese teens who increase calcium intake from 800 to 1300 mg/day could increase their bone mineral content and reduce risk of bone fracture

V(A). Planned Program (Summary)**Program # 6****1. Name of the Planned Program**

Human, Family, and Community Health and Well-being

 Reporting on this Program**V(B). Program Knowledge Area(s)**

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
608	Community Resource Planning and Development	12%		12%	
701	Nutrient Composition of Food	5%		5%	
702	Requirements and Function of Nutrients and Other Food Components	10%		10%	
703	Nutrition Education and Behavior	10%		10%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	5%		5%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	10%		10%	
721	Insects and Other Pests Affecting Humans	3%		3%	
723	Hazards to Human Health and Safety	3%		3%	
801	Individual and Family Resource Management	12%		12%	
802	Human Development and Family Well-Being	12%		12%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	10%		10%	
805	Community Institutions, Health, and Social Services	3%		3%	
806	Youth Development	5%		5%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	0.4	0.0	10.3	0.0

Actual Paid Professional	22.9	0.0	35.4	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
1587383	0	935203	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
2319102	0	3528506	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
386990	0	1033977	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

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

- 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,
- developing workshop materials and curricula
- conducting workshops
- developing 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?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	249084	2409209	672792	102217

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

Patent Applications Submitted

Year: 2012
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	608	608

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of nutrition related programs offered to consumers

Year	Actual
2012	7956

Output #2

Output Measure

- Number of programs offered to the food industry

Year	Actual
2012	134

Output #3

Output Measure

- Number of research projects on human nutrition and health

Year	Actual
2012	55

Output #4

Output Measure

- Number of nutrition related research publications

Year	Actual
2012	608

Output #5

Output Measure

- Number of nutrition programs offered to foodservice staff

Year	Actual
2012	30

Output #6

Output Measure

- Number of community health coalition events

Year	Actual
2012	222

Output #7

Output Measure

- Number of volunteers

Year	Actual
2012	1877

Output #8

Output Measure

- Number of Extension publications written, new or revised

Year	Actual
2012	3662

Output #9

Output Measure

- Number of youth volunteer development opportunities

Year	Actual
2012	1495

Output #10

Output Measure

- Number of youth related volunteer hours

Year	Actual
2012	5673

Output #11

Output Measure

- Number of youth involved in focused community collaboration

Year	Actual
2012	14341

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 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
12	Number of participants who increased knowledge of healthy food choices
13	New technology developed or under development that can alter human health.
14	Number of participants reporting decreased debt
15	Number of youth who increased knowledge of good character traits, goal setting, team work, communication techniques, decision making, and handling conflict
16	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
17	Number of youth involved in community service activities

18	Dollar value of grants obtained as a result of participation in grant writing program
19	An impact on human health resulting from new knowledge about nutrition & wellness, chronic diseases, and/or environmental factors

Outcome #1

1. Outcome Measures

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

Not Reporting on this Outcome Measure

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

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Number of participants consuming appropriate 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
2012	5382

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Diabetes adversely impacts lives of almost 700,000 adults in Indiana. In 2007, diabetes was the 7th leading cause of death in Indiana. Annual healthcare costs incurred by the State for diabetes was \$4 billion. In 2009, 9.3% of adults reported they had been diagnosed with diabetes, plus another 3% estimated with undiagnosed diabetes. Modifiable risk factors associated with diabetes include obesity, physical inactivity, and dietary habits.

What has been done

34 Purdue Extension educators, with assistance from healthcare professionals, presented Dining with Diabetes 52 times in 31 counties to teach diabetes prevention and help diabetics lessen long-term complications. During 4 two-hour sessions and a follow-up, Extension educators demonstrated how to prepare healthier options for main dishes, side dishes, beverages, snacks, and desserts, which participants were able to sample.

