

# 2014 Mississippi State University Combined Research and Extension Annual Report of Accomplishments and Results

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## 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 \$4,959,557 for federal fiscal year 2014 and a total Smith-Lever appropriation of \$7,012,000.

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 2014, MSU Extension professionals (274.6 total FTE) carried out 100,938 educational activities with a total of 4,089,245 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 FY2014, MAFES scientists ( 108.8 total FTE) produced 464 peer-reviewed scientific publications, 208 other technical publications, 14 patent applications, and supported 202 graduate assistants.

In 2014, the U.S. Census estimated Mississippi to have approximately 2,994,079 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 2014 to refine MSU Extension's county and state plan of work processes.

Grant-funded projects (such as the Early Years Network) enabled MSU Extension and MAFES to increase actual professional FTEs over our projected number. Additionally, modifications in the percentage of time each Extension professional was to allocate to various program areas were made across all Extension personnel (e.g., all agents must now allocate a portion of their time to 4-H).

#### **Total Actual Amount of professional FTEs/SYs for this State**

Year: 2014	Extension		Research	
	1862	1890	1862	1890
Plan	243.0	0.0	99.6	0.0
Actual	274.6	0.0	108.8	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

During 2013 and 2014, the Department of Animal and Dairy Sciences conducted a self-assessment and a benchmark survey of department heads at comparable departments. Some identified strengths of the program were: 1) strong junior faculty base which provides energy and enthusiasm for departmental work, 2) broad curriculum to meet student needs with both science and production being emphasized in all concentrations, 3) recent hiring of a dedicated Department Head, 4) excellent educators and mentors for students, 5) proximity of animal facilities to campus allows students to gain research and work experience, 6) funding for a new Meat Science and Muscle Biology Research and Teaching Lab, 7) legislative approval for new Animal and Dairy Science/Poultry Science building, 8) integrated faculty (Extension, research, and teaching) provide students multiple perspectives, 9) staff within MAFES animal units supportive of teaching efforts, and 10) emphasis on student internships to increase placement rate upon graduation.

Some identified weaknesses were: 1) mentoring for junior faculty is lacking due to only 5 tenured faculty; 2) teaching load is 40% greater than peer and peer-plus institutions; 3) lack of student-run livestock operations for experience in animal husbandry; 4) classroom, lab, and office space is limited; 5) no concerted efforts to recruit students, and 6) few courses offered for graduate students, thus program breadth suffers. Corresponding plans to address these weaknesses include: 1) new faculty will participate in an on-boarding program and be assigned a senior mentor; 2) develop course collaborations that enable research and Extension faculty to teach and cross-college teaching collaborations to increase student exposure to other disciplines, as well as increase graduate student participation in teaching, and hire part-time instructors; 3) develop a purebred Angus beef her with student participation in its management and daily operations; 4) two new classrooms and a new Research and Teaching Lab are under construction; 5) funds and personnel re-allocated for recruiting; and 6) adjust 12-month faculty appointments to 9-months as motivation for the development of summer term classes and create a strategic graduate course development plan to meet needs of both traditional and non-traditional graduate students (such as those in Extension).

Some opportunities for the program were: 1) development of new strategic plan, 2) addition of new faculty will allow for a broader range of courses and research interests, 3) development of an animal teaching facility would put the department at the forefront of similar departments in the southeast region, 4) construction of new Research and Teaching Lab is underway, 5) increase collaboration across departments and colleges has increased research and learning opportunities for students, and 6) strong college and division administration supports department's efforts to increase teaching, research, and outreach activity.

The subsequent strategic planning process identified goals, objectives, activities, benchmarks, and timelines to develop and/or maintain a future program of excellence.

### 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 of traditional stakeholder groups
- Survey of the general public
- Survey specifically with non-traditional groups
- Survey specifically with non-traditional individuals

#### Brief explanation.

Efforts to determine economic, social, and environmental issues included our standard processes as well as a formal statewide needs assessment.

- Statewide Needs Assessment: A formal statewide needs assessment was conducted with three primary audiences: the general public through a random-digit-dialed telephone survey, county Extension advisory committee members through a paper surveys sent through the US mail, and Mississippi State University Extension Service employees through an online survey.

- 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 at least 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 twice 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
- Use Surveys

**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.

MSU Extension and MAFES administrators again 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. Members of the general public who participated in the formal statewide needs assessment were selected through a random-digit-dialed telephone survey method. All county Extension advisory board members and all Extension employees also were invited to participate in the formal statewide needs assessment process.

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

**1. Methods for collecting Stakeholder Input**

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

- 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. A formal statewide needs assessment was also conducted by MSU Extension in 2014.

As described, a formal statewide needs assessment was conducted by MSU Extension in 2014 using a random-digit-dialed telephone survey with a sample of the general public (436 respondents), mail surveys sent to all county Extension advisory committee members (578 respondents), and an online survey for all MSU Extension employees (470 respondents).

As one example, all three groups in the formal statewide needs assessment were asked to respond "yes" or "no" to a list of 10 to 15 issues within each of three base questions: 1) What are the most important needs for Mississippi? 2) What are the most important concerns for Mississippi families? and 3) What are the most important concerns for the future of your community?

#### **3. A statement of how the input will be considered**

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

#### **Brief explanation.**

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. Findings from the formal statewide needs assessment were used to identify five imperatives that will be MSU Extension's priorities for the next five years.

#### **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.

Results revealed the top five most pressing needs for the state of Mississippi as: 1) keeping communities safe from crime, 2) sustainability of natural resources, 3) quality of public education, 4) growing the state's economy, and 5) safe and affordable food supply.

The top five most pressing needs for families were: 1) training for jobs or entering the job market, 2) caring for elderly relatives, 3) managing the family budget, 4) healthier lifestyles, and 5) chronic diseases.

Finally, the top five most pressing needs for communities were: 1) attracting or developing new businesses, 2) preventing crime, 3) training for jobs or entering the job market, 4) effectiveness of

local government officials, and 5) lack of job opportunities.

Taking into consideration these identified needs and the strengths and capacity of the Mississippi State University Extension Service, five guiding imperatives were identified. Over the next five years, Mississippi State University Extension Service's programs will be directed toward:

- 1) Enhancing the viability of Mississippi's agriculture.
- 2) Sustaining Mississippi's natural resources and environment.
- 3) Growing vibrant and successful Mississippi communities and businesses.
- 4) Building Mississippi's future through positive 4-H youth development.
- 5) Strengthening and sustaining Mississippi families.

#### IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
7012000	0	4959557	0

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	7012000	0	4097912	0
Actual Matching	7012000	0	4232069	0
Actual All Other	1485669	0	16751598	0
Total Actual Expended	15509669	0	25081579	0

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous				
Carryover				
	6425382	0	3375103	0

**V. Planned Program Table of Content**

S. No.	PROGRAM NAME
1	Global Food Security and Hunger - Animal Production Systems
2	Global Food Security and Hunger - Plant Production Systems
3	Global Food Security and Hunger-Agricultural, Biological, and Natural Resources
4	Global Food Security and Hunger - Enterprise Economics
5	Environmental Systems and Sustainability
6	Forestry
7	Wildlife and Fisheries
8	Community Resource and Economic Development
9	4-H Youth Development
10	Family and Consumer Sciences

**V(A). Planned Program (Summary)**

**Program # 1**

**1. Name of the Planned Program**

Global Food Security and Hunger - Animal Production 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%		9%	
302	Nutrient Utilization in Animals	10%		34%	
303	Genetic Improvement of Animals	5%		1%	
304	Animal Genome	5%		7%	
305	Animal Physiological Processes	5%		12%	
306	Environmental Stress in Animals	5%		5%	
307	Animal Management Systems	15%		20%	
308	Improved Animal Products (Before Harvest)	5%		1%	
311	Animal Diseases	10%		6%	
312	External Parasites and Pests of Animals	5%		1%	
313	Internal Parasites in Animals	5%		0%	
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals	5%		2%	
315	Animal Welfare/Well-Being and Protection	10%		1%	
402	Engineering Systems and Equipment	5%		0%	
903	Communication, Education, and Information Delivery	0%		1%	
	<b>Total</b>	100%		100%	

**V(C). Planned Program (Inputs)**

**1. Actual amount of FTE/SYs expended this Program**

Year: 2014	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	14.2	0.0	10.0	0.0
<b>Actual Paid</b>	17.5	0.0	24.2	0.0
<b>Actual Volunteer</b>	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
447661	0	794487	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
447661	0	1916275	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	6541918	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, 230 MSU employees are eXtension users. Further, MSU Extension has 71 employees that serve on one or more of the 66 Communities of Practice (COPs); MSU Extension employees are members of 39 COPs. 10 MSU Extension employees serve as a leader for a COP, leading 7 COPs. 5 MSU Extension personnel are members of the Beef Cattle COP. 3 MSU Extension personnel are members of the Bee Health COP with 1 being a leader. 3 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. 4 MSU Extension personnel are members of the Community, Local, and Regional Food Systems COP. 1 MSU Extension employee is a member of the Youth Agriculture COP.

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	65336	97850	0	0

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

**Patent Applications Submitted**

Year: 2014

Actual: 3

**Patents listed**

1. In vivo vaginal biomechanics device: insertable probe
2. Utilization of oleaginous microorganism as a nutritional supplement for animals
3. Apparatus and Method for rearing maggots

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2014	Extension	Research	Total
Actual	1	88	89

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

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

Year	Actual
2014	27198

**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 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**

<b>Year</b>	<b>Actual</b>
2014	5440

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

Timely dissemination of beef cattle research is needed to assist clientele in making operational decisions with updated information. A growing number of cattle industry participants look to internet-based sources including social media for management ideas and recommendations. Much information available via this format is from sources other than land-grant schools. It is critical that experiment stations provide unbiased, relevant, and timely information via this online dissemination method to fill the need for this type of information and for research to achieve application in the field.

#### **What has been done**

The North Mississippi Research and Extension Center Prairie Research Unit established a Twitter feed in July 2014. It is accessible online at [twitter.com/msuprairie](https://twitter.com/msuprairie) and is shown on [msucare.com/nmrec/stations/prairie](http://msucare.com/nmrec/stations/prairie). Targeted tweets, internet links, and photographs focusing on experiment station activities and research applications have been showcased through this Twitter feed. The feed has been marketed in a variety of ways including via face-to-face contacts at industry association meetings and by way of electronic dissemination. Tweets are posted routinely to attract viewers.

#### **Results**

The @msuprairie Twitter feed has had promising initial interest and continues to gain followers. Tweets posted to this Twitter account have been routinely retweeted, favorited, or referenced in other tweets showing evidence of user engagement with the feed. Comments about particular tweets have also been relayed online. User engagement reflects recognition that research-based recommendations can be effectively applied in real-world settings in advantageous ways to the industry user. For every 100 users, online beef cattle research application showcasing through social media contributes an estimated \$187,500 in improved Mississippi beef cattle operation

annual net returns by way of educational information sharing and best management practice adoption.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
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)
311	Animal Diseases
312	External Parasites and Pests of Animals
313	Internal Parasites in Animals
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
315	Animal Welfare/Well-Being and Protection
402	Engineering Systems and Equipment
903	Communication, Education, and Information Delivery

**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**

<b>Year</b>	<b>Actual</b>
2014	2263

**3c. Qualitative Outcome or Impact Statement**

### **Issue (Who cares and Why)**

Many producers did not have the knowledge to maximize profit potential within their respective cattle operation. The average cow/calf producer in Jasper County has less than 50 cows and works another full-time job. Most producers did not know the value of a herd sire to improve genetics, needed training on nutrition and forage management, and knew little of the value of a good vaccine program. They lacked knowledge of soil science when it came to forage production and sufficient livestock handling facilities to support livestock protocols needed to improve herd health.

### **What has been done**

The Jasper County Calf Producers have capitalized on the group dynamic of purchases and marketing. Analyzing bull purchase power through our local economic development, the group purchased bulls then leased them to individuals in the program. Most producers have less than 50 cows, so we used research data for the small group to develop training and set goals for the group. Group purchases of vaccine through the local economic development organizations were a great fit within the group. Like the bull lease program, this was economical at first, then producers saw the value.

### **Results**

Producers have completely changed their approach to their methods of cattle production. After 5 years in the program all producers have purchased bulls that are top quality. Each year the calves have graded consistently higher. Quality has improved with 90% of calves in the program moving up at least one grade in quality and with 45% moving up two grades in quality. Herd health has improved exponentially. Overall herd sickness has dropped below 1% since the start of the program. Producers initially were using the working chute purchased by the Jasper County Cattleman's Association for loan and use by its membership but have purchased or constructed adequate facilities to accommodate their herd. All are Beef Quality Assurance certified at the basic level at least.

## **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
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
315	Animal Welfare/Well-Being and Protection
402	Engineering Systems and Equipment

### **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**

<b>Year</b>	<b>Actual</b>
2014	2089

#### **3c. Qualitative Outcome or Impact Statement**

##### **Issue (Who cares and Why)**

Many cattle operations in MS are extensive and have limited or no access to working facilities. As such, proper management practices, such as deworming or vaccinations, may only occur at sporadic times when facilities are available. Additionally, when these facilities are available to use, it is unclear to what extent the cost to rework the animals is both economically and on the productivity of the animal. To address these issues some products have been developed that have a long acting potential; however, little data has been generated examining the efficacy of these products.

##### **What has been done**

Studies have been initiated at the MAFES White Sand Branch Unit examining the use of long acting animal health technologies (de-wormers and growth promoting implants) that have the potential to reduce the added cost of reworking livestock and to help producers increase their return and ensure sustainability.

##### **Results**

Studies have indicated that long acting technologies seem to provide similar benefit compared to their shorter term counterparts. However, when examining the added cost of reworking the animals, the long acting technologies seem to have benefit in that less money is spent re-working animals. Additionally, in one instance it has been documented that re-working animals might result in significant weight loss and might impair overall performance. Cattle treated with long acting technologies have observed a \$50/head increase in profitability. Producers who do not have access to facilities and are dependent upon other people to work their animals will benefit from the adoption of these technologies in that it will reduce the number of times they have to use others to work their cattle.

#### 4. Associated Knowledge Areas

<b>KA Code</b>	<b>Knowledge Area</b>
302	Nutrient Utilization in Animals
305	Animal Physiological Processes
306	Environmental Stress in Animals
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)
311	Animal Diseases
312	External Parasites and Pests of Animals
313	Internal Parasites in Animals
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
315	Animal Welfare/Well-Being and Protection

#### 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

<b>Year</b>	<b>Actual</b>
2014	1132

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

Agricultural insecticides pose risks to honey bees. Whether deserved or not, much attention has focused on some insecticides (e.g., neonicotinoids) as being particularly dangerous to bees despite lack of consensus within the scientific community on the long term effects of these chemicals on bees. Recent episodes of high mortality of bee hives in the U.S. have resulted in many people (including beekeepers) blaming losses on use of insecticides. The potential conflict between beekeepers and farmers in the Mississippi Delta is particularly high because of high honey production from soybeans.



**What has been done**

A set of behavioral standards were developed to help foster better relationships between beekeepers and farmers in the MS Delta. MSU apiculture worked in collaboration with Extension specialists, the MS Farm Bureau, MS Department of Agriculture and Commerce, and various farm commodity groups and agricultural pilots associations to develop the MS Honey Bee Stewardship Program in late summer 2013. The written standards provide best management practices that each partner (beekeeper and farmer) can use to provide the best protection of honey bees that are kept on farms for honey production.

**Results**

Presentations and articles in mass media about the program have increased awareness of the issues related to keeping honey bees in agricultural environments. Requests for information about the program from individuals and Extension agents from other states peaked in mid-spring 2014. Several neighboring states modeled their pollinator protection plans from our program. Awareness of the program should lead to better protection of honey bees. In late September the Environmental Protection Agency sent several officials from Washington, D.C. to tour the MS Delta and meet participants in the honey bee stewardship program. The EPA saw how a voluntary program could protect bees and allow farmers to manage pests effectively. This input may help them develop strategies for the entire U.S.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
307	Animal Management Systems
312	External Parasites and Pests of Animals
313	Internal Parasites in Animals
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
315	Animal Welfare/Well-Being and Protection

**Outcome #5**

**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**

<b>Year</b>	<b>Actual</b>
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2014

1044

### 3c. Qualitative Outcome or Impact Statement

#### Issue (Who cares and Why)

The number of small ruminant producers is steadily growing in Greene County. A needs assessment survey performed in August 2014 illustrates this growth. Responses from 17 producers represented approximately 700 goats and sheep owned by producers, a sample of producers in the county. In the last year Extension has compiled a list containing 42 known small ruminant producers. Along with this increase in number comes a greater need for education on small ruminant management practices particularly internal parasite management. Generally, producers can expect a 20% loss.

#### What has been done

Extension increased educational opportunities for small ruminant producers by facilitating training sessions to enhance knowledge and skills concerning management practices for small ruminants. This program educated producers on topics such as rotational grazing, forages, and culling practices as an effort to combat parasites. Through work with this group, Extension also helped organize a breeders' sale which will benefit Greene and surrounding counties. This sale will increase marketing outlets for producers and educate them on practices that will help with future marketing.

#### Results

During 2014, 271 small ruminant producers attended programs offered in Greene County. Knowledge concerning management practices in small ruminant production and where to locate potential sources of assistance has increased. According to program evaluations, 100% of survey respondents indicated that they would employ practices learned in their operations. According to data collected from evaluations, producers have drastically decreased the amount of medication given to small ruminants. After implementing strategic deworming practices, administration of medications has decreased to as little as twice a year reducing unnecessary treatments and costs. Average mortality losses for producers have also decreased due to implementation of learned management practices.

### 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
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
315	Animal Welfare/Well-Being and Protection
903	Communication, Education, and Information Delivery

## **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 2014, 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 Planned Program Area. In addition, two narrative Accomplishment Reports are required from each MSU Extension employee each year. Finally, a specific request for impact statements from MSU Extension and MAFES faculty and staff is also made. The evaluation results shared through our impact statements are a combination of this quantitative and qualitative data.

Late in the 2014 program year, we introduced a Standardized Extension Evaluation Survey. The Standardized Extension Evaluation Survey was designed for use in any MSU Extension Service program, workshop, or event with adults. The survey assesses program process, participant satisfaction, knowledge and/or skill change, and behavioral intentions. It provides a ready-made evaluation for agents and specialists to use and will allow us to aggregate data across the state. A small number of agents and specialists have utilized the survey to date, but we hope use will increase over time.

### **Key Items of Evaluation**

**V(A). Planned Program (Summary)****Program # 2****1. Name of the Planned Program**

Global Food Security and Hunger - Plant Production Systems

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

## 1. Program Knowledge Areas and Percentage

<b>KA Code</b>	<b>Knowledge Area</b>	<b>%1862 Extension</b>	<b>%1890 Extension</b>	<b>%1862 Research</b>	<b>%1890 Research</b>
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%		10%	
202	Plant Genetic Resources	5%		3%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	10%		4%	
204	Plant Product Quality and Utility (Preharvest)	0%		6%	
205	Plant Management Systems	20%		30%	
206	Basic Plant Biology	0%		4%	
211	Insects, Mites, and Other Arthropods Affecting Plants	5%		9%	
212	Diseases and Nematodes Affecting Plants	5%		17%	
213	Weeds Affecting Plants	10%		6%	
215	Biological Control of Pests Affecting Plants	0%		1%	
216	Integrated Pest Management Systems	0%		8%	
403	Waste Disposal, Recycling, and Reuse	5%		0%	
601	Economics of Agricultural Production and Farm Management	5%		0%	
901	Program and Project Design, and Statistics	0%		1%	
903	Communication, Education, and Information Delivery	5%		1%	
	<b>Total</b>	100%		100%	

**V(C). Planned Program (Inputs)****1. Actual amount of FTE/SYs expended this Program**

Year: 2014	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	32.5	0.0	18.0	0.0
<b>Actual Paid</b>	43.6	0.0	38.7	0.0
<b>Actual Volunteer</b>	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
1112906	0	1925504	0
<b>1862 Matching</b>	<b>1890 Matching</b>	<b>1862 Matching</b>	<b>1890 Matching</b>
1112906	0	1197407	0
<b>1862 All Other</b>	<b>1890 All Other</b>	<b>1862 All Other</b>	<b>1890 All Other</b>
0	0	5050998	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, 230 MSU employees are eXtension users. Further, MSU Extension has 71 employees that serve on one or more of the 66 Communities of Practice (COPs); MSU Extension employees are members of 39 COPs. 10 MSU Extension employees serve as a leader for a COP, leading 7 COPs. 3 MSU Extension personnel are members of the All About Blueberries COP. 6 MSU Extension personnel are members of the Consumer Horticulture 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. 4 MSU Extension personnel are members of the Community, Local, and Regional Food Systems COP. 2 MSU Extension personnel are members of the Garden professors CoP COP. 1 MSU Extension employee is a member of the Youth Agriculture COP.

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	370168	731929	0	0

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

**Patent Applications Submitted**

Year: 2014  
 Actual: 4

**Patents listed**

- 1.Soybean cyst nematode resistance gene and methods of use
- 2.Engineering the production of a conformational variant of occidiofungin that has enhanced inhibitory activity against fungal species
- 3.Use of Burkoldaria contaminants MS14 and Occidiofungin as a fungicide against plant pathogens
- 4.Generation of imazapic resistant switchgrass population

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2014	Extension	Research	Total
<b>Actual</b>	6	167	173

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

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

<b>Year</b>	<b>Actual</b>
2014	183683

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Documentation of producers increasing production or profitability levels.
2	Number of producers minimizing inputs/expenses based on practice change.
3	Documentation of efforts and activities which have improved environmental stewardship.
4	Number of producers adopting new practices, technologies, strategies, or systems based on research/extension recommendations.



## **Outcome #1**

### **1. Outcome Measures**

Documentation of producers increasing production or profitability levels.

### **2. Associated Institution Types**

- 1862 Extension
- 1862 Research

### **3a. Outcome Type:**

Change in Condition Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2014	15282

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

With seven brands of Upland cottonseed available for Mississippi and approximately 75 varieties, it is apparent that growers are faced with an overload of cotton varieties to choose from for planting every year. With an overload of varieties, it clear that a variety testing program planted locally will help with the process of selecting the correct variety for that particular soil in that particular county.

#### **What has been done**

A large scale, on-farm variety trial was conducted in Noxubee County because of the growing interest in cotton production. Large scale trials are intended to compliment the small plot official variety trials conducted through our research. Trials are conducted to increase awareness of new cottonseed varieties and further evaluate their performance compared to other commercial varieties across Mississippi. Most trials consist of 5 varieties with lint yield and quality as the primary testing criteria. Trial data is provided to growers, consultants, dealers, and university personnel.

#### **Results**

Plot results indicated final lint yields ranged from 1,373 to 1,508 pounds per acre across five varieties replicated twice within a grower's field. Final crop value based from the lint yield and net loan price ranged from \$759 to \$832 per acre or a difference of \$73 per acre. Noxubee County had approximately 13,500 cotton acres for the 2014 cropping season. Looking at the economic impact of this trial Extension efforts could influence the growers of Noxubee County by \$985,500 through the proper selection of cotton varieties.

### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
132	Weather and Climate
201	Plant Genome, Genetics, and Genetic Mechanisms
202	Plant Genetic Resources
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
205	Plant Management Systems
206	Basic Plant Biology
213	Weeds Affecting Plants
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems
901	Program and Project Design, and Statistics
903	Communication, Education, and Information Delivery

**Outcome #2**

**1. Outcome Measures**

Number of producers minimizing inputs/expenses based on practice change.

**2. Associated Institution Types**

- 1862 Extension
- 1862 Research

**3a. Outcome Type:**

Change in Condition Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2014	14107

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Downy mildew is a devastating disease of roses that discolors flowers and causes severe leaf drop. It kills the plant in a short time if not controlled. Many plants remain infected after symptoms disappear and explode with the disease when favored by weather. Fungicides are used to control rose downy mildew. Because downy mildew is a water mold with moderate-high risk pathogen for developing resistance to fungicides, fungicide choice is limited and expensive. The fungicides must be constantly rotated to prevent resistance from developing, so expensive inventory must be

maintained.

**What has been done**

Extension aided a commercial rose grower in selecting a rotation of three fungicides to address a downy mildew problem. Spraying required about one day to two weeks. An extensive and expensive inventory was necessary. Reentry periods affected worker schedules. Downy mildew control was good but not excellent. Using USDA-NIFA IPM funds, Extension purchased a bag of sulfur and three sulfur burners. One burner was for a 42' X 20' greenhouse, and the other two were for a 20' X 96' greenhouse. The burners were set to work 3-5 hours nightly.

**Results**

In the sulfur-smoked greenhouses, reentry periods no longer applied, so flexibility was restored to worker schedules. No downy mildew developed in either of two houses treated with the sulfur smokers but did develop in other greenhouses. The sulfur controlled mite pests. Mites were a problem in other greenhouses, and their control is expensive. Blackspot disease was reduced in the sulfur-treated greenhouses. An estimated \$300 savings in pesticide expenses led to a total savings of \$665 per month. Since downy mildew is a risk in Mississippi for six months, estimated yearly monetary savings are 6 x \$665 = \$3,990. Labor savings from not spraying are not included. Replacing water mold fungicides with sulfur reduced environmental risks of pesticide runoff, reduced the risk of fungicide resistance, and produced healthier plants.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
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
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
206	Basic Plant Biology
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Diseases and Nematodes Affecting Plants
213	Weeds Affecting Plants
216	Integrated Pest Management Systems
903	Communication, Education, and Information Delivery

**Outcome #3**

**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
2014	14695

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Plant-parasitic nematodes cause substantial yield losses in Mississippi agricultural production systems. With the lack of resistant varieties most of our producers rely on the use of chemicals for nematode management.

**What has been done**

Using molecular techniques we have identified over 150 genes that are involved in the resistance reaction of the soybean plant to the Soybean Cyst Nematode. The functionality of these genes to better understand the sequence of events that are involved to prevent nematode infection is determined. Currently plants have been engineered with specific genes and examined for nematode resistance under controlled greenhouse conditions. Until specific genes are incorporated into crop varieties we examine chemically- and biologically-derived products for nematode management.

**Results**

Preliminary results from plants engineered with specific genes have shown significant reductions in the ability of the nematode to establish infection sites, or infect the plant and successfully complete all life developmental stages. In specific cases 95% of the nematode population was reduced. These genes will be instrumental in the development of nematode resistant varieties. Nematode resistant varieties will reduce the amount of chemicals that are currently used, thus providing a more environmental safe crop production practice. Until resistance is available there is a shift away from the broad spectrum chemical nematicides and toward the biologically target-specific products. These products are providing good nematode management combined with high returns to our agricultural producers.

**4. Associated Knowledge Areas**

KA Code	Knowledge Area
201	Plant Genome, Genetics, and Genetic Mechanisms
202	Plant Genetic Resources
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems

206	Basic Plant Biology
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Diseases and Nematodes Affecting Plants
216	Integrated Pest Management Systems
903	Communication, Education, and Information Delivery

#### **Outcome #4**

##### **1. Outcome Measures**

Number of producers adopting new practices, technologies, strategies, or systems based on research/extension recommendations.

##### **2. Associated Institution Types**

- 1862 Extension
- 1862 Research

##### **3a. Outcome Type:**

Change in Action Outcome Measure

##### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2014	36737

##### **3c. Qualitative Outcome or Impact Statement**

###### **Issue (Who cares and Why)**

The fungus responsible for frog-eye leaf spot, an important yield-limiting disease of soybean, has been determined to be resistant to the strobilurin fungicide chemistry across much of MS. The strobilurin fungicides (e.g., Headline, Quadris) have been the main class of fungicides used in soybean production to prevent yield loss. Strobilurin fungicides are preventive in that they prevent infection from occurring on leaf material post-application. Additional curative fungicide mode-of-actions exist but haven't been as widely applied as a specific, timed growth stage application.

###### **What has been done**

Rather than apply a fungicide that will not produce a positive response in the presence of disease, research trials were conducted to determine the effectiveness of fungicides which are more curative to frog-eye leaf spot. Pre-mix fungicides that contain a strobilurin and a curative fungicide, either a triazole or carboximide, in addition to several other modes-of-action were screened at multiple trial locations to determine the placement in frog-eye leaf spot susceptible soybean varieties. Results from the trials have been widely presented at farmer meetings throughout MS since late 2013.

###### **Results**

By applying a strobilurin fungicide, farmers with frog-eye leaf spot susceptible varieties lose the

cost of the fungicide plus application between \$14 and \$20 per acre. Strobilurin fungicides no longer provide a yield benefit when applied to frogeye susceptible soybean varieties as a growth stage timed application due to the development of fungicide resistance. In 2014, approximately 700,000 acres of frogeye leaf spot susceptible varieties were planted in MS. Farmers that applied a curative fungicide to manage frogeye leaf spot observed an increase between 6 and 15.5 bushels/acre or an approximate return of \$52-\$160/acre. If half of the frogeye leaf spot susceptible acres received a curative fungicide MS soybean farmers would have observed a return as high as \$56,000,000.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
212	Diseases and Nematodes Affecting Plants

#### 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 2014, 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 Planned Program Area. In addition, two narrative Accomplishment Reports are required from each MSU Extension employee each year. Finally, a specific request for impact statements from MSU Extension and MAFES faculty and staff is also made. The evaluation results shared through our impact statements are a combination of this quantitative and qualitative data.

Late in the 2014 program year, we introduced a Standardized Extension Evaluation Survey. The Standardized Extension Evaluation Survey was designed for use in any MSU Extension Service program, workshop, or event with adults. The survey assesses program process, participant satisfaction, knowledge and/or skill change, and behavioral intentions. It provides a ready-made evaluation for agents and specialists to use and will allow us to

aggregate data across the state. A small number of agents and specialists have utilized the survey to date, but we hope use will increase over time.

**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%		19%	
402	Engineering Systems and Equipment	50%		60%	
403	Waste Disposal, Recycling, and Reuse	10%		11%	
404	Instrumentation and Control Systems	0%		1%	
405	Drainage and Irrigation Systems and Facilities	0%		9%	
	<b>Total</b>	100%		100%	

**V(C). Planned Program (Inputs)**

1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	5.5	0.0	5.0	0.0
<b>Actual Paid</b>	7.5	0.0	1.6	0.0
<b>Actual Volunteer</b>	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
192590	0	1813	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
192590	0	1716	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	448036	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, 230 MSU employees are eXtension users. Further, MSU Extension has 71 employees that serve on one or more of the 66 Communities of Practice (COPs); MSU Extension employees are members of 39 COPs. 10 MSU Extension employees serve as a leader for a COP, leading 7 COPs. 5 MSU Extension personnel are members of the Beef Cattle COP. 3 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. 4 MSU Extension personnel are members of the Community, Local, and Regional Food Systems COP. 1 MSU Extension employee is a member of the Youth Agriculture COP.

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	15752	13429	0	0

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

Year: 2014  
 Actual: 2

**Patents listed**

1. Fiber separation from grain products including corn flour and DDGS using electrostatic method
2. Shock-wave mitigating bio-inspired football helmet design

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2014	Extension	Research	Total
Actual	2	20	22

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

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

Year	Actual
2014	4864

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Number of producers adopting new practices, technologies, strategies, or systems 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 their environmental stewardship.

## **Outcome #1**

### **1. Outcome Measures**

Number of producers adopting new practices, technologies, strategies, or systems due to research/extension recommendations.

### **2. Associated Institution Types**

- 1862 Extension
- 1862 Research

### **3a. Outcome Type:**

Change in Knowledge Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2014	487

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

Many cattle producers leave attainable returns unrealized by lack of sufficient genetic improvement in their herds. Artificial insemination is a proven means of rapidly improving the genetics of a cattle herd, but specialized training is required to implement this technology. Successful adoption of artificial insemination requires intensive management and specialized training in the technique. There are limited training opportunities to learn artificial insemination management and techniques in the United States.

#### **What has been done**

A Cattle Artificial Insemination School was developed by Extension to provide a cost-efficient program to educate producers on reproductive management, familiarize producers with artificial insemination tools, and provide hands-on artificial insemination experience. The curriculum is updated at least twice annually to provide the most current information to participants. Both beef and dairy cattle breeders are serviced through this school.

#### **Results**

The Cattle Artificial Insemination School has gained national attention attracting participants from 20 states to date. Participant feedback indicates notable artificial insemination adoption as a result of this school. The net returns from artificial insemination use in Mississippi cattle herds due to program participation is estimated at \$876,250 per year across the 701 breeders who have already completed the program. Each year the program's annual economic impact grows by approximately \$93,750 as another 75 Mississippi cattle breeders implement artificial insemination as a result of this program. Additional monetary benefits of the program are also realized from improved implementation of nutritional, health, and reproductive best management practices emphasized through this school.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
306	Environmental Stress in Animals
402	Engineering Systems and Equipment

#### 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
2014	486

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

Hay production across the state is still a large enterprise for winter feeding recommendations. The hay production yields in Mississippi range from 2.5 to 3.5 tons per acre. Those are 40% below the potential yields. Based on nutritive values, over 70% of the forage produced does not meet the nutrient requirements for a dry cow. The cost of hay production in Mississippi averages \$85 per acre.

###### **What has been done**

New approaches have been taken to implement management practices that will require less hay production and better quality hay. Adoption of new technologies such as portable Near Infra-red Systems (NIRS) has allowed advised producers on management practices that reduce the amount of hay needed, improve forage quality and improve nitrogen applications.

###### **Results**

Taking a field real time approach has allowed producers to obtain most of the hay needed in the first two cuts of hay. This has reduced the acres need for hay production by 54%, the amount of fertilizer needed by 38% and improve nutritive value by 47%. Because of these approaches this has also reduced feed supplementation by 83%. Implementation of these combined strategies has created an economic impact of \$8.4 million to the Mississippi hay industry.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
402	Engineering Systems and Equipment
404	Instrumentation and Control Systems

#### 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
2014	405

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

The Mississippi Band of Choctaw Indians tribally based high school's Occupational Training Center (OTC) constructed a new 5,000-square foot greenhouse for training special needs students. The OTC staff of three high school teachers had no prior experience operating a greenhouse or a modern fertilizer injector system. The staff had been using the injector system improperly and burned foliage of nearly half the seedlings produced in the new structure.

###### **What has been done**

The OTC staff asked Extension to train the school personnel in the proper use of the greenhouse's basic daily operating procedures and in the correct use of the liquid fertilizer injector. A day-long training was set up and instructed by an Extension specialist and the local FRTEP agent to address these issues. All greenhouse personnel attended the workshop and received classroom and hands-on instruction in the greenhouse located at the OTC.

###### **Results**

Since the greenhouse training conducted by Extension in February 2014, the OTC staff has reduced the loss of more than 90% of the plant seedlings due to overfertilization by improper use

of the greenhouse injector system. The OTC staff report an annual savings of approximately \$1,750 in soluble fertilizer cost, as well. The staff also reports that all OTC students receive a higher level of instruction by greenhouse staff due to expertise gained by working with Extension. The Tribe's FRTEP agent is now a regular guest instructor, spending more than 80 hours annually with tribal youth in the OTC greenhouse facility.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
401	Structures, Facilities, and General Purpose Farm Supplies
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
2014	373

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

Each year there are over 200 entries in the Mississippi Soybean Variety Trials. The average life of a soybean variety is about 3-4 years. Therefore, it is necessary to evaluate the new varieties, breeding lines, etc. for resistance to the major soybean diseases. This information is made available to producers to assist them in selecting a variety.

###### **What has been done**

The entries in the variety trials and others to be evaluated are planted in replicated plots or in greenhouse and growth chamber studies. The entries are inoculated in separate trials with the various pathogens. The resistance to each disease is rated. The results are published in the Mississippi State Soybean Variety bulletin, online, and in other areas.

### Results

The findings from the Mississippi State Soybean Variety Trials assist the producer in selecting disease resistant varieties. This allows losses due to disease to be minimized and also reduces the need for additional applications of expensive fungicides. Both of these outcomes allow for a great reduction in the expenses that soybean producers must undertake when growing their crops.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
402	Engineering Systems and Equipment
404	Instrumentation and Control Systems

#### Outcome #5

##### 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
2014	389

##### 3c. Qualitative Outcome or Impact Statement

###### Issue (Who cares and Why)

Cutting propagation is the most widely used method for multiplying many nursery and floriculture crops. Shortages and costs of pine bark and peat moss, two common components of nursery and greenhouse growing media, have led to investigation of alternative, sustainable materials for crop production. Wood-based substrates have been identified as acceptable components in growing media for established nursery and greenhouse crops, but this material has not been evaluated for use in propagation media for rooting cuttings.

###### What has been done



A study was conducted over two years to evaluate processed whole loblolly pine trees (WPT; *Pinus taeda*) as a rooting substrate for stem cutting propagation of a range of ornamental crops. Substrates included processed whole pine tree, pine bark, and each mixed with equal parts (by volume) peat moss. Physical and chemical properties were determined for all substrates. Rooting percentage, total root length, total root volume, and total shoot length were evaluated for cuttings of eight herbaceous and woody ornamental crops rooted using commercial nursery practices.

**Results**

With an increasing number of commercial nurseries in the southeastern U.S. currently using (or considering use of) processed, whole pine tree as a renewable resource for plant production, this study demonstrated that whole pine tree media alone or combined with peat moss can be used for cutting propagation. Renewable materials are needed to replace supplies of pine bark, which has become more costly and difficult to obtain for nursery production, as pine bark is now being used as a fuel source. In this study, rooting percentages was similar among the different rooting media within each species. The addition of peat moss to whole pine tree material resulted in greater root length for most species. Shoot growth was most vigorous using pine bark and peat moss media.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
102	Soil, Plant, Water, Nutrient Relationships
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
402	Engineering Systems and Equipment
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
- 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 2014, 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 Planned Program Area. In addition, two narrative Accomplishment Reports are required from each MSU Extension employee each year. Finally, a specific request for impact statements from MSU Extension and MAFES faculty and staff is also made. The evaluation results shared through our impact statements are a combination of this quantitative and qualitative data.

Late in the 2014 program year, we introduced a Standardized Extension Evaluation Survey. The Standardized Extension Evaluation Survey was designed for use in any MSU Extension Service program, workshop, or event with adults. The survey assesses program process, participant satisfaction, knowledge and/or skill change, and behavioral intentions. It provides a ready-made evaluation for agents and specialists to use and will allow us to aggregate data across the state. A small number of agents and specialists have utilized the survey to date, but we hope use will increase over time.

### **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%		5%	
502	New and Improved Food Products	0%		16%	
503	Quality Maintenance in Storing and Marketing Food Products	0%		8%	
504	Home and Commercial Food Service	0%		1%	
511	New and Improved Non-Food Products and Processes	0%		10%	
601	Economics of Agricultural Production and Farm Management	30%		20%	
602	Business Management, Finance, and Taxation	10%		7%	
603	Market Economics	0%		7%	
604	Marketing and Distribution Practices	40%		2%	
605	Natural Resource and Environmental Economics	0%		14%	
606	International Trade and Development Economics	0%		1%	
608	Community Resource Planning and Development	0%		1%	
609	Economic Theory and Methods	0%		1%	
610	Domestic Policy Analysis	20%		7%	
	<b>Total</b>	100%		100%	

**V(C). Planned Program (Inputs)**

1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	5.2	0.0	4.0	0.0
<b>Actual Paid</b>	3.9	0.0	12.4	0.0
<b>Actual Volunteer</b>	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
100524	0	311985	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
100524	0	643879	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	2188099	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:

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, 230 MSU employees are eXtension users. Further, MSU Extension has 71 employees that serve on one or more of the 66 Communities of Practice (COPs); MSU Extension employees are members of 39 COPs. 10 MSU Extension employees serve as a leader for a COP, leading 7 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. 7 MSU Extension personnel are members of the Entrepreneurs and Their Communities COP.

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	6702	10369	0	0

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

Year: 2014  
 Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2014	Extension	Research	Total
<b>Actual</b>	0	35	0

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

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

Year	Actual
2014	2845

**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**

<b>Year</b>	<b>Actual</b>
2014	569

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

U.S. farm policy has increasingly focused on crop insurance as risk protection offered to crop producers. The Agricultural Act of 2014 was projected to spend \$89 billion on crop insurance while the commodity title was projected to spend \$44 billion. Key elements of this new legislation are two area-triggered shallow-loss insurance programs: the Supplemental Coverage Option (SCO) and Stacked Income Protection Plan (STAX). These programs borrow from procedures developed for deep loss area insurance, but modifications in procedures were required to operationalize these programs.

#### **What has been done**

MSU agricultural economists had developed the rating mechanism used by USDA/RMA. Building upon this base, a team modified models to simulate the implications of SCO and STAX and to evaluate the efficacy of these farm bill proposals. These results were shared with congressional staffers and RMA actuaries prior to passage of the bill. Continued analysis has been shared at multiple national Extension conferences to inform producers regarding options under the Act. It has also been used to advise USDA/RMA on implementation.

#### **Results**

This analysis provided policymakers information used in crafting these programs that are expected to provide \$5 billion in support to U.S. producers. Analysis of how to provide coverage in counties without long NASS county yield series facilitated expanding these programs to counties where they would otherwise be missing. This analysis is also being shared with producers evaluating the optimal crop insurance coverage levels which determine the upper limit of individual coverage and the lower limit of the shallow loss coverage.

### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation
603	Market Economics
604	Marketing and Distribution Practices
609	Economic Theory and Methods
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**

<b>Year</b>	<b>Actual</b>
2014	455

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

Diesel engines power the majority of fishing vessels in the United States, and diesel fuel is the largest component of operating costs on Gulf shrimp vessels. To survive, shrimpers need to increase fuel efficiency to decrease operational costs.

#### **What has been done**

The use of energy-efficient trawl gear with less drag can reduce fuel costs. The MS-AL Sea Grant Consortium conducted field research and documented the fuel savings and catch retention associated with available energy-efficient trawl gear and more efficient turtle excluder/bycatch reduction devices. MASGC shared the results with fishermen through demonstrations. Vietnamese Americans with limited English language skills own and operate a large percentage of the offshore fishing fleet in the northern Gulf. A staff member used his Vietnamese language skills to reach underserved clientele.

#### **Results**

Over 20 shrimp vessels have adopted the use of energy-efficient trawl gear. All reported fuel



savings are similar to the field trials, and most have continued to use the gear. Based on conservative estimates of fuel savings (1.5 gallons per hour, a 12-hour fishing day, 180 days per year and fuel cost of \$3 per gallon), each vessel is saving about \$10,000 a year in operating costs. Cost savings continue to accrue and are greater with rising fuel costs. Total savings to the fleet has topped \$1 million since the program's inception.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
501	New and Improved Food Processing Technologies
502	New and Improved Food Products
503	Quality Maintenance in Storing and Marketing Food Products
504	Home and Commercial Food Service
511	New and Improved Non-Food Products and Processes
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation
605	Natural Resource and Environmental Economics
606	International Trade and Development Economics
608	Community Resource Planning and Development

#### 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

{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 2014, 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 Planned Program Area. In addition, two narrative Accomplishment Reports are required from each MSU

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**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**

<b>KA Code</b>	<b>Knowledge Area</b>	<b>%1862 Extension</b>	<b>%1890 Extension</b>	<b>%1862 Research</b>	<b>%1890 Research</b>
101	Appraisal of Soil Resources	0%		4%	
102	Soil, Plant, Water, Nutrient Relationships	5%		63%	
104	Protect Soil from Harmful Effects of Natural Elements	0%		2%	
111	Conservation and Efficient Use of Water	10%		10%	
112	Watershed Protection and Management	5%		7%	
131	Alternative Uses of Land	0%		4%	
132	Weather and Climate	5%		0%	
133	Pollution Prevention and Mitigation	5%		10%	
205	Plant Management Systems	10%		0%	
206	Basic Plant Biology	5%		0%	
211	Insects, Mites, and Other Arthropods Affecting Plants	10%		0%	
212	Diseases 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%	
	<b>Total</b>	100%		100%	

**V(C). Planned Program (Inputs)**

**1. Actual amount of FTE/SYs expended this Program**

Year: 2014	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	8.4	0.0	10.0	0.0
<b>Actual Paid</b>	10.2	0.0	14.0	0.0
<b>Actual Volunteer</b>	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
259859	0	645104	0
<b>1862 Matching</b>	<b>1890 Matching</b>	<b>1862 Matching</b>	<b>1890 Matching</b>
259859	0	159839	0
<b>1862 All Other</b>	<b>1890 All Other</b>	<b>1862 All Other</b>	<b>1890 All Other</b>
0	0	1515408	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, 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, and
6. Public health issues related to vector control.

Research and Extension programming related to water resources will focus on:

1. Development of best management practices to reduce nutrient and sediment transport in rowcrop and pasture systems.
2. Watershed scale assessment of individual and cumulative effects of BMPS on nutrient and sediment

transport and water quality.

3. Development and evaluation of irrigation technologies that conserve water and energy.
4. Transfer of technologies that enhance water quality and reduce groundwater demands to producers and other stakeholders.

Research and Extension programming related to renewable fuels will focus on:

1. Development and evaluation of advanced plant materials that provide a renewable source of biomass for green energy production.
2. Development and evaluation of conversion technologies for producing advanced transportation fuels from renewable biomass and waste streams

**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, 230 MSU employees are eXtension users. Further, MSU Extension has 71 employees that serve on one or more of the 66 Communities of Practice (COPs); MSU Extension employees are members of 39 COPs. 10 MSU Extension employees serve as a leader for a COP, leading 7 COPs. 3 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. 4 MSU Extension personnel are members of the Community, Local, and Regional Food Systems COP. 1 MSU Extension employee is a member of the Youth Agriculture COP.

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	63383	26240	0	0

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

**Patent Applications Submitted**

Year: 2014  
 Actual: 2

**Patents listed**

- 1.Catalysts for converting syngas into liquid hydrocarbons and methods thereof
- 2.Upgrading of Bio-oil using synthesis gas

### 3. Publications (Standard General Output Measure)

#### Number of Peer Reviewed Publications

2014	Extension	Research	Total
Actual	0	23	23

#### V(F). State Defined Outputs

##### Output Target

##### Output #1

##### Output Measure

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

Year	Actual
2014	14937

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Number of producers adopting new practices, technologies, strategies, or systems based on research/extension recommendations.
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 improving their environmental stewardship.

## **Outcome #1**

### **1. Outcome Measures**

Number of producers adopting new practices, technologies, strategies, or systems based on research/extension recommendations.

### **2. Associated Institution Types**

- 1862 Extension
- 1862 Research

### **3a. Outcome Type:**

Change in Action Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2014	2987

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

In South MS there has been a need to utilize land lying idle during the summer months behind a winter weight gain stocker calf program to see economic improvements. Therefore, Extension began evaluating a sod-based agriculture planting program with soybeans. Problems that existed were soil compaction behind the grazing of cattle, erosion, lack of irrigation, poor root development from grazing and/or disking and limited equipment necessary for vertical tillage, high cost of nitrogen for ryegrass, and high levels of phosphate accumulating in soils due to high use of chicken litter.

#### **What has been done**

Extension found that a one-pass planting system which vertically breaks in front of the planter units was beneficial. This prevents erosion by reducing the need for disking, allows planting into sod or ryegrass, breaks compaction zones ensuring the continued development of a tap root, and allows for greater water infiltration into the soil profile. This planting system also reduces the weed population and nitrogen needed for succeeding rye-grass crop and reduces excessive levels of phosphates generated by use of chicken litter.

#### **Results**

There has been a continued increase of soybean yields by about 25-30 Bu/ac which accounts for a gross of \$250-300/acre return. With the system, we are seeing more growers through South MS adopt the system, with an increase of 35%. The adoption of the system is also increasing in other areas of MS and other states and commodities, like tobacco. This expansion has been thanks to the production of the equipment and marketing by a local company in South MS. From our work we are seeing a net profit from the system of about \$1,250.00/ac return via the combined sale of cattle and soybeans. Adoption of the one-pass planting system is reducing the number of trips across the field, soil disturbance, weed populations, erosion, and nitrogen use on ryegrass, and it



is improving water infiltration, soybean yields, and the maintenance of soil phosphate levels.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
205	Plant Management Systems
206	Basic Plant Biology
405	Drainage and Irrigation Systems and Facilities

#### 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
2014	2390

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

Livestock producers have a large investment of equipment and resources on hay production system. Mississippians utilize approximately 48% of the pastureland in hay production. Regardless if a Mississippi's livestock producer makes its own hay or purchase it, it is an expensive alternative to grazing. Extending the effective grazing period and reducing the need for hat can have positive impacts and sustainability in livestock operations.

###### **What has been done**

The 330+ grazing initiative has been implemented to develop grazing systems that will enable livestock producers to graze year-round and use less or no hay. The program focus on six pillar species (bahiagrass, bermudagrass, tall fescue, alfalfa, annual ryegrass, and clovers) along with pinpoint systems (summer annual grasses and legumes). Integrating these forages into a

rotational grazing systems will extend the grazing season and reduce hay supplementation. Maintaining pastures by using rotational grazing can also reduce weed completion.

**Results**

The rotational grazing system can reduce hay supplementation by 27% and reduce the numbers of acres in hay production by 42%. This is land then can be allocated to grazing management. Adoption of these management practices will allow to increase stocking rates by 25% and give an economic impact of \$1.8 million increase in revenue. Additionally, maintaining pastures that are more healthy and competitive by using rotational, will reduce weed completion and thus herbicide cost. The average herbicide application cost in pastures can range from \$8 to \$12 per acre per year. Utilizing rotational grazing system can have \$1.3 to \$1.9 million reduction in herbicide inputs.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
131	Alternative Uses of Land
132	Weather and Climate
205	Plant Management Systems

**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**

<b>Year</b>	<b>Actual</b>
2014	574

**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 "piggyback" insecticides with the fungicide to save application cost, but in many instances there is no insect pest at economic threshold. This often causes "flaring" of secondary insect pests requiring even more insecticide applications and unneeded pesticide in the environment.

**What has been done**

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

**Results**

In 2014 Mississippi farmers planted 2,250,000 acres of soybeans. Approximately 60% of growers co-apply an insecticide and fungicide. Given low insect pressure in 2014, we were successful in convincing soybean farmers to leave this automatic mix out. At least 80% of producers took this advice based on direct feedback (2,250,000 x 80% = 1,800,000 would have been treated, 60% convinced to not to do this = 1,080,000 acres x \$13.00 per application = \$14,040,000 saved directly). Based on previous research it is likely that an early automatic pyrethroid application would flare secondary pests on an additional 50% of acres treated requiring additional applications (1,080,000 x 50% = 540,000 acres x \$18 caterpillar pests application = \$9,720,000). There is an estimated saving of \$23,760,000 to Mississippi soybean producers.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
112	Watershed Protection and Management
133	Pollution Prevention and Mitigation
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Diseases 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
721	Insects and Other Pests Affecting Humans
903	Communication, Education, and Information Delivery

**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
2014	621

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Pesticide applicators are legally required by both state and federal laws to be certified to apply restricted-use pesticides. Individuals who apply general use pesticides in a commercial situation are required by state law to be licensed. The Pesticide Safety Education Program does not advocate the use of pesticides over other means of pest management. Rather, it focuses on the safe and proper use of pesticides by individuals who have already determined that pesticides are necessary in a given situation.

**What has been done**

The Pesticide Safety Education Program conducted 284 workshops for 3,543 individuals during the reporting period. These workshops allowed the individuals to either become certified or renew certifications or licenses. By the renewal, producers and commercial applicators could produce the food and fiber that is a large portion of the MS economy and also could protect homes and lawns from insects, weeds, and diseases.

**Results**

The impact of this program not only adds to 50% of the MS economy but also allows applicators to maintain jobs that are related to the area of either agricultural production or commercial area programs. Certification of commercial applicators helps protect the health of individuals by reducing the disease carrying insects in and around homes.

**4. Associated Knowledge Areas**

KA Code	Knowledge Area
104	Protect Soil from Harmful Effects of Natural Elements
112	Watershed Protection and Management
133	Pollution Prevention and Mitigation
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Diseases 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
403	Waste Disposal, Recycling, and Reuse

#### **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 2014, 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 Planned Program Area. In addition, two narrative Accomplishment Reports are required from each MSU Extension employee each year. Finally, a specific request for impact statements from MSU Extension and MAFES faculty and staff is also made. The evaluation results shared through our impact statements are a combination of this quantitative and qualitative data.

Late in the 2014 program year, we introduced a Standardized Extension Evaluation Survey. The Standardized Extension Evaluation Survey was designed for use in any MSU Extension Service program, workshop, or event with adults. The survey assesses program process, participant satisfaction, knowledge and/or skill change, and behavioral intentions. It provides a ready-made evaluation for agents and specialists to use and will allow us to aggregate data across the state. A small number of agents and specialists have utilized the survey to date, but we hope use will increase over time.

##### **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%		14%	
122	Management and Control of Forest and Range Fires	20%		0%	
123	Management and Sustainability of Forest Resources	40%		86%	
124	Urban Forestry	10%		0%	
125	Agroforestry	15%		0%	
132	Weather and Climate	5%		0%	
133	Pollution Prevention and Mitigation	5%		0%	
403	Waste Disposal, Recycling, and Reuse	5%		0%	
	<b>Total</b>	100%		100%	

**V(C). Planned Program (Inputs)**

1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	9.9	0.0	0.0	0.0
<b>Actual Paid</b>	16.3	0.0	2.6	0.0
<b>Actual Volunteer</b>	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
416384	0	75464	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
416384	0	8088	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	59259	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, 230 MSU employees are eXtension users. Further, MSU Extension has 71 employees that serve on one or more of the 66 Communities of Practice (COPs); MSU Extension employees are members of 39 COPs. 10 MSU Extension employees serve as a leader for a COP, leading 7 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**

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	70671	71592	0	0

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

**Patent Applications Submitted**

Year: 2014

Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

<b>2014</b>	<b>Extension</b>	<b>Research</b>	<b>Total</b>
<b>Actual</b>	0	10	0

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

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

<b>Year</b>	<b>Actual</b>
2014	23711



**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

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

## **Outcome #1**

### **1. Outcome Measures**

Number of producers adopting new technologies or 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**

<b>Year</b>	<b>Actual</b>
2014	4742

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

With many youth and young adults these days, there is an assumption that all fires in nature are bad. From the media to their parents, there has been a resounding push against the use of fire in forestry and other places. A large amount of the information about fire is negative. Fire, when used correctly, responsibly, and under strict control and circumstances, is beneficial to the landscape, and there is a need for more information about the positive effects of fire in forestry.

#### **What has been done**

A Fire in Forestry workshop was held with area youth that went over the techniques used to responsibly control and implement a burn program in our area. A lot of old information about the bad things fire causes were debunked, and the consequences of misuse of fire were reiterated. It was important to teach the youth about the good that fire can create, as well as make sure they understand the full extent of the damage fire can cause when not managed or controlled properly.

#### **Results**

Many youth left the workshop feeling more informed and educated on the ways fire benefit the landscape and wildlife. There are more youth interested in the ways to use and implement a fire program on their family land. The youth will be more knowledgeable about the correct planning and manpower needed to safely and correctly use fire on their family property in the future. They also now have a more positive view of fire and the ways its benefits nature, as well as ways good fires prevent bad fires.

### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
121	Management of Range Resources

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**

<b>Year</b>	<b>Actual</b>
2014	1821

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

Landowners in south Mississippi are increasingly interested in planting longleaf pine for multiple reasons. Chief reasons stated include longleaf pines increased tolerance for hurricane-force winds and increased wildlife habitat quality as opposed to loblolly pines. However, successful planting of longleaf pine is more challenging than planting of other pines. MS landowners are interested in information on successful replanting techniques, where to get help, use of prescribed fire in longleaf pines, and possible economic returns.

#### **What has been done**

A Longleaf Pine Field Day was held in Greene County to address the above concerns. The landowners discussed their interest, and a long-time forester discussed the history of longleaf pines in south MS. The field day started in an area recently replanted with longleaf pine. This was followed by other talks in more mature timber, and the field day concluded with a discussion of where landowner could go for both technical and financial assistance regarding longleaf pine.

#### **Results**

The Field Day reached 46 landowners. Evaluations revealed that 96% better understood how to successfully replant longleaf; 100% better understood the role of fire; 93% better understood various sources of assistance; 96% better understood potential economic returns; and 92% were more inclined to plant longleaf. Field day participants owned 9,798 acres of forestland and valued

the information received at \$130,500. Sixty-five percent would accept a reduction in the rate of return on their investment (3% or greater) in order to have longleaf pine.

#### 4. Associated Knowledge Areas

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

#### 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
2014	1897

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

Bark beetles and subterranean termites are keystone species in pine forests globally. Their combined activities plague timber before harvest until well after consumer utilization. Together, they have cost U.S producers and consumers more than \$100B in prevention, control, and mitigation over the last 20 years. We recently discovered that subterranean termites feed preferentially on wood containing blue-stain fungi associated with bark beetles. The ecological implications of this discovery and potential for exploitation as an IPM strategy were knowledge gaps created.

###### **What has been done**

We began to investigate interactions between subterranean termites, blue-stain fungi, and bark beetles. Lab and field results indicate a strong preference for blue-stained wood exists for native and Formosan subterranean termites. Ongoing lab and field experimentation will assess other termite and fungal species, investigate potential compounds or mechanisms causing the behavior, and estimate the impact of this association on landscape scale carbon cycles.

**Results**

Our findings may have direct impacts on scientific understanding of forest ecosystems, utilization of natural resources, and economic impacts felt by forest product producers and consumers. These discoveries have wide implications for forest ecology and management, including partially explaining a previously unknown driving force behind landscape-scale nutrient flow in forest ecosystems. Interactions between bark beetles, blue-stain fungi, and subterranean termites are novel, and may generate knowledge regarding forest ecology, the impact of insect herbivores and decomposers on carbon cycles, and climate change models. We continue to investigate potential for commercialization of blue-stained wood or its derivatives with industry partners.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
122	Management and Control of Forest and Range Fires
123	Management and Sustainability of Forest Resources
125	Agroforestry
133	Pollution Prevention and Mitigation
403	Waste Disposal, Recycling, and Reuse

**Outcome #4**

**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**

<b>Year</b>	<b>Actual</b>
2014	1973

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Silvopasture is a process by which landowners can produce forage, livestock, and trees on the same acreage. This is accomplished by either planting trees in existing pastureland or by heavily thinning existing forestland to get sufficient light on the ground to grow grass. Legitimate questions persist about how to initiate a silvopasture system, compromises made, challenges landowners face, and other concerns. Establishing a silvopasture demonstration would help

landowners make more informed decisions when considering a silvopasture system for their operations.

#### **What has been done**

MSU-ES and MAFES initiated a silvopasture demonstration at the McNeill Experiment Station. This demonstration consisted of pastureland planted with longleaf pine seedlings in early 2013. In September 2014, a Silvopasture Field Day was held for landowners and livestock producers to update them on this system. Presentations consisted of a silvopasture overview, timber production, forage and livestock production, wild hog damage, and reforestation expenses recovery. A total of 82 people attended the Field Day, and 45 completed an evaluation at the end of the Field Day.

#### **Results**

Landowners were very pleased with the program. Evaluations reveal that 98% better understand what silvopasture is; 100% better understand how to begin a silvopasture operation; 96% have increased knowledge of hog management; 93% better understand how silvopasture can diversify income; 81% better understand how to recover reforestation expenses; and 64% are more interested in starting a silvopasture operation. Participants owned 12,470 acres of land, and valued the information received at \$161,500. Those interested in silvopasture on their land ranked the following reasons: 1) generating timber income, 2) diversifying income/reducing risk; and 3) improvign habitat. Key questions they had about silvopasture involved issues of cost and profitability.

#### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
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 2014, 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 Planned Program Area. In addition, two narrative Accomplishment Reports are required from each MSU Extension employee each year. Finally, a specific request for impact statements from MSU Extension and MAFES faculty and staff is also made. The evaluation results shared through our impact statements are a combination of this quantitative and qualitative data.

Late in the 2014 program year, we introduced a Standardized Extension Evaluation Survey. The Standardized Extension Evaluation Survey was designed for use in any MSU Extension Service program, workshop, or event with adults. The survey assesses program process, participant satisfaction, knowledge and/or skill change, and behavioral intentions. It provides a ready-made evaluation for agents and specialists to use and will allow us to aggregate data across the state. A small number of agents and specialists have utilized the survey to date, but we hope use will increase over time.

### **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%	
	<b>Total</b>	100%		100%	

**V(C). Planned Program (Inputs)**

1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	9.4	0.0	2.0	0.0
<b>Actual Paid</b>	11.9	0.0	1.9	0.0
<b>Actual Volunteer</b>	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
302774	0	209102	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
302774	0	31654	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	395042	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, 230 MSU employees are eXtension users. Further, MSU Extension has 71 employees that serve on one or more of the 66 Communities of Practice (COPs); MSU Extension employees are members of 39 COPs. 10 MSU Extension employees serve as a leader for a COP, leading 7 COPs. 4 MSU Extension personnel are members of the Feral Hogs COP with 2 being leaders.

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	95936	138548	0	0

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

**Patent Applications Submitted**

Year: 2014  
 Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

<b>2014</b>	<b>Extension</b>	<b>Research</b>	<b>Total</b>
<b>Actual</b>	1	21	22

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

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

<b>Year</b>	<b>Actual</b>
2014	24436

**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 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**

<b>Year</b>	<b>Actual</b>
2014	4887

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

A majority of imperiled lands and natural resources in MS, including wetlands, coastal marshes, and river basins are in private ownership. For conservation to be successfully implemented on these private lands, landowners and producers usually must realize incentives to their lands and incomes before they undertake conservation practices. Research conducted at MSU has shown that private landowners, forest landowners, and agricultural producers can diversify incomes and increase conservation on their lands by developing fee-access outdoor recreational enterprises.

#### **What has been done**

To this end, the Natural Resource Enterprises Program (NRE) at MSU along with state, federal, and private-sector collaborators have designed educational workshops and demonstrations to train landowners and producers in developing outdoor recreational businesses on working lands that increase conservation and income diversification. Specifically, NRE staff devised curricula and selected rural properties as host sites for workshops in 2014. Ten workshops that included general and advanced seminars were conducted with 400 paid participants.

#### **Results**

To measure impacts from our programming efforts, we have developed a comprehensive mail survey that has been periodically sent to past workshop participants. There was a 45% response rate from landowner participants. Findings revealed that conservation practices were implemented by respondents on nearly 2,250 farms and landholdings nationwide, representing 1.2 million acres in conservation; 1,200 new NRE businesses were developed on an estimated 500,000 acres since 2010 due to NRE programming; annual revenues collected from these outdoor recreational businesses nationwide averaged \$13,768 per farm (\$17 per acre), accounting for \$8.3 million in new income to family farms and landowners; and landowners reported incomes from newly started NRE operations met or exceeded their expectations.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
131	Alternative Uses of Land
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity
214	Vertebrates, Mollusks, and Other Pests Affecting Plants
605	Natural Resource and Environmental Economics
722	Zoonotic Diseases and Parasites Affecting Humans

#### 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
2014	1542

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

Human-wildlife conflicts are a common encounter for landowners. One of the greatest issues that Mississippi has had in this area is the increase of the wild pig population. It is estimated that nearly every MS county has a population of wild pigs and that wild pigs have resulted in billions of dollars of damage throughout the Southeast U.S. Many residents rely on hunting and small traps to remove wild pigs. There is a need for more information for landowners on reliable methods for removing wild pigs.

###### **What has been done**

MSU Extension has approached this problem by giving educational presentations to landowners and land-caretakers across MS. The focus is on information on reliable processes for the removal of wild pigs. Contact information for Extension specialists is also given, so landowners can get further instruction on methods or a site visit can be conducted. As of September 2014, 15 presentations on wild pig removal methods were given to 421 individuals. Furthermore, 2 large booth presentations were conducted, reaching approximately 1100 individuals.

**Results**

An evaluation form has been developed to formatively evaluate this program, but official results have not been gathered, yet. Extension agents have conducted follow-up calls with participants to assess degree of implementation of techniques and resulting impact on the removal process. Follow-up calls are conducted six months to a year after the presentations. As a result of this program, Extension agents have provided further technical assistance in 10 cases, aiding 15 known landowners and land-caretakers.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
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**

<b>Year</b>	<b>Actual</b>
2014	782

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

The Mobile Bay estuarine system is experiencing habitat degradation as a result of anthropogenic and natural impacts. Pollution emanating from the constructed environment degrades water quality. Tropical storms have a direct physical impact on many of the region's natural resources. Natural oyster reefs in particular have diminished due to siltation and changes in salinity brought about by weather events resulting in an influx of predatory oyster drills. Many areas previously available for oyster harvest are now closed due to changes in water quality classifications.

**What has been done**

In 2001, the MASGC Outreach Program launched the Mobile Bay Oyster Gardening Project to

improve water quality in the Bay by increasing the number of oyster beds and enhancing environmental literacy. Waterfront residents who volunteer for the program are provided with oyster hatchery seed and grow-out cages and receive training in cage maintenance. After the volunteers grow the seedlings to maturity, oysters are collected by Outreach personnel and used to replenish depleted reefs. The oysters are not grown for future harvest; they are used solely for restoration purposes.

**Results**

Since 2001, the MBOGP has produced nearly 600,000 oysters; enough to restore 30 acres of reef habitat and generate hundreds of millions of larvae for the overall system during spawning periods following the annual November plantings of that year's gardening. MBOGP has established a 10-acre reserve with 0 harvest for dense aggregates of broodstock on 2,500 m2 of clutched bottom habitat for further investigation of stocking techniques and future predation reduction strategies to guide future oyster restoration projects in the bay and northern gulf coast. During 2013, over 100 Oyster Gardening volunteers produced approximately 40,000 oysters -- enough to replenish 1.9 acres of reefs. The oysters were deployed at 47 sites. These oysters serve as broodstock for natural spat production and reef habitat replenishment.

**4. Associated Knowledge Areas**

KA Code	Knowledge Area
135	Aquatic and Terrestrial Wildlife
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
2014	1173

**3c. Qualitative Outcome or Impact Statement**

### **Issue (Who cares and Why)**

Growing global population will increase food and fiber demands and intensify production agriculture industry in Mississippi, putting additional pressure on the state's soil and water resources. Natural resource concerns, particularly water resources, in the State were the motivation for starting REACH. Significant investments in landscape improvements by the Federal government and producers through conservation cost-share programs warrant the need for increased research supporting the efficacy of conservation practices.

### **What has been done**

REACH is a producer-driven program, focused on addressing needs. The goal of REACH was to create a network of cooperative farms in MS, with variable agricultural systems, degrees of conservation initiatives, and ecosystem monitoring to illustrate the success of practicing conservation. REACH and its collaborators collect data on water quality, specifically nutrient and sediment in runoff, which is used to quantify efficiency of conservation practices. REACH additionally collects data on water quantity since problems with MS water resources are related to both quality and quantity.

### **Results**

REACH provided information on the benefits of conservation in agriculture to producers across the MS Delta, garnering support from 41 producers, who either currently practice conservation or were interested in implementing conservation efforts, and encompassing over 126,000 acres of agriculture land. Outreach & Extension efforts increased producer awareness and support for government assistance programs. Research outcomes provided policymakers and producers with environmental and economic costs and benefits of conservation implementation, empowering stakeholders with information as to which conservation practices may fit best with the goals of their operations and which best management practices may result in greater environmental impacts per investment of government resources.

## **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
111	Conservation and Efficient Use of Water
131	Alternative Uses of Land
132	Weather and Climate
136	Conservation of Biological Diversity
605	Natural Resource and Environmental Economics
903	Communication, Education, and Information Delivery

## **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
2014	782

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Numerous small lakes and farm ponds are owned by landowners across Mississippi. Many landowners spend numerous dollars each year on fertilizing, killing weeds, stocking, and providing overall quality care to their ponds and small lakes for recreational fishing and aesthetics on their properties.

**What has been done**

Extension staff in Lowndes County offered a small lake and pond management workshop that covered stocking, water quality, aquatic weeds, fish population balance, and pond/lake construction. Attendees were able to visually see and name various pond weeds, view a pond shocking demonstration to determine population density, and see how water alkalinity works and its effect on fish health.

**Results**

Evaluations from attendees at the workshop revealed that over 200 surface acres of water was represented at the workshop and that many of these pond owners learned information that they planned on taking back and implementing on their properties. Evaluation results revealed that over \$6,000 in management costs for these landowners (entire attendance) ponds/lakes is expected to be saved yearly in proper maintenance on these bodies of water. Primary pond/lake management goals were reported by pond owners (increase sport fishing opportunities, increase knowledge of weed identification, increase knowledge of fertilization and liming water to increase overall health of fish, increase knowledge on stocking and harvesting).

**4. Associated Knowledge Areas**

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water
131	Alternative Uses of Land
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
604	Marketing and Distribution Practices

**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 2014, 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 Planned Program Area. In addition, two narrative Accomplishment Reports are required from each MSU Extension employee each year. Finally, a specific request for impact statements from MSU Extension and MAFES faculty and staff is also made. The evaluation results shared through our impact statements are a combination of this quantitative and qualitative data.

Late in the 2014 program year, we introduced a Standardized Extension Evaluation Survey. The Standardized Extension Evaluation Survey was designed for use in any MSU Extension Service program, workshop, or event with adults. The survey assesses program process, participant satisfaction, knowledge and/or skill change, and behavioral intentions. It provides a ready-made evaluation for agents and specialists to use and will allow us to aggregate data across the state. A small number of agents and specialists have utilized the survey to date, but we hope use will increase over time.

**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 and Social Services	25%		92%	
901	Program and Project Design, and Statistics	0%		7%	
903	Communication, Education, and Information Delivery	0%		1%	
	<b>Total</b>	100%		100%	

**V(C). Planned Program (Inputs)**

1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	49.7	0.0	1.0	0.0
<b>Actual Paid</b>	39.9	0.0	1.8	0.0
<b>Actual Volunteer</b>	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
1019673	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
1019673	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	443536	0

**V(D). Planned Program (Activity)**

**1. Brief description of the Activity**

Extension will assist local communities in conducting the following activities:

- Developing demographic, economic, and fiscal profiles
- Developing 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, 230 MSU employees are eXtension users. Further, MSU Extension has 71 employees that serve on one or more of the 66 Communities of Practice (COPs); MSU Extension employees are members of 39 COPs. 10 MSU Extension employees serve as a leader for a COP, leading 7 COPs. 1 MSU Extension employee is a member 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. 4 MSU Extension personnel are members of the Network Literacy COP. 4 MSU Extension personnel are members of the Community, Local, and Regional Food Systems COP. 1 MSU Extension is a member and a leader of the Cooperatives COP.

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	157625	255620	0	0

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

**Patent Applications Submitted**

Year: 2014  
 Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2014	Extension	Research	Total
<b>Actual</b>	5	26	31

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

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

<b>Year</b>	<b>Actual</b>
2014	68874

**Output #2**

**Output Measure**

- Number of communities requesting economic analyses.

<b>Year</b>	<b>Actual</b>
2014	2

**Output #3**

**Output Measure**

- Number of communities participating in community health improvement activities.

<b>Year</b>	<b>Actual</b>
2014	45

**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**

<b>Year</b>	<b>Actual</b>
2014	13775

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

In today's environment of increasing costs/reduced government assistance, financial management for public infrastructure is important to the sustainability of infrastructure and the quality of life for residents. This is especially true in the case of determining rates that will be charged for the large majority of revenue. Many decision tools that currently exist utilize only averages, do not provide accurate baselines, do not incorporate usage risk at all. Furthermore, the tools that do exist are not provided to utilities and require a technical assistance to perform the analysis.

**What has been done**

MSU-ES has developed user-friendly, spreadsheet-based tools that incorporate the utility's individual billing data in developing baseline and risk-adjusted scenarios based on a priori knowledge and statistical calculations. Tools provide information on the number of customers and minimum billed customers for each billing class and cycle, the total revenue and minimum bill revenue received for each billing class and cycle, and comparisons with expenses to aid in sustainability decisions. Tools are customized to the needs of each utility and education is provided on use and interpretation.

**Results**

Five systems representing approximately 25,000 Mississippi residents have adopted these decision making tools and are using them to determine the best rate structure for their utility. Weak billing areas of systems are identified as well as determine the impact of the system in upgrading production and distribution facilities. These tools have resulted in a more careful examination of the rate structure regardless of the service offered. For municipal systems, the tool will allow entities to more fully comply with GASB Rule 14 and to determine whether or not those entities are sustainable within themselves. Development of dashboards within the tools also



provide a relatively quick understanding of the information contained in the tool to facilitate utility sustainability.

#### 4. Associated Knowledge Areas

<b>KA Code</b>	<b>Knowledge Area</b>
608	Community Resource Planning and Development
609	Economic Theory and Methods
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
805	Community Institutions and Social Services
901	Program and Project Design, and Statistics
903	Communication, Education, and Information Delivery

#### 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

<b>Year</b>	<b>Actual</b>
2014	11020

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

Emergency preparedness is vital in the life of a community. Sometimes emergency preparedness can mean the difference between life and death during an emergency. Furthermore, it is becoming more pertinent to American life, as Americans travel more to places with different possible emergencies than their usual environment. There is a definite need for more emergency preparedness education in Mississippi.

###### **What has been done**

The Mississippi Youth Preparedness Initiative (MyPI) is an award winning youth development program focused on emergency preparedness. The program is composed of three components: the Department of Homeland Security-certified Teen CERT curriculum; an Add On Catalog

offering other emergency preparedness trainings; and a capstone service/leadership project, PREP + 6. In PREP + 6, students work with their families, and six other families, to bolster emergency supply kits and/or family communication plans.

**Results**

In 2014, MyPI won the FEMA Individual and Community Preparedness Award for Most Outstanding Youth Preparedness program and also garnered an Honorable Mention for "Preparing the Whole Community". Since the program's inception, 206 students have graduated from the program, and PREP + 6 has allowed us to directly impact 1,442 families. There may be some additional indirect impacts, as well, with other families participating via word of mouth.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
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 and Social Services
901	Program and Project Design, and Statistics
903	Communication, Education, and Information Delivery

**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**

<b>Year</b>	<b>Actual</b>
2014	148

**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. In 2014, the Municipal Clerk Certification Program had 120 clerks participating. Five achieved the Certified Municipal Clerk designation and 20 achieved 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. Three Municipal Clerks received their Master Municipal Clerk designation this year.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
805	Community Institutions and Social Services
901	Program and Project Design, and Statistics
903	Communication, Education, and Information Delivery

**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**

<b>Year</b>	<b>Actual</b>
2014	18

### 3c. Qualitative Outcome or Impact Statement

#### Issue (Who cares and Why)

The increasing cost of flood and wind insurance is making it difficult for coastal residents to be financially resilient. Participation in the National Flood Insurance Program and its incentive-based program, the Community Rating System (CRS), has become essential to mitigating for future hazards, as well as reducing insurance premiums.

#### What has been done

Sea Grant offered technical assistance, hosted workshops, or planned meetings with 10 communities and two counties to increase community participation in the CRS. It also assisted other communities in improving their CRS class rating. The NOAA Coastal Storms Program in coordination with Mississippi-Alabama Sea Grant Consortium conducted an evaluation of the Gulf of Mexico Region to determine the economic impact and benefits of this assistance.

#### Results

When compared to control groups in North Carolina and Florida, communities in Alabama, Mississippi, and Louisiana increased their CRS participation by 14 communities and decreased their class rating by 0.6 from 2007 to 2013 (i.e., more than a half of a class better than the control group). These improvements in flood protection lead to reduced risk of flood damage and can result in significant cost savings for those needing to purchase insurance. Across Alabama, Louisiana, and Mississippi, there were 29 communities that moved from no discount to a 5-percent discount on flood insurance or from a 5-percent to a 10-percent discount between 2007 and 2013. These improvements saved residential policyholders \$29-\$98 annually and commercial policyholders \$83-\$329, depending on level of coverage.

### 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
2014	31

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

FRTEP was instrumental in the procurement of a \$900,000 grant which started the creation of the tribe's first tribally based agriculture enterprise in 2012. The Choctaw Fresh Produce (CFP) enterprise got under way selling most produce to the tribal casino and resort properties. The tribal population expressed interest in having this enterprise allow them access to the locally grown produce.

**What has been done**

Choctaw Fresh Produce approached the tribally based FRTEP office about these concerns brought forward by tribal individuals and council representatives. Through Extension the CFP department was introduced to the concept of Community Supported Agriculture, and Extension then put them in contact with several producers in the state involved with CSA and a specialist to formulate a plan and implement the tribe's first ever CSA.

**Results**

With the blessing of the tribal leadership, the first tribally based CSA was introduced in the spring of 2014 with the hope of a maximum of 60 participants to sign up. All 60 participants were signed up with-in two weeks of the first notification boosting the net income of CFP by \$9500.00. With the addition of more high tunnels in 2015 by CFP, the number of CSA memberships is expected to increase at least to at least 100. With this CSA implementation an increase if an estimated 180.5 tribal members now have access to tribally produced fruits and vegetables.

**4. Associated Knowledge Areas**

KA Code	Knowledge Area
805	Community Institutions and Social Services
901	Program and Project Design, and Statistics
903	Communication, Education, and Information Delivery

**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
2014	46

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Greene County has a limited number of tourist destinations but an abundance of natural resources, rivers, and public forest lands for visitors to enjoy and bring economic income to the county. Officials and county citizens are continuously working to develop and draw tourist to our hunting paradise.

**What has been done**

Members of the Greene County MHV Garden Club, in association with the MSU Extension Service, connected with a Barn Quilt Trail enthusiast and author Suzi Parron who wrote Barn Quilts and the American Quilt Trail Movement. In many areas Barn Quilt Trails provide a boost to the local economy from tourist and provide recognition for the host community. The members and communities around Greene County are getting on board, and Barn Quilt patterns are being approved, painted, and displayed by residents.

**Results**

Interest in establishing Mississippi's first Barn Quilt Trail is increasing. A recent article on the Chickasa-Leaf Barn Quilt Trail in the Today in MS has shown tremendous interest. A brochure will be designed listing the Barn Quilt Trails in Greene County. The MHV Club members recruited volunteers across the county to join the Chickasa-Leaf Quilt Trail Project. This project is building interest, growing the economy, and strengthening leadership in MHV members and the Chickasa-Leaf Trail committee. Barn quilt painting has become an entrepreneurial enterprise for many, and skilled barn quilt artists are constantly at work. More often, quilt trails take visitors on a drive through the countryside. Citizens of Greene County now have a new type of cultural art that can bring economic development to our area.

**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**

<b>Year</b>	<b>Actual</b>
2014	37

### **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 number one in the nation in rates of heart disease mortality and incidence of adult diabetes -- factors contributing to having the lowest life expectancy at birth in the country. 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 1998-2014 (with the exception of 2008 and 2009).

#### **Results**

To date, 317 students have completed the program. Students have come from 61 of the state's 82 counties and included 61% females and 24% minorities. Approximately 70% of our graduates have gone on to pursue health-related careers, 35 went to medical school, and 24 have graduated and are practicing physicians today. Of the 24 physicians, 14 are within MS, and 16 of the 24 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 and Social Services
901	Program and Project Design, and Statistics
903	Communication, Education, and Information Delivery

#### 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
2014	6

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

Agricultural communities throughout rural Mississippi struggle to find economic development opportunities to promote commerce and trade within and among regions using online markets, social media, websites, blogs, and more. Providing these communities with various tools that help communities and entrepreneurs to these new markets could increase local sales, and as a result, expand employment.

###### **What has been done**

The Mississippi Bricks to Clicks Program was created to help entrepreneurs and communities start and grow their online businesses through the adoption of social media, blogs, websites, mobile applications, and/or e-commerce solutions. The program focuses on helping both communities and entrepreneurs grow their respective market opportunities.

###### **Results**

A USDA Rural Business Enterprise Grant was successfully submitted and funded at \$86,000 for Natchez, which will be used to build a new entrepreneurship center in the downtown area and will create a new place to offer small business owners the program. Woodville requested the assistance of the program to help market its Annual Deer and Wildlife Festival using Facebook advertisements. The number of Facebook fans increased by almost 3,500, attendance increased by 20%, and the economic value of its Facebook page increased by \$171,500. The program



provided technical assistance and training to more than 40 small businesses in MS. In 2015, in-services will provide all 82 agents with a standardized curriculum to teach local businesses throughout the state, and the program will be made available for a small fee to other Extension Services.

#### 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
2014	2

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

In today's world the Internet plays an increasing role in connecting Americans of all ages to news and information, government services, health resources, and opportunities for social support. Seniors lag behind younger Americans, and many remain disconnected from the world of technology. According to Pew Research 41% do not use the Internet at all, 53% do not have broadband access at home, and 23% do not use cell phones. Locally, there is no community technology training for the senior population or retirees and our advisory council recommended programming to address this.

###### **What has been done**

In cooperation with the Center for Technology Outreach, a series of technology classes targeted to older adults were planned and implemented. The "Technology Tuesday" classes were held on the second Tuesday of the month for 7 months. Topics included, computer security, social media, buying and selling on line, creating a web page, making money on line, photo editing, and selecting and using a digital camera.

**Results**

One hundred and ten adults participated in the classes; many of them were new to Extension programs. 100% of participants indicated on the evaluation that they learned new skills they would use in the classes; 80% increased their knowledge of antivirus software, removing spyware, and internet scams; 100% gained new knowledge about making money on-line. 100% increased their knowledge about building a website, and 100% increased their knowledge about digital camera selection. Participants were very enthusiastic and appreciative of the information. 100% indicated they would attend more classes on utilizing and learning new technology in the future.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
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
2014	2755

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

200 MHV Clubs in Mississippi strive to strengthen and improve our families, communities, state, and country through continuing education, so they can serve all people. The mission of MHV Clubs is to strengthen families through education and community involvement. Over 2,400 members throughout Mississippi are actively involved. The Leadership Development Area Agent has worked with this statewide organization as advisor for approximately 15 years.

**What has been done**

MHV members are actively involved in many activities and projects. Some projects are making gowns, blankets, diaper shirts, crochet booties, cancer caps, books, and donating to the Blaire E. Batson Children's Hospital. Therapy Dolls are made for each child to become their "Hospital Buddy". Whatever medical treatment is needed for the child, it performed on the doll also. Many

needed items are also donated to the Ronald McDonald House in Jackson such as cleaning supplies, books, tote bags, stamps, toiletries, and monetary donations for families to stay there.

### Results

Teddy bears are donated to local police departments and the MS Highway Patrol for children involved in accidents. 566 tote bags were constructed as part of an international program for women. Child Abuse Prevention literature was distributed to schools, churches, day cares, restaurants and businesses as part of the Blue Ribbon Campaign in which the MHV are actively involved. 822,727 drink tabs were collected for a chemotherapy program sponsored by Ronald McDonald House. 620 pairs of eyeglasses were collected for International Lions Clubs. 57,000 soup labels were collected to assist schools in purchasing computer software. The MHV contributed volunteer hours with the making of the projects and volunteer work which has a monetary value of \$5,628,981.

## 4. Associated Knowledge Areas

KA Code	Knowledge Area
802	Human Development and Family Well-Being
805	Community Institutions and Social Services
901	Program and Project Design, and Statistics
903	Communication, Education, and Information Delivery

### 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 2014, 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 Planned Program Area. In addition, two narrative Accomplishment Reports are required from each MSU Extension employee each year. Finally, a specific request for impact statements from MSU Extension and MAFES faculty and staff is also made. The evaluation results shared through our impact statements are a combination of this quantitative and qualitative data.

Late in the 2014 program year, we introduced a Standardized Extension Evaluation Survey. The Standardized Extension Evaluation Survey was designed for use in any MSU Extension Service program, workshop, or event with adults. The survey assesses program process, participant satisfaction, knowledge and/or skill change, and behavioral intentions. It provides a ready-made evaluation for agents and specialists to use and will allow us to aggregate data across the state. A small number of agents and specialists have utilized the survey to date, but we hope use will increase over time.

**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%	
	<b>Total</b>	100%		0%	

**V(C). Planned Program (Inputs)**

1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	70.3	0.0	0.0	0.0
<b>Actual Paid</b>	80.0	0.0	0.0	0.0
<b>Actual Volunteer</b>	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
2043839	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
2043839	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

- 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 the following:
  - 4-H Club Congress
  - District Achievement Days
  - County, State, & Regional Fairs
  - Livestock and Horse Shows
- Provide training to Extension personnel on experiential education through subject-matter work
- Chartering all 4-H Clubs and groups
- Four Essential Elements
- Legal Use of the Name and Emblem
- Diversity Training
- Financial Management

**2. Brief description of the target audience**

All Mississippians between the ages of 5 and 18.

**3. How was eXtension used?**

Not used in this area.

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	126509	135410	295189	315958

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

**Patent Applications Submitted**

Year: 2014

Actual: 0

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2014	Extension	Research	Total
<b>Actual</b>	4	2	6

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

- Number of youth enrolled in 4-H Clubs.

<b>Year</b>	<b>Actual</b>
2014	21723

**Output #2**

**Output Measure**

- Number of clubs operating on military bases.

<b>Year</b>	<b>Actual</b>
2014	4

**Output #3**

**Output Measure**

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

<b>Year</b>	<b>Actual</b>
2014	1044

**Output #4**

**Output Measure**

- Number of volunteers attending state volunteer leaders conference.

<b>Year</b>	<b>Actual</b>
2014	224

**Output #5**

**Output Measure**

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

<b>Year</b>	<b>Actual</b>
2014	27

**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**

<b>Year</b>	<b>Actual</b>
2014	6635

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

Mississippi was without a collegiate livestock judging program prior to 2013 which left Extension agents without leadership and materials needed to train youth in their respective counties. The absence of educational camps and resources available to agents and volunteers through MSU hinders the success of 4-H participants at both the state and national levels. Many of the Extension agents preparing students are without the knowledge base to adequately equip students due to having graduated from MSU during its period without a judging program.

#### **What has been done**

In January 2013 a qualified livestock judging coach and instructor was hired by MSU. The new coach traveled the state surveying the needs of those who coach 4-H livestock judging teams. Camps were developed and the state livestock judging contest was organized and conducted by the new coach. Additionally, the new coach has conducted workshops, provided educational materials, and had face-to-face and other communication on livestock evaluation and management practices.

#### **Results**

Extension agents, volunteers, and 4-H members made up the 103 attendees of camps hosted by the new coach which taught livestock judging skills and made youth aware of opportunities to continue livestock judging at the collegiate level. The 2014 MSU livestock judging team had three members, and 12 undergraduates have committed to the 2015 team. Future team members from all over the Southeast have been recruited by judging 20 livestock shows and getting to know current undergraduate students and 4-H members. Additionally, out-of-state community college transfer students have been recruited to judge on future MSU livestock judging teams. Many livestock producers and judging team alumni have indicated support of the new coach and rebirth of the judging program by contributing over \$45,000.

#### 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
2014	1295

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

The MS Band of Choctaw Indians operates their own Law Enforcement and Justice Center for a population of approximately 11,000 registered tribal members. The Tribal Justice Center also houses youth offenders and attempts to rehabilitate non-violent youth through the Green Re-Entry program. Green Re-Entry is a rehabilitation program funded through Choctaw Youth Court, and incorporates agriculture to teach youth about their heritage and good work habits. Although, Green Re-Entry teaches good work habits through facility staff, the youth are not exposed to multiple positive adult influences.

###### **What has been done**

In response to this concern the Choctaw FRTEP agent proposed an additional program to be implemented in 2014 for the Green Re-Entry youth. An Agriculture Mentors program was developed to introduce tribal youth to not only local adults involved in agriculture, but positive adults state-wide that have chosen agriculture as their career. The Ag-Mentors program introduces the youth to different aspects of agriculture so they will have an idea of how food and fiber is produced, but this program also exposes at risk youth to adults that promote education, family values, and pride.

###### **Results**

All empirical data states that youth benefit from positive adult influences whether they are family members or adults outside the home. The Ag-Mentors program was implemented by Extension in 2014 with the partnership of Choctaw Youth Court staff. Ag-Mentors has introduced 24 tribal

youth from all eight tribal communities to more than 10 agriculture professionals. From the 24 youth involved in the Ag-Mentors program, 12 youth, almost 50%, expressed interest in an agriculture career and at least 85% of offenders have not reoffended in 2014. Four mentees from the program has contacted mentors they met during program, and established positive relationships to inquire about agricultural education venues and advise about life matters. The program is scheduled to be implemented in 2015.

#### 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
2014	1088

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

According to the 2014 4-H Status Report, 83,812 youth are enrolled in the 4-H program state-wide, which is a decrease in over 100,000 youth enrolled the previous year. During, 2013 Lowndes County 4-H program had 32 youth enrolled, which has decreased by about 10% to 295. 4-H participation has decreased on the county, district, and state levels.

###### **What has been done**

In an effort to increase the number of active youth participating in the Lowndes County 4-H program, a 4-H Recruit Fun Day was planned by 4-H agent and volunteers to market the 4-H program and recruit new members. To ensure participants visited all stations, a 4-H Passport was designed for each station presenter's initials. The evaluation questions were printed on the bottom section of the passport. Participants with completed passports received a 4-H prize. The event was held at Propst Park on Saturday, September 6 and the media was used to advertise the event.

###### **Results**

Even though sixty-nine people attended the 4-H Recruit at Propst Park, only 19 completed the evaluation. Forty-two percent of the respondents answered yes to the question "Is this your first knowledge of 4-H?". One hundred percent of the respondents were able state one thing learned about 4-H. Fifty-eight percent stated they would join 4-H.

#### 4. Associated Knowledge Areas

<b>KA Code</b>	<b>Knowledge Area</b>
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
2014	16339

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

4-H members gain four essential elements through 4-H participation: belonging, independence, generosity, and mastery. These elements help youth become competent and contributing citizens.

###### **What has been done**

The MSUES 4-H Cooperative Business Leadership Conference allows delegates to participate in activities that promote the four essential elements. Delegates were encouraged to develop relationships and work together as peers and adults (belonging). Delegates participated in leadership opportunities to instill responsibility, independent thinking, and self-discipline (independence). Sponsor support helped build relationships (generosity). Delegates learned how to make positive career choices through hands-on experiences (mastery).

###### **Results**

The Business Leadership Conference gave 69 4-H'ers and adults the opportunity to learn-by-doing as they organized their own 4-H soft drink cooperative. Under the leadership of the cooperative manager and staff, along with the board of directors and active members, their efforts resulted in a 500% return on their investment. As delegates traveled across the state, they

experienced the cooperative form of business and became mock legislators. They also enhanced their leadership and decision-making skills through educational workshops and networking with cooperative business leaders and state legislators.

#### 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
2014	13939

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

Young people's understanding of natural processes and resource conservation (including wildlife) is deficient, leaving students ill-equipped to deal with complex issues facing society, including problems such as quality and quantity of water; sustainable use of soil, water, and other natural resources; and conservation of threatened plant and animal species.

###### **What has been done**

Many outreach efforts have been employed to address this issue. Conservation camps are offered annually during the summer to educate and excite students about natural resources. The 4-H Wildlife Habitat Education Program (WHEP) builds knowledge of management practices in junior and senior 4-H'ers. Training and special events for Boy and Girl Scouts and leaders, 4H volunteers, and teachers employ a "train the trainer" model. Collaboration with other natural resource agencies on youth outreach programs allows for greater impact through synergy and pooled resources.

###### **Results**

Ninety-one young people participated in WHEP, and the team representing MS at the national contest placed third. Ninety-eight youth-serving adults received training on conservation topics and educational methods, with the subsequent potential to impact 2,400 youth. Sixty participants

in camp program showed an average 24% improvement on post camp knowledge assessments when compared to their pretest scores, demonstrating improved knowledge. Environmental attitude surveys of these participant showed similar results. Twenty students received Hunter Safety certification during summer camp, which may result in fewer hunting accidents and greater respect for firearms and hunting ethics.

#### 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
2014	8200

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

The cost of tuition at many Mississippi colleges and universities exceeds \$6,500 (combined for fall and spring semesters). Many Mississippi youth lack sufficient funds to attend college after graduating from high school without some financial assistance. It is important that these youth who desire to earn a college education are given opportunities to compete for scholarships to aid them in this pursuit.

###### **What has been done**

The Dixie National Sale of Junior Champions provided an opportunity for the Champion and Reserve Champion market animals to be sold in a bid auction at the conclusion of the 2014 Dixie National Junior Round-Up. The Mississippi State University Extension Service managed the livestock shows and many aspects of the auction where exhibitors received 80% of the sale price of their animal that can be used for their college education and to expand their animal project while 20% was kept for sale expenses and awarded through various scholarships to Mississippi youth.

###### **Results**

A total of 44 animals qualified for the Dixie National Sale of Junior Champions that totaled \$369,125. In addition, \$55,500 in scholarships was awarded as follows: 25 scholarships (\$1,500 each) awarded to seniors in high school that did not qualify an animal for the Sale of Junior Champions; 6 scholarships (\$2,000 each) awarded to the winners of the Premier Exhibitor Contest in Beef Cattle, Dairy Cattle, Sheep, Swine, Meat Goats and Dairy Goats; and 4 scholarships (\$1,500 each) to the exhibitors of the Supreme Beef Male, Supreme Beef Female, Supreme Dairy Cattle Female and Supreme Dairy Goat Female. The sale proceeds and scholarships awarded to Mississippi youth will greatly assist them in their collegiate education.

#### 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
2014	8200

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

Firearm safety training seeks to instill a certain mindset and appropriate habits by following specific rules. The mindset is that firearms are inherently dangerous and must always be stored carefully and handled with care. Handlers are taught to treat firearms with respect for their destructive capabilities, and strongly discouraged from playing with firearms, a common cause of accidents. Due to media coverage related to firearm accidents, shooting incidents, and shooting deaths of innocent victims the general public often has a negative concept of any use.

###### **What has been done**

Mississippi State University Extension Service 4-H Shooting Sports Program's goal is youth development. Through participation in firearm safety training and shooting sports activities, young men and women are given the opportunity to learn responsibility, sportsmanship, self-discipline, and other qualities critical to the development of productive citizens. Mississippi 4-H Shooting Sports involves thousands of kids and continues to grow annually. Over 700 trained adult

volunteer instructors and 4-H agents provide safety training and leadership for our program throughout the state.

### Results

Through our local 4-H Shooting Sports program in 2014 we had 24 4-H members who participated in county practices and shoots developing their firearm safety and shooting skills. Over half received some type of award for accuracy in shooting skills developed through the program. In addition, youth participants learn teamwork, time management, responsibility, good sportsmanship, cooperation, problem solving skills and more as they care for their firearm, plan for and participate in practice and competitions, form a friendship with other teammates, and learn to identify their errors and correct them. Though there is no pre- and post-test the improvement in skills is obvious in improvement in scores and the life skills learned like improved self-esteem and teamwork are seen through observation.

## 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

{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 2014, 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 Planned Program Area. In addition, two narrative Accomplishment Reports are required from each MSU Extension employee each year. Finally, a specific request for impact statements from MSU Extension and MAFES faculty and staff is also made. The evaluation results shared through our impact statements are a combination of this quantitative and qualitative data.

Late in the 2014 program year, we introduced a Standardized Extension Evaluation Survey. The Standardized Extension Evaluation Survey was designed for use in any MSU Extension Service program, workshop, or event with adults. The survey assesses program process, participant satisfaction, knowledge and/or skill change, and behavioral intentions. It provides a ready-made evaluation for agents and specialists to use and will allow us to



aggregate data across the state. A small number of agents and specialists have utilized the survey to date, but we hope use will increase over time.

**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

<b>KA Code</b>	<b>Knowledge Area</b>	<b>%1862 Extension</b>	<b>%1890 Extension</b>	<b>%1862 Research</b>	<b>%1890 Research</b>
701	Nutrient Composition of Food	0%		1%	
702	Requirements and Function of Nutrients and Other Food Components	0%		1%	
703	Nutrition Education and Behavior	20%		1%	
704	Nutrition and Hunger in the Population	0%		1%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	5%		3%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	5%		36%	
722	Zoonotic Diseases and Parasites Affecting Humans	0%		1%	
723	Hazards to Human Health and Safety	0%		7%	
724	Healthy Lifestyle	25%		1%	
801	Individual and Family Resource Management	15%		0%	
802	Human Development and Family Well-Being	30%		34%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	0%		12%	
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures	0%		1%	
903	Communication, Education, and Information Delivery	0%		1%	
	<b>Total</b>	100%		100%	

**V(C). Planned Program (Inputs)**

## 1. Actual amount of FTE/SYs expended this Program

Year: 2014	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	37.9	0.0	4.0	0.0
<b>Actual Paid</b>	43.7	0.0	11.6	0.0
<b>Actual Volunteer</b>	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
1115790	0	134453	0
<b>1862 Matching</b>	<b>1890 Matching</b>	<b>1862 Matching</b>	<b>1890 Matching</b>
1115790	0	273211	0
<b>1862 All Other</b>	<b>1890 All Other</b>	<b>1862 All Other</b>	<b>1890 All Other</b>
1485669	0	109302	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, 230 MSU employees are eXtension users. Further, MSU Extension has 71 employees that serve on one or more of the 66 Communities of Practice (COPs); MSU Extension employees are members of 39 COPs. 10 MSU Extension employees serve as a leader for a COP, leading 7 COPs. 2 MSU Extension personnel are members of the Community Nutrition Education COP. 4 MSU Extension personnel are members of the Community, Local, and Regional Food Systems COP. 3 MSU Extension personnel are members, with 1 being a leader, of the Creating Healthy Communities COP. 1 MSU Extension employee is a member of the eXtension Alliance for Better Child Care COP. 2 MSU Extension personnel are members of the Families and Child Well-Being Learning

Network COP. 15 MSU Extension personnel are members of the Families, Food, and Fitness COP with 3 being leaders. 3 MSU Extension personnel are members of the Family Caregiving COP. 3 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. 2 MSU Extension personnel are members of the Healthy Food Choices in Schools COP. 3 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**

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	192600	217411	288901	326117

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

**Patent Applications Submitted**

Year: 2014  
 Actual: 3

**Patents listed**

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2014	Extension	Research	Total
<b>Actual</b>	1	72	73

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

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

Year	Actual
2014	48150

**Output #2**

**Output Measure**

- Number of people attending certification courses.

<b>Year</b>	<b>Actual</b>
2014	1019

**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 adopt 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**

<b>Year</b>	<b>Actual</b>
2014	1233

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

A telephone survey conducted in 2014 by the MSU Social Science Research Center gathered data from 411 SNAP-eligible Mississippians about dietary behaviors and attitudes. The responses showed that the following factors (out of 9 factors) are "very important" to this population when preparing home cooked meals: spending less money (77%), providing healthy food (79%), knowing how to cook (83%), and knowing how to plan and grocery shop (77%).

#### **What has been done**

Expanded Food and Nutrition Education Program (EFNEP) employs 24 paraprofessionals who are trained to conduct programs which allow resource-limited participants to develop cooking skills, taste healthy foods, and make smart food choices. Participants' attendance at the series of at least eight classes reinforces the knowledge and skills gained.

#### **Results**

During FY2014, there were 427 participants that graduated from the EFNEP program. The results are directly related to the values expressed in the survey: 64% of participants showed improvement in comparing prices before purchasing food items; 70% of participants showed improvement in planning meals ahead of time; 41% less participants ran out of food before the end of the month; and participants saved an average of \$18.90 each on monthly grocery costs.

### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
704	Nutrition and Hunger in the Population
723	Hazards to Human Health and Safety

724	Healthy Lifestyle
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

## **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**

<b>Year</b>	<b>Actual</b>
2014	527

### **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 2013 to September 30, 2014, 39 classes were taught by twelve ServSafe certified MSU Extension instructors. A total of 527 participants completed the ServSafe Certification training. Passage rate for all attendees taking the certification exam was 70.2%. ServSafe certification courses were offered at fourteen 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**

<b>KA Code</b>	<b>Knowledge Area</b>
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
722	Zoonotic Diseases and Parasites Affecting Humans
903	Communication, Education, and Information Delivery

**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**

<b>Year</b>	<b>Actual</b>
2014	6548

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

MS youth experience similar poor health behaviors as MS adults, which 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**

Compared to 11,300 students in 2013, 14,000 students experienced the BodyWalk exhibit in 2014. The 3rd grade students were asked a question to test their knowledge gain. Out of 1,751 third graders, 97% learned at least one thing from the experiences, and 30% made perfect scores on the question.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
701	Nutrient Composition of Food
702	Requirements and Function of Nutrients and Other Food Components
703	Nutrition Education and Behavior

**Outcome #5**

**1. Outcome Measures**

Number of clientele who adopt 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**

<b>Year</b>	<b>Actual</b>
2014	5239

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

The 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**

The SNAP-Ed program in MS employs 37 paraprofessionals who provide nutritional programming for adults and children. Many of the children's programs are conducted in schools which have at least 50% of their students participating in free or reduced lunch program; other venues include after school programs, boys' and girls' clubs, cooking classes at MSU Extension Offices, etc. Quality, engaging, evidence-based curriculum that is based on USDA Dietary Guidelines and the USDA food guidance icon is used in SNAP-Ed programming. In 2014, 52,668 children participated in SNAP-Ed programs.

#### **Results**

Approximately 1,100 3rd-5th graders who were surveyed after a series of SNAP-Ed programs showed increased fruit and vegetable intake. Additionally, the students showed improvement in their willingness to ask parents to have fruits and vegetables readily accessible. These students also were more willing to ask parents to buy non-fat or 1% milk instead of whole milk. Sixth through 8th graders also improved their intake of vegetables, fruits, and low-fat milk. These impacts align seamlessly with the key recommendations of the most recent Dietary Guidelines (2010).

#### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
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**

<b>Year</b>	<b>Actual</b>
2014	2311

### 3c. Qualitative Outcome or Impact Statement

#### Issue (Who cares and Why)

The MS Behavior Risk Factor Surveillance Survey (2013) shows that as income increases, obesity/overweight rates decrease and shows that as income decreases, reports of poor mental health increase. These trends are particularly notable in Mississippi where the poverty rate is 21.2% (U.S. Census, 2012). The MSBRFSS also reports that 38.2% of Mississippians report no leisure time physical activity in the previous 30 days. This is pertinent, because physical activity can help a person feel better about themselves and decrease the chance of becoming depressed.

#### What has been done

In cooperation with the MS Department of Human Services and USDA, MSU Extension provides nutrition education to SNAP eligible adults. SNAP-Ed and EFNEP 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

Sixty-five percent of adults who participated in a series of EFNEP programs showed improvement in dietary behavior by taking time to think about healthy food choices when deciding what to feed their families. This forethought can help improve well-being by choosing to eat healthy. One hundred and ninety-nine adults attended single SNAP-Ed programs. As a result, 70% "most of the time" or "always" plan to be more physically active, and 82% "most of the time" or "always" feel that preventing weight gain is an important part of staying healthy. By choosing to improve lifestyle habits, participants can feel more empowered to live more healthfully.

### 4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population

### 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
2014	192

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

According to the 2013 BRFSS, 69% of adults surveyed are either overweight or obese. MS youth experience similar poor health behaviors as MS adults, which may result in a generation of children with shorter life expectancies than their parents (HBO Weight of the Nation). 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).

**What has been done**

EFNEP conducts adult and youth nutrition education programs which focus on the USDA Dietary Guidelines and MyPlate, while also incorporating physical activity, teaching cooking skills, and offering tastings when appropriate. In 2014 EFNEP reached 427 adults and 19,714 youth. SNAP-Ed lessons are single lessons or a series of lessons and are also based on USDA Dietary Guidelines and MyPlate, incorporating physical activity, teaching cooking skills, and offering tastings when appropriate. SNAP-Ed reached 52,668 youth participants in 2014.

**Results**

After participation in EFNEP programs, adults showed a 61% improvement in participants who fed their children breakfast. Among 3rd-5th grade participants, there was a 16% improvement in children who ate breakfast. Breakfast eaters are significantly less likely to be overweight, and adolescents who eat breakfast tend to have lower body mass index. (Dayle Hayes, MS, RD, www.nutritionforthe future.org). EFNEP adults also demonstrated a positive change (42%) in physical activity, while 59% of participants reduced solid fat and added sugar intake. Both of these habits can contribute to decreasing obesity rates. Third through fifth graders in EFNEP and FNP showed improvements in physical activity (26% and 25%, respectively).

**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
2014	482

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Over the last 25 years, the cost of attending college has increased 400%, while incomes have increased 150%. Public funding for higher education has decreased significantly since the 1980s, declining between 15 and 70% across different states in the U.S. While the cost of attending college has increased significantly, the cost of not attending college is even greater. Since 2004 there has been a 70% increase in the number of borrowers and the average debt load is over \$30,000 for undergraduates. Students give financial stress as the number one reason they drop out of college.

**What has been done**

The MSU Extension Center for Economic Education and Financial Literacy developed a program for college students. Piloted at MSU, the program delivered workshops through student organizations, classes, dorms, and events. Materials were developed so that college and universities across the nation can replicate the program. To bridge the gap between knowing and doing, the program focuses on behavioral change through simulations and a peer mentor program. Topics include budgeting, saving, credit, student loan debt, preparing for graduate school, and choosing a major.

**Results**

The MSU Extension Center for Economic Education and Financial Literacy worked with units across campus to reach students through their trusted channels. Over 1,200 students were served in 2014. Participant evaluations showed that most agreed or strongly agreed that they enjoyed the presentations and would attend more sessions. Participants improved their understanding of the importance of delayed gratification and their ability to delay gratification. Students improved in their understanding and confidence to save to be millionaires by forgoing buying a new car right out of college and knowledge of the steps to take to build credit. Students pledged to save at least \$10 each week while in college. Student loan recipients figured out the most they should borrow given their major.

**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**

<b>Year</b>	<b>Actual</b>
2014	385

**3c. Qualitative Outcome or Impact Statement**

**Issue (Who cares and Why)**

Of all fraud complaints, identity theft ranks at the top, and the MS Attorney General's office wanted to address the issue. Destruction of unnecessary documents is a great preventative measure against identity theft.

**What has been done**

Through the MS Consumer Education Partnership, Extension partnered with the MS Attorney General's office to hold Shred Day events in 4 cities in March 2014. The events were sponsored by a group initiated and facilitated by MSU Family Resource Management Agents to leverage resources of public and private consumer organizations. Cintas also donated services to assist consumers.

**Results**

The 2014 Shred Day aided consumers in destroying unnecessary personal documents they accumulated in an effort to prevent identity theft. At least 1,513 consumers (increased from 1,118 in 2013) shredded more than 94,000 pounds (increase of 88% from 50,120 pounds in 2013) of sensitive personal papers at 2014 Shred Day events in 4 cities in March in events. Cintas's services aided consumers in preventing an average loss of \$5,000 per consumer for a total event impact of nearly \$7,565,000.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
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**

<b>Year</b>	<b>Actual</b>
2014	193

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

According to the Corporation for Enterprise Development (CFED) Assets and Opportunities scorecard, only about half of Mississippians have savings account, and approximately 46% are unbanked or underbanked. Savings is an important component of financial security.

#### **What has been done**

In response to the noted financial disparity, MSU Extension established the Mississippi Saves campaign in 2014 to address the issue. This program was launched as part of the America Saves national campaign, which aims to encourage savings as part of the foundation for a financially secure household. A major part of the campaign involves encouraging people to take the pledge to save as an action step towards a savings commitment.

#### **Results**

Consumer Federation of America, the organization that sponsors the national America Saves campaign, uses the number of pledges as a measure of impact. In 2014, the Mississippi Saves campaign had 111 savers who pledged to save a total of \$10,603. This increase in intention to save money has the potential to foster more financial security in Mississippi households.

### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
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**

<b>Year</b>	<b>Actual</b>
2014	770

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

Sleep is a public health problem in America. Sleep problems include short sleep duration, multiple night wakings, bedtime resistance, parasomnias, and daytime sleepiness. Many children (~49%) are exposed to aggression within their home, and the climate of the family environment plays a role in sleep of young children. Such interadult conflict within the family can negatively impact children's sleep.

#### **What has been done**

Modeled after Together We Can, an evidence based curriculum, Sleep Hygiene and Parent Engagement: Children's Academic Readiness Enhancement (SHAPE-CARE) is an intervention that integrates conflict management, emotion regulation, and sleep hygiene into a parent education program. MSU Extension implements SHAPE-CARE for primary caregiver(s) of preschool-aged children.

#### **Results**

Pretest scores indicate that mothers' reports of children's responses during interadult conflict were positively associated with children's sleep anxiety and parasomnias. Positive couple functioning was negatively associated with children's bedtime resistance, sleep amount, and nightwakings. For mothers involved in a romantic relationship, pretest scores indicated that verbal conflict in the romantic relationship was negatively associated with sleep amount and bedtime resistance, while physical conflict was positively associated with parasomnias. Findings replicate studies conducted with older children that indicate interadult conflict is associated with poorer sleep outcomes for children. The conflict resolution, emotion regulation, and coparenting skills learned through SHAPE-CARE help to reduce the impact of conflict on preschool children's sleep.

### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
802	Human Development and Family Well-Being
903	Communication, Education, and Information Delivery

## **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**

<b>Year</b>	<b>Actual</b>
2014	616

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

Therapeutic riding is a specialized equine activity that provides physical, emotional, and psychological benefits to children and adults with disabilities. TRAC programs are designed to provide physical benefits for the rider such as improved posture, muscle strength, and trunk balance. Equine assisted activity and therapeutic riding programs are designed to provide therapeutic un-mounted activities to a diverse population. Children and adults with and without disabilities may benefit from un-mounted activities such as grooming horses, leading horses, and stable management.

#### **What has been done**

MSU Extension Service's 4-H Therapeutic Riding and Activity Center (TRAC) promotes therapeutic riding through educational and research-based activities. The program has earned premier accreditation through the Professional Association of Therapeutic Horsemanship. Through carefully planned activities developed by a certified riding instructor, the horse is used as a treatment tool to help each rider achieve his or her goals.

#### **Results**

The TRAC program is still young, but interviews with 19 parents of youth participants demonstrate its accomplishments. For example: 1) 17 parents indicated that TRAC met the goals identified for their child; 2) 18 parents felt TRAC did "very good" at making their child feel special during sessions; and 3) 16 parents said their child's riding expectations were fulfilled. Five of the families have typically developing siblings that participated in TRAC with their special needs sibling. Families indicated that TRAC was the only extracurricular activity in which the siblings could

participate together, and it strengthened the sibling bond.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
802	Human Development and Family Well-Being
903	Communication, Education, and Information Delivery

**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**

<b>Year</b>	<b>Actual</b>
2014	172

**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 CDA, the MS Director's, and the National Director's Credentials have been adopted by the Early Years Network (EYN). They provide performance-based training, assessment, and credentialing of early care and education teachers. EYN provides opportunities for educators to access these credentials through scholarships made available with funding provided by the MS DHS. Child care educators are provided with development opportunities to meet and exceed the requirements of the state.

**Results**

There were 98 early care and education teachers who completed the CDA with more than 11,000 online training hours successfully accomplished. There were 55 early care and education

teachers who complete the Mississippi Director's Credential with over 7,400 training hours successfully completed. There were 19 early care and education teachers who completed the National Director's Credential with more than 2,500 online training hours successfully accomplished. Early childhood educators were offered over 2,000 staff development opportunities including workshops and technical assistance. More than 22,000 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
2014	124

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

Mississippi has over 1,500 licensed child care facilities and over 600 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 2.20 and 2.56, 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 Early Years 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 34 licensed child care facilities and 90 family child care facilities that increased the quality of care provided to children.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
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**

<b>Year</b>	<b>Actual</b>
2014	763

**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 Early Years 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 763 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 2014, 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 Planned Program Area. In addition, two narrative Accomplishment Reports are required from each MSU Extension employee each year. Finally, a specific request for impact statements from MSU Extension and MAFES faculty and staff is also made. The evaluation results shared through our impact statements are a combination of this quantitative and qualitative data.

Late in the 2014 program year, we introduced a Standardized Extension Evaluation Survey. The Standardized Extension Evaluation Survey was designed for use in any MSU Extension Service program, workshop, or event with adults. The survey assesses program process, participant satisfaction, knowledge and/or skill change, and behavioral intentions. It provides a ready-made evaluation for agents and specialists to use and will allow us to aggregate data across the state. A small number of agents and specialists have utilized the survey to date, but we hope use will increase over time.

##### Key Items of Evaluation

## VI. National Outcomes and Indicators

### 1. NIFA Selected Outcomes and Indicators

<b>Childhood Obesity (Outcome 1, Indicator 1.c)</b>	
	Number of children and youth who reported eating more of healthy foods.
<b>Climate Change (Outcome 1, Indicator 4)</b>	
	Number of new crop varieties, animal breeds, and genotypes with climate adaptive traits.
<b>Global Food Security and Hunger (Outcome 1, Indicator 4.a)</b>	
	Number of participants adopting best practices and technologies resulting in increased yield, reduced inputs, increased efficiency, increased economic return, and/or conservation of resources.
<b>Global Food Security and Hunger (Outcome 2, Indicator 1)</b>	
	Number of new or improved innovations developed for food enterprises.
<b>Food Safety (Outcome 1, Indicator 1)</b>	
	Number of viable technologies developed or modified for the detection and
<b>Sustainable Energy (Outcome 3, Indicator 2)</b>	
	Number of farmers who adopted a dedicated bioenergy crop
<b>Sustainable Energy (Outcome 3, Indicator 4)</b>	
	Tons of feedstocks delivered.