2013 Mississippi State University Combined Research and Extension Annual Report of Accomplishments and Results

Status: Accepted

Date Accepted: 06/17/2014

I. Report Overview

1. Executive Summary

This Plan of Work Report is a joint report from the Mississippi State University Extension Service (MSU Extension) and the Mississippi Agricultural and Forestry Experiment Station (MAFES) on 1862 Extension and Research efforts. The report is divided among 10 programs defined in the Five-Year Plan. This report includes efforts and results related to our Hatch appropriations, which total $4,529,232 for federal fiscal year 2013 and a total Smith-Lever appropriation of $6,496,267.

The MSU Extension Service provides research-based information, educational programs, and technology transfer focused on issues and needs of the people of Mississippi, enabling them to make informed decisions about their economic, social, and cultural well-being. MSU Extension delivers programming in Agriculture and Natural Resources, Family and Consumer Sciences, 4-H Youth Development, and Enterprise and Community Development. During FY 2013, MSU Extension professionals (253.5 total FTE) carried out 88,013 educational activities with a total of 4,183,080 contacts.

The Mississippi Agricultural and Forestry Experiment Station (MAFES) conducts fundamental and applied research leading to discovery of knowledge that supports agricultural production, economic development, improved nutrition, food safety, and human health, which benefits all citizens of Mississippi. MAFES develops and delivers emerging technologies to agricultural producers, bridging the gap between science and application. During FY2013 MAFES scientists (60.6 total FTE) produced 449 peer-reviewed scientific publications, 269 other technical publications, 14 patent applications, and supported 425 graduate students.

In 2013, the U.S. Census estimated Mississippi to have approximately 2,991,207 citizens. The population demographics in Mississippi pose unique challenges with a wide range of diversity including both the agricultural and human sectors. Significant work continued during FY 2013 to refine MSU Extension's county and state plan of work processes.

Grant-funded projects (such as the Mississippi Child Research and Referral Centers) enabled MSU Extension and MAFES to increase actual professional FTEs over our projected number.

Total Actual Amount of professional FTEs/SYs for this State

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	243.0	0.0	54.0	0.0
Actual	253.5	0.0	60.6	0.0

II. Merit Review Process

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

- Internal University Panel
- Combined External and Internal University External Non-University Panel
- Expert Peer Review

2. Brief Explanation

Research projects utilized both an internal university panel and an expert peer review as part of the regional research networks. These reviews covered all aspects of research project proposals, including scientific merit, budgets, and suitability of the research mission for the unit, experiment station, and regional consortium. In addition, commodity-specific advisory committees are used to make research as applicable as possible to the state's needs. Research projects by MAFES scientists are conducted under an approved CRIS project which is reviewed at 3 levels: 1) two external and one internal discipline specific experts; 2) two internal administrative levels (Department Head and Associate Director); and 3) externally through the CRIS approval process. MAFES annually sponsors several internally competitive RFPs, funded in part with Hatch funds. An RFP is released describing research priorities, format, and evaluation criteria. Submitted proposals are reviewed by an internal/external panel (4 reviewers) based on objective criteria, ranked, and select proposals funded with a 25-45% success rate.

MSU Extension programs underwent an internal university panel review. This review takes into consideration the need for the program (including stakeholder input), the methods utilized, the audience identified, and the methods for outcome/impact evaluation. Each of the programs also has an advisory panel (external non-university panel) which reviewed programs in terms of the need, resources allocated, and expected outcomes. These advisory panels are specific to the programs being delivered. Each advisory panel consisted of industry and/or community leaders in the area of review. The panel members are selected to be reflective of the community represented, and as such it reflects the diversity of race, gender and socioeconomic status of the programs' clientele.

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
- Survey specifically with non-traditional groups
- Survey specifically with non-traditional individuals

Brief explanation.

Efforts to determine economic, social, and environmental issues began with County Extension Advisory Councils. Further needs assessment was carried out through Research and Extension Center Advisory Councils, and through formal and informal interaction with other stakeholders. Issues identified include concerns to be addressed with Extension and/or research programs.

County Extension Advisory Councils:
As a formal process, key clientele met under the leadership of county Extension professionals to review results of programs and identify key issues to be addressed in the county or area.

Input came from three different groups: the Overall Extension Advisory Council, Program Advisory Councils, and other stakeholders.

Overall Extension Advisory Councils:
MSU Extension has an Overall Extension Advisory Council in each county. These advisory councils meet a minimum of two times per year to discuss programming efforts, evaluate programs, legitimize program efforts, assess needs for future programming, and identify human and financial resources needed for county programming. This group includes leaders who provide input from business, social, and economic entities as well as those who represent the needs of underserved and underrepresented clientele.

Program Advisory Councils:
Program and/or commodity advisory groups in each county act as subcommittees of the overall advisory council, including people who represent the interests of agriculture, family & consumer sciences, 4-H youth, and community/rural development issues. These groups meet at least two times per year to identify specific areas of program needs, delivery and evaluation.

Other Stakeholders:
MSU Extension professional agents are also required to obtain information regarding clientele needs from people outside the advisory councils. They must give special attention to key community leaders and representatives of underserved populations, making sure all groups who are possible beneficiaries of MSU Extension programming efforts are included. These groups meet several times during the year to offer input and react to Extension's efforts to address key issues in the community. MAFES and MSU Extension administration meet annually with state-specific commodity boards representing corn, soybean, cotton, rice, and peanut producers. Annual commodity board meetings help to understand producer requirements, establish research priorities, and communicate research outcomes. MAFES assists commodity board in developing RFPs and managing submission and review processes.

Research and Extension Center Advisory Councils:
MSU has four area Research and Extension Centers (Delta, Northeast, Central, and Coastal) jointly administered by MSU Extension and MAFES. These centers each have an overall advisory council where stakeholders led discussions about programming and research efforts and assessed needs. Various subgroups of the advisory councils met several times during the year to discuss specific needs in research and extension programming.

Key Partners:
MSU Extension and MAFES met with key partners throughout the year to discuss efforts and results, coordinate activities, and set priorities. These key partners include such organizations as the Mississippi Farm Bureau; Natural Resources Conservation Service; Delta Council; Rural Development Offices; Mississippi Forestry Commission; Mississippi Department of Wildlife, Fisheries, and Parks; Mississippi Department of Agriculture and Commerce; Mississippi Consumer Education Partnership; and numerous state and regional commodity groups.

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
- Open Listening Sessions
- Needs Assessments

Brief explanation.

The collection of input from stakeholders is an ongoing process with both MSU Extension and MAFES (described in the previous section). Advisory committees are required to be reflective of the population of potential clientele. The process began with county extension personnel identifying stakeholders, along with promotion of the meetings to the general public for their participation. This local and community-based approach to identifying stakeholders and assessing needs allows a wide diversity in program planning as required to meet a large variety of needs expressed.

Each year, and again in 2013, MSU Extension and MAFES administrators travelled through the state extensively to gain input about research and Extension programming and proposed changes. This included sessions with internal groups, as well as the general public and external producer advisory committees such as Delta Council, Mississippi Farm Bureau, and several commodity promotion boards.

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 the general public (open meeting advertised to all)
- Meeting specifically with non-traditional groups
- Survey specifically with non-traditional groups
- Survey specifically with non-traditional individuals

Brief explanation.

Meetings with traditional stakeholder groups, with the general public, and, specifically, with nontraditional groups are an on-going part of the needs assessment process conducted by MSU Extension and MAFES. Surveys of traditional stakeholder groups and non-traditional groups and individuals were conducted in specific situations.

As one example, the North Mississippi Research and Extension Center held an annual Producers Advisory Council meeting. At this meeting, 15 Commodity Committees develop and offer a list of 3-5 recommendations for MSU Extension and MAFES to address with Extension/outreach and research activities. In 2013, 223 producers from 27 North MS counties attended this meeting, along with 54 industry and MSU personnel.

3. A statement of how the input will be considered

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

Brief explanation.

Stakeholder input had an influence on most aspects of this Plan of Work. Issues were identified through the needs assessment process discussed earlier. The issues helped Extension agents and specialists determine their plans of action, including redirecting programs to meet clientele needs. Administration provided the resources to accomplish these changes, including setting new priorities or revising existing priorities, and hiring appropriate staff members as required to address the priorities.

Brief Explanation of what you learned from your Stakeholders

Each of our programs gain information from stakeholder that is, in turn, used to guide programming and effort.

Reaching private forest landowners has long been a priority of Extension Forestry. However, in most counties we reach less than 10% of the forest landowners through traditional programming. More effectively reaching the remaining 90% of landowners would have a significant economic impact on the economies of landowners, their families, and the state. The Piney Woods Project is testing ways to reach these landowners. This collaborative effort involves the American Forest Foundation, Mississippi Forestry Association, MSU Extension Service, the Mississippi Forestry Commission, and private landowners.

An initial effort of the Piney Woods Project was a "targeted marketing campaign" for landowners in 2 southeast MS counties. Landowner lists were purchased, and color brochures were mailed to all landowners with more than 10 acres. This involved some 4,000 landowners in Jones and Pearl River Counties. The campaign tested 1) the type of message (general, economic, and wildlife), and 2) different offering to the landowner (forestry publications, visit with a forester, visit with a wildlife biologist). The goal was to see what type of instrument generated the greatest response.

The response rate was 7.1% of all landowners. Of those responding, 59% requested a forestry publication (Managing the Family Forest in Mississippi). Another 41% requested a meeting with either a registered forester or a wildlife biologist. Site visits were most useful to the landowner, as these provided landowner-specific recommendations from a natural resource professional. Recommendations to the landowner included the areas of reforestation, harvesting, prescribed fire, herbicide application, cost-share assistance available, and invasive species problems. The publication mailed to participants, while valuable to them, contained less specific information, and we intend to follow-up with those requesting the publication to identify further assistance they might need.

Several next steps are planned: 1) those responding to the mailings, after about 6 months, will be contacted to ask if further assistance or direction can be provided at no cost to them; and 2) a second mailing will be undertaken in the spring of 2014 in different counties in southeast Mississippi. The brochures will be modified slightly, and an additional testing group will be added to give the recipient the option of one of three response options, rather than just a single option to help see what impact this has on response rates.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
6496267	0	4529232	0

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	6496267	0	3931695	0
Actual Matching	6496267	0	4044889	0
Actual All Other	1522827	0	21850371	0
Total Actual Expended	14515361	0	29826955	0

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous				
Carryover	6496267	0	2750472	0

V. Planned Program Table of Content

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Global Food Security and Hunger - Animal Systems

☑ 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
301	Reproductive Performance of Animals	10%		18%	
302	Nutrient Utilization in Animals	10%		17%	
303	Genetic Improvement of Animals	5%		3%	
304	Animal Genome	5%		15%	
305	Animal Physiological Processes	5%		17%	
306	Environmental Stress in Animals	5%		7%	
307	Animal Management Systems	15%		13%	
308	Improved Animal Products (Before Harvest)	5%		1%	
311	Animal Diseases	10%		7%	
312	External Parasites and Pests of Animals	5%		0%	
313	Internal Parasites in Animals	5%		0%	
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals	5%		1%	
315	Animal Welfare/Well-Being and Protection	10%		1%	
402	Engineering Systems and Equipment	5%		0%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	14.2	0.0	10.0	0.0
Actual Paid Professional	14.6	0.0	16.4	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**
373925	0	794651	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
373925	0	1665164	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	6262225	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Extension personnel will communicate with animal producers and the general public through seminars, workshops, and Extension bulletins and newsletters distributed in paper copy and electronically via the internet. Field demonstrations may also be required to encourage acceptance of new practices and methodologies. Results of research projects may also be published in peer-reviewed scientific journals.

2. Brief description of the target audience

The target audience for this program includes animal producers and related industry personnel. Specifically, the target audience includes producers of beef, dairy, swine, equine, forage, catfish, crayfish, freshwater prawns, and commercial poultry.

3. How was eXtension used?

The resources provided through eXtension were used to supplement and enhance our public learning experiences provided by MSU Extension agents and specialists. eXtension was also used as a resource in state-based planning processes. Overall, 233 MSU employees are eXtension users, with 12 new registrations during this reporting period. Further, MSU Extension has 77 employees that serve on one or more of the 78 Communities of Practice (COPs); MSU Extension employees are members of 45 COPs. 13 MSU Extension employees serve as a leader for a COP, leading 9 COPs. 5 MSU Extension personnel are members of the Beef Cattle COP. 4 MSU Extension personnel are members of the Freshwater Aquaculture COP. 1 MSU Extension employee is a member of the Livestock and Poultry Environmental Learning Centers COP. 2 MSU Extension personnel are members of the Marine Aquaculture COP.

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	54847	86953	0	0

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

Patent Applications Submitted

Year:	2013
Actual:	2

Patents listed
1. Oral Delivery of Attenutated Edwardsiella ictaluri Vaccines.
2. In Vivo Vaginal Biomechanics Device.

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	1	87	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of producers attending seminars, workshops, short courses, and demonstrations.

Year	Actual
2013	23633

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of producers adopting new technologies, strategies, or systems.
2	Number of producers increasing production levels.
3	Number of producers optimizing production inputs/expenses.
4	Number of producers improving their environmental stewardship.
5	Number of producers improving production efficiency.
6	Number of producers improving overall animal health and/or protection.

Outcome #1

1. Outcome Measures

Number of producers adopting new technologies, strategies, or systems.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	4727

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Mississippi lands are well-suited to raising stocker cattle due to a favorable forage grazing season. Calves transitioning from a pasture-based ranch system into a beef stocker system can experience multiple stressors that increase the likelihood of bovine respiratory disease (BRD). BRD is the most common and economically detrimental disease of beef cattle during the post-weaning phase. BRD causes an estimated $800 million to $900 million annually in economic losses to the U.S. beef industry from death, reduced feed efficiency, and treatment costs.

What has been done
A strong emphasis of this research program is the improvement of the health and performance of Mississippi stocker cattle. This includes an emphasis on receiving programs that reduce the incidence of BRD while improving calf gains and profitability. The research program seeks to improve animal health and performance through applying management practices such as vaccinations programs, nutritional programs, and management systems.

Results
Impacts of improved nutrient utilization and management systems can reduce the incidence of BRD in Mississippi stocker producers and add more value to these calves for producers. If the incidence of BRD could be reduced by half in the 400,000+ head of stocker cattle in the state, this could result in increased returns over $5 million.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals

302	Nutrient Utilization in Animals
303	Genetic Improvement of Animals
304	Animal Genome
305	Animal Physiological Processes
306	Environmental Stress in Animals
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)

Outcome #2

1. Outcome Measures

Number of producers increasing production levels.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1260

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Many new producers enter beef cattle production needing general knowledge of major beef production and marketing topics tailored specifically for Mississippi production environments. Many experienced producers also need continuing education with updated information to be competitive and profitable. Complicating matters for information seekers is that much of the information available online is not relevant to Mississippi operations. There is a need for a comprehensive, publicly available, localized curriculum addressing these concerns.

What has been done
The Mississippi (MS) Master Cattle Producer Program, updated in 2013, focuses on improving overall management and decision-making skills and developing a broad beef cattle production knowledge base. This comprehensive training in major beef cattle production topic areas consists of current recommendations tailored to MS-based operations. An Internet-based self-study version of the MS Master Cattle Producer Program is available for online completion by producers interested in learning more about improving production on beef cattle operations.

Results

For every 500 participants trained through the MS Master Cattle Producer Program, there is potential to increase total beef cattle production annual net returns by over $4.1 million. For every $1 million increase in value of cattle production, the expected impact on the MS economy exceeds $1.9 million including support for employment and the tax base. This equates to an annual economic impact to date of greater than $8.6 million as a result of this program. In addition to MS beef cattle producers, Mississippians from other segments of the beef cattle industry, such as feed retailers, as well as out-of-state beef cattle producers participate in the program. Program participation continues to grow.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
303	Genetic Improvement of Animals
305	Animal Physiological Processes
306	Environmental Stress in Animals
307	Animal Management Systems

Outcome #3

1. Outcome Measures

Number of producers optimizing production inputs/expenses.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1260

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Catfish culture is an important agricultural commodity and an essential component of the AL, AR, and MS economies. The regional economic impact exceeds $4 billion, and the industry employs more than 10,000 citizens in the deep-south. With increasing feed costs the profitability of catfish farming has shrunk, leading to the closure of half the total U.S. farm acreage. Since feed is the largest variable cost to production, developing low cost feeds with alternative feed ingredients has

tremendous potential to increase profitability of fish farming.

What has been done
Research was conducted to develop catfish feeds with less expensive alternative feed ingredients. Primary feed constituents evaluated were the use of alternative protein sources, lower protein levels, and defining optimal levels of vitamin and mineral premixes in feed formulations. Research showed diets could be formulated with partial replacement of traditional feed ingredients, such as fish meal, soybean meal, and corn and reduced vitamin and mineral premixes and protein levels without significant reductions in growth and processing yield.

Results
Collectively, work from this project has resulted in tremendous savings to the catfish producer and ultimately the U.S. consumer. Based on current commodity prices and an estimated 400,000 tons of feed sold in 2013, potential savings by using cost-effective feeds with traditional and alternative feed ingredients are estimated to be about $50 per ton of feed, or $20 million annually, to the catfish producer. This information is currently utilized by feed mills to formulate low-cost, quality diets and is a tremendous economic benefit to the catfish producer.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
303	Genetic Improvement of Animals
305	Animal Physiological Processes
306	Environmental Stress in Animals
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)

Outcome #4

1. Outcome Measures

Number of producers improving their environmental stewardship.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual

2013 946

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Forage utilization has remained unchanged for long period of times in Mississippi leading to losses in forage quality and declining stocking rates. Over 90% of the livestock producers use rotational grazing due to economic constrains and how their farm is set up for grazing management.

What has been done
This program serves as a pilot program to look at ways to extend the grazing season and reduce supplementation; it identifies 2-3 farms in each of the districts in collaboration with Extension area agents that participate in the program for a minimum of 2 years. Part of the farm follows grazing and nutrient management guidelines established by the MSU Forage program to compare current management practices to improved alternatives. Our goal is to add more producers each year and use the farms as on-farm research and classroom instruction for other producers.

Results
Producers that participated in the first year of the program have become more aware of the advantages of rotational grazing. They have developed skills to determine grazing capacity, rotation patterns, and use of soil survey to determine species suitability and how to manage nutrient applications. Producers participating in the program have been able to increase stocking rates from 0.5 to 0.8 animal units per acre and extend the grazing season by an average of 47 days. Nutrient applications have decreased by 60% when using recommendations, forage utilization has increased from 35% to 57%, and forage quality has increased by 4%. The application of this program has reduced forage production cost by 20% saving producers an average of $250.00 per acre. A full implementation in the state will save approximately $250 million annually.