Results

552 people attended, 331 completed a pre and post evaluation, and 87 completed a follow up evaluation. 88% were age 51 and older. 14% were pre-diabetic, 59% diabetic, and 27% were not diabetic but prepared meals for a diabetic or interested in learning. On pre- and post-tests, there was significant improvement in knowledge responses on reading food labels, importance of fiber in the diet, difference between types of fat, and importance of exercise; in behavior related to exercise, eating fruits and vegetables, dairy intake, and using the Idaho Plate Method for Diabetes for planning meals, in practicing healthful cooking and food preparation. Participants completing follow up were able to maintain or improve their dietary changes.

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

Not Reporting on this Outcome Measure

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

Outcome #12

1. Outcome Measures

Number of participants who increased knowledge of healthy food choices

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

According to the US Bureau of Labor Statistics, 8.2% of Hoosiers were unemployed in September 2012, with individual counties as high as 9%. In 2010 Statistics Indiana reported Indiana ranked 22nd in the nation with 15.31% living in poverty. Indiana Family and Social Service Administration, as of October 2012, 923,253 individuals in Indiana received food assistance (SNAP). Indiana has seen an increase in poverty and joblessness.

What has been done

Family Nutrition Program is partnership with Purdue Extension, Indiana Family Social Service Administration and USDA to provide education to low-income participants on food safety, diet quality, and economizing food dollars to help bring about nutrition related lifestyle changes and reduce food security. FNP goal is to improve the likelihood of SNAP eligible individuals making healthy food choices within a limited budget. In 2012, Purdue Extension requested \$4,949,271 and received federal funds of \$5,050,203 to fund the program.

Results

Impact of FNP is maximized through its partnerships in education with community agencies and organizations such as the Division of Family Resources, schools, learning center, libraries, WIC, health departments, senior center, congregate meal sites, shelters and crisis centers. In 2012, the program was provided in 91 Indiana counties. 231,614 clients were reached with direct education and an additional 105,228 clients were reached through indirect contact. 27,797 participants completed short-term evaluations and 568 completed the medium term evaluation. Pre- and post-tests were completed and showed statistically significant improvement for all 14 education lessons.

4. Associated Knowledge Areas

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

Outcome #13

1. Outcome Measures

New technology developed or under development that can alter human health.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Successful islet transplantation could dramatically impact the lives of individuals living with type 1 diabetes by eliminating the need for life-long insulin administration, improving quality of life, decreasing risk of hyper/hypoglycemic events, and reducing the risk of long term chronic complications. Islets are made up of several types of cells that produce insulin in the pancreas. Diabetes develops when the pancreas isn't able to produce enough insulin or can't use the insulin that is produced. Some researchers are experimenting with islet transplantation as a therapy to replace insulin injections but like any type of transplant, the body doesn't always accept foreign cells and the body's own islets often get killed off by the immune system.

What has been done

Purdue researchers have developed a unique method whereby the islets can grow their own protective, bio-compatible shell to protect themselves when the body's immune system attacks

the transplanted cells, allowing the cells to continue to produce insulin.

Results

We will begin pre-clinical small animal trials in April 2013 and expect to begin to move to a sustainable human stem cell based cell source by Fall 2013. As we optimize the materials we are beginning to collect data supporting an ability of the materials to protect cells from immune insults.

4. Associated Knowledge Areas

KA Code	Knowledge Area
723	Hazards to Human Health and Safety

Outcome #14

1. Outcome Measures

Number of participants reporting decreased debt

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	86

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Consumers without knowledge of stock market swings or investment experience tend to lose money in such markets due to unfounded, emotional decision-making. However, with the right strategy and enough time to endure the ups and downs of the financial markets, savings in the form of equities still provide better return on investment than simply putting money away in a savings account. However, before consumers enter the volatile world of stock market investing, it is best to have a sufficient amount of money saved for emergencies. In order to save enough income to cover expenses for up to six months of potential unemployment (for example), it is imperative that they understand and obtain control over their own spending behaviors.

