2016 Alcorn State University and Mississippi State University Combined Research and Extension Annual Report of Accomplishments and Results

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I. Report Overview

1. Executive Summary

This Report of Accomplishments (ROA) is a joint report among the Mississippi State University Extension Service (MSU Extension), the Mississippi Agricultural and Forestry Experiment Station (MAFES), and the Alcorn State University (ASU) School of Agriculture and Applied Sciences (AAS). The report therefore includes Extension and research from Mississippi's 1862 land-grant institution, Mississippi State University, and its 1890 land-grant institution, Alcorn State University.

This report includes efforts and results related to MSU's Hatch appropriation, which total $4,915,243 for federal fiscal year 2016 and a total Smith-Lever appropriation of $7,056,470, as well as ASU's Evans Allen appropriation and Smith-Lever appropriation.

In 2016, the U.S. Census estimated Mississippi to have approximately 2,988,726 citizens. Mississippi is a diverse state, with a variety of agricultural systems, a large population of ethnic minorities, and families and communities with unique needs. The land-grant universities meet this challenge with a broad spectrum of programming designed to reach these diverse audiences. Creation and transfer of knowledge to solve problems are at the core of these efforts.

MSU Extension provides research-based educational programs and information in agriculture and natural resources, 4-H youth development, family and consumer education, and community resource development to improve the economic, social, and cultural well-being of all Mississippians. 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 FY2016, MSU Extension professionals (267.9 total FTE) carried out 108,867 educational activities with a total of 3,648,858 contacts. [MSU Extension is transitioning to a new reporting system; 2016 was the first year this system was pilot-tested. It may take one or two reporting cycles for numbers to re-stabilize through this process.]

The mission of MAFES is the creation of knowledge through fundamental and applied research in the fields of science related to agriculture, food, natural resources, the natural environment, people, and communities. The focus of these research programs is on enhancing and/or developing economically efficient and environmentally sustainable agricultural production and processing systems. The goals are to provide safe, nutritious, desirable food and fiber products and processes for consumers, as well as to assure that the businesses which comprise Mississippi's agricultural industry have the information required to remain competitive in a global marketplace. MAFES develops and delivers emerging technologies to agricultural producers, bridging the gap between science and application. During Calendar 2016, MAFES scientists (93.98 total FTE) produced 378 peer-reviewed scientific publications, 212 other technical publications, 12 patent applications, 4 patents/PVPs, and supported 177 graduate assistants.

Mississippi State University (MSU) has reduced its previous 10 program areas to 5 "imperatives" that were

identified through a formal statewide needs assessment process. These five imperatives are:

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.

The Joint ROA of Alcorn State University's School of Agriculture and Applied Sciences (AAS), formally the School of Agriculture, Research, Extension and Applied Sciences (AREAS), draws upon the organization's unique strengths and its comprehensive delivery system to conduct original research and deliver educational programs targeting limited-resource audiences. Research and Extension professionals facilitate positive change in the Capital River, Delta, and Coastal regions of Mississippi by implementing jointly planned programs.

Alcorn State University (ASU) state-level Extension and Research staff consists of researchers who conduct studies to address relevant issues and situations facing the state's limited-resource citizens, as well as issues relevant to specific geographical areas within the state. Extension specialists use research-based information to design and develop educational programs for limited resource audiences across Mississippi. County-level staff consisting of Extension Educators, Project Directors, and off-campus research centers' personnel, deliver educational programs, events, and activities that allows limited-resource audiences to obtain and apply new knowledge and skills. Many of the research and agricultural educational programs are tested and supported by the Model Farm on the ASU campus, two off-campus demonstration centers in Mound Bayou and Preston, and the Natchez Farmers Market located in Natchez, MS.

ASU's five program areas include:

1. Animal Systems
2. Plant Systems
3. 4-H and Positive Youth Development
4. Family and Consumer Sciences, and
5. Community Resource and Economic Development.

These planned programs represent those areas with the greatest need as identified by local advisory groups, community stakeholders, researchers, and Extension staff. Stakeholder input from limited resource audiences in the Delta, Coastal, and Capital River targeted regions of Mississippi focused on the five program areas listed above.