4. Associated Knowledge Areas

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

Outcome #5

1. Outcome Measures

Number of producers improving production efficiency.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1261

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Due to continual increases in world-wide demands for foods and biofuels, high animal feed cost has become a major problem that dramatically restrains the profit of swine production in Mississippi, the nation, and the world. As animal scientists conducting research at MSU, we have a responsibility to help swine producers maintain and enhance the sustainability of swine production. From a nutritional standpoint, one approach to maintain or enhance sustainable swine production is to improve the feed economic efficiency for swine industry.

What has been done
A long-term research goal of our research team is to develop novel nutritional strategies to raise pigs and to improve feed efficiency and muscle growth rate of pigs via molecular understanding and intervention. Therefore, we have been studying how dietary lysine, the first limiting essential amino acid in common, typical swine diets, on the expression of genes that are related to muscle protein biosynthesis and degradation in growing pigs, with an aim to elucidate the underlying molecular mechanisms in terms of gene regulatory network affected by lysine.

Results
The knowledge gained from this research program will shed light onto the current "black/gray box," - how amino acid lysine regulate swine muscle protein biosynthesis and the body mass increase at cellular and molecular levels. This increased understanding can further provide a foundation for exploring the molecular mechanisms by which other amino acids, individually or in concert, regulate muscle protein biosynthesis. Holistic understanding of the molecular mechanisms by which amino acids regulate muscle protein accretion and tissue growth will eventually lead to the development of innovative nutritional strategies to improve the economic efficiency of swine production. This understanding can also give insight to human nutritionists and physicians to develop innovated therapy.

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)

402 Engineering Systems and Equipment

Outcome #6

1. Outcome Measures

Number of producers improving overall animal health and/or protection.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	945

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In 2003 over 300 million kg of farm raised catfish, valued at approximately $400 million, were produced in the SE U.S. Despite successful growth and prosperity over the past few decades, the U.S. catfish industry is threatened by increasing disease losses, considered the largest impediment to increasing production efficiencies. The most prevalent disease affecting catfish is enteric septicemia of catfish (ESC), caused by a gram negative bacterium. This disease is estimated to reduce production by 25-30% at cost of $30-40 million annually.

What has been done
In efforts to develop more effective management strategies for controlling ESC, we developed and tested a live attenuated vaccine and a mechanism for oral delivery. The vaccine is mixed with feed at the point of delivery to ensure optimal viability of vaccine cells. The new oral delivery method has been shown safe and effective in laboratory tests and commercial-scale field trials. Protocols for vaccine production and processing have been developed and validated in field trials. Commercial field trials will be conducted during the USDA/APHIS licensing process.

Results
This oral vaccination platform will virtually eliminate ESC-related losses in the catfish industry and dramatically reduce the use of medicated feeds in catfish culture. In repeated pond trials, vaccination resulted in two-fold improvements in survival and feed conversion ratios and three-fold increases in projected net sales. The implementation of this technology will greatly reduce disease-related costs and substantially increase the net profitability of catfish farming to help insure the economic viability of the U.S. catfish industry.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
303	Genetic Improvement of Animals
306	Environmental Stress in Animals
307	Animal Management Systems
311	Animal Diseases
312	External Parasites and Pests of Animals
313	Internal Parasites in Animals
315	Animal Welfare/Well-Being and Protection

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

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

MSU Extension agents and specialists, as well as MAFES faculty, used a variety of recommended methods to gather needed information. Specific strategies were initiated and utilized for collecting evaluation information to determine program outputs and outcomes (see impact statements for examples). In FY 2013, MSU Extension agents and specialists were required to submit four quarterly reports (January, April, July, and September). This quarterly report collects information about the number of contacts, types of contacts, and number of programs conducted in each Priority Planning Area. In addition, two narrative Accomplishment Reports are required from each MSU Extension employee each year. Finally, a specific request for impact statements is also made. The evaluation results are a combination of this quantitative and qualitative data.

Our Planned Program Areas (PPAs) changed in 2013 - a reduction from over 20 PPAs in 2012 to 10 for this current reporting cycle. Previous PPAs of Animal Science Production, Animal Science Protection, Aquaculture Health, Aquaculture Production, and Poultry were combined into Global Food Security and Hunger - Animal Systems. Given the time it takes to adapt an electronic reporting system and ensure all end-users are trained and understand how to report in new ways and new PPAs, our outcome data matching process required modification for 2013. As a result, some of our numbers may appear skewed from

previous ones. This reduction of PPAs and thus combination of outcomes led to some outcomes within each PPA being very similar for 2013. Our reporting system would not allow us to make detailed distinctions at this point in time, so numbers were evenly distributed across those similar outcomes when appropriate. As our data collection system evolves over the next year or two, we will be able to more clearly align the various data elements within the system to resolve this issue.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Global Food Security and Hunger - Plant Systems

☑ 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%		0%	
111	Conservation and Efficient Use of Water	10%		0%	
132	Weather and Climate	10%		0%	
201	Plant Genome, Genetics, and Genetic Mechanisms	0%		7%	
202	Plant Genetic Resources	5%		5%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	10%		5%	
204	Plant Product Quality and Utility (Preharvest)	0%		6%	
205	Plant Management Systems	20%		33%	
206	Basic Plant Biology	0%		1%	
211	Insects, Mites, and Other Arthropods Affecting Plants	5%		6%	
212	Pathogens and Nematodes Affecting Plants	5%		17%	
213	Weeds Affecting Plants	10%		9%	
215	Biological Control of Pests Affecting Plants	0%		1%	
216	Integrated Pest Management Systems	0%		10%	
403	Waste Disposal, Recycling, and Reuse	5%		0%	
601	Economics of Agricultural Production and Farm Management	5%		0%	
903	Communication, Education, and Information Delivery	5%		0%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890

Plan	32.5	0.0	18.0	0.0
Actual Paid Professional	44.2	0.0	25.2	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
1131789	0	1789121	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
1131789	0	1215018	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	7221342	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Short courses, Workshops or Training Seminars
Field Consultations
Demonstration and Verification Programs
Newsletters and Publications
Web-based information and E-mail
Distance Learning Programs
Field Manuals or Guides
Farm Management Software/Components
Direct Technical Assistance/Recommendations/Interpretation/Analysis

2. Brief description of the target audience

Commercial and non-commercial producers
Non-traditional crop producers (wildlife food plots, tourist farms, etc....)
Agricultural consultants
Agricultural retail suppliers and dealers
Agricultural businesses and financial institutions
Agricultural industry representatives and research and development personnel
Agricultural applicators
Extension Service personnel
Research faculty and personnel

3. How was eXtension used?

The resources provided through eXtension were used to supplement and enhance our public learning experiences provided by MSU Extension agents and specialists. eXtension was also used as a resource in state-based planning processes. Overall, 233 MSU employees are eXtension users, with 12 new registrations during this reporting period. Further, MSU Extension has 77 employees that serve on one or more of the 78 Communities of Practice (COPs); MSU Extension employees are members of 45 COPs. 13 MSU Extension employees serve as a leader for a COP, leading 9 COPs. 3 MSU Extension

personnel are members of the All About Blueberries COP with 1 being a leader. 3 MSU Extension personnel are members of the Bee Health COP with 1 being a leader. 6 MSU Extension personnel are members of the Consumer Horticulture COP. 3 MSU Extension personnel are members of the Cotton COP. 1 MSU Extension personnel is a member of the eOrganic COP. 1 MSU Extension employee is a member and leader of the Grapes COP. 2 MSU Extension personnel are members of the Invasive Species COP.

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	256653	765509	0	0

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

Patent Applications Submitted

Year: 2013

Actual: 6

Patents listed

1.Crapemyrtle Plant named Neshoba
2.Crapemyrtle Plant named Pascagoula
3.Crapemyrtle Plant named Sequoyah
4.Crapemyrtle Plant named Shumaka
5.Crapemyrtle Plant named Tishomingo
6.Generation of Imazapic Resistant Switchgrass

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	7	144	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of producers and/or clientele attending seminars, workshops, short courses, and demonstrations.

Year **Actual**

2013 170360

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Documentation and effect of producers adopting recommended practices, technologies, strategies, or systems.
2	Documentation of producers increasing production levels.
3	Documentation of producers minimizing inputs/expenses associated with crop production.
4	Documentation of efforts and activities which have improved environmental stewardship.
5	Number of producers adopting new practices based on research/extension recommendations.
6	Number of producers reporting increased income/decreased expenses based on practice change
7	Number of producers reporting increasing profitability levels.

Outcome #1

1. Outcome Measures

Documentation and effect of producers adopting recommended practices, technologies, strategies, or systems.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	17036

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The tarnished plant bug is the most important insect pest of cotton in Mississippi. Producers in the Delta region of the state typically make an average of about 7 insecticide applications for this pest, and control costs exceed $100.00 per acre annually. This is not sustainable and a more holistic approach that relies on other management strategies is needed for this insect pest.

What has been done
MSU research and Extension entomologists initiated research to evaluate multiple cultural practices to improve integrated pest management plans for tarnished plant bug. The research investigated normal agronomic practices such as planting date and variety selection, and their impact on tarnished plant bug infestations and damage in cotton. Additional research is currently being conducted to investigate the impact of infestation timing on cotton yields, the impact of irrigation timing, and the impact of hairy leaf and smooth leaf varieties on infestations.

Results
Cotton planted from mid-April through early-May required fewer insecticide application for tarnished plant bug and suffered less yield loss than cotton planted from mid-May to early-June. Early planting dates required 3 fewer insecticide applications compared to later planting dates. Additionally, an early maturing variety suffered less yield loss than a late maturing variety. Yield losses from tarnished plant bug ranged from 21% to 38% on the early maturing variety compared to 37% to 56% on the late maturing variety. Similarly, less damage was observed on a hairy leaf variety compared to a smooth leaf variety. Preliminary results suggest that irrigation timing can impact tarnished plant bug infestations in cotton. This research can reduce our reliance on insecticides.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
132	Weather and Climate
202	Plant Genetic Resources
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
213	Weeds Affecting Plants

Outcome #2

1. Outcome Measures

Documentation of producers increasing production levels.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	6815

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Variety selection is the key management decision each year for rice producers. Conventional rice acres in Mississippi declined in recent years in favor of the "Clearfield" rice system. However, with increasing costs of seed, declining control of grassy weeds like Barnyardgrass, and lodging problems associated with the better yielding "Clearfield" cultivars, growers have sought a better conventional rice option.

What has been done
The MSU Rice Breeding Program makes several new crosses each year. After a series of selections over a period of years, the most elite germplasm is identified. Every few years, a new variety can be released to the public after it has shown qualities that are superior to previously released varieties. Upon release, a cooperative effort from MAFES and MSU Extension is needed

to educate growers on the benefits of the new variety and practices that will help the grower succeed in its production.

Results
In 2010, MSU released its most recent conventional rice variety as "Rex." The Certified class of Rex seed was produced in 2012, thus allowing a major expansion of seed available to be planted in 2013. Rex increased to 15% of the acreage planted in Mississippi. This was the second most popular cultivar used in planting and the largest conventional pure line planted. In Mississippi, "Cocodrie," a Louisiana State University-developed variety, has held the largest share of conventional pure line acreage since 2001. Over the last three years, Rex has averaged 7 bushels per acre greater than Cocodrie. At the current value of rice, growers realized $50 per acre more by planting Rex compared to Cocodrie. Furthermore, Rex is moderately resistant to lodging.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
202	Plant Genetic Resources
205	Plant Management Systems

Outcome #3

1. Outcome Measures

Documentation of producers minimizing inputs/expenses associated with crop production.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	6814

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In Mississippi, it has become routine for soybean producers to apply foliar fungicides to soybeans at the R3 growth stage for prevention of diseases. Over the last several years growers have begun to "piggy back" insecticides with the fungicide to save application cost, but in many

instances there is no insect pest at economic threshold.

What has been done
MSU Extension has been conducting research and demonstration trials over the last several years to convince growers that scouting and treating on thresholds is more economically sound than automatic sprays and that automatic sprays killed beneficial insects that flared secondary caterpillar pests which actually required more applications.

Results
In 2013, MS farmers planted 2.2 million acres of soybeans. It is estimated that about 60% of those growers co-apply an insecticide with a fungicide at the R3 growth stage. Insect pressure was very light, and MSU Extension entomologists immediately began talking to consultants and producers about the consequences of this application. We feel that we were successful in convincing soybean consultants and growers to leave this automatic mix out of the tank. We estimate that at least 80% of the producers took this advice based on direct feedback, saving an estimated $10,560,000 directly. It is likely that an early automatic pyrethroid application would flare secondary pests on an additional 50% of those acres treated requiring another application otherwise not needed. This is a total estimated savings of $19,008,000.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
202	Plant Genetic Resources
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
213	Weeds Affecting Plants

Outcome #4

1. Outcome Measures

Documentation of efforts and activities which have improved environmental stewardship.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	13629

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Irrigation is critical for the long-term sustainability of consistent, high-yielding soybean production in Mississippi. However, declining groundwater levels in the Mississippi Alluvial aquifer have raised concerns over the continued use of irrigation water from this natural resource. This aquifer supplies much of the groundwater supplies for agriculture and industry throughout the region. Estimates are that this aquifer is declining by roughly 300,000 to 350,000 acre feet per year in Mississippi.

What has been done
PHAUCET is a computer program that calculates pressure within the irrigation pipe and flow rates for each watered furrow. The program utilizes field schematics and user-defined information to calculate existing system performance and alternative hole-size designs for poly pipe-based delivery systems to improve distribution and uniformity without bursting the pipe. Research was conducted from 2010-2012, at the MSU Delta Research and Extension Center to evaluate PHAUCET-designed irrigation as compared to conventional irrigation practices.

Results
Results from these studies indicate that the implementation of PHAUCET resulted in an approximately 16% reduction in acre inches of water pumped per irrigation event and at least a 22% reduction in pumping times and/or cost. This research also reported no significant differences in soybean yields as compared to conventional irrigation practices. PHAUCET coupled with sound irrigation management practices will improve irrigation uniformity and increase water use efficiency while minimizing over-watering. Adoption of PHAUCET and additional conservation practices could help to reduce the current demand on the MS Alluvial Aquifer, while increasing irrigation efficiency and reducing pumping costs.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
132	Weather and Climate
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
213	Weeds Affecting Plants

Outcome #5

1. Outcome Measures

Number of producers adopting new practices based on research/extension recommendations.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	17036

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
More information is available to row crop producers than ever before. In addition, this information is more easily accessible than ever before. However, not all information that is provided to row crop producers is reliable, nor is it all based on scientific, non-biased data. As a result, producers are often pressured to purchase a given product or service that may not have been fully researched to determine how effective it is or how it could benefit the producer.

What has been done
In 2009, MSU personnel enhanced the Cotton Short Course into a Row Crop Short Course. Since then, attendance and impact has increased each year. In 2013, approximately 492 people pre-registered for the Row Crop Short Course. Subject matter experts were brought in from 6 states in addition to MS to provide educational information covering all aspects of row crop production thus allowing anyone involved in row crop agriculture to get solutions to problems they face.

Results
Although an exact dollar figure is impossible to quantify, a conservative estimate of the value of the Row Crop Short Course could be placed at $35 million. In addition to the monetary value placed on the Row Crop Short Course, it has proven to be one of the flagship meetings conducted by MSU Extension each year. Attendees documented a very high level of satisfaction with the quality of speakers, information presented, and additional amenities provided during the Row Crop Short Course.

4. Associated Knowledge Areas

KA Code	Knowledge Area
132	Weather and Climate

403 Waste Disposal, Recycling, and Reuse

Outcome #6

1. Outcome Measures

Number of producers reporting increased income/decreased expenses based on practice change

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	6815

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Industry seed companies regularly evaluate their products and compare them to competitive genetics to improve their marketability. These comparisons are often quite limited and rarely regulated. Furthermore, there is considerable incentive for each company to conduct and represent such evaluations in a partial manner to enhance marketability of their products. Thus, although industry-generated genetic information is readily available, its value for growers to identify and select optimal genetics from within the vast market is minimal.

What has been done
The MSU Variety/Hybrid Trials conduct annual, open, scientific-based, third-party performance evaluations of genetic performance of seed entries representing any company. MSU Extension crop specialists analyze these research results from corn, cotton, and soybean variety trials for yield performance annually to develop summaries of superior-yielding genetics expressly for various cropping cultures in MS, which are published and distributed to growers.

Results
MSU Variety Trial and genetic evaluation efforts enhance knowledge by delivering findings through numerous educational activities. Using superior genetics evaluated by MSU improved 2013 value of soybeans (4.3 bu/a)($13.2/bu) (1.98m acres) = $112 million; Corn (11.4 bu/a) ($4.4/bu) (.86m acres) = $43 million; Cotton (100 lb/a) ($.8/lb)(420,000 acres) = $34 million; Wheat (5.2 bu/a) ($6.82/bu) (.36m acres) = $13 million. These activities increased raw value of these agronomic commodities over $200 million. Utilization of improved genetics also often improves product quality, increases production efficiency, and reduces production input expenses. This resulted in at least $40 million of additional benefit for Mississippi crop producers

4. Associated Knowledge Areas

KA Code	Knowledge Area
132	Weather and Climate

Outcome #7

1. Outcome Measures

Number of producers reporting increasing profitability levels.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	6814

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Two populations of glyphosate-resistant (GR) Italian ryegrass were identified in field crops in Washington County, MS, in 2005. GR Italian ryegrass is now present in 32 counties in MS. Research to address management of GR Italian ryegrass has shown that a minimum of two herbicide applications are required for >90% control. However, herbicide programs that provide nearly complete GR Italian ryegrass control are costly, and growers are sometimes hesitant to invest the required money. Therefore, research is needed to demonstrate the yield loss associated.

What has been done
Research to address management of GR Italian ryegrass was initiated. Early research demonstrated two findings. Post-emergence options in the spring are limited and require two herbicide applications to approach complete control, and residual herbicides applied in the fall offer the best opportunity for controlling GR Italian ryegrass. The research emphases have transitioned to focus on programs for managing GR Italian ryegrass. Two studies were conducted from 2011-13 to determine the impact on yield of GR Italian ryegrass that survives.

Results
Average net returns for corn above treatment costs ranged from $361.32 per acre where no control measure for GR Italian ryegrass was used to $962.53 per acre where sequential fall and spring herbicide programs were utilized. This represented a gain of $601.21 per acre based solely

on controlling GR Italian ryegrass. This return to treatment would result in a positive economic impact of $811.63 per acre to the MS Delta region's economy. For soybeans, the highest average net return of $486.32 per acre was realized for the fall herbicide program. This compares with $325.80 per acre with no control measures. This implies a gain of $160.52 per acre for control of GR Italian ryegrass in soybeans and a positive economic impact of $216.70 per acre to the MS Delta region's economy.