What has been done

Where Does Your Money Go contains built-in, educator-friendly replication and can be taught on several topics: Current Spending; Wants and Needs; Spending and Savings Plans; Spending Leaks; Extra Expenses; and Tracking Expenses. Single session evaluation and 12-week Follow-up evaluation data were collected on: Reduction, Spending Plans, Tracking Expense, Debt

Reduction, and Money Management. Participants were asked to complete either evaluation. An impact survey was sent three months following the final session.

Results

471 participants in 8 counties completed single session evaluations. 66.02% indicated they found resource materials useful, 72.94% discovered ideas they could use immediately. Participants learned difference between needs and wants (53.96%), what their leaks are (76.28%), how to develop spending-saving plans (81.74%), and how to track expenses using envelope method (85.03%). 90% would think differently about their spending. Most preferred techniques were Tracking Expenses (77.16%) and Reducing Spending Leaks (74.41%). For follow-up, 20 participants from St. Joseph county enrolled. 57.14% reduced spending leaks (average \$59.66/week), reduced spending by tracking expenses (50%) and spending on needs before wants (64.7%). 62.5% developed spending/saving plans, average spending reduction was \$317.69, average debt reduction was \$1002.65. 93.33% managed their money better.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #15

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
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

During the pre-teen/early teen years, youth face many issues including peer pressure, assuming responsibility for their own actions and assuming leadership roles.

What has been done

Programs have been developed to offer youth the opportunity to explore relationships with others and develop skills to assume leadership roles in club and organizational settings. 4 H Jr. Leader Programs that have as a primary target those youth enrolled in grades 8-12 have been designed

to specifically target this age group and offer programs and experiences to build important interpersonal skills.

Results

5,249 Indiana youth enrolled and participated in their local Jr. Leader program and activities. 42,221 youth indicated when surveyed that after concluding participation in specific 4-H educational programs they had increased their knowledge of good character traits, goal setting, teamwork, communication techniques, decision making, and handling conflict.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #16

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
2012	0

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

2,444 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 #17

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
2012	0

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. 13,862 youth were directly involved in community service activities.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #18

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
2012	8000000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Difficult economic times make for challenges in community development. Securing funds to support community programs and services, improve businesses, schools and community agencies, and address community vitality are crucial to meeting the needs of Indiana residents and communities.

What has been done

Statewide effort, Beginner's Guide to Grant Writing Program, paired Extension specialists with educators to deliver 16-hour distance learning program. Educators completed training on program delivery and content. Specialists provided curriculum materials and administered training including Continuing Education Credits for Indiana Certified Teachers, Indiana Public Accountants, Indiana Social Workers, and Law Enforcement. Educators marketed programs locally, assisted with delivery, and provided follow-up services to participants. Community participants represented non-profit organizations and government agencies, learned how to develop ideas for winning grant proposals, identify and work with funding sources, develop, submit and review proposals. They completed a full proposal and received feedback from

professional grant writers.

Results

Participants reported over \$8.0 million in funded proposals. Grants supported building renovations, infrastructure development, school-based programs and equipment, small business funding, environmental protection projects, health and human resource projects, programs to enhance computer and health education projects, youth programs, and general operating dollars supporting organization growth and sustainability. Participants reported they felt more confident in their grant writing skills, understood how to develop a project idea into a proposal, and knew where to find information for available funding.

4. Associated Knowledge Areas

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

Outcome #19

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Since 2005, health coalitions, often referred to as Healthy People, Healthy Community coalitions, have included Extension educators as partners to identify and address local health issues and connect the expertise and resources of Purdue to the community.

What has been done

Since 2008, Purdue Extension has been a partner with Community Health Engagement Program of Indiana Clinical Translational and Sciences Institute (CTSI/CHEP), Indiana State Department of Health, local health departments and health care systems to identify community priorities and connect to researchers at Purdue, Indiana University School of Medicine, University of Notre

Dame, IUPUI and Indiana University-Bloomington to communities. In 2011, there were 54 health coalitions. An Issue Based action Team (IBAT) was created to build capacity of these coalitions to create action plans and address health needs. In July 2012, a survey was conducted to determine status of health coalitions across the state.