The six integrated planned program areas to be addressed by MSU and ASU are:

1. Animal Systems;
2. Plant Systems;
3. Natural Resources;
4. Community Resource and Economic Development;
5. 4-H and Youth Development; and
6. Family and Consumer Science.

These planned programs represent those areas with the greatest need as identified by community partnerships, environmental scans, researchers, stakeholder input, and Extension staff.

Total Actual Amount of professional FTEs/SYs for this State

Year: 2016	Extension		Research	
	1862	1890	1862	1890
Plan	245.0	36.0	100.0	36.0
Actual	267.9	43.4	185.6	21.0

II. Merit Review Process

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

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

2. Brief Explanation

At MSU, research projects utilize both an internal university panel and an expert peer review as part of the regional research networks. These reviews cover all aspects of research project proposals, including scientific merit, budgets, and suitability of the research mission for the unit, experiment station, and regional consortium.

MSU Extension programs undergo an internal university panel review. This review takes into consideration the need for the program (including stakeholder input), the methods utilized, the audience identified, and the methods for outcome/impact evaluation. MSU Extension created Program Development Teams (comprised of Department heads/administrators and Extension faculty) that are involved in developing the overall statewide plan of work for the subject-matter area that the team represents. Teams conduct needs assessments; identify program area goals and objectives; develop or identify curricula to address needs; identify indicators of success, evaluation tools, and program outcomes; train Extension agents to deliver and evaluate the identified curricula; and write impact statements to share program successes.

The MSU 5-Year Plan of Work is reviewed by a combined internal and external university and external non-university panel. Panels are set up as appropriate for specific program plans with a focus on a broader review of the needs, resources allocated, and expected outcomes of the programs.

At ASU, a panel consisting of individuals from within the University, other universities, and external non-university groups is selected every two years to establish and conduct a merit review process of the Joint Extension and Research POW. The individuals selected include Extension program leaders, specialists, and researchers from land-grant universities within and outside of Mississippi. The non-university panel members include partnering agencies with complementary research and Extension functions and priorities within the state. The merit review process focuses on the five planned programs previously identified.

Every other year at ASU, and for the next five years, a comprehensive program review is conducted by the panel established by the School of AAS. The input to this reviewing process is obtained from local and state stakeholders, feedback from county advisory groups, and contributions from university faculty in the respective areas of the plan. The results from the review are used to improve, change, and modify the

current Plan of Work.

ASU's research efforts are reviewed annually to evaluate the relevancy of research priorities, the quality of research methodologies, project outputs, and measurable impacts of research projects. External expert reviewers and peer reviews from governmental agencies (state and federal), other universities, and local officials are also included in the examination of the POW Research conducted during the relevant reporting period.

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
- Other (Establish a statewide Extension Advisory Council)

Brief explanation.

MSU used its standard processes to seek stakeholder input. In 2016, at least 157 advisory meetings were held with county, multi-county, regional, and/or statewide advisory committees. Under the leadership of county Extension agents, County Extension Advisory Councils met to review programs and identify key issues to be addressed. An Overall Extension Advisory Council in each county met at least once per year to discuss programming efforts, evaluate programs, assess needs for future programming, and identify human and financial resources for programming. This group includes leaders who provide input from business, social, and economic entities and individuals who represent underserved and underrepresented clientele. Program Advisory Councils in each county act as subcommittees of the Overall Advisory Council and represent the interests of agriculture, family & consumer sciences, 4-H youth, and community/rural development issues. These groups met at least twice per year to discuss program needs, delivery, and evaluation. MSU Extension agents also obtain information regarding client needs from outside these advisory councils, giving attention to key community leaders and representatives of underserved populations to ensure all groups who are possible beneficiaries of programming efforts are included. These groups met several times during the year to offer input and react to Extension's efforts. MSU also 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 discuss programming and research efforts and assess needs. Subgroups of these councils met several times during the year to discuss specific research and programming needs.

MSU Extension and MAFES met with key partners to discuss efforts and results, coordinate activities, and set priorities. Key partners include 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. For example, MAFES and MSU Extension administration met with state-specific

commodity boards representing corn, soybean, cotton, rice, and peanut producers to understand producer requirements, establish research priorities, and communicate research outcomes. MAFES assists commodity boards in developing RFPs and managing submission and review processes.