4. Associated Knowledge Areas

KA Code	Knowledge Area
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

MSU Extension agents and specialists, as well as MAFES faculty, used a variety of recommended methods to gather needed information. Specific strategies were initiated and utilized for collecting evaluation information to determine program outputs and outcomes (see impact statements for examples). In FY 2013, MSU Extension agents and specialists were required to submit four quarterly reports (January, April, July, and September). This quarterly report collects information about the number of contacts, types of contacts, and number of programs conducted in each Priority Planning Area. In addition, two narrative Accomplishment Reports are required from each MSU Extension employee each year. Finally, a specific request for impact statements is also made. The evaluation results are a combination of this quantitative and qualitative data.

Our Planned Program Areas (PPAs) changed in 2013 - a reduction from over 20 PPAs in 2012 to 10 for this current reporting cycle. Previous PPAs of Agronomic Crops, Horticulture, Climate Change, Sustainable Energy, and Farm and Home Safety: Farm Safety were combined into Global Food Security and Hunger - Plant Systems. Given the time it takes to adapt an electronic reporting system and ensure all end-users are trained and understand how to report in new ways and new PPAs, our outcome data matching process required modification for 2013. As a result, some of our numbers may appear skewed from previous ones. This reduction of PPAs and thus combination of outcomes led to some outcomes within each PPA being very similar for 2013. Our reporting system would not

allow us to make detailed distinctions at this point in time, so numbers were evenly distributed across those similar outcomes when appropriate. As our data collection system evolves over the next year or two, we will be able to more clearly align the various data elements within the system to resolve this issue.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Global Food Security and Hunger-Agricultural, Biological, and Natural Resources Engineering

☑ 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	20%		0%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	10%		0%	
306	Environmental Stress in Animals	5%		0%	
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals	5%		0%	
401	Structures, Facilities, and General Purpose Farm Supplies	0%		37%	
402	Engineering Systems and Equipment	50%		46%	
403	Waste Disposal, Recycling, and Reuse	10%		11%	
404	Instrumentation and Control Systems	0%		1%	
405	Drainage and Irrigation Systems and Facilities	0%		5%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	5.5	0.0	5.0	0.0
Actual Paid Professional	2.6	0.0	1.3	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**
67532	0	17006	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
67532	0	83847	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	568070	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Research and outreach must not only adapt to engineering changes, but must improve efficiency under these new conditions provide by resource innovation.

2. Brief description of the target audience

Stakeholders and customers of research and Extension programs represent a broad section of audiences, including agricultural producers and consumers.

3. How was eXtension used?

The resources provided through eXtension were used to supplement and enhance our public learning experiences provided by MSU Extension agents and specialists. eXtension was also used as a resource in state-based planning processes. Overall, 233 MSU employees are eXtension users, with 12 new registrations during this reporting period. Further, MSU Extension has 77 employees that serve on one or more of the 78 Communities of Practice (COPs); MSU Extension employees are members of 45 COPs. 13 MSU Extension employees serve as a leader for a COP, leading 9 COPs. 5 MSU Extension personnel are members of the Beef Cattle COP. 4 MSU Extension personnel are members of the Freshwater Aquaculture COP. 1 MSU Extension employee is a member of the Livestock and Poultry Environmental Learning Centers COP. 2 MSU Extension personnel are members of the Marine Aquaculture COP. 1 MSU Extension employee is a member of the Wood Energy COP.

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	9900	10008	0	0

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

Patent Applications Submitted

Year:	2013
Actual:	2

Patents listed
1. Using Biochar as a container Substrate for Plant Growth
2. Fiber separation from Grain Products including Corn Flour and DDGS Using Electrostatic Method

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	26	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of people attending workshops, short courses, etc.

Year	Actual
2013	3318

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of producers adopting new practices due to research/extension recommendations.
2	Number of producers adopting new technologies, strategies, or systems.
3	Number of producers increasing production levels.
4	Number of producers decreasing production inputs/expenses.
5	Number of producers improving production efficiency.
6	Number of producers improving their environmental stewardship.

Outcome #1

1. Outcome Measures

Number of producers adopting new practices due to research/extension recommendations.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	332

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Commercial nursery propagators use various formulations of a root-inducing compound, auxin indole-3-acetic acid (IBA), to promote rooting on stem cuttings of ornamental and fruit crops. Recently, the potassium salt of IBA (also known as K-IBA) was removed from the market. The most similar product on the market is Hortus IBA Water Soluble. Growers requested that research be conducted to determine whether results with this product would be comparable to results previously obtained using K-IBA at similar rates, or whether rates would need to be adjusted.

What has been done
A study was conducted comparing these 2 products for cutting propagation of three common, woody nursery crops. Solutions were prepared using these products at five rates of IBA: 500, 1000, 1500, 2000, and 3000 ppm. Subterminal cuttings of Texas privet and star jasmine and single-node cuttings of 'Red Cascade' rose received a 1-second basal quick-dip in one of the 10 solutions, inserted in commercial rooting medium, and placed under intermittent mist in a greenhouse. After 6-7 weeks, number of roots and root length were evaluated.

Results
Upon harvest, cuttings of all three crops showed no significant difference in number of roots or total root length between the two products, although increasing rates of IBA increased the rooting of rose and star jasmine cuttings. Results indicate that commercial propagators can switch from K-IBA to Hortus Water Soluble Salts for a basal quick-dip without an adjustment in IBA rate. Results were presented at the 2013 annual meetings of the Western Region and Southern Region of the International Plant Propagators' Society, with combined attendance of approximately 250 nursery professionals. Results were also presented at the 2013 annual meeting of the Southern Nursery Association Research Conference, with attendance of approximately 100 nursery professionals, researchers, and Extension personnel.

4. Associated Knowledge Areas

KA Code	Knowledge Area
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
402	Engineering Systems and Equipment
403	Waste Disposal, Recycling, and Reuse

Outcome #2

1. Outcome Measures

Number of producers adopting new technologies, strategies, or systems.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	332

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Salmonella is a foodborne pathogen that causes salmonellosis in infected individuals. Poultry breeding and processing has been associated with Salmonella and consequently this pathogen has been frequently associated with various retail poultry products including ground turkey. In 2009, FoodNet-Centers for Disease Control and Prevention reported 7,039 laboratory-confirmed cases of Salmonella.

What has been done
Low concentrations of carvacrol (0.025 to 0.2%) and lauric arginate (LAE; 25 to 200 ppm) were tested at 4, 22, and 45°C in a broth model, and higher concentrations of carvacrol (0.1 to 5%) and LAE (200 to 5,000 ppm) were tested individually and in combination at 4°C in 3 different ground turkey samples (with 15, 7, and 1% fat content) for their effectiveness against a 3-strain mixture of Salmonella.

Results
A mixture of 25 ppm of LAE and 0.025% carvacrol showed a synergistic action by reducing 6 log cfu/mL Salmonella counts to an undetectable level within 30 min of exposure. For the total microbial load, about 2,000 ppm of LAE or 2% of carvacrol treatments were needed to achieve 2 to 3 log (P ≤ 0.05) cfu/g reductions in different turkey samples. This study indicated that a

combination between LAE and carvacrol would be an effective measure to control salmonella on ground turkey for the poultry industry.

4. Associated Knowledge Areas

KA Code	Knowledge Area
306	Environmental Stress in Animals
402	Engineering Systems and Equipment
403	Waste Disposal, Recycling, and Reuse

Outcome #3

1. Outcome Measures

Number of producers increasing production levels.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	177

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
As more growers become interested in high tunnel production, information about specific crop production techniques is vital.

What has been done
Vegetable production trials have been conducted annually at the Beaumont Horticultural Unit for 5 years. Variety selection, yield data, pest management, and sensory evaluation of products has been performed. Additional high tunnels have been constructed at the South Mississippi Branch Station in Poplarville and at Coastal Research and Extension Center in Biloxi. These new high tunnels will be used for specialty crop production education and evaluation.

Results
Information from these trials had been utilized by producers in their decision-making strategies when determining crop selection and market opportunities. Using the season-extension techniques of high tunnel production allows growers to bring product to market earlier in the Spring and later into the Fall and Winter seasons. This presents increased marketing and

revenue opportunities for farmers.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
402	Engineering Systems and Equipment

Outcome #4

1. Outcome Measures

Number of producers decreasing production inputs/expenses.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	177

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
As the economy continues to recover, manufacturers utilizing wood have increased their production. There is increasing evidence that hardwood lumber manufacturing is gaining momentum, and secondary manufacturing is experiencing a resurgence. Unfortunately, much of the knowledge about wood that the companies possessed was lost to retirements and downsizing.

What has been done
Mills were visited to determine their needs and issues. From this assessment a series of publications and workshops were created and tailored to the individual needs of the mills. The materials were focused on employees that worked in the mill along with the management of the mill. Topics included wood and water relationships, wood ID, wood drying, and wood properties as they relate to the species and intended use of the materials produced.

Results
Through the examination of mill production data and return claims, mills that participated in the workshops increased production and manufacturing defects. Several mills have found alternative wood species as a means of offsetting costs and servicing product demand, something they were

unaware of being able to do until being presented with the information.

4. Associated Knowledge Areas

KA Code	Knowledge Area
401	Structures, Facilities, and General Purpose Farm Supplies
402	Engineering Systems and Equipment

Outcome #5

1. Outcome Measures

Number of producers improving production efficiency.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	177

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In 2009, the Yazoo Water Mangement District (YMD) through static water level surveys showed that the Mississippi Alluvial aquifer is being mined and projected pumping problems in a specific area in the next ten years. Most producers, consultants, and seed representatives irrigate, or encourage irrigation, to prevent any crop stress in corn in order to obtain maximum yields. So, they generally irrigate before the crop stresses at all, with no regard to soil moisture; thus, water is applied that does not result in a yield benefit.

What has been done
MAFES scientists conducted irrigation initiation field studies with corn to determine optimum irrigation timing. Initiation was tested under sprinkler and furrow irrigation methods on a silt loam and silty clay loam soil, respectively, with and without deep tillage, while in a 1:1 rotation with cotton.

Results
Deep tillage increased yield under non-irrigated and irrigated conditions most years. There is a 5- to 10-day window of opportunity that occurs between V10 and VT, depending on rainfall, in which irrigation can be initiated in which yields will not be affected and in which apparent water-use

efficiency is relatively high. Earlier initiations did not increase yield or apparent water-use efficiency. Watermark readings varied from year to year for this window of opportunity, but in the worst-case scenario, irrigation needed to be initiated by 40 and 50 kPa, for the sprinkler and furrow irrigated fields, respectively. Reducing pumping by 2-3 inches will help reduce the overdraft on the aquifer and sustain our water resources while reducing fuel costs and increasing the bottom line of the producers.

4. Associated Knowledge Areas

KA Code	Knowledge Area
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
306	Environmental Stress in Animals
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
402	Engineering Systems and Equipment

Outcome #6

1. Outcome Measures

Number of producers improving their environmental stewardship.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	265

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Coastal communities in MS and AL provide vital economic, social, and recreational opportunities for hundreds of thousands of Americans, but decades of population migration and coastal hazards have transformed coastal landscapes and intensified demand on finite coastal resources. As a result, it has become increasingly important for communities to create and implement plans that address the dynamic nature of the coastline (watershed deterioration, changes in sea level) and assist in visualization of future scenarios (working waterfronts, greenspace).

What has been done

The MS-AL Sea Grant was responsive to planning needs by providing resources for climate adaptation planning for communities, conducting greenspace analysis, convening workshops to discuss future development options, and providing technical assistance to 15 communities in MS and AL. In addition, vulnerability assessments were conducted in 8 coastal communities, financial indicator analysis was conducted in 1 community, and 12 coastal jurisdictions received technical assistance to implement activities in the Community Rating System.

Results

Communities are incorporating sea-level-rise scenarios into hazard mitigation planning. Communities are aware of their strengths and weaknesses and are using the results from the Coastal Community Resilience Index to quantify whether the steps they are taking are moving them toward a more resilient community. Stewardship program managers are using research findings to refine prescription plans for burning on state lands and to minimize risks to vulnerable high marsh areas. Local governments are using research on takings law to determine their legal ability to implement sea-level-rise adaptation policies. State legislators have been provided with recommendations that address planning/zoning, financial incentive, socioeconomic, and infrastructure issues regarding waterfront access.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
402	Engineering Systems and Equipment
403	Waste Disposal, Recycling, and Reuse

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

MSU Extension agents and specialists, as well as MAFES faculty, used a variety of recommended methods to gather needed information. Specific strategies were initiated and utilized for collecting evaluation information to determine program outputs and outcomes (see impact statements for examples). In FY 2013, MSU Extension agents and specialists were required to submit four quarterly reports (January, April, July, and September). This quarterly report collects information about the number of contacts, types of contacts, and number of programs conducted in each Priority Planning Area. In addition, two narrative Accomplishment Reports are required from each MSU Extension employee

each year. Finally, a specific request for impact statements is also made. The evaluation results are a combination of this quantitative and qualitative data.

Our Planned Program Areas (PPAs) changed in 2013 - a reduction from over 20 PPAs in 2012 to 10 for this current reporting cycle. Previous PPAs of Environment/Nutrient Management, Sustainable Energy, Animal Production, and Aquaculture Production were combined into Global Food Security and Hunger - Agricultural, Biological, and Natural Resources Engineering. Given the time it takes to adapt an electronic reporting system and ensure all end-users are trained and understand how to report in new ways and new PPAs, our outcome data matching process required modification for 2013. As a result, some of our numbers may appear skewed from previous ones. This reduction of PPAs and thus combination of outcomes led to some outcomes within each PPA being very similar for 2013. Our reporting system would not allow us to make detailed distinctions at this point in time, so numbers were evenly distributed across those similar outcomes when appropriate. As our data collection system evolves over the next year or two, we will be able to more clearly align the various data elements within the system to resolve this issue.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Global Food Security and Hunger - Enterprise Economics

☑ 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
501	New and Improved Food Processing Technologies	0%		3%	
502	New and Improved Food Products	0%		7%	
503	Quality Maintenance in Storing and Marketing Food Products	0%		7%	
511	New and Improved Non-Food Products and Processes	0%		32%	
601	Economics of Agricultural Production and Farm Management	30%		15%	
602	Business Management, Finance, and Taxation	10%		6%	
603	Market Economics	0%		8%	
604	Marketing and Distribution Practices	40%		1%	
605	Natural Resource and Environmental Economics	0%		14%	
606	International Trade and Development	0%		1%	
608	Community Resource Planning and Development	0%		1%	
609	Economic Theory and Methods	0%		1%	
610	Domestic Policy Analysis	20%		4%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	5.2	0.0	4.0	0.0
Actual Paid Professional	2.2	0.0	6.5	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**
56149	0	374997	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
56149	0	605356	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	3454741	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

This program includes three areas designed to assist farmers in making their enterprises more profitable: 1) Farm Management Information and Training, 2) Extension Agricultural Marketing Information and Education, and 3) Agricultural Policy Analysis and Education.

The Farm Management Information and Training area provides farmers and agribusiness professionals with timely and relevant information on a variety of topics potentially impacting management decisions on their operations. It offers a number of practical decision aids along with training on the use of these aids as well as providing a resource for managers who need help with business planning.

The Extension Agricultural Marketing Information and Education area provides producers of major row crops, cattle, milk and dairy products, catfish, fruits and vegetables, and horticultural crops with regular, timely updates on conditions in these commodity markets. In addition, training will be made available on the use of commonly used marketing tools and strategies.

The Agricultural Policy Analysis and Education area provides producers, lenders and other input providers, and rural community leaders with timely and relevant information on existing farm, conservation, and international trade programs as well as analysis of the potential impact of proposed policy changes.

2. Brief description of the target audience

The target audience for this program consists primarily of agricultural producers and related agribusiness personnel.

3. How was eXtension used?

The resources provided through eXtension were used to supplement and enhance our public learning experiences provided by MSU Extension agents and specialists. eXtension was also used as a resource in state-based planning processes. Overall, 233 MSU employees are eXtension users, with 12 new registrations during this reporting period. Further, MSU Extension has 77 employees that serve on one or more of the 78 Communities of Practice (COPs); MSU Extension employees are members of 45 COPs. 13 MSU Extension employees serve as a leader for a COP, leading 9 COPs. 3 MSU Extension personnel are members of the Extension Disaster Education Network COP. 1 MSU Extension employee is a member of the Volunteerism COP.

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	3815	4051	0	0

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

Patent Applications Submitted

Year: 2013

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	28	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of producers attending workshops, seminars, and short courses.

Year	Actual
2013	1311

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of producers adopting recommended strategies in management, marketing, and government program use.
2	Number of producers indicating increased profitability due to implementation of recommended strategies.

Outcome #1

1. Outcome Measures

Number of producers adopting recommended strategies in management, marketing, and government program use.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	262

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In 1995, the US Food and Drug Administration enacted a law mandating HACCP for seafood businesses. The regulation became effective on December 18, 1997. This law applies to both domestic processors and those exporting their products to the United States. HACCP is a science-based program that helps seafood processors identify and evaluate critical points during production, processing, handling, and distributing to set up control measures that help ensure safe seafood.

What has been done
The Seafood HACCP course was developed by the Association of Food and Drug Officials (AFDO) and the National Seafood HACCP Alliance. Completion of this course fulfills training requirements for the FDA Final Rule as outlined in 21 CFR, Part 123. Three workshops were conducted to help the food industry to comply with the FDA and/or state requirements.

Results
About 75 participants attended these workshops. All the participants became Seafood HACCP certified by AFDO. This program is very important for the seafood industry not only in Mississippi but also nationwide as many of the participants were from other states.

4. Associated Knowledge Areas

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

Outcome #2

1. Outcome Measures

Number of producers indicating increased profitability due to implementation of recommended strategies.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	210

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The closures of significant portions of the Gulf of Mexico federal and MS state waters to commercial and recreational fishing due to Deepwater Horizon in April 2010 altered the production and consumption decisions of residents and tourists in affected areas. The changes in the market perceptions and flow of goods and services generated by the damaged natural resources affected households and the seafood producers and service providers dependent on these resources. The annual shares of MS to total domestic commercial landings fell in 2010 and 2011.

What has been done
Provision of an electronic database of seafood establishments, farmers' markets, for-hire charter boats, restaurants, processors, retail stores and other seafood establishments was continued. MarketMaker social media networks were developed and maintained. MarketMaker training materials for establishments, regulators, marketing, and research/extension faculty and staff were developed, updated, and disseminated. MarketMaker training workshops for fisheries and marine-related establishments, regulators, marketing, and research/Extension were conducted.

Results
As a result of this food marketing program, the following impacts were observed: increased listings and registrations and encouraged updates of online profiles of fisheries and marine-related establishments at the MS MarketMaker website during the past year; increased number of web users, web hits, and number of hits per user during the last 12 months; and increased annual shares of MS to total domestic commercial landings in 2012.