Results

Results showed: in 2007-2008, 45 of 92 counties in Indiana had developed and/or were implementing goals. By 2012, number of coalitions had grown to 60, with 48 coalitions having developed and/or implemented goals. With continued support, our goal for 2017 (based on a survey of counties) is to have 76 coalitions, 73-76 coalitions actively implementing goals, and 35 coalitions to have implemented interventions and conducted assessments of effectiveness.

4. Associated Knowledge Areas

KA Code	Knowledge Area
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.)
- Other (State and National priorities)

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

- Outcome 5 - pre posttests knowledge, behaviors; 6 month follow up - food selection and preparation for diabetes
- Outcome 12 - pre posttests knowledge, short and medium term - food safety, diet quality and economizing food dollars for low income families
- Outcome 13 - lab study - successful islet transplantation for insulin production in diabetes
- Outcome 14 - posttests and 12 week follow up - spending, saving, debt reduction and money management strategies
- Outcome 15 - post-survey knowledge - youth in 4-H and 4-H Jr leadership programs
- Outcome 16 - pre posttest attitude - 5th graders attitudes about laws

- Outcome 17 - post-survey - 4-H youth taking part in community service
- Outcome 18 - posttest and follow up - beginning grant writing
- Outcome 19 - tracking trends - building health coalitions in Indiana counties

Key Items of Evaluation

- Outcome 5 - improved knowledge of reading food labels, importance of fiber, difference between types of fat, importance of exercise; increased behavior related to exercise, eating fruits and vegetables, dairy intake and using Idaho Plate Method for diabetes for planning meals, practicing healthful cooking and food preparation; maintained or improved dietary changes in follow up
 - Outcome 12 - adults improved knowledge in all 14 education lessons related to nutrition related lifestyle changes
 - Outcome 13 - method whereby islets can grow their own protective, biocompatible shell to protect themselves when body's immune system attacks transplanted cells, allowing for insulin production; preclinical small animal trials and human stem cell based cell source in 2013
 - Outcome 14 - reduced spending leaks (average \$59.66/week), reduced spending (average \$317.59), reduced debt (average \$1002.62).
 - Outcome 15 - increased knowledge good character traits, goal setting, teamwork, communication techniques, decision making and handling conflict
 - Outcome 16 - improved attitude toward laws, law enforcement, judicial system and taking personal responsibility to abide by laws and report unlawful acts
 - Outcome 17 - increased awareness of level of need in community and options for serving others; developed sense of pride in giving to others
 - Outcome 18 - \$8 million in grants for communities
 - Outcome 19 - growth of health coalitions to 60 across state

V(A). Planned Program (Summary)

Program # 7

1. Name of the Planned Program

Natural Resources and Environment

Reporting on this Program

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: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	1.4	0.0	6.5	0.0
Actual Paid Professional	5.0	0.0	20.3	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
839965	0	620896	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
1486959	0	2236925	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
306640	0	870154	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?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	150638	2404303	29283	27628

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

Patent Applications Submitted

Year: 2012
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	156	156

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

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

Year	Actual
2012	569

Output #2

Output Measure

- Number of research projects

Year	Actual
2012	290

Output #3

Output Measure

- Number of demonstrations and field days

Year	Actual
2012	425

Output #4

Output Measure

- Number of Extension publications written, new & revised

Year	Actual
2012	226

Output #5

Output Measure

- Number of K-12 Classroom visits

Year	Actual
2012	445

Output #6

Output Measure

- Number of one-on-one consultations

Year	Actual
2012	16427

Output #7

Output Measure

- Number of newsletter or magazine articles written

Year	Actual
2012	560

Output #8

Output Measure

- Number of volunteers trained

Year	Actual
2012	1814

Output #9

Output Measure

- Number of Extension publications distributed

Year	Actual
2012	35747

Output #10

Output Measure

- Number of research publications

Year	Actual
2012	156

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

Not Reporting on this Outcome Measure

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Emerald Ash Borer (EAB) is spreading through Indiana and the region, killing unprotected ash trees. EAB costs homeowners, businesses, and municipalities millions of dollars associated with falling dead ash trees and the associated loss of their ecosystem services and damage to property.