ASU employs a variety of methods to encourage stakeholders to participate in program planning and evaluation. At the county level, needs assessment is often conducted jointly with MSUES staff using overall advisory councils and subject area advisory boards (agriculture, family and consumer science, 4-H, and community resources and economic development). State-level stakeholders participate in program planning meetings and on state advisory boards to offer input and suggestions for programs and services for limited-resource audiences.

Stakeholder participation is also encouraged through collaborative partnerships, accountability meetings, and program evaluation surveys. ASU's partners include the Mississippi Association of Cooperatives, USDA Rural Development, Farm Service Agency, Natural Resource Conservation Services, Risk Management Agency, MS Head Start, County Boards of Supervisors, ASU's Small Farm and Agribusiness Center, Local County School Districts, and the Mississippi Department of Agriculture.

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

1. Method to identify individuals and groups

- Use Advisory Committees
- Use External Focus Groups
- Open Listening Sessions
- Needs Assessments
- Use Surveys

Brief explanation.

Meetings with traditional stakeholder groups, the general public, and specifically with nontraditional groups are an ongoing part of the needs assessment process conducted by MSU Extension and MAFES (described in a previous section). Advisory committees are required to be reflective of the population of potential clientele. 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. Additionally, MSU Extension conducted a statewide needs-assessment survey in 2014, targeting all county Extension advisory group members (overall council and programmatic councils), regional and statewide advisory councils, stakeholder groups, and the general public.

MSU Extension and MAFES administrators also traveled 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.

Alcorn State University (ASU) collects names and demographic information on participant registration forms during various county and state-level activities. This information is transferred into a database which is consistently updated for accuracy. Direct mailings relative to current and prospective educational programs and activities are sent to individuals stored in the database. These same individuals are often consulted for program planning input and program evaluation. ASU used data gathered during state and local advisory council and stakeholder meetings to plan

and implement educational programs and activities. Further, suggestions for needed programs were collected on evaluation instruments at the end of educational activities.
Suggestions for agricultural programs and activities included container gardening projects, animal health, farm risk management, record keeping and financial management, and technical assistance with USDA loan applications. Suggestions for educational activities for youth included summer camps and educational field trips, teen pregnancy and STI prevention, drug awareness, high school drop-out prevention, youth safety, and etiquette/manners. Family and Consumer Science programs identified were parental involvement in community schools, parent/child relationships, teen parenting, nutrition education, health and wellness, and financial management. Community and resource development activities suggested were workforce development, leadership development, citizenship, community involvement, and local government policy making.

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

1. Methods for collecting Stakeholder Input

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

Brief explanation.

Meetings with traditional stakeholder groups, with the general public, and specifically with nontraditional groups are an ongoing 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. Results from a formal statewide needs assessment conducted by MSU Extension in 2014 are still used to inform programming.

The information collected in 2016 directed ASUEP's administration on how to efficiently use funds to implement programs across counties. Also, the information improved existing research programs and guided the development of new research focuses. The administration used the information to determine staffing needs and to develop an action plan to address county issues.

3. A statement of how the input will be considered

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

Brief explanation.

At MSU, stakeholder input influences most aspects of this POW. Issues are identified through the processes discussed earlier. MSU Extension Program Development Teams consider the information collected from stakeholders; this information helps Extension Agents and Specialists determine their plans of action, including redirecting programs to meet clientele needs. Administration must then determine the resources to provide in order to achieve success, including setting new priorities or revising existing priorities, and hiring appropriate staff members as required to address the priorities.

At ASU, input from stakeholders was used to redirect budget allocations, identify emerging issues, redirect research and outreach efforts, select staff, develop action plans, and set priorities directly connected to the ASU mission. This mission is the foundation of our proposed change model which consists of planning, implementing, evaluating and maintaining accountability. Data collected from needs assessment activities, survey findings, research results and merit reviews support our decision-making process to establish clear budget priorities and action plans that satisfy our educational mission. When possible, budget changes are made to allocate the necessary resources and staff to address program priorities. It is also critical that we conduct an internal assessment and monitor our talent capacity to deliver on our priorities.