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

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

MSU Extension agents and specialists, as well as MAFES faculty, used a variety of recommended methods to gather needed information. Specific strategies were initiated and utilized for collecting evaluation information to determine program outputs and outcomes (see impact statements for examples). In FY 2013, MSU Extension agents and specialists were required to submit four quarterly reports (January, April, July, and September). This quarterly report collects information about the number of contacts, types of contacts, and number of programs conducted in each Priority Planning Area. In addition, two narrative Accomplishment Reports are required from each MSU Extension employee each year. Finally, a specific request for impact statements is also made. The evaluation results are a combination of this quantitative and qualitative data.

Our Planned Program Areas (PPAs) changed in 2013 - a reduction from over 20 PPAs in 2012 to 10 for this current reporting cycle. The Previous PPA of Risk and Farm Management was renamed Enterprise Economics. Given the time it takes to adapt an electronic reporting system and ensure all end-users are trained and understand how to report in new ways and new PPAs, our outcome data matching process required modification for 2013. As a result, some of our numbers may appear skewed from previous ones. This reduction of PPAs and thus combination of outcomes led to some outcomes within each PPA being very similar for 2013. Our reporting system would not allow us to make detailed distinctions at this point in time, so numbers were evenly distributed across those similar outcomes when appropriate. As our data collection system evolves over the next year or two, we will be able to more clearly align the various data elements within the system to resolve this issue.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Environmental Systems and Sustainability

☑ 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	0%		4%	
102	Soil, Plant, Water, Nutrient Relationships	5%		38%	
104	Protect Soil from Harmful Effects of Natural Elements	0%		3%	
111	Conservation and Efficient Use of Water	10%		18%	
112	Watershed Protection and Management	5%		15%	
132	Weather and Climate	5%		1%	
133	Pollution Prevention and Mitigation	5%		21%	
205	Plant Management Systems	10%		0%	
206	Basic Plant Biology	5%		0%	
211	Insects, Mites, and Other Arthropods Affecting Plants	10%		0%	
212	Pathogens and Nematodes Affecting Plants	5%		0%	
213	Weeds Affecting Plants	5%		0%	
214	Vertebrates, Mollusks, and Other Pests Affecting Plants	5%		0%	
215	Biological Control of Pests Affecting Plants	5%		0%	
216	Integrated Pest Management Systems	5%		0%	
403	Waste Disposal, Recycling, and Reuse	5%		0%	
405	Drainage and Irrigation Systems and Facilities	5%		0%	
721	Insects and Other Pests Affecting Humans	5%		0%	
903	Communication, Education, and Information Delivery	5%		0%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Extension	Research

Year: 2013	1862	1890	1862	1890
Plan	8.4	0.0	10.0	0.0
Actual Paid Professional	11.8	0.0	4.0	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**
302254	0	647450	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
302254	0	113303	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	1905447	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Varied activities, services, and products are anticipated. These include formation of state and regional advisory groups; assignment of work groups to address specific issues and tasks associated with environmental systems and sustainability; participation of targeted audiences, such as agricultural producers, in environmental education programs; and development of publications, fact sheets, web pages and other educational materials as program support, and reporting documents. Specific programs targeted toward agricultural producers in this plan include environmental stewardship programs, waste pesticide collection and disposal programs, recycling and solid waste management programs, development of agricultural water conservation practices to protect and maintain water resources, pharmaceutical and household chemical management and disposal programs and other initiatives related to water quality and nutrient management.

As related to environmental systems, research and extension programming will be conducted in many IPM areas, including the following:

1. urban entomology and plant pathology
2. plant disease and nematode diagnostics
3. cotton and corn pest management
4. greenhouse tomato pest management
5. soybean management by application of research and technology
6. public health issues related to vector control

2. Brief description of the target audience

Stakeholders and customers of research and extension programs represent a broad section of audiences, including agricultural producers and other rural audiences, agricultural support groups, environmental and water quality agencies, public health agencies and consumers.

3. How was eXtension used?

The resources provided through eXtension were used to supplement and enhance our public learning experiences provided by MSU Extension agents and specialists. eXtension was also used as a resource in state-based planning processes. Overall, 233 MSU employees are eXtension users, with 12 new registrations during this reporting period. Further, MSU Extension has 77 employees that serve on one or more of the 78 Communities of Practice (COPs); MSU Extension employees are members of 45 COPs. 13 MSU Extension employees serve as a leader for a COP, leading 9 COPs. 2 MSU Extension personnel are members of the Imported Fire Ants COP. 1 MSU Extension employee is a member of the Urban Integrated Pest Management COP.

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	68064	150140	0	0

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

Patent Applications Submitted

Year: 2013
Actual: 3

Patents listed
1. System and Method for pest reduction
2. Phenoxyalklyl Pyridinium Oxime Therapeutics for treatment of Organophosphate poisoning
3. Engineering the production of a conformational Variant of Occidiofungin that has inhibitory activity against Candida Species

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	2	85	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of clientele attending workshops, seminars, short courses, and demonstrations.

Year	Actual
2013	36367

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of producers adopting new technologies, strategies, or systems.
2	Number of producers reporting increased income or profits/decreased expenses based on practice changes.
3	Number of producers reducing environmental impacts of pesticide use.
4	Number of producers adopting new practices based on research/extension recommendations
5	Number of producers improving their environmental stewardships

Outcome #1

1. Outcome Measures

Number of producers adopting new technologies, strategies, or systems.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	3637

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In Mississippi in 2012, 60 fatal injuries were reported as being transportation incidents, followed by violence and other injuries by persons and animals and contact by objects and equipment; together these three major categories accounted for 80% of Mississippi's total fatal work injuries. Though none have been fatal to the Wayne County area there have been accidents on the work site.

What has been done
In response to this issue, the Wayne County Extension Service devised a series of safety workshops. In this program, there were workshops offered in chainsaw, fire, heat-related injuries, impaired driving, hypothermia, shop and tractor, disaster preparedness, and first aid.

Results
After applying the workshops to everyday work, there has been an increase in safety awareness. The Wayne County Board of Supervisors purchased safety equipment for all city workers. This is a program that will have an impact not only on the work environment, but it is also helping the City of Waynesboro economically with lowering insurance premiums for the city and with worker compensation cases due to injuries.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
206	Basic Plant Biology
211	Insects, Mites, and Other Arthropods Affecting Plants

212	Pathogens and Nematodes Affecting Plants
213	Weeds Affecting Plants
214	Vertebrates, Mollusks, and Other Pests Affecting Plants
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems

Outcome #2

1. Outcome Measures

Number of producers reporting increased income or profits/decreased expenses based on practice changes.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	5819

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Conventional fertilizer application to warm season pastures is a common practice among Mississippi cattle producers to increase forage biomass and forage quality. It is unclear to what extent these nutrient applications actually benefit livestock production. Many producers apply these nutrients without actually measuring impacts on productivity. Additionally environmental concerns may soon limit the ability of producers to apply these nutrients. More efficacious use of producer's resources might increase productivity and reduce environmental impact.

What has been done
A three-year study was conducted to evaluate the more efficient N delivery system in grazing beef cattle: no added fertilizer and no supplement; conventional fertilizer; or a supplemental feedstuff fed three times weekly to beef cattle. Data indicate that fertilization of pastures had no impact on performance of beef cattle, minimal increase in forage biomass, and an increase in pasture quality. However, supplementing feed to beef cattle resulted in improved performance, and no difference in pasture quality.

Results
Based upon the data observed, by not applying N in the form of a fertilizer a producer might save an additional $100 acre over the summer. Additionally, by providing N directly to the animal in the

form of a supplement rather than via conventional fertilizer a 7 fold improvement in cost of gain was noted. These types of savings can significantly impact beef cattle producers that utilize warm season pasture as their base program.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
132	Weather and Climate

Outcome #3

1. Outcome Measures

Number of producers reducing environmental impacts of pesticide use.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1454

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Under Federal and State laws and regulations, pesticide applicators must be certified to apply restricted use pesticides. Also, anyone who applies any pesticide for a fee must be licensed by the state of Mississippi. If the individual does not comply with the federal and/or state laws and regulations the individual could face a fine and/or imprisonment. Without the Pesticide Safety Education Program thousands of individuals would be unemployed, thus having a negative impact on the economy of the state.

What has been done
MSU Extension, through the Pesticide Safety Education Program, offers and conducts courses of training to individuals to become certified or recertified. The program provides self-study manuals to those individuals who are seeking first time Commercial certification. The program also conducts certification workshops in each County Extension office for Private Applicators (producers); they are required to take a recertification class every three years. These applicators can attend one of twenty scheduled classes in the state.

Results

In 2013, the Pesticide Safety Education Program trained 2,965 (2,120 private applicators and 845 commercial applicators) pesticide applicators in 272 meetings, totaling 467 hours of training. An additional 17 statewide recertification and certification workshops were conducted for stakeholders, such as electric power associations, city and county maintenance crews, community colleges, Mississippi Department of Transportation, aerial aviation association, and other agencies. These workshops allowed these agencies and stakeholders to stay in compliance with state and federal laws and regulations. The Commercial workshops allowed the individuals to stay employed and Private workshops allowed producers to continue producing food and fiber not only for MS but for the world.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
213	Weeds Affecting Plants
214	Vertebrates, Mollusks, and Other Pests Affecting Plants
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems

Outcome #4

1. Outcome Measures

Number of producers adopting new practices based on research/extension recommendations

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	3636

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Peanuts are a relatively new crop in Mississippi and the areas in which they are grown are expanding. Peanuts are susceptible to many diseases, and no plant pathologist had been working with Mississippi growers.

What has been done
MSU Extension activities for Mississippi peanut growers included: working with the Mississippi Peanut Promotion Board; surveying fields for disease from planting to harvest; contacting growers and their consultants about fungicide usage and problems they were encountering; establishing disease test plots in grower fields; posting news about peanut diseases on a web-based blog; writing newsletter articles; and organizing a set of disease images linked to a calendar.

Results
Activities showed that growers and almost all consultants were unable to distinguish "dangerous" leaf spot pathogens from innocuous ones. Similarly, they could not distinguish Sclerotium rolfsii (southern stem rot) from a similar fungus. Poor disease recognition resulted in unneeded sprays. Conversely, some growers were not spraying at all, and failed to recognize the introduction of a serious pathogen. About 85,000 acres were planted in the last two years. MSU Extension activities directly influenced sprays on ca. 30% of this acreage. Unneeded sprays helped the environment and saved growers ca. $382,500. Advice to spray impacted about 2% of the acreage.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
132	Weather and Climate

Outcome #5

1. Outcome Measures

Number of producers improving their environmental stewardships

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1455

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Erosion caused by wind, water, and wave action results in loss of residential and commercial property, reduction of storm buffering capacity, aquatic and terrestrial habitat loss, increased suspended solids, and water quality degradation. To combat these effects, property owners often erect bulkheads or seawalls. While these methods are effective, they also tend to alter, or create a loss of, natural habitat. Living shorelines present an ecological and economic alternative that may be viable for low and moderate erosional settings.

What has been done

MSU Coastal Research and Extension Center's "Living Shorelines" program educates the public, state, and federal regulatory agencies and private contractors about the benefits of installing natural erosion control structures as alternatives to seawalls and bulkheads to protect shoreline properties. Since 2007, Extension and outreach personnel have planned and conducted 6 Living Shorelines workshops in MS, AL, and FL; published 3 Extension publications related to natural erosion control structures and 2 policy reports; and made numerous presentations.

Results

The Mississippi General Permit for Living Shorelines (MSGP-03-Living Shorelines) was approved by the U.S. Army Corps of Engineers Mobile District on April 12, 2013. This general permit allows for the installation of native wetland plants and breakwaters composed of approved construction material if wave attenuation is needed for project success. This general permit will expedite approval of living shoreline type projects and creates a level permit approval process for living shorelines and hard structures. Since 2010, 44,859 linear feet of shoreline has been protected using alternative shoreline erosion control principles. These alternative options include using native marsh grass plants, dune plants, coir fiber logs, and offshore wave attenuation devices.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
403	Waste Disposal, Recycling, and Reuse
405	Drainage and Irrigation Systems and Facilities

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

MSU Extension agents and specialists, as well as MAFES faculty, used a variety of recommended methods to gather needed information. Specific strategies were initiated and utilized for collecting evaluation information to determine program outputs and outcomes (see impact statements for examples). In FY 2013, MSU Extension agents and specialists were required to submit four quarterly reports (January, April, July, and September). This quarterly report collects information about the number of contacts, types of contacts, and number of programs conducted in each Priority Planning Area. In addition, two narrative Accomplishment Reports are required from each MSU Extension employee each year. Finally, a specific request for impact statements is also made. The evaluation results are a combination of this quantitative and qualitative data.

Our Planned Program Areas (PPAs) changed in 2013 - a reduction from over 20 PPAs in 2012 to 10 for this current reporting cycle. Previous PPAs of Integrated Pest Management, Environment/Nutrient Management, Sustainable Energy, Farm and Home Safety: Biosecurity, Farm and Home Safety: Commercial Pesticide Applicator Training, and Farm and Home Safety: Private Pesticide Applicator Training were combined into Environmental Systems and Sustainability. Given the time it takes to adapt an electronic reporting system and ensure all end-users are trained and understand how to report in new ways and new PPAs, our outcome data matching process required modification for 2013. As a result, some of our numbers may appear skewed from previous ones. This reduction of PPAs and thus combination of outcomes led to some outcomes within each PPA being very similar for 2013. Our reporting system would not allow us to make detailed distinctions at this point in time, so numbers were evenly distributed across those similar outcomes when appropriate. As our data collection system evolves over the next year or two, we will be able to more clearly align the various data elements within the system to resolve this issue.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Forestry

☑ 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
121	Management of Range Resources	0%		31%	
122	Management and Control of Forest and Range Fires	20%		0%	
123	Management and Sustainability of Forest Resources	40%		68%	
124	Urban Forestry	10%		0%	
125	Agroforestry	15%		1%	
132	Weather and Climate	5%		0%	
133	Pollution Prevention and Mitigation	5%		0%	
403	Waste Disposal, Recycling, and Reuse	5%		0%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	9.9	0.0	0.0	0.0
Actual Paid Professional	14.0	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**
359857	0	8406	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
359857	0	1195	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	133363	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Research will be conducted in forest production and management, timber harvesting, forest recovery, and environmental impacts of forest practices. Extension programming will be conducted to share this information with forest landowners and industry personnel.

2. Brief description of the target audience

The audience for these programs includes forest landowners, loggers, professional foresters, industry personnel, and the general public.

3. How was eXtension used?

The resources provided through eXtension were used to supplement and enhance our public learning experiences provided by MSU Extension agents and specialists. eXtension was also used as a resource in state-based planning processes. Overall, 233 MSU employees are eXtension users, with 12 new registrations during this reporting period. Further, MSU Extension has 77 employees that serve on one or more of the 78 Communities of Practice (COPs); MSU Extension employees are members of 45 COPs. 13 MSU Extension employees serve as a leader for a COP, leading 9 COPs. 1 MSU Extension employee is a member of the Climate, Forests, and Woodlands COP. 1 MSU Extension employee is a member of the Prescribed Fire COP. 2 MSU Extension personnel are members of the Wood Products COP.

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	54171	52312	0	0

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

Patent Applications Submitted

Year: 2013

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	2	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of producers and industry attending seminars, workshops, short courses, and demonstrations.

Year	Actual
2013	17747

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of timber producers adopting new technologies and practices.
2	Number of timber producers increasing profitability of their forest operations.
3	Number of producers improving their environmental stewardship.
4	Number of producers adopting new practices based on research/extension recommendations
5	Number of producers reporting increased income/decreased expenses based on practice changes.

Outcome #1

1. Outcome Measures

Number of timber producers adopting new technologies and practices.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1775

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Wood-based bioenergy has received attention in the U.S. due to an increase in awareness from negative environmental consequences of fossil fuels, a need for energy security, and the potential for economic revenue and job creation for rural communities. Forest lands provide ample opportunity for production of wood-based bioenergy. Given their dominance in southern forest lands, nonindustrial private forest (NIPF) landowner willingness to harvest woody biomass for wood-based bioenergy is important to realize sustainable feedstock supplies.

What has been done
To better understand NIPF landowner willingness to supply woody biomass for wood-based bioenergy, a survey of 2,500 NIPF forest landowners having more than 100 ac of forest land was conducted to examine landowner knowledge of wood-based bioenergy and, based on their knowledge, factors affecting NIPF landowner willingness to supply woody biomass for wood-based bioenergy generation.

Results
Almost half the NIPF landowners were unaware of wood-based bioenergy. Those having larger forested acres and pine plantations, being male, and being residents were more likely to know bioenergy could be produced from unused logging residues. Willingness to harvest trees to supply woody biomass (given awareness) was positively related to landowner residence, pine plantation in forest land, age, and opinion regarding monetary benefits of wood-based bioenergy. Results have implications for Extension education. Low income landowners need education related to the emerging wood-based bioenergy market and relevant Extension education services. Economic sustainability of this industry will depend on adequate biomass supplies affected by knowledge and willingness of landowners to supply feed stocks.

4. Associated Knowledge Areas

KA Code	Knowledge Area
122	Management and Control of Forest and Range Fires
123	Management and Sustainability of Forest Resources
124	Urban Forestry
125	Agroforestry
133	Pollution Prevention and Mitigation

Outcome #2

1. Outcome Measures

Number of timber producers increasing profitability of their forest operations.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1420

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
During 2013, 125,000 Mississippi forest landowners managed 19,700,000 acres of forest land that produced timber with a harvested value of $1.17 billion. In 2010, forestry and forest products-related employment accounted for 123,659 or 4.2% of all jobs in MS. Forestry is an essential economic engine to many rural MS counties. County government policies concerning forestry and timber harvesting influence economic activity in this important sector.

What has been done
Documenting the economic contribution of forestry and forest products to a county economy provides valuable information to forestry advocates and benefits landowners. Economic impact analyses were conducted for 72 forested counties in MS. Total impacts, measured by income, employment, total output, and value-added, were reported in an outreach publication series. The 72 individual publications describe the economic impact of the forestry and forest products industry on an entire county economy.

Results

As the housing market improves, demand for dimensional lumber and other forest products is increasing. In 2013, the production value of timber was $149 million over that of 2012. County government adoption of policies restrictive or overly burdensome to timber harvesting can have negative multiplier effects on local economies and slow recovery. The ability to quantify the economic contribution of forestry and forest products at the county level can benefit forestry and forest products advocates when facing restrictive policies or other objections to timber harvesting. The model of economic contribution described helps government officials and the public understand the economic importance of forestry and forest products and craft policies that demonstrate fiscal prudence and support natural resource-based industries.

4. Associated Knowledge Areas

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources
125	Agroforestry

Outcome #3

1. Outcome Measures

Number of producers improving their environmental stewardship.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1420

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Although there are many nurseries in Adams County, MS, it is difficult to find young trees for planting whether it be for forest areas, home lawns, or fruit production. Therefore Adams County Extension personnel partnered with the Soil & Water Conservation Service to start having an annual tree sale in Adams County where bare root seedling trees for all occasions could be offered. Trees sold included fruit & nut trees, trees for home landscaping, and trees for wildlife enhancement.

What has been done
The tree sale was planned to be the same week as Arbor Day in an effort to use it as an

educational tool. Over 3,000 trees were purchased and hundreds of pine seedlings were donated for give-away. Local school groups participated in helping mark all of the trees for identification. Every local media source was used for advertisement.

Results
The tree sale was a huge success for the county. Over 2,500 trees were sold with much of the funds going to educational and 4-H programs. There was also an opportunity to go into every school and give an Arbor Day educational program to all 5th graders in the county. Each student was given three pine seedlings to take home with them. Future tree sales are being planned to continue this event that benefits many segments of the community.

4. Associated Knowledge Areas

KA Code	Knowledge Area
122	Management and Control of Forest and Range Fires
133	Pollution Prevention and Mitigation
403	Waste Disposal, Recycling, and Reuse

Outcome #4

1. Outcome Measures

Number of producers adopting new practices based on research/extension recommendations

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1774

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Approximately 70% of the state of MS is forested, and the majority of that is in private ownership of 100 acres or less. It is essential to the sustainability of the resource and the industry that landowners are knowledgeable in forest management, harvesting, and marketing practices and techniques. The Extension Program of the Department of Forestry at MSU has held a major role for almost 90 years in expanding that knowledge base through educational opportunities for landowners, foresters, loggers, 4-H and youth, and the general public.

What has been done
County forest landowner short courses have been a major part of the Forestry Extension program for several years. These short courses provide intensive training in specific subject areas. Each course typically meets on a one-day basis. Each participant receives a three-ring binder containing reference material on each topic covered during the course to extend the learning experience of each participant.

Results
Twelve landowner short courses were conducted in FY13 with 391 attendees owning 303,118 acres of forestland. These attendees placed a collective value of $770,700 on the training they received. Planning, coordination, and implementation of short courses are joint efforts of Extension Forestry faculty and staff, county directors, and cooperating organizations. Personnel from other agencies, forest industries, and consulting firms serve as instructors for some course topics. While the courses are primarily designed for landowners, many professional foresters attend and benefit from the intensive training. The knowledge gained through these short courses and the networking opportunities provided contribute to the continued success and sustainability for the forestry industry in MS.

4. Associated Knowledge Areas

KA Code	Knowledge Area
122	Management and Control of Forest and Range Fires
123	Management and Sustainability of Forest Resources
124	Urban Forestry
403	Waste Disposal, Recycling, and Reuse

Outcome #5

1. Outcome Measures

Number of producers reporting increased income/decreased expenses based on practice changes.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1420

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The first-line supervisor is typically the backbone of manufacturing and responsible for many elements of production and personnel. While formal education and training exist for other professionals, the first-line supervisor is usually thrust into a position of accountability and responsibility with little preparation or continued education. This is true for many supervisors in furniture manufacturing. Most have advanced to their position from within the plant and are tasked with providing leadership and technical assistance without training in soft skills.

What has been done

In response to the need for a training program specifically geared towards supervisory-level personnel, FFI developed the Training Program. This course provides training on-site at manufacturing plants to supervisors and key employees hoping to become supervisors. Skills taught include communication, leadership, and management, as well as modern manufacturing techniques. The course is delivered in four modules each consisting of 12 in-class hours of instruction, and participants must pass tests at the end of each module.

Results

The supervisory management training program remains the most requested service available through FFI. During FY13, 4 companies with a total of 47 participants enrolled in the management training program and 94% completed all sessions. Implementation of each course has been shown to provide substantial savings for participating companies, as well as improving skills, efficiencies, and technical knowledge of graduates of the program. Although designed for supervisory level, many middle managers, as well as those at the upper management level such as CEOs and plant managers, have participated in the course. Requests for the program extend beyond the furniture manufacturing cluster, and it is now available to any manufacturing sector.

4. Associated Knowledge Areas

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources
125	Agroforestry

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Appropriations changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

MSU Extension agents and specialists, as well as MAFES faculty, used a variety of recommended methods to gather needed information. Specific strategies were initiated and utilized for collecting evaluation information to determine program outputs and outcomes (see impact statements for examples). In FY 2013, MSU Extension agents and specialists were required to submit four quarterly reports (January, April, July, and September). This quarterly report collects information about the number of contacts, types of contacts, and number of programs conducted in each Priority Planning Area. In addition, two narrative Accomplishment Reports are required from each MSU Extension employee each year. Finally, a specific request for impact statements is also made. The evaluation results are a combination of this quantitative and qualitative data.

Our Planned Program Areas (PPAs) changed in 2013 - a reduction from over 20 PPAs in 2012 to 10 for this current reporting cycle. Previous PPAs of Forest Products, Forestry, Climate, and Sustainable Energy were combined into Forestry. Given the time it takes to adapt an electronic reporting system and ensure all end-users are trained and understand how to report in new ways and new PPAs, our outcome data matching process required modification for 2013. As a result, some of our numbers may appear skewed from previous ones. This reduction of PPAs and thus combination of outcomes led to some outcomes within each PPA being very similar for 2013. Our reporting system would not allow us to make detailed distinctions at this point in time, so numbers were evenly distributed across those similar outcomes when appropriate. As our data collection system evolves over the next year or two, we will be able to more clearly align the various data elements within the system to resolve this issue.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 7

1. Name of the Planned Program

Wildlife and Fisheries

☑ 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
111	Conservation and Efficient Use of Water	5%		0%	
131	Alternative Uses of Land	10%		0%	
132	Weather and Climate	5%		0%	
135	Aquatic and Terrestrial Wildlife	15%		100%	
136	Conservation of Biological Diversity	5%		0%	
214	Vertebrates, Mollusks, and Other Pests Affecting Plants	15%		0%	
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals	5%		0%	
604	Marketing and Distribution Practices	10%		0%	
605	Natural Resource and Environmental Economics	15%		0%	
722	Zoonotic Diseases and Parasites Affecting Humans	5%		0%	
903	Communication, Education, and Information Delivery	10%		0%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	9.4	0.0	2.0	0.0
Actual Paid Professional	10.1	0.0	1.0	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**
258116	0	205343	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
258116	0	18818	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	422202	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

In-state and multistate research and extension activities will be conducted related to wildlife and fisheries habitat management, wildlife enterprise development, human-wildlife conflicts, and youth (K-12) education.

2. Brief description of the target audience

The target audience for this project consists of most Mississippians, including those who hunt, fish, and watch wildlife, those who interact with wildlife at work and home, those who work in related industries and professions, and those who educate our youth (K-12).

3. How was eXtension used?

The resources provided through eXtension were used to supplement and enhance our public learning experiences provided by MSU Extension agents and specialists. eXtension was also used as a resource in state-based planning processes. Overall, 233 MSU employees are eXtension users, with 12 new registrations during this reporting period. Further, MSU Extension has 77 employees that serve on one or more of the 78 Communities of Practice (COPs); MSU Extension employees are members of 45 COPs. 13 MSU Extension employees serve as a leader for a COP, leading 9 COPs. 4 MSU Extension personnel are members of the Feral Hogs COP with 2 being leaders. 1 MSU Extension employee is a member of the Wildlife Damage Management COP.

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	76024	20363	0	0

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

Patent Applications Submitted

Year: 2013

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	1	19	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of clientele attending seminars, workshops, short courses, and demonstrations.

Year	Actual
2013	16065

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of producers adopting new practices based on research/extension recommendations.
2	Number of wildlife professionals improving their skills in handling wildlife damage issues.
3	Number of non-industrialized, private landowners initiating wildlife-related enterprises.
4	Number of landowners reporting improved wildlife conservation due to management practices.
5	Number of clientele reporting increased income levels due to wildlife enterprises.
6	Number of producers reporting increased income/decreased expenses based on practice changes.

Outcome #1

1. Outcome Measures

Number of producers adopting new practices based on research/extension recommendations.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	3213

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
MS is the leading state for catfish production. Ready-to-eat smoked fish is one of the most popular fish products worldwide; the seafood industry is looking for ways to commercially produce smoked catfish. People may make smoked catfish at home. Catfish can be contaminated with Listeria monocytogenes during smoking or packaging process owing to unhygienic conditions; these can grow well at refrigerated temperatures (5°C) which makes L. monocytogenes a threat to the health of those who eat smoked catfish, and Listeriosis accounts for about 2500 cases of illness.

What has been done
The efficacy of X-ray processes in inactivating L. monocytogenes levels in smoked catfish during storage at 5°C and the effects of X-ray doses on controlling the growth of spoilage bacteria on smoked catfish during storage at 5°C for up to 5 weeks were studied. Smoked catfish fillets inoculated with L. monocytogenes were treated with 0.0-2.0 kGy X-ray and stored at 5°C for 5 weeks. The negative controls and uninoculated samples treated with the lowest (0.1 kGy) and highest (2.0 kGy) doses were stored at 5°C and tested for psychrotroph count during the 5 weeks.

Results
The initial L. monocytogenes population on smoked catfish was significantly ($P < 0.05$) reduced to undetectable level by a treatment of 1.0 kGy or higher. The initial psychrotroph count on smoked catfish was significantly reduced from 4.7 CFU/g to below the detectable level by a treatment with 2.0 kGy. A treatment with 2.0 kGy X-ray also kept the levels of psychrotrophs in the smoked catfish within the acceptable level until 35 days. The results of this investigation indicate that X-ray would be a good alternative, for the catfish industry, to ensure the safety and extend the shelf life of smoked catfish stored at refrigeration temperature.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
132	Weather and Climate
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
605	Natural Resource and Environmental Economics
722	Zoonotic Diseases and Parasites Affecting Humans
903	Communication, Education, and Information Delivery

Outcome #2

1. Outcome Measures

Number of wildlife professionals improving their skills in handling wildlife damage issues.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1542

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Southwest Mississippi is continuing to see a rapid expansion in the wild hog population. This invasion is causing significant loss of economic and recreational resources. Commodity groups from forestry and wildlife, along with farming and ranching, have expressed deep concern over future impacts should no course of action occur to reduce numbers or attention to the issue.

What has been done
The Adams County Extension Service led the charge to arrange a day to invite South Mississippi to a wild hog seminar. We partnered with the state Extension wildlife specialist; Farm Bureau; St. Catherine Wildlife Refuge; Department of Mississippi Wildlife, Parks, & Fisheries; and the NRCS to plan a day to provide as much comprehensive knowledge and hands-on training as possible.

The agenda included biology of the species, reproduction & growth habits, state and federal regulations, removal techniques, and history.

Results
The event had 52 participants from different segments of the state, including foresters, loggers, hunters, landowners, farmers, and livestock owners. The overwhelming majority of the group learned several new things throughout the day from understanding reproduction rates, which leads to population increases, to identifying disease possibilities from handling live hogs. Every participant learned new methods of trap designs and gate systems for homemade enclosures.

4. Associated Knowledge Areas

KA Code	Knowledge Area
135	Aquatic and Terrestrial Wildlife
605	Natural Resource and Environmental Economics
903	Communication, Education, and Information Delivery

Outcome #3

1. Outcome Measures

Number of non-industrialized, private landowners initiating wildlife-related enterprises.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	642

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Research conducted at MSU found that expenditures for hunting, fishing, and wildlife watching in 2008 produced $2.7 billion annually in economic impact to MS, primarily benefiting its rural and coastal economies. In the U.S., an estimated 90 million outdoor enthusiasts spent over $145 billion to hunt, fish, and view wildlife in 2011. Due to this business potential, more landowners and communities are interested in how to start outdoor recreational businesses and implement related land and water resource conservation on their lands.

What has been done

The Natural Resources Enterprise (NRE) Program educates landowners, farmers, and other clientele about fee-access recreational business development (hunting, angling, wildlife watching, nature-based tourism, agritainment) and compatible land and water conservation practices on private lands. Since 2005, NRE has conducted 70 landowner workshops in 9 states at requests of partners (i.e., university extension services, state farm bureaus) and trained 4,000 landowners and community leaders. NRE conducted 8 events in 2013 in 4 states to over 400 participants.

Results
Impacts from programming have been impressive. Past participants' survey responses indicate that our programming has initiated over 1,000 new outdoor recreational businesses and generated an estimated $12.6 million in additional family farm incomes. Over half of these new NRE ventures were started in MS, due to our primary focus being in-state. Our programming has led to conservation being conducted on approximately 2 million acres in private ownership across the nation. The NRE demonstration area at Coastal Plains Experiment Station hosted its 5th Annual Fall Youth Wildlife Field Day for both the municipal and county schools in Newton County. Through 4 interactive stations including mammals, reptiles, forestry obstacle course, and archery, 164 6th graders were introduced to wildlife and fisheries of central MS.

4. Associated Knowledge Areas

KA Code	Knowledge Area
136	Conservation of Biological Diversity
605	Natural Resource and Environmental Economics
903	Communication, Education, and Information Delivery

Outcome #4

1. Outcome Measures

Number of landowners reporting improved wildlife conservation due to management practices.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	643

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In 2004, USDA introduced a new practice under the Conservation Reserve Program (CRP) called Habitat Buffers for Upland Birds (CP33). CP33 provides economic incentives for establishing 30 to 120-foot-wide buffers of diverse native grasses and forbs along the edges of crop fields to provide habitat for bobwhites and other grassland birds. This was the first CRP conservation practice designed specifically to help meet recovery objectives of a large-scale wildlife conservation initiative and to require a wildlife monitoring component.

What has been done
MSU Wildlife Scientists designed and led a 6-year national monitoring program. The program, delivered across more than 1000 agricultural fields in 14 states, involved collaboration among 3 federal agencies, 14 state natural resource agencies, 3 universities, and 4 non-governmental agencies. Upland habitat buffers increased breeding season bobwhite densities by 85-109% and fall bobwhite densities by 50-110%. At current enrollment of 238,046 acres, the study estimates the practice has added 30,000 quail coveys to the landscape annually.

Results
Conservation practices like CP33 make relatively small changes (3-5%) in primary land use at little or no cost to landowners and provide essential wildlife habitat in productive working agricultural landscapes. The team also found that when buffers are strategically implemented in low yielding portions of fields, they increase whole field profitability for producers. MSU scientists developed a geospatial decision support tool to help producers identify eligible portions of fields and evaluate economic costs and benefits. The CP33 monitoring program allows for evaluation of populations of grassland avifauna at a large geographic scale and demonstrates that measurable and substantive conservation benefits can be achieved through targeted and strategically implemented wildlife conservation practices.

4. Associated Knowledge Areas

KA Code	Knowledge Area
135	Aquatic and Terrestrial Wildlife
605	Natural Resource and Environmental Economics

Outcome #5

1. Outcome Measures

Number of clientele reporting increased income levels due to wildlife enterprises.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	514

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
As pressure mounts to increase production without compromising environmental stewardship, sustainable, resilient grazing systems that supply high-quality forage for beef production and provide ecosystem services (e.g., wildlife habitat, carbon sequestration, pollination) are key. Native warm-season grasses (NWSG) have largely been replaced by exotic grasses in southern forage systems; while forage quality is comparable, NWSG are more drought tolerant and produce greater biomass yield and environmental services with fewer inputs.

What has been done
In 2011-2013, MAFES scientists conducted a replicated, operational-scale study to measure stocker cattle performance, wildlife habitat value, economics, and meat quality of beef production systems based on monotypic NWSG, mixed NWSG, and exotic forage grasses. In May 2011 and 2012, stocker cattle with a mean starting weight of 525lbs/head were stocked at a rate of 1.1 animals/ac on each of 4 replicates (20 ac each) of 3 treatments (monotypic Indian grass, Mixed NWSG, and Bermuda/fescue mixed exotic forage grasses).

Results
Both 2011 and 2012 were relatively dry years. During the growing season, average daily gain on Indian grass and mixed NSWG was 0.35-0.55 lbs/day greater than on exotic forage grasses. Over the 2 years, monotypic and mixed NWSG treatments had 7.8-39.1% higher marginal rates of return, despite the higher cost of establishment. Eighty-seven to 100% of stockers conditioned on NWSG and finished on grain graded Choice or better at harvest. Stockers raised on NWSG had lower fat content, higher protein and moisture, and less oxidation during storage than those raised on exotic forage grasses. As indexed by production of resident grassland birds, NWSG pastures produced 50-125% greater wildlife benefits.

4. Associated Knowledge Areas

KA Code	Knowledge Area
135	Aquatic and Terrestrial Wildlife
605	Natural Resource and Environmental Economics

Outcome #6

1. Outcome Measures

Number of producers reporting increased income/decreased expenses based on practice changes.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	514

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Out-of-production catfish ponds serve as favorable loafing sites for American White Pelicans in the vicinity of active farms. Pelicans serve as host for a digenetic trematode that causes fish mortalities and decreased production. As effective treatment regimes were developed to control the parasite, the rate of new infections began to taper off; however, diagnostic submissions rose dramatically from 2011 to 2013 due to an influx of large flocks of pelicans, increased loafing sites, and relaxed scouting and treatment regimes.

What has been done
Since treatment regimes were already established due to extensive MSU research and field trials, the main response to the problem was to increase awareness. Catfish producers were informed through a series of diagnostic site visits, consultations, newsletter articles, popular press articles, and Extension-based educational programs.

Results
Even light infections of trematodes have been proven to cause a reduction of up to 60%. It is estimated that had these 10 farms not implemented some form of disease surveillance and treatment program, the lost net return to land would have been over $18 million in 2013.

4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
131	Alternative Uses of Land
132	Weather and Climate
136	Conservation of Biological Diversity
604	Marketing and Distribution Practices
605	Natural Resource and Environmental Economics

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Government Regulations
- Competing Programmatic Challenges

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

MSU Extension agents and specialists, as well as MAFES faculty, used a variety of recommended methods to gather needed information. Specific strategies were initiated and utilized for collecting evaluation information to determine program outputs and outcomes (see impact statements for examples). In FY 2013, MSU Extension agents and specialists were required to submit four quarterly reports (January, April, July, and September). This quarterly report collects information about the number of contacts, types of contacts, and number of programs conducted in each Priority Planning Area. In addition, two narrative Accomplishment Reports are required from each MSU Extension employee each year. Finally, a specific request for impact statements is also made. The evaluation results are a combination of this quantitative and qualitative data.

Our Planned Program Areas (PPAs) changed in 2013 - a reduction from over 20 PPAs in 2012 to 10 for this current reporting cycle. Previous PPAs of Wildlife/Fisheries and Climate Change were combined into Wildlife and Fisheries. Given the time it takes to adapt an electronic reporting system and ensure all end-users are trained and understand how to report in new ways and new PPAs, our outcome data matching process required modification for 2013. As a result, some of our numbers may appear skewed from previous ones. This reduction of PPAs and thus combination of outcomes led to some outcomes within each PPA being very similar for 2013. Our reporting system would not allow us to make detailed distinctions at this point in time, so numbers were evenly distributed across those similar outcomes when appropriate. As our data collection system evolves over the next year or two, we will be able to more clearly align the various data elements within the system to resolve this issue.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 8

1. Name of the Planned Program

Community Resource and Economic Development

☑ 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	25%		0%	
609	Economic Theory and Methods	25%		0%	
802	Human Development and Family Well-Being	5%		0%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	20%		0%	
805	Community Institutions, Health, and Social Services	25%		100%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	49.7	0.0	1.0	0.0
Actual Paid Professional	33.6	0.0	0.6	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
861897	0	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
861897	0	0	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	358027	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Extension will assist local communities in conducting the following activities:

- Development of demographic, economic, and fiscal profiles
- Development of economic analyses (e.g., feasibility, impact, export-base, business plans, commuting, trade, shift share, location quotients)
- Providing technical assistance and holding community forums
- Taking strategic planning surveys (e.g., market assessment, customer satisfaction, hospitality, health)
- Developing market strategies
- Conducting strategic planning workshops
- Publishing a directory of local services
- Developing quantitative profiles of health organizations
- Conducting feasibility studies
- Producing gap analyses
- Promoting coalition building trainings
- Conducting tourism development workshops
- Providing customer service/hospitality trainings
- Conducting leadership development workshops
- Providing technical assistance to counties and municipalities in such areas as general management, financial administration, personnel administration, leadership development, economic development, community facilities and services, and solid waste management

2. Brief description of the target audience

The target audience for this program consists of local communities and their leaders, as well as community members interested in improving their community. These individuals include master Extension volunteers and 4-H volunteers.

3. How was eXtension used?

The resources provided through eXtension were used to supplement and enhance our public learning experiences provided by MSU Extension agents and specialists. eXtension was also used as a resource in state-based planning processes. Overall, 233 MSU employees are eXtension users, with 12 new registrations during this reporting period. Further, MSU Extension has 77 employees that serve on one or more of the 78 Communities of Practice (COPs); MSU Extension employees are members of 45 COPs. 13 MSU Extension employees serve as a leader for a COP, leading 9 COPs. 2 MSU Extension personnel are

members of the Diversity Equity and Inclusion COP. 2 MSU Extension personnel are members of the Enhancing Rural Capacity COP. 7 MSU Extension personnel are members of the Entrepreneurs and Their Communities COP. 3 MSU Extension personnel are members of the Extension Disaster Education Network COP. 5 MSU Extension personnel are members of the Network Literacy COP. 3 MSU Extension personnel are members of the Public Deliberation COP. 2 MSU Extension personnel are members of the Tourism and Recreation COP.

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	153190	245603	0	0

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

Patent Applications Submitted

Year:	2013
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	3	14	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of clientele attending workshops, seminars, and short courses.

Year	Actual
2013	66466

Output #2

Output Measure

- Number of communities requesting economic analyses.

Year	Actual
2013	2

Output #3

Output Measure

- Number of communities participating in community health improvement activities.

Year	Actual
2013	74

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of community leaders improving knowledge and skills.
2	Number of participants implementing strategies to improve public decision-making and/or increase civic engagement.
3	Number of local government officials obtaining required certifications.
4	Number of local communities adopting recommended strategies to improve their local economy.
5	Number of local communities adopting recommended strategies to improve health services.
6	Number of communities implementing strategies for improvement, development, and/or marketing of tourist attractions.
7	Number of local communities improving their health services.
8	Number of communities reporting increased levels of tourist activity.
9	Number of communities reporting an increase in local broadband adoption and use.
10	Number of clientele who make use of leadership skills by volunteering for community organizations.

Outcome #1

1. Outcome Measures

Number of community leaders improving knowledge and skills.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	13293

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Citizens' well-being is safeguarded through the democratic process which enables them to elect representatives to make decisions on their behalf. Public utilities operated by municipalities, utility districts, and rural associations have an elected board, but private water utilities do not. The Mississippi Public Service Commission (PSC) oversees private water utilities and considers proposed changes to rates, policies, or procedures. The PSC requested an unbiased review of a private water utility in DeSoto County that petitioned for a rate increase.

What has been done
The Center for Government and Community Development performed a prudent and economic management audit for the DeSoto County private water utility. The audit included a review of staffing, finances, and assets in relation to size of the customer base. Comparisons were made with similar water utilities in Mississippi, in DeSoto County, and statewide averages. It was important to see that the staff numbers, items of finance, and assets were similar to public water utilities to highlight uniformity of operations regardless of private status.

Results
The management audit concluded that the subject, private water utility in DeSoto County, was operating in a very prudent and economical manner. The PSC was able to ascertain the necessity of the petitioned rate increase and the private water utility was granted the rate increase. The private water utility had acquired $1.2 million in debt to upgrade the pumps, treatment, and storage to create capacity for future growth in their certificated area. The rate increase will enable them to fully fund their monthly debt service of approximately $10,000.

4. Associated Knowledge Areas

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

Outcome #2

1. Outcome Measures

Number of participants implementing strategies to improve public decision-making and/or increase civic engagement.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	10634

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The financial soundness of a water and sewer utility is vital to its technical and managerial functions. The governing body must annually review water and sewer rates to maintain sound enterprise funds. Revenue generated is dependent upon consumption by customers at a determined rate. The governing board sets the rate to adequately fund short-run and long-run expenses incurred in providing water and sewer service to its customers. The concept of water as a finite resource, in particular, should be considered when establishing consumption rates.

What has been done
The mayor of the City of Hernando requested assistance in reviewing the city's rate structure compared to that of surrounding water and sewer utilities. He wanted to know if the city's water/sewer enterprise was making or losing money, as well as how much revenue could be produced from incremental increases in the water/sewer rate. Study findings could assist the mayor and board in making an informed decision concerning revenue requirements of their municipal enterprise fund and to identify any modifications needed to insure its financial stability.

Results
The mayor and board learned from the study that their rate structure was 45.6% lower on average

than the surrounding water and sewer utilities, resulting in a substantial financial shortfall in their water and sewer enterprise funds. As a result of the study, the City of Hernando increased its base water rate by $3.00 for the first 2,000 gallons used and the variable water rate by $0.85 for each additional 1,000 gallons used. The rate change will generate approximately $161,496 from the base rate and $342,261 from the variable rate annually. This assistance enabled Hernando to create a rate structure to adequately fund the water and sewer enterprise funds from user fees as well as to begin to build reserves in those enterprise funds.

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development
609	Economic Theory and Methods
802	Human Development and Family Well-Being
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
805	Community Institutions, Health, and Social Services

Outcome #3

1. Outcome Measures

Number of local government officials obtaining required certifications.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	2225

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Mississippi has 298 municipalities with 4 forms of government; Mayor/ Board of Aldermen, Mayor-Council, Council-Manager, and Commission. The municipal clerk is required by state statute to perform specific duties as they relate to the specific form of government in each municipality. Prior to 1973, there was no formal education-based program for a municipal clerk and his/her deputies to attend to learn these required duties.

What has been done

In 1973, the Center for Governmental Training and Technology developed a three-year, exam-based, accredited curriculum for municipal clerks in MS. The MS Municipal Clerk Certification Program is a three-year program consisting of 120 classroom hours of training in three areas of study: public administration; social and interpersonal skills; and electives. Each course consists of 4 hours of classroom instruction. The program is taught in North, Central, and South MS twice a year. A municipal clerk and/or their deputies may start the program at any point.

Results
The Municipal Clerks Certification Program provides in-depth training for municipal clerks and their deputies. Since its inception in 1973, over 900 municipal clerks and/or deputy clerks have become Certified Municipal Clerks or Certified Deputy Municipal Clerks. Currently there are 125 clerks in the program with approximately 40 graduating each year. In 2013 MSU had 19 achieve the Certified Municipal Clerk designation and 25 achieve the Certified Municipal Deputy Clerk designation. Upon graduation from the Clerks Certification Program a clerk may enter into the Master Municipal Clerk Program which consists of 120 hours of management and leadership training. Five Municipal Clerks received their Master Municipal Clerk designation this year.

4. Associated Knowledge Areas

KA Code	Knowledge Area
805	Community Institutions, Health, and Social Services

Outcome #4

1. Outcome Measures

Number of local communities adopting recommended strategies to improve their local economy.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	20

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Furniture manufacturing plays a key role in supporting economic growth through job creation and investment, as it currently ranks 2nd in total Mississippi durable goods manufacturing employment. After a loss of more than 10,000 jobs during the past decade, the MS furniture industry is again on the upswing. Manufacturers have begun to increase capacity; however, many

have found that the pool of workers with the needed skill sets has virtually disappeared. Companies are also facing difficulties finding available equipment, especially sewing machines.

What has been done
One of the primary responsibilities of the FFI is to be responsive to the needs of the furniture industry. FFI staff looked to similar industries for assistance to face the problems manufacturers were encountering. FFI staff contacted a local apparel company which had lost a major government contract and discovered that the company had excess capacity and had recently been forced to layoff workers. FFI was able to refer several furniture manufacturers to the apparel company, and negotiations began to "outsource" sewing to furniture companies.

Results
One company is currently utilizing the apparel company to provide cut and sew operations to enable them to meet increased demand for their products. Another five companies are in the negotiation process with this company. The use of a local company for contract sewing operations instead of outsourcing labor to low-wage countries such as China and Vietnam, provides economic benefits by keeping investment in people and capital in our state. The furniture companies benefit through lower costs, greater efficiency, and better quality of product. Thirty jobs were retained by this sewing contractor through these matches to date, and many more are expected.

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development
609	Economic Theory and Methods

Outcome #5

1. Outcome Measures

Number of local communities adopting recommended strategies to improve health services.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	34

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Fifty-two percent of older Mississippians live in rural areas, and over 80% live in their own family dwellings. Since 1970, the state's 60+ population has grown by 43%. The challenge is finding ways to maintain and improve the health of our seniors while allowing them the freedom of residing in their own homes. This is especially true for rural areas with less formal support for seniors' health and well-being. In the county where the program was delivered in FY13, 14.7% of the population is over 65, compared to an average of 12.8% for the state.

What has been done
MSU Extension designed the Smart Aging: Healthy Futures program to help communities foster the healthy aging of seniors. In FY13, the program was conducted in Marion County. A series of public forums, directed by Extension, led the community to establish priorities for local action, and volunteer groups were formed to work on those priorities. MSU Extension trained the volunteer groups in "Moving from Talk to Action." To insure community ownership, they proceeded on their own, but MSU Extension held quarterly progress meetings to encourage efforts.

Results
Having the right people together at the right time created opportunities and committed volunteers who accomplished their objectives. The most significant accomplishment is the establishment of a senior fitness center. A community action group (CAG) was formed and adopted the mission of acquiring a facility for a fitness center and health classes to promote better and healthier lifestyles for the county's seniors. CAG members connected with the Southern Mississippi Planning and Development District, which led to the District funding the purchase of exercise equipment for the Center. Though recently opened, the Center already is attracting 15-18 individuals each day. The age range of those using the fitness equipment is between 70 and 85 years. Individuals also perform upper body exercises while seated and watching exercise videos.

4. Associated Knowledge Areas

KA Code	Knowledge Area
805	Community Institutions, Health, and Social Services

Outcome #6

1. Outcome Measures

Number of communities implementing strategies for improvement, development, and/or marketing of tourist attractions.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	50

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Marion County farms and producers have not had an organized avenue to market fresh fruits, vegetables, and homemade goods. Many producers left the county to sell goods. Farmers' markets provide growers with an established place to sell their products straight to the consumer, allowing them to receive higher profits by removing the middleman and selling directly to consumers. Farmer's markets are beneficial to the local economy, farmers, and consumers. Since most consumers want a "homegrown" fresh product, the needs of consumers are met.

What has been done
June 10th was the opening day of the Marion County Farmers Market. There were 3 producers present on opening day. Producers showed great interest in the market, and by the 3rd week there were over 15 producers with fresh vegetables, living wreaths, cut flowers, honey, woodworks, handmade children's clothing, baked goods, homemade ice cream, soaps, and all-natural body butters and creams. Entertainment was even provided, and different food vendors on site to provide lunch to the shoppers.

Results
Farmers markets support local economic impact in the community where they are organized and sell products. It is found that 70% of farmers market customers are also spending in the community or town where they market is. Farmers markets encourage producers in rural areas to become entrepreneurs. Farmers markets are one of the few areas in which all parts of a community benefit. The farmer or producer gets top dollar for the product sold, the consumer gets a high quality fresh product, and the community sees economic impact from the organized market.

4. Associated Knowledge Areas

KA Code	Knowledge Area
608	Community Resource Planning and Development
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

Outcome #7

1. Outcome Measures

Number of local communities improving their health services.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	40

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Mississippi has the lowest number of physicians per capita in the nation. This limits access to care and contributes to many of the negative health status indicators plaguing the state. MS is within the top two in the nation in rates of heart disease mortality, cancer mortality, and incidence of adult diabetes. The bottom line is easy to read - more people, per capita, develop potentially fatal diseases than elsewhere in the country, and when they do, it is more difficult for them to secure the care they need.

What has been done
MSU Extension developed and directs the Rural Medical Scholars program. The objective of the program is to "grow local docs" for the state by identifying talented and interested high school students and exposing them to academics and experiences relevant to the life of a family medicine physician. During the program, Scholars enroll in two pre-med courses, "shadow" physicians, and participate in various activities related to rural physicians. The program was conducted from 1998-2013 (with the exception of 2008 and 2009).

Results
To date, 294 students have completed the program. Students have come from 60 of the state's 82 counties and included 62% females and 23% minorities. 70% of our graduates have gone on to pursue health-related careers, 34 went to medical school, and 20 have graduated and are practicing physicians today. Of the 20 physicians, 13 are within MS, and 14 of the 20 are in primary care practice or residency programs. In addition to medicine, others are pursuing nursing, pharmacy, counseling, dentistry, physical or occupational therapy, and medical research. The program is paying dividends for the state. In addition to the health care concerns that drive the program, a recent study indicated that the addition of one physician to a typical MS county results in increased economic output of $2 million.

4. Associated Knowledge Areas

KA Code	Knowledge Area
805	Community Institutions, Health, and Social Services

Outcome #8

1. Outcome Measures

Number of communities reporting increased levels of tourist activity.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	4

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Several rural areas in Mississippi are in a food desert -- making it difficult for individuals to eat a healthy diet. In some cases, the only source of groceries is the local "quick mart," making access to healthy and affordable food more challenging. Farmers' markets are one potential way to help combat food deserts as well as create a mood that fosters tourism and increases income for local producers. The Attala County Farmers' Market manager expressed the need for a basic gardening and horticultural education program for its vendors.

What has been done
MSU Extension conducted a workshop for Attala County Farmers' Market vendors on the importance of fertilization and soil amendments, and vegetable varieties and proper production practices.

Results
Farmers' Market vendors expressed genuine appreciation of the program and indicated that their knowledge of the subject matter covered during the workshop was positively impacted. Attendees were pleased with the information discussed, as well as the presenters who provided the presentations. Each attendee expressed that the knowledge they gained during the workshop would be applicable to their personal operations on the farm and at home. Additionally, the group believed that the enhanced knowledge would likely positively impact the Attala County Farmers' Market efforts in the community. This should lead to additional visitors to and subsequent spending in the community where the Farmers' Market is located, which leads to a multiplier effect in the local economy.

4. Associated Knowledge Areas

KA Code	Knowledge Area

608	Community Resource Planning and Development
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

Outcome #9

1. Outcome Measures

Number of communities reporting an increase in local broadband adoption and use.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	4

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Using high speed internet is no small feat in many Mississippi communities for reasons that include limited access, costs, security concerns, and uncertainty about how to use broadband. Taken together, these factors prevent many Mississippi citizens from experiencing the benefits that broadband can offer to their families and communities. Greater broadband use can lead to better educational opportunities, a more highly skilled workforce, enhanced quality of life, and improved access to health care and public services in Mississippi.

What has been done
The Extension Broadband Education & Adoption Team (e-BEAT) is a network of regional coordinators that provides broadband education and planning assistance to individuals and communities; monitors broadband use; gathers public feedback on statewide plans; establishes regional advisory teams to identify regional needs, priorities, and strategies; documents benefits of broadband use; and provides train-the-trainer programs to partnering organizations. For example, free WiFi hotspots were set up in the downtown area of four Mississippi communities.

Results
In the city of Meridian, the Dumont Plaza WiFi Hotspot has been used on a daily basis from its inception. Students from the nearby MSU Branch Business program frequent the outdoor space in the plaza with their laptops to use the free WiFi. The project has had a positive impact on our downtown revitalization efforts and helped us project a positive image of our urban core. The facility has proven to be such a success that the City of Meridian is assessing the possibility of providing access at other public spaces in the community.

4. Associated Knowledge Areas

KA Code	Knowledge Area
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

Outcome #10

1. Outcome Measures

Number of clientele who make use of leadership skills by volunteering for community organizations.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	2980

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Successful communities nurture a leadership philosophy that encourages widespread citizen involvement. Lamar County Extension's goals include helping residents identify opportunities to improve the social and economic well-being of the community. Efforts to find practical and timely solutions are enhanced by working with communities, agencies, and organizations. In working with schools, community groups and advisory councils the need for information about gardening, including small-space gardening suitable for physically-limited people, was identified.

What has been done
MSU Extension worked with the Pine Belt Master Gardeners and ANR agent to develop educational programs related to gardening, nutrition, and health through the development and installation of a handicap-accessible demonstration garden at the Lamar County Office. We worked with community groups to install gardens at schools, senior centers, and assisted-living facilities. We developed media to promote the Lunch & Learn educational programs provided on a weekly basis through the Extension office.

Results
The handicap-accessible demonstration garden has increased public awareness and increased educational opportunities. Partnerships with other organizations and schools have increased in the community, and opportunities for citizens with physical limitations to enjoy gardening have increased. The project has provided fundraising opportunity for PBMG, allowing them to expand program outreach and create $500 scholarships, and has increased public awareness of MSU

Extension and Pine Belt Master Gardeners. PBMG provided more than 400 volunteer hours for a dollar value in excess of $11,000 toward community facilities. The Lunch & Learn series audience has increased 15%. Evaluations indicated 70% learned new information about gardening, 82% indicated information was useful, and 60% indicated they would share information with others.

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being
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
- Government Regulations
- Competing Programmatic Challenges

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

MSU Extension agents and specialists, as well as MAFES faculty, used a variety of recommended methods to gather needed information. Specific strategies were initiated and utilized for collecting evaluation information to determine program outputs and outcomes (see impact statements for examples). In FY 2013, MSU Extension agents and specialists were required to submit four quarterly reports (January, April, July, and September). This quarterly report collects information about the number of contacts, types of contacts, and number of programs conducted in each Priority Planning Area. In addition, two narrative Accomplishment Reports are required from each MSU Extension employee each year. Finally, a specific request for impact statements is also made. The evaluation results are a combination of this quantitative and qualitative data.

Our Planned Program Areas (PPAs) changed in 2013 - a reduction from over 20 PPAs in 2012 to 10 for this current reporting cycle. Previous PPAs of Enterprise and Community Development, Adult Technology Education, Leadership Development, Farm and Home Safety: Disaster Preparedness, and Farm and Home Safety: Disaster Relief were combined into Community Resource and Economic Development. Given the time it takes to adapt an electronic reporting system and ensure all end-users are trained and understand how to report in new ways and new PPAs, our outcome data matching process required modification for 2013. As a result, some of our numbers may appear skewed from previous ones. This reduction of PPAs and thus combination of outcomes led to some outcomes within each PPA being very similar for 2013. Our reporting system would not allow us to make detailed distinctions at this point in time, so numbers were evenly

distributed across those similar outcomes when appropriate. As our data collection system evolves over the next year or two, we will be able to more clearly align the various data elements within the system to resolve this issue.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 9

1. Name of the Planned Program

4-H Youth Development

☑ 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
806	Youth Development	100%		0%	
	Total	100%		0%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	70.3	0.0	0.0	0.0
Actual Paid Professional	76.7	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
1965020	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
1965020	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

Activities include:

- Recruit youth and volunteers
- Provide volunteer leader training for youth leaders and adult volunteers
- Provide training on organization and maintenance of community clubs
- Provide recognition events for youth to exhibit project skills, including 4-H Club Congress; District Achievement Days; County, State, & Regional Fairs; and Livestock and Horse Shows
- Provide training to Extension personnel on experiential education through subject-matter work on chartering all 4-H Clubs and groups, the four essential elements, legal use of the name and emblem, diversity training, and financial management

2. Brief description of the target audience

All Mississippians between the ages of 5 and 18.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	114262	131687	266611	307271

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

Patent Applications Submitted

Year:	2013
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	3	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of youth enrolled in 4-H Clubs.

Year	Actual
2013	22354

Output #2

Output Measure

- Number of clubs operating on military bases.

Year	Actual
2013	4

Output #3

Output Measure

- Number of youth-at-risk who join 4-H clubs.

Year	Actual
2013	7444

Output #4

Output Measure

- Number of volunteers attending local and/or district training.

Year	Actual
2013	1068

Output #5

Output Measure

- Number of volunteers attending state volunteer leaders conference.

Year	Actual
2013	329

Output #6

Output Measure

- Number of volunteers attending the regional 4-H volunteer leaders forum.

Year	Actual
2013	26

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Adult and youth volunteers increasing their knowledge and skills in being effective volunteer leaders.
2	Volunteers participating in training conferences incorporate their skills gained from training to work with 4-H clubs.
3	Volunteer-managed 4-H clubs are sustained at the local level.
4	Number of youth who improve life skills.
5	Number of youth who increase knowledge of subject-matter areas.
6	Number of 4-H projects completed.
7	Youth increase their involvement in leadership events and activities at the district, state, and national levels.

Outcome #1

1. Outcome Measures

Adult and youth volunteers increasing their knowledge and skills in being effective volunteer leaders.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	8241

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The public is largely unaware that societal health is connected to environmental health. With little understanding of environmental processes, it will be difficult to communicate to citizens about environmental issues and unrealistic to expect democratic discourse on solutions. Mississippians are the least prepared academically to deal with environmental problems. Science achievement by students is the lowest in the U.S.; therefore, there is need for youth-serving adults to have greater understanding of natural resources science issues.

What has been done
Extension personnel in the MSU Department of Wildlife, Fisheries and Aquaculture annually conduct a variety of training programs for volunteer youth leaders and education professionals. Programs provide practical methods for engaging youth in the outdoors, improving interest in nature, incorporating science in multi-disciplinary instruction, and enhancing understanding of relevant and research-based science.

Results
Assessments of the youth conservation education workshops indicate participants gain increased knowledge and a greater comfort level with natural resources science topics and content. Volunteer leaders and professional educators indicate a greater willingness to implement workshop material in their local youth instructional efforts. A substantial number of volunteer leaders return to attend additional workshops, indicating retained interest and confidence in the workshops' benefits. Collaboration with other educational institutions and natural resources entities in some of the educational programs improves inter-agency cooperation and communication, creating synergy and leveraging resources to improve educational outcomes.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #2

1. Outcome Measures

Volunteers participating in training conferences incorporate their skills gained from training to work with 4-H clubs.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1423

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The urban Wingfield High School football program faced several challenges: the team had lost 17 straight games heading into 2012, the school had only 500 pounds in weights and no youth-football feeder system, the booster club had under $100 in the bank, and the players were physically weak and lacked discipline and focus. The 4-H Youth Development program strives to improve the quality of life for Mississippi youth by developing their potential and providing "hands-on" (experiential) educational programs. Program priorities identified include leadership development, life skills training, developing positive self-esteem, and empowering volunteers.

What has been done
The coach of the football team worked with MSU Extension and MSU Horticulture faculty to establish the Dr. George Washington Carver Future Scientists 4-H Club. The primary focus of the club has been a 2-acre garden at Foot Print Farms, a 98-acre urban-rural farm. By locating there instead of at the school, the 4-H members and club leaders also gained access to equipment, expertise, and a real farming experience. Football team members participated in all aspects of farming from soil preparation to tilling and planting to harvesting and selling.

Results
The football team grew over 1,000 watermelons in its first growing season. Profits from sales at the market and donations went back into the football program, enabling the team to buy weights, team apparel, and pregame meals. The youth have learned to work together. Their attitudes and grades have improved (50% made honor roll), they are physically stronger, and freshmen enrollment on the team increased from 3 to 22 in one year. As the coach stated, "We were showing them that they can be producers in society." The project has garnered national attention

with stories in USA Today High School Sports and an appearance on Katie Couric's show, "Katie."

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #3

1. Outcome Measures

Volunteer-managed 4-H clubs are sustained at the local level.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1095

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
KidsCount.org reports 46% of youth in the Jackson County, MS, Pascagoula School District (PSD) are evaluated to be at or below proficient levels in overall academic achievement, and the 2002 Tufts University 4-H Study of Positive Youth Development Study shows that participation in 4-H clubs increases educational achievement. Students who participated in 4-H clubs reported better grades, higher levels of academic competence, and an elevated level of engagement at school, and 4-H members are 3 times more likely to actively contribute to their communities.

What has been done
In collaboration with Gautier Middle School, Jackson County 4-H established 32 4-H clubs for 6th-8th grade students. Each project club was based on the essential elements of 4-H, including life skills, leadership, and citizenship. School teachers were assigned as club leaders, based upon their interest and skills; students were also assigned a club based upon interest and availability. Clubs met for one hour, once a month, throughout the 2012-2013 school year.

Results
Jackson County 4-H and Gautier Middle School (GMS) provided 690 students the opportunity to participate in 4-H Clubs and utilized 71 teachers as club leaders and volunteers. Club members and leaders reported 355 community service volunteer hours, which is valued at $7,459.70 to the City of Gautier and Jackson County community (based on Current Independent Sector rate for

volunteer hours of $22.14/hr). The 2012-2013 PSD Achievement and Performance report is not available yet, but, based upon expectations from school administration, it is expected to see notable increases in achievement standards. Based upon the outcomes and experiences provided, GMS has continued to implement the 4-H Club program for another year in 2013-2014.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #4

1. Outcome Measures

Number of youth who improve life skills.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	14812

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The Jobs for Mississippi Graduates (JMG) program helps assist students to stay in school, graduate, and successfully transition from school into employment, post-secondary education, other training, or the military. Natchez High School JMG Director, Linda Bowers, contacted the Adams County 4-H program in need of leadership programs for JMG students. Many of the youth needed some leadership programs that the school couldn't offer them to improve themselves for the future and beyond.

What has been done
Adams County 4-H program agent, Jason Jones, met with Linda Bowers to discuss what topics and events would help her youth get better leadership skills and get involved in 4-H. Both agreed to have the JMG students help out with Real World program station, which would be held at the school in March. Also, youth would participate in various presentations.

Results
Fifty-five youth learned about the benefits of 4-H, importance of being a leader, ways to help improve their community, and importance in helping others. On the evaluation, over 47 youth indicated they learned new leadership practices that will benefit them in their lives. Also, 12 youth

indicated they wanted work in a manger position or some kind leadership role to help improve others after the leadership presentations. Youth learned more responsibility, how to prepare for college, how to be more financially responsible, and how to be an overall better leader in their communities. Over 10 youth signed up to join the 4-H club.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #5

1. Outcome Measures

Number of youth who increase knowledge of subject-matter areas.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	12590

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Adams County youth have the benefit of living in an environment with an abundant amount of agriculture and natural resources. However, the vast majority of our school students have limited interaction with agriculture or farming of any kind. The school teachers have asked us to provide more hands-on knowledge to students.

What has been done
The Adams County Extension Service made the decision to plan a multiple day event to take 9-12 year old students out to learn about agriculture. We partnered with other agricultural agencies to obtain funding for transportation and meals for the participants. Then eight different farming operations agreed to provide hands-on training in their areas: exotic wildlife management, blueberry production, aquaculture, horse training, cattle production, vegetable gardening, agronomy, pond construction, sod farming, and avian wildlife conservation.

Results
Twenty-five students participated in the Farm Camp. 100% of the participants indicated on a post-evaluation that they had learned and visited places they had never seen before. Over 30% of the participants had never been on a farm before. The camp was a tremendous success, and future

endeavors like this will be provided on an annual basis.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #6

1. Outcome Measures

Number of 4-H projects completed.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	7406

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In Mississippi in 2012, 26 incidents of injuries/death of youth between the ages of 15-19 due to firearms were reported, and there was an increase of media coverage on this issue. Mississippi was ranked fourth in firearm-related deaths throughout the nation according to the World Life Expectancy website.

What has been done
In response to this, a shooting sports/hunter education certification program was offered in one county. There were 7 hunter education classes conducted within the county open enrollment and county schools. In the shooting sports program participants learn time management, leadership skills, life skills, and proper use of a firearm. In the hunter education program participants learn other safety measures such as first aid, shoot and don't shoot situations, and other firearm safety.

Results
After applying this program with youth in the county there is a new interest in participation in shooting sports. In 2013, the participation and retention was increased in the shooting sports program with 12 new members and 15 returning members. While on the range, they demonstrated time management, leadership skills, and proper use of firearms. The hunter education program was conducted through the seventh grade classes in the county schools which were increased from two to five schools and three open classes with estimated participation

to be approximately 300 students/participants to pass the certification along with a written and fire arm demonstration exam.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #7

1. Outcome Measures

Youth increase their involvement in leadership events and activities at the district, state, and national levels.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	7406

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Currently, Newton County has approximately just over 5,000 youth under the age of 18. Other than hunter education classes there are no other firearm educational opportunities for the youth in the county. Many of the youth are hunting and need more hands on experience in handling firearms in a safe manner. Newton County is considered a rural county and many of the youth have hunting and fishing interest.

What has been done
The Newton County 4-H Shooting Sports program provides opportunities for the youth in the county to learn firearm safety. Certified instructors lead youth in a classroom setting on parts of the firearm and how to safely handle the firearm. The instructors also lead youth in actual hands-on training on the firing range. Once the youth have been properly trained, they are allowed to compete in competitions.

Results
4-H Shooting Sports members have become very efficient shooters and have had the opportunity to compete on a district, state, and national level. Members have also had opportunity to guide hunts for hunters with disabilities. Many of these youth now feel comfortable handling firearms and hunting alone. There are currently over 60 youth participating in the program on the county level, and 6 have qualified to compete on a national level.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Appropriations changes
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

MSU Extension agents and specialists, as well as MAFES faculty, used a variety of recommended methods to gather needed information. Specific strategies were initiated and utilized for collecting evaluation information to determine program outputs and outcomes (see impact statements for examples). In FY 2013, MSU Extension agents and specialists were required to submit four quarterly reports (January, April, July, and September). This quarterly report collects information about the number of contacts, types of contacts, and number of programs conducted in each Priority Planning Area. In addition, two narrative Accomplishment Reports are required from each MSU Extension employee each year. Finally, a specific request for impact statements is also made. The evaluation results are a combination of this quantitative and qualitative data.Our Planned Program Areas (PPAs) changed in 2013 - a reduction from over 20 PPAs in 2012 to 10 for this current reporting cycle. Previous PPAs of 4-H Youth Development and Youth Technology Education were combined into 4-H Youth Development.

Given the time it takes to adapt an electronic reporting system and ensure all end-users are trained and understand how to report in new ways and new PPAs, our outcome data matching process required modification for 2013. As a result, some of our numbers may appear skewed from previous ones. This reduction of PPAs and thus combination of outcomes led to some outcomes within each PPA being very similar for 2013. Our reporting system would not allow us to make detailed distinctions at this point in time, so numbers were evenly distributed across those similar outcomes when appropriate. As our data collection system evolves over the next year or two, we will be able to more clearly align the various data elements within the system to resolve this issue.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 10

1. Name of the Planned Program

Family and Consumer Sciences

☑ 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
701	Nutrient Composition of Food	0%		1%	
703	Nutrition Education and Behavior	20%		7%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	5%		1%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	5%		43%	
723	Hazards to Human Health and Safety	0%		1%	
724	Healthy Lifestyle	25%		0%	
801	Individual and Family Resource Management	15%		0%	
802	Human Development and Family Well-Being	30%		33%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	0%		14%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	37.9	0.0	4.0	0.0
Actual Paid Professional	43.7	0.0	5.7	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
1119728	0	94721	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
1119728	0	342188	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
1522827	0	1524954	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Considering the breadth of this program, Extension and research will focus on numerous areas:
healthy lifestyles education
proper food handling
family resource management
preparing a competent early child care workforce and
human development

2. Brief description of the target audience

The audience for this program includes all Mississippians. Aspects of this program will target specific professionals or employees, such as food handlers (food safety) and early care/education providers (MSCCR&R). Other activities in this program--such as those focused on childhood obesity and human health and nutrition--will have a broader focus.

3. How was eXtension used?

The resources provided through eXtension were used to supplement and enhance our public learning experiences provided by MSU Extension agents and specialists. eXtension was also used as a resource in state-based planning processes. Overall, 233 MSU employees are eXtension users, with 12 new registrations during this reporting period. Further, MSU Extension has 77 employees that serve on one or more of the 78 Communities of Practice (COPs); MSU Extension employees are members of 45 COPs. 13 MSU Extension employees serve as a leader for a COP, leading 9 COPs. 1 MSU Extension employee is a member of the Community Nutrition Education COP. 2 MSU Extension personnel are members of the Community, Local, and Regional Food Systems COP. 1 MSU Extension employee is a member and leader of the Creating Healthy Communities COP. 1 MSU Extension employee is a member of the Diabetes COP. 1 MSU Extension employee is a member of the eXtension Alliance for Better Child Care COP. 1 MSU Extension employee is a member of the Families and Child Well-Being Learning Network COP. 15 MSU Extension personnel are members of the Families, Food, and Fitness COP with 4 being leaders. 2 MSU Extension personnel are members of the Family Caregiving COP. 4 MSU Extension personnel are members of the Financial Security for All COP with 1 being a leader. 4 MSU Extension personnel are members of the Food Safety COP. 1 MSU Extension employee is a member of the Healthy Food Choices in Schools COP. 4 MSU Extension personnel are members of the Just In Time Parenting COP. 1 MSU Extension employee is a member of the Women in Ag Learning Network COP.

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	206763	333896	310144	500843

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

Patent Applications Submitted

Year: 2013

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	25	46	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of clientele attending workshops, seminars, and short courses.

Year	Actual
2013	50708

Output #2

Output Measure

- Number of people attending certification courses.

Year	Actual
2013	983

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of clientele reporting changes in lifestyle to improve health.
2	Number of clientele reporting decreases in at least one indicator (blood pressure, blood cholesterol, body mass index).
3	Number of foodservice professionals achieving required certification in food handling techniques.
4	Number of clientele who learn how to use nutritional guidelines to make food decisions.
5	Number of clientele who adoopt practices to fit their diets with dietary guidelines
6	Number of clientele reporting improved health and/or well-being due to changes in diet.
7	Number of clientele reporting a positive change in at least one behavior related to obesity (increased physical activity, decrease in caloric intake, increase in fruits and vegetables in diet).
8	Number of clientele adopting new practices related to financial management
9	Number of clientele reducing debt.
10	Number of clientele increasing wealth.
11	Number of families adopting recommended family strategies and behaviors.
12	Number of families reporting improved strengthened family life.
13	Number of childcare providers maintaining certification requirements.
14	Number of care providers increasing the quality of care provided.
15	Number of clientele increasing knowledge in child care and development content areas as measured by pre/post assessments.

Outcome #1

1. Outcome Measures

Number of clientele reporting changes in lifestyle to improve health.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1405

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
More people in Mississippi develop serious health problems than anywhere else in the nation. The most effective strategies to deal with the issues of chronic disease and poor health habits include early healthy life skills building, increased utilization of preventive medical care, early detection and treatment of disease, and community access to comprehensive health care.

What has been done
MSU Extension collaborated with health professionals, health-promoting coalitions, and community agencies to plan and implement programs to educate citizens about the health benefits of making healthy lifestyle choices. MSU Extension participated in 12 health fairs/screenings at corporate and school health fairs, provided a Body Walk Exhibit for 4th graders in Lamar County, worked to assess needs of the senior adult community in Marion County, conducted the 12-week Seniors Living Well program, and provided 5 other community programs concerning healthy life skills.

Results
Participants showed increased understanding of the benefits of healthy living. 239 students indicated they learned information they did not know about calories, exercise, and healthy choices from sessions. Partnerships were increased with other community health professionals, and evaluations completed by teachers indicated the students learned beneficial health information that would help them make healthier choices. Senior citizens formed an action group that was instrumental in getting $8000 worth of exercise equipment for Lampton Community. 30-40 senior adults that did not have a safe place to exercise have participated in physical activity regularly. 80% of senior citizens participating in the Senior Living Well program indicated they learned beneficial health information and safety tips for a safer environment.

4. Associated Knowledge Areas

KA Code	Knowledge Area
723	Hazards to Human Health and Safety
724	Healthy Lifestyle

Outcome #2

1. Outcome Measures

Number of clientele reporting decreases in at least one indicator (blood pressure, blood cholesterol, body mass index).

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Number of foodservice professionals achieving required certification in food handling techniques.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	427

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Under the MS Food Code, anyone serving food for pay is required to have a permit to operate their facility. Facilities are required to show documentation of food safety knowledge. This requirement applies to commercial, institutional, catering, and other foodservice establishments. The required training leads to cleaner and safer facilities with employees who have a better understanding of how food becomes unsafe and what groups are at an increased risk for foodborne illnesses. Cleaner and safer facilities lead to contaminated food.

What has been done
MSU Extension in partnership with the MS Hospitality and Restaurant Association and the MS State Department of Health, provides the primary food safety management certification course

used in MS. The ServSafe program is an 8-16-hour, face-to-face training with a national certification offered by the National Restaurant Association Educational Foundation. Certification requires a score of 75 on a secure, proctored exam. Recertification is required every five years. MSU Extension employees provides a managerial course to personnel in a variety of foodservice operations.

Results
From October 2012 to September 30, 2013, 46 classes were taught by ten ServSafe certified MSU Extension instructors. A total of 504 participants completed the ServSafe Certification training. Passage rate for all attendees taking the certification exam was 84.7%. ServSafe certification courses were offered at ten primary locations throughout the state of MS during the program year. MSU Extension instructors have been praised for their dedication and professionalism regarding the curriculum and training by many of the participants. The MSU Extension ServSafe program continues to be recommended by the Mississippi State Department of Health to businesses and individuals seeking certification in MS.

4. Associated Knowledge Areas

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

Outcome #4

1. Outcome Measures

Number of clientele who learn how to use nutritional guidelines to make food decisions.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	7030

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
MS youth experience similar poor health behaviors as MS adults, which for the first time ever may result in a generation of children with shorter life expectancies than their parents (HBO Weight of

the Nation, 2012). At least 79% of MS high school students do not consume adequate amounts of fruits, vegetables, or milk. Many students do not meet daily physical activity recommendations and spend 3 or more hours a day watching television/using computers. These behaviors contribute to 21.9% of MS youth being obese (Trust for America's Health, 2012).

What has been done
In cooperation with the Mississippi Department of Human Services and the United States Department of Agriculture, MSU Extension provides the MS Body Walk, an interactive tour of the human body that educates youth grades K-5th about how to keep their bodies healthy. Curricula used in the MS Body Walk focuses on ways to keep your brain, mouth, stomach, muscles, bones, lungs, and nervous system healthy like by brushing your teeth, eating according to MyPlate, and avoiding cigarettes.

Results
In FY13, the MS Body Walk visited 22 counties allowing just over 12,000 students to experience the interactive human body. When comparing knowledge, behavior, and skills of students in K-2nd who received nutrition education and the Body Walk with students in K-2nd who only received nutrition education, the Body Walk showed to increase positive change. Students experiencing the Body Walk showed increased improvements in recognition of healthy snacks, vegetables, fruits, grains, dairy, and proteins.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

Outcome #5

1. Outcome Measures

Number of clientele who adoopt practices to fit their diets with dietary guidelines

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	5624

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Behavioral Risk Factor Surveillance System (2007) results show, among Mississippians with incomes below $15,000/yr, 87.5% reported consuming less than five fruits and vegetables a day, and 46.8% reported not being physically active in the past month. MS rates are among the highest in prevalence of diet-related diseases. Cardiovascular disease, cancer, diabetes, and overweight/obesity are leading chronic diseases. These chronic diseases are particularly concerning due to MS's elevated poverty rate in comparison to the U.S.

What has been done
Paraprofessionals work in approximately 26 counties with poverty rates at or above the state average. Nutrition education concentrates on diet quality/physical activity, food safety, shopping behavior/food resource management, and food security. Children have been selected as a target audience for programs that will assist development healthy lifestyle behaviors before chronic disease begins. Programming with adult audiences promotes dietary changes in the home environment. This synergistic approach supports healthy changes across the board.

Results
During FY13, EFNEP worked with 708 individuals, graduating 539, and indirectly reaching 1,914 family members. An increase of 45% of graduates reported eating 3 or more cups of fruits and vegetables combined. An increase of 31% reported not allowing meat and dairy foods to sit out more than 2 hours. 47% reported a positive change in their physical activity level. EFNEP also worked with 23,408 youth. 39% of 3rd-5th graders reported improvement in asking to have vegetables within reach; 30% of 6th-8th graders reported improvement in choosing a low-fat food item; and 57% of K-2nd graders reported improvement in washing hands. Improvements in diet quality, food safety, and physical activity levels among adult and youth helps EFNEP families enhance their quality of life.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

Outcome #6

1. Outcome Measures

Number of clientele reporting improved health and/or well-being due to changes in diet.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual

2013 2814

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In MS, there are many nutritional concerns among the SNAP eligible population. According to the results of the Behavioral Risk Factor Surveillance System (2007), 87.5% of Mississippians reporting incomes below $15,000/yr reported consuming less than 5 fruits and vegetables a day, compared to 81.9% for all Mississippians. 46.8% of those Mississippians also reported not being physically active within the past month, compared to 31.8% of all Mississippians. There is need for strategies or interventions to be implemented to address these concerns.

What has been done
In cooperation with the MS Department of Human Services and USDA, MSU Extension provides nutrition education to SNAP eligible adults. Programs are designed to help participants become more effective managers of available food sources and make healthier food choices. Single and series nutrition programs are conducted. Curricula focus on enhancing knowledge, attitudes, and skills needed to follow MyPlate and the 2010 Dietary Guidelines for Americans, enhance physical activity levels, and achieve calorie balance to avoid excess weight gain.

Results
During FY13, the Family Nutrition Program (FNP) worked with 9,453 adults at community centers, SNAP offices, job training sites, and other venues to reach SNAP eligible people. After completing a series of FNP lessons, participants reported an increased intention to consume low-fat dairy and make half their plate vegetables and fruits. 65% of those in a single FNP lesson reported an increased intention to be more physically active. Also, 63.6% of series participants said their clothes fit better/looser because of changes they made in nutrition and physical activity since beginning the program. Eating more vegetables and fruits, being more active, and achieving a healthy weight are important behaviors in preventing many chronic diseases that plague Mississippians.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

Outcome #7

1. Outcome Measures

Number of clientele reporting a positive change in at least one behavior related to obesity (increased physical activity, decrease in caloric intake, increase in fruits and vegetables in diet).

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	156

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
MS youth experience similar poor health behaviors as MS adults, which for the first time ever may result in a generation of children with shorter life expectancies than their parents (HBO Weight of the Nation, 2012). At least 79% of MS high school students do not consume adequate amounts of fruits, vegetables, or milk. Many students do not meet daily physical activity recommendations and spend 3 or more hours a day watching television/using computers. These behaviors contribute to 21.9% of MS youth being obese (Trust for America's Health, 2012).

What has been done
In cooperation with the MS Department of Human Services and USDA, MSU Extension provides nutrition education to youth in schools with at least 50% participation in the free school meal program. Curricula used in youth programs focuses on following MyPlate and the 2010 Dietary Guidelines for Americans, improving food safety practices, and enhancing physical activity levels. Programs introduce youth to new foods through tastings, get them active by incorporating physical activity, and teach cooking skills when appropriate.

Results
In FY13, FNP worked with 56,315 youth in 45 MS counties. Programs took place in 74 public schools; 43 head start programs; and multiple community centers, churches, and other youth education sites. Youth in 3rd-5th grade participating in a series of nutrition education lessons reported a 25% increased participation in physical activity, 31% increased consumption of vegetables, and 30% increased requests for fat-free/low-fat milk products. Youth reported improvements in knowing when to wash hands and what to do with leftover or unrefrigerated foods. Establishing healthy habits when young is an important step in encouraging healthy behaviors later in life. Additionally, youth are taking lessons home and showing healthy habits to their parents, caregivers, and siblings.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
724	Healthy Lifestyle

Outcome #8

1. Outcome Measures

Number of clientele adopting new practices related to financial management

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	445

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
There are multiple adults in Mississippi that utilize community resources to help pay for their utilities, mortgage, rent, etc. Families are not able to budget and manage their money properly.

What has been done
An MSU Extension Family and Consumer Sciences agent partnered with Pearl River Valley Opportunities (PRVO) to do a Family Expense Record Book presentation. Through this presentation, the adults are able to learn about money management and how to complete a record book for each month. Also, the adults received a record book to take home.

Results
PRVO clients learned about money management and how to utilize a record book. The record book process can help the adults to learn how to manage their money, so they do not have to depend on community resources. Also, they do not have to worry about when and how they are going to pay their bills each month. Learning how to manage money is an important skill that adults learn throughout life. The adults worked on writing down their expenses for the week in the record book, understanding the different categories, and learning how to budget. They completed a pre/posttest. After the program, their knowledge about budgeting increased, and they were able to complete a record book successfully.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #9

1. Outcome Measures

Number of clientele reducing debt.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	356

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Managing scarce financial resources is especially important for families in Mississippi which ranks among states with the highest poverty rates for individuals living in poverty. Unfortunately, Mississippi also ranks among states with the highest number of unbanked or under-banked families, as well as states with the lowest per capita income. Finding ways to meet basic needs for the present and build wealth for the future seems almost impossible for many in the state.

What has been done
MSU Extension partnered with local organizations to provide the Healthy, Wealthy, and Wise Financial Education Program, adapted to meet needs of underemployed Christian Women's Job Corp groups, statewide. The program was also adopted by a group of bankers and community development volunteers who taught under-banked consumers in the Delta region to manage and save resources. The Mississippi Saves Program sponsored in partnership with national America Saves program and state financial partners also targeted under-banked consumers.

Results
Activities on improving financial health, building wealth, and paying off debt yielded some amazing stories and encouraging results. One middle-aged consumer opened a new savings account and saved enough in one year for a down-payment to move out of her mother's home and buy the first home of her own. A widow who had never managed family finances and could not make ends meet gained several thousand dollars each month by learning to carefully review her checking account and cancel useless automatic payments. Consumers participating in MSU's Healthy, Wealthy, and Wise; Mississippi Saves, and other financial management programs reported saving a total of $ 28,233 monthly, reducing debt or expenses by $23,599 monthly, and adopting wise practices, such as reviewing credit reports annually.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #10

1. Outcome Measures

Number of clientele increasing wealth.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	178

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In 2012, at least 12,616 Mississippians filed complaints of identity theft or fraud through the Federal Trade Commission with an average loss of $2,350 per consumer. Although the total amount of dollars lost by Mississippi citizens was great ($29,412,600), the cost of these crimes reaches far beyond simple dollars and cents. Much time and distress accompanies identity theft losses, which may take months or years to rectify.

What has been done
Shred Day Events were held on March 8-9, 2013. The annual event was sponsored by the MS Consumer Protection and Education Partnership, a group created and convened by the MSU Extension Family Resource Management Specialist and Area Agents. Partnership members who leverage state and private resources to serve consumers are Attorney General, Secretary of State, Insurance Commissioner, Treasurer, Energy Division, Human Services, Better Business Bureau, Consumer Credit Counseling Services, Bancorp South, Trustmark Bank and MS Credit Union Association.

Results
A total of 1,118 consumers shredded up to 5 bags or boxes of sensitive documents at Shred Day Events in Tupelo, Jackson, Hattiesburg, D'Iberville, Meridian, and Vicksburg for a total of more than 50,120 pounds of Paper shredded. Shred-it Trucks donated services with a value of more than $10,080, in addition to millions of dollars of potential savings to citizens who may have

avoided identity theft by participating in Shred Days. If each consumer avoided losing the average of $1,187 paid by MS victims of fraud, the event had an impact of at least $1,327,066 saved and countless hours of stress circumvented.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #11

1. Outcome Measures

Number of families adopting recommended family strategies and behaviors.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	682

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Domestic violence is as serious and damaging a problem in Latino communities as it is in other ethnic communities. According to reported studies, 48% of Latinas report their partner's violence against them had increased since immigrating to the United States. For Latino women, high rates of poverty, poor education, limited job resources, language barriers, and fear of deportation increase the difficulty of finding support services to assist in their efforts to improve their lives.

What has been done
A community partnership was developed with Seashore Mission's Mujers Unidas to empower Latina women towards self-sufficiency and encourage women to be leaders and take charge of their lives. Bimonthly classes are offered and taught on a wide range of issues such as parenting, relationship building, self-esteem, goal setting, and financial literacy. The group promotes leadership, self-esteem, and cultural preservation and offers a place to build community and escape the isolation that immigrant women often suffer.

Results
On June 19, 2013, these twelve women's achievement through their participation with the classes was highlighted in a graduation ceremony. For some, this was the first time they had every graduated from anything. Since the introduction of these classes last year, a positive progressive

change of self-sufficiency and a sense of empowerment with these ladies towards setting realistic and attainable goals is evident. Three of the women received their U-Visa with work authorization and are applying the skills learned towards seeking better job opportunities and improving their lives overall.

4. Associated Knowledge Areas

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

Outcome #12

1. Outcome Measures

Number of families reporting improved strengthened family life.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	546

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Suicide is listed as the third leading cause of death in MS in the 15-24 age groups. According to the Attorney General's office, cyberbullying is a problem that affects almost half of American teens. According to the Cyberbullying Research Center, "there have been several...cases involving teenagers taking their own lives in part because of being harassed and mistreated over the Internet, a phenomenon termed cyberbullicide." Research shows various consequences of cyberbullying, such as lower self-esteem and increased suicidal ideation.

What has been done
The I Got U program was offered to youth in grades 8 and 10 in Newton County schools. Schools in surrounding counties also participate. I Got U has grown into a partnership between Central MS Residential Center, MS Attorney General's office, MSU Extension Service, and various other organizations. The program is offered to student groups over a two-week period and includes 5 hours of education related to suicide prevention, healthy relationships, alcohol and drugs, cyberbullying, and coping skills. A total of 3,850 students attended the program in 2012-2013.

Results

Results indicate that the I Got U program has had a significant positive impact on students. Schools have reported that, as a result of the program, they have observed an improvement in academic performance and an increase in good coping skills as well as in behavioral-related referrals. Using visual/verbal feedback at least 95% of students who attended the program conducted in Newton County gained knowledge on: cyberbullying, what a healthy dating relationship looks like, how drugs and alcohol impacts your judgment, good coping strategies for stressful life events.

4. Associated Knowledge Areas

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

Outcome #13

1. Outcome Measures

Number of childcare providers maintaining certification requirements.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	127

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Across the state and national lines, education requirements for early childhood educators are increasing. Additional professional development creates providers who deliver more developmentally appropriate care and education and higher quality classroom experiences to young children than those who do not participate in advanced levels of education. The Child Development Associate credential serves as the professional education tool that inspires and enables best practices beyond the annually required 15 contact hours of staff development.

What has been done
The Child Development Associate Credential has been adopted by the Network. It provides performance-based training, assessment, and credentialing of early care and education teachers. The Network provides opportunities for educators to access the credential through scholarships made available with funding provided by the Mississippi Department of Human Services. Additionally, child care educators are provided with a plethora of staff development opportunities to meet and exceed the requirements set forth by the state.

Results
There were 127 early care and education teachers who completed the CDA with more than 10,000 online training hours successfully accomplished. Early childhood educators were offered over 1,800 staff development opportunities including workshops and technical assistance. More than 25,000 early childhood educators participated in staff development.

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

Outcome #14

1. Outcome Measures

Number of care providers increasing the quality of care provided.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	213

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Mississippi has over 1,500 licensed child care facilities and over 500 documented family child care facilities. On average, classrooms in licensed centers and family homes that enroll in the Network's technical assistance programs have Environment Rating Scale pre-assessment scores of 2.23 and 2.82, respectively, out of a 7-point scale. The average scores for both licensed child care providers and family providers indicates that centers in the state that have not received assistance provide less than minimum quality to children.

What has been done
The Mississippi Child Care Research and Referral Network has continued to reach out to child care facilities to provide research-based technical assistance to improve the quality of care provided to children. The technical assistance programs offer developmentally appropriate, two-hour lessons and mentoring as a solution to the issue.

Results
There were 61 licensed child care facilities and 152 family child care facilities that increased the quality of care provided to children.

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

Outcome #15

1. Outcome Measures

Number of clientele increasing knowledge in child care and development content areas as measured by pre/post assessments.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	3615

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
There is a demand for early care and education providers in Mississippi to improve the quality of care provided to children through use of research-based, developmentally appropriate practices. The Quality Rating and Improvement System known as Quality Stars, while a voluntary program, has more stringent requirements for education and staff development hours for centers enrolled in the program beyond the 15 contact hours required for licensing.

What has been done
The Mississippi Child Care Resource and Referral Network provided workshop opportunities on the Mississippi Early Learning Guidelines (ELG) and Mississippi Early Learning Standards (ELS) developed from curricula created by the Division of Early Childhood Care and Development of the Mississippi Department of Human Services in collaboration with the Mississippi Department of Education.

Results

There were 3,615 early childhood educators who successfully increased knowledge in content areas in the ELG and ELS workshop assessments. These curricula help early childhood educators and administrators provide quality care to children through research-based strategies for implementing developmentally appropriate practices.

4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Other (Cultural traditions)

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

MSU Extension agents and specialists, as well as MAFES faculty, used a variety of recommended methods to gather needed information. Specific strategies were initiated and utilized for collecting evaluation information to determine program outputs and outcomes (see impact statements for examples). In FY 2013, MSU Extension agents and specialists were required to submit four quarterly reports (January, April, July, and September). This quarterly report collects information about the number of contacts, types of contacts, and number of programs conducted in each Priority Planning Area. In addition, two narrative Accomplishment Reports are required from each MSU Extension employee each year. Finally, a specific request for impact statements is also made. The evaluation results are a combination of this quantitative and qualitative data.

Our Planned Program Areas (PPAs) changed in 2013 - a reduction from over 20 PPAs in 2012 to 10 for this current reporting cycle. Previous PPAs of Childhood Obesity, Family Life, Family Resource Management, Early Care and Education, Health, Human Nutrition, and Food Safety were combined into Family and Consumer Sciences. Given the time it takes to adapt an electronic reporting system and ensure all end-users are trained and understand how to report in new ways and new PPAs, our outcome data matching process required modification for 2013. As a result, some of our numbers may appear skewed from previous ones. This reduction of PPAs and thus combination of outcomes led to some outcomes within each PPA being very similar for 2013. Our reporting system would not allow us to make detailed distinctions at this point in time, so numbers were evenly distributed across those similar outcomes when appropriate. As our data collection system evolves over the next year or two, we will be able to more clearly align the various data elements within the system to resolve this issue.

Key Items of Evaluation