What has been done

Empowering the Public to Combat Emerald Ash Borer (EAB) was an effort by Purdue Extension specialists and educators who developed decision making tools to optimize EAB management, delivered multi-state coordinated outreach messages about EAB, its impacts, management tools with regional impact that addresses multiple audiences, including homeowners, arborists, municipal decision makers, and educators. Purdue Extension created ad hoc task force of urban foresters, city managers, community groups to identify needs, review tools, and messaging strategies through Neighbors Against Bad Bugs (NABB). This started with tagging ash trees to raise awareness of local impacts of losing ash trees, and then directed people to the website EABindiana.info for resources: EAB Decision Guide, Pesticide Updates, You-Tube Videos, EAB Cost Calculator, NABB organization guide, EAB University. Purdue Extension specialist and educators created a mobile app, Purdue Tree Doctor to help clients better identify and manage tree disorders caused by insects and diseases.

Results

EABindiana.info website received over 110,000 hits, insecticide YouTube videos collectively received over 5,100 downloads. NABB program website had nearly 5,000 hits, and Purdue resources were adapted for use in 10 states. EAB Decision Guide 6,700 copies distributed to 10 states and downloaded over 2,050 times. Over 1000 community managers from Missouri to Massachusetts used EAB Cost Calculator to help plan their response to EAB to reduce annual costs for managing EAB while preserving a large part of their urban forest. 220 participants from 22 states attended six EABU webinars, with over 1000 downloads of the recording. Of those responding to survey, over 80% used information to change their approach to EAB management. Over 900 Purdue Tree Doctor apps sold since released in 2012. Most sales have been in the United States, but also in other countries, including Australia, Germany, Japan, United Kingdom, Canada, Chile, Singapore, Spain, China, Belgium, and Turkey. One app purchaser called it an excellent app, This is the best \$2.00 you will ever spend. Tree Doctor is easy to use, gives great information, and the pictures are excellent. This is a must have resource in the field and office.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
121	Management of Range Resources
123	Management and Sustainability of Forest Resources

Outcome #19

1. Outcome Measures

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

Not Reporting on this Outcome Measure

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

- Outcome 19 - tracking website hits, distribution and sales of resources - EAB tools and resources for the public

Key Items of Evaluation

- Outcome 19 - over 110,000 website hits, 5,1000 YouTube downloads, 6,700 decision guides distributed to 10 states and over 2,050 downloads; over 1000 community managers from Missouri to Massachusetts used EAB cost calculator, over 90 Purdue tree doctor apps sold in U.S. and 11 other countries

V(A). Planned Program (Summary)

Program # 8

1. Name of the Planned Program

Animals and Their Systems

Reporting on this Program

Reason for not reporting

This planned program is now reporting under the planned program Global Food Security and 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
315	Animal Welfare/Well-Being and Protection	100%		0%	
	Total	100%		0%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	4.1	0.0	69.7	0.0
Actual Paid Professional	0.0	0.0	0.0	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
0	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	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?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

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

Patent Applications Submitted

Year: 2012
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	0	0

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
2012	0

Output #2

Output Measure

- Number of research projects

Year	Actual
2012	0

Output #3

Output Measure

- Number of consultations

Year	Actual
2012	0

Output #4

Output Measure

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

Year	Actual
2012	0

Output #5

Output Measure

- Number of K-12 classroom visits

Year	Actual
2012	0

Output #6

Output Measure

- Number of Extension publications distributed

Year	Actual
2012	0

Output #7

Output Measure

- Number of research publications

Year	Actual
2012	0

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 Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

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
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

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
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #4

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #5

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

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
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #7

1. Outcome Measures

Number of 4-H member Youth Quality Assurance certified

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #8

1. Outcome Measures

Number of adults Quality Assurance certified

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #9

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

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

-

Key Items of Evaluation

-

V(A). Planned Program (Summary)

Program # 9

1. Name of the Planned Program

Economic and Community Development

Reporting on this Program

Reason for not reporting

This planned program is now reporting under the planned program Global Food Security and Hunger, and the planned program Human, Family, and Community, 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
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: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	3.5	0.0	3.9	0.0
Actual Paid Professional	0.0	0.0	0.0	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
0	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	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?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

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

Patent Applications Submitted

Year: 2012

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- number of workshops conducted

Year	Actual
2012	0

Output #2

Output Measure

- number of research projects

Year	Actual
2012	0

Output #3

Output Measure

- Number of Extension publications written, new or revised

Year	Actual
2012	0

Output #4

Output Measure

- number of collaborations with other agencies

Year	Actual
2012	0

Output #5

Output Measure

- number of Adobe Connect programs

Year	Actual
2012	0

Output #6

Output Measure

- number of one-on-one consultations

Year	Actual
2012	0

Output #7

Output Measure

- number of web sites developed

Year	Actual
2012	0

Output #8

Output Measure

- Number of research publications

Year	Actual
2012	0

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
9	Number of farmers, producers, consultants with new knowledge for evaluating the efficiency and/or effectiveness of their operations.

Outcome #1

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

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 #2

1. Outcome Measures

Number of communities engaged in issue identification and action planning

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

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 #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
-------------	---------------

2012 0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

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 #5

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

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 #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
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

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 #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
-------------	---------------

2012 0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #9

1. Outcome Measures

Number of farmers, producers, consultants with new knowledge for evaluating the efficiency and/or effectiveness of their operations.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
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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

-

Key Items of Evaluation

-

V(A). Planned Program (Summary)

Program # 10

1. Name of the Planned Program

Family Well-Being

Reporting on this Program

Reason for not reporting

This planned program is now reporting under the planned program Human, Family, and Community, 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
802	Human Development and Family Well-Being	100%		0%	
	Total	100%		0%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	7.0	0.0	17.2	0.0
Actual Paid Professional	0.0	0.0	0.0	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
0	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Conduct workshops
- Provide staff development
- Develop web-based and distance educational materials
- Conduct research
- Create displays
- Collaborate with other agencies
- Work with media
- Publish research and extension articles

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?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

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

Patent Applications Submitted

Year: 2012
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	0	0

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
2012	0

Output #2

Output Measure

- Number of research projects

Year	Actual
2012	0

Output #3

Output Measure

- Number of Extension publications written, new or revised

Year	Actual
2012	0

Output #4

Output Measure

- Number of web sites developed
Not reporting on this Output for this Annual Report

Output #5

Output Measure

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

Year	Actual
2012	0

Output #6

Output Measure

- Number of research publications

Year	Actual
2012	0

Output #7

Output Measure

- Number of volunteers

Year	Actual
2012	0

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
26	Number of participants reporting improvement in managing adult care giving roles and responsibilities
27	Number of participants who report increased use of skills and strategies to support children's growth and development
28	Number of participants who adopt one or more new practices in the use of social networking tools
29	Number of participants who adopt one or more safety and privacy practices related to the use of social networking tools

Outcome #1

1. Outcome Measures

Number of participants who increased their knowledge of debt management

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
------	--------

2012 0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #2

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #3

1. Outcome Measures

Number of participants reporting decreased debt

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

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
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #5

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code **Knowledge Area**
{No Data} null

Outcome #6

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code **Knowledge Area**
{No Data} null

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
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #8

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #9

1. Outcome Measures

Number of participants who develop a plan for achieving financial security

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #10

1. Outcome Measures

Number of participants who report increased financial security

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #11

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

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.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

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
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #16

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #17

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code **Knowledge Area**
{No Data} null

Outcome #18

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #19

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #20

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #21

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #22

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #23

1. Outcome Measures

Participants increased saving by \$ _____

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #26

1. Outcome Measures

Number of participants reporting improvement in managing adult care giving roles and responsibilities

Not Reporting on this Outcome Measure

Outcome #27

1. Outcome Measures

Number of participants who report increased use of skills and strategies to support children's growth and development

Not Reporting on this Outcome Measure

Outcome #28

1. Outcome Measures

Number of participants who adopt one or more new practices in the use of social networking tools

Not Reporting on this Outcome Measure

Outcome #29

1. Outcome Measures

Number of participants who adopt one or more safety and privacy practices related to the use of social networking tools

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

asdf

V(I). Planned Program (Evaluation Studies)

Evaluation Results

-

Key Items of Evaluation

-

V(A). Planned Program (Summary)

Program # 11

1. Name of the Planned Program

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

Reporting on this Program

Reason for not reporting

This planned program is now reporting under the planned program Global Food Security and 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
512	Quality Maintenance in Storing and Marketing Non-Food Products	100%		100%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	1.4	0.0	7.2	0.0
Actual Paid Professional	0.0	0.0	0.0	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
0	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Conduct research
- Publish research articles
- Develop educational 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?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

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

Patent Applications Submitted

Year: 2012
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of programs offered to farmers or production agriculture specialists

Year	Actual
2012	0

Output #2

Output Measure

- Number of programs offered to the food industry

Year	Actual
2012	0

Output #3

Output Measure

- Number of programs offered to the non-food industry

Year	Actual
2012	0

Output #4

Output Measure

- Number of research projects on bioprocessing

Year	Actual
2012	0

Output #5

Output Measure

- Number of research projects on grain storage and processing

Year	Actual
2012	0

Output #6

Output Measure

- Number of research projects related to dairy products

Year	Actual
2012	0

Output #7

Output Measure

- Number of research projects related to aquaculture products

Year	Actual
2012	0

Output #8

Output Measure

- Number of research projects related to enology and viticulture

Year	Actual
2012	0

Output #9

Output Measure

- Number of research project related to food processing

Year	Actual
2012	0

Output #10

Output Measure

- Number of research projects related to food quality

Year	Actual
2012	0

Output #11

Output Measure

- Number of workshops offered to the general public

Year	Actual
2012	0

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
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #2

1. Outcome Measures

Number of products produced using new bioprocessing technologies

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #3

1. Outcome Measures

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

Not Reporting on this Outcome Measure

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
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #5

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #8

1. Outcome Measures

Number of persons gaining knowledge in air quality control systems

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
512	Quality Maintenance in Storing and Marketing Non-Food Products

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 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

Outcome #12

1. Outcome Measures

Numbers of persons and companies adopting better grain processing practices

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

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
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

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
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code **Knowledge Area**
{No Data} null

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
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code **Knowledge Area**
{No Data} null

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
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
{No Data}	null

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

asdf

V(I). Planned Program (Evaluation Studies)

Evaluation Results

-

Key Items of Evaluation

-

V(A). Planned Program (Summary)

Program # 12

1. Name of the Planned Program

Youth Development

Reporting on this Program

Reason for not reporting

This planned program is now reporting under the planned program Human, Family, and Community, 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
806	Youth Development	100%		0%	
	Total	100%		0%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	7.7	0.0	0.1	0.0
Actual Paid Professional	0.0	0.0	0.0	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
0	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Develop and implement 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?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

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

Patent Applications Submitted

Year: 2012
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	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
2012	0

Output #2

Output Measure

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

Year	Actual
2012	0

Output #3

Output Measure

- Number involved in youth focused community collaborations

Year	Actual
2012	0

Output #4

Output Measure

- Number of quality, educational workshops for youth audiences

Year	Actual
2012	0

Output #5

Output Measure

- Number of volunteer development opportunities

Year	Actual
2012	0

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
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

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
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

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
2012	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

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.

Not Reporting on this Outcome Measure

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.

Not Reporting on this Outcome Measure

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

-

Key Items of Evaluation

-