Brief Explanation of what you learned from your Stakeholders

At MSU, the various methods we used to learn from stakeholders about their needs resulted in the identification of five guiding imperatives that will drive MSU Extension's programs for the next few years:

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.

ASU values stakeholder input and is committed to implementing suggestions when feasible. Stakeholders appreciate timely responses to questions and concerns relative to all Extension program areas, but particularly those related to agriculture and youth development. It is also beneficial to provide stakeholders with methods for offering feedback directly to decision-makers that will improve current and future programs. ASU stakeholders have been positive voices for promoting informal, educational programs offered by Extension and formal, academic programs offered at the university. Therefore, it important to keep stakeholders informed about University programing and educational efforts.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
7056470	2036654	4915243	2544945

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	7056470	2036654	5165321	1882220
Actual Matching	7056470	2036654	5326277	1882220
Actual All Other	0	0	22307568	0
Total Actual Expended	14112940	4073308	32799166	3764440

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous				
Carryover	0	0	3970621	0

V. Planned Program Table of Content

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Animal Systems

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
301	Reproductive Performance of Animals	8%	4%	7%	0%
302	Nutrient Utilization in Animals	10%	0%	21%	20%
303	Genetic Improvement of Animals	4%	2%	1%	0%
304	Animal Genome	5%	0%	3%	0%
305	Animal Physiological Processes	6%	0%	12%	0%
306	Environmental Stress in Animals	5%	0%	5%	0%
307	Animal Management Systems	16%	19%	17%	40%
308	Improved Animal Products (Before Harvest)	4%	0%	2%	30%
311	Animal Diseases	10%	0%	16%	0%
313	Internal Parasites in Animals	5%	0%	0%	0%
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals	5%	0%	1%	0%
315	Animal Welfare/Well-Being and Protection	10%	0%	0%	10%
402	Engineering Systems and Equipment	5%	0%	0%	0%
403	Waste Disposal, Recycling, and Reuse	0%	0%	1%	0%
501	New and Improved Food Processing Technologies	0%	0%	4%	0%
503	Quality Maintenance in Storing and Marketing Food Products	0%	0%	5%	0%
601	Economics of Agricultural Production and Farm Management	2%	56%	0%	0%
603	Market Economics	0%	0%	3%	0%
604	Marketing and Distribution Practices	2%	19%	1%	0%
903	Communication, Education, and Information Delivery	3%	0%	1%	0%
	Total	100%	100%	100%	100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2016	Extension		Research	
	1862	1890	1862	1890
Plan	14.2	6.0	33.0	4.0
Actual Paid	24.5	5.3	30.9	1.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
645879	239092	911930	371406
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
645879	239092	2455412	371406
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	8556402	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

At MSU, this program utilized a multidisciplinary team to explore issues related to global food security and hunger in an effort to find solutions that impact the community through research and educational programs. Extension personnel communicated with animal producers, industry, and the general public through seminars, workshops, group meetings, and Extension bulletins and newsletters distributed in paper copy and electronically via the internet. Field demonstrations, farm tours, and one-to-one intervention were held to encourage acceptance of new practices and methodologies. Both basic and applied research were conducted, with results of research projects published in peer-reviewed scientific journals and presented at conferences.

In 2016, ASU used feedback from stakeholders and county-level staff to plan and implement educational programs related to animal systems. Specifically, programs and activities were conducted on alternative livestock production practices, producing safe food products, management practices and technologies, and marketing and distribution practices. Information and resources were distributed during workshops, field days, one-on-one technical assistance, farm visits, educational tours, conferences, certification sessions, farm demonstrations, fair exhibits, special events, and via written communications. Research projects focused on livestock reproduction, nutrition utilization, improved animal products, and animal welfare and well-being.

2. Brief description of the target audience

At MSU, the target audiences for this program included producers of beef, dairy, swine, equine, forage, catfish, crayfish, freshwater prawns, and commercial poultry; related industry personnel; and consumers.

At ASU, the target audiences for this program are limited-resource and socially disadvantaged farmers and residents within the State of Mississippi. Limited-resource residents are those earning 80% or less income

of Mississippi's Median Household income (0.80 of $39,031 = $31,224.80 per year). According to 2014 U.S. Census Bureau estimates, Mississippi had a median household income (2009-2013) of $39,031.

3. How was eXtension used?

At MSU, 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, 104 MSU employees are eXtension users as members of 39 COPs. 9 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. 1 MSU Extension employee is a leader of the Cooperatives COP. 3 MSU Extension employees are members of the Enhancing Rural Capacity COP. 4 MSU Extension personnel are members of the Feral Hogs COP with 2 being leaders. 3 MSU Extension personnel are members of the Freshwater Aquaculture COP. 1 MSU Extension employee is a member of the Internationalizing Extension 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. 5 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. 1 MSU Extension employee is a member of the Companion Animal COP. 2 MSU Extension personnel are members of the Unmanned Aircraft Systems (UAS) COP. 1 MSU Extension employee is a member of the Map@Syst COP.

At ASU, eXtension was used as a resource to identify information to enhance existing teaching apparatuses and methods.

V(E). Planned Program (Outputs)

1. Standard output measures

2016	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	102667	177256	77	3718

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

Patent Applications Submitted

Year:	2016
Actual:	6

Patents listed
Ezekwe, M. O., S. A. Besong. 2016. Feed composition comprising Recinodendro heudelotii and methods of processing and using thereof. Patent Pending, U. S. Department of Commerce No 15/236,424; August 13 2016.

Smith, J. A, A. Ravichandran, S. Laihing, Lu, Shien, F. Austin, and S. Pruett. 2015. Occidiofungion formulations and uses thereof. Patent Pending, USPTO 15/510,801; RPA PCT 09/14/2015, US RPA 03/21/2017.

Donaldson, J., and J Carroll. 2016. Utilization of Oleaginous Microorganisms as an Oral Supplement for Animals. Patent Pending, USPTO PCT/US16/28696; 4/21/16

Wise, D.,G. Chesser, J. Lowe T. Byers, and T. Greenway. 2016. System for delivery of live biologics. Patent Pending, USPTO PCT/US16/066728, 12/14/2016.

To, F. 2016. Microenvironment Incubation Method and Apparatus. Provisional patent application USPTO 62/345.971. 06/06/2016.

Lu, S.Smith, J. L, F. Austin, G. Gu. 2016. Novel Antifungal Oligopeptide Occidiofungin Produced by Burkholderia contaminans Strain MS14. Patent Pending, Continuation in Part USPTO 14/806121, 01/14/2016.

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2016	Extension	Research	Total
Actual	28	112	140

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

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

Year	Actual
2016	43528

Output #2

Output Measure

- Conduct educational demonstrations for limited-resource farm families on best management practices and best available technologies for livestock production. (ASU)

Year	Actual

2016	7

Output #3

Output Measure

- Conduct educational programs, activities, or events to improve herd genetics for limited-resource farm families. (ASU)

Year	Actual
2016	1

Output #4

Output Measure

- Conduct educational programs, activities, or events on pastured livestock production practices for limited-resource farm families. (ASU)

Year	Actual
2016	3

Output #5

Output Measure

- Conduct educational programs, activities, or events on reproduction performance, nutrient utilization in animals to decrease livestock production cost for limited-resource farm families. (ASU)

Year	Actual
2016	2

Output #6

Output Measure

- Conduct educational programs, activities, or events on alternative livestock production practices for limited-resource farm families. (ASU)

Year	Actual
2016	5

Output #7

Output Measure

- Develop research publications related to animal/meat production. (ASU)

Year	Actual
2016	2

Output #8

Output Measure

- Develop research-based, reader-friendly pamphlets, and fact sheets on livestock production for Extension educators and farm families. (ASU)

Year	Actual
2016	1

Output #9

Output Measure

- Develop M.S. thesis on animal production systems. (ASU)

Year	Actual
2016	1

Output #10

Output Measure

- Conduct educational programs, activities, or events on forage production practices for limited-resource farm families. (ASU)
  Not reporting on this Output for this Annual Report

Output #11

Output Measure

- Conduct, collaborate, and participate in educational programs, events, and activities on the utilization of direct marketing of Alternative Agricultural Enterprises. (ASU)

Year	Actual
2016	1

Output #12

Output Measure

- Develop research papers and publications on the findings of studies focusing on plant systems. (ASU)

Year	Actual
2016	16

Output #13

Output Measure

- Conduct educational field days for limited-resource farm families on sustainable crop production practices. (ASU)

Year	Actual

2016	1

Output #14

Output Measure

- Conduct educational programs on sustainable horticulture production practices to limited-resource farm families. (ASU)

Year	Actual
2016	19

Output #15

Output Measure

- Develop educational fact sheets on sustainable horticulture production practices to limited-resource farm families. (ASU)

Year	Actual
2016	7

Output #16

Output Measure

- Conduct research projects on sustainable crop production practices. (ASU)

Year	Actual
2016	4

Output #17

Output Measure

- Conduct educational programs and demonstrations on alternative crop production. (ASU)

Year	Actual
2016	12

Output #18

Output Measure

- Educate farmers on the importance of producing safe food through the use of Integrated Pest Management. (ASU)

Year	Actual
2016	356

Output #19

Output Measure

- Educate farmers on the importance of producing safe food through the use of Good Agricultural Practices (GAP). (ASU)

Year	Actual
2016	1

Output #20

Output Measure

- Demonstrate the use of Integrated Pest Management. (ASU)

Year	Actual
2016	55

Output #21

Output Measure

- Conduct educational programs and demonstrations on community and container gardening. (ASU)

Year	Actual
2016	14

Output #22

Output Measure

- Conduct, collaborate, and participate in educational programs, events, and activities on the utilization of direct marketing of Alternative Agricultural Enterprises at local Farmers Market. (ASU)

Year	Actual
2016	2

Output #23

Output Measure

- Conduct educational sessions/demonstrations on farm record keeping. (ASU)

Year	Actual
2016	6

Output #24

Output Measure

- Develop fact sheets on direct marketing of agriculture produce/product and value-added goods and services. (ASU)

Not reporting on this Output for this Annual Report

Output #25

Output Measure

- Conduct educational sessions on farm and financial management. (ASU)

Year	Actual
2016	17

Output #26

Output Measure

- Conduct educational sessions to provide technical assistance on farm loans, other government agencies' requirements, and application processes. (ASU)

Year	Actual
2016	5

Output #27

Output Measure

- Conduct educational tours on direct marketing of agricultural goods and services. (ASU)

Year	Actual
2016	2

Output #28

Output Measure

- Conduct educational programs on the utilization of direct marketing techniques of agricultural goods and services. (ASU)

Year	Actual
2016	2

Output #29

Output Measure

- Conduct educational programs and demonstrations on Direct Marketing of Alternative Agriculture. (ASU)

Year	Actual
2016	1

Output #30

Output Measure

- Conduct special events at the Farmers Market to bring awareness to youth about eating healthier. (ASU)

Year	Actual
2016	1

Output #31

Output Measure

- Conduct educational sessions on Farm Risk Management. (ASU)

Year	Actual
2016	7

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Clientele increase knowledge about recommended agricultural practices or behaviors. (MSU)
2	Clientele implement recommended agricultural practices or behaviors. (MSU)
3	Clientele report enhanced agricultural productivity and/or profitability. (MSU)
4	Number of program participants that improve livestock production efficiency through best management practices. (ASU)
5	Number of producers that improve pasture grass fed to livestock. (ASU)
6	Number of farmers that utilize artificial insemination and/or embryo transfer to decrease the need to purchase quality male animals and improve herd genetics. (ASU)
7	Number of farmers that adopt pasture or alternative livestock systems as an alternative enterprise. (ASU)
8	Number of new technologies, production practices, or improved production systems developed. (MSU)
9	Number of farmers and vendors that gain knowledge on Direct Marketing of Alternative Agriculture Enterprises. (ASU)
10	Number of new technologies, practices, production systems developed that enhance production, profitability or environmental stewardship. (MSU)
11	Number of policies, decision support tools, and strategies developed that enhance profitability, inform production decision, and mitigate/manage risk. (MSU)
12	Percentage of farmers and producers that gain knowledge on Farm and Financial Management. (ASU)
13	Number of farmers and cooperatives that gain knowledge on the importance of developing and utilizing a marketing plan. (ASU)
14	Percentage of farmers and producers that keeps accurate records. (ASU)
15	Percentage of farmers and producers that applies for farm loans. (ASU)
16	Percentage of farmers and producers that demonstrates minimizing risk on the farm. (ASU)
17	Number of farmers and vendors that report and demonstrate gained knowledge in Direct Marketing to Farmers Markets. (ASU)

Outcome #1

1. Outcome Measures

Clientele increase knowledge about recommended agricultural practices or behaviors. (MSU)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	8706

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Many people throughout Mississippi own and enjoy horses; however, continual knowledge concerning proper care and management of horses is warranted. Additionally, responsible horse ownership can be costly. The Horse Management 101 Series is an opportunity for horse owners and enthusiasts to gain knowledge in horse management in an environment that is conducive to both the beginner and advanced horsemen.

What has been done
MSU Extension created Horse Management 101 with the intent of bringing horse management information to people throughout the state. The objectives were to provide knowledgeable and experienced horse industry experts in various fields of equine production and management to teach participants horse industry topics such as the importance of dentistry, hoof care, nutrition, exercise; demonstrate riding techniques and training tips in a hands-on classroom; and expose horse enthusiasts to a vast array of MS horse trainers and professionals who would be future sources of contact and information.

Results
A total of 19 youth and adults, along with 2 county extension agents, participated in the 2016 Horse Management 101 series. Twelve industry professionals assisted in teaching the 8-week course. All participants (100%) stated the series improved their understanding of all topics such as proper ways to feed horses, pasture management, importance of developing sound contracts for business, selection of horses for performance, factors affecting reproduction, and proper hoof care and dentistry. Furthermore, all responses indicated that knowledge gained helped them adopt practices in management, including use of effective horsemanship, developing control

when riding, use of body condition scoring, and utilizing conformation as a predictor of athleticism.

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals
305	Animal Physiological Processes
306	Environmental Stress in Animals
307	Animal Management Systems
311	Animal Diseases
601	Economics of Agricultural Production and Farm Management
903	Communication, Education, and Information Delivery

Outcome #2

1. Outcome Measures

Clientele implement recommended agricultural practices or behaviors. (MSU)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	6965

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Most sheep and goat producers in Mississippi lack sufficient training in basic small ruminant management to remain successful. Expansion of the industry continues every year. New numbers reported this year show approximately 27,000 goats and 5,000 sheep in Mississippi. Estimated death loss for small ruminants has been computed at 18% annually. This is primarily due to internal parasites. Small ruminant numbers are expected to climb as producers receive higher market prices. Meeting the educational needs of Mississippi small ruminant producers continues to be a priority.

What has been done

MSU Extension provided regional training opportunities on small ruminant management in the state. Several hands-on clinics and traditional educational programs to address parasite and forage management were conducted in different areas of the state by trained Extension agents. The hands-on programs were used to teach the FAMACHA method of parasite management and incorporated forage management and strategic deworming as a part of the program. Traditional programs utilized PowerPoint presentations as well as round table discussions on management, budgeting, and marketing.

Results

Over 150 producers and Extension agents across Mississippi have benefited from these clinics. Educational turnover increases as these clinics teach others skills they have learned. FAMACHA alone has decreased losses for producers. Additionally, strategic deworming and management skills have improved overall survival of small ruminants. At an average value of $125 per head, Mississippi has around $4M total value of small ruminants. Reducing death loss to 10% statewide through this training will enable small ruminant producers to realize an additional $320,000 in income in a year.

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals
303	Genetic Improvement of Animals
305	Animal Physiological Processes
306	Environmental Stress in Animals
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)
311	Animal Diseases
313	Internal Parasites in Animals
601	Economics of Agricultural Production and Farm Management

Outcome #3

1. Outcome Measures

Clientele report enhanced agricultural productivity and/or profitability. (MSU)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	3482

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The 2011 National Beef Quality Audit showed that the industry lost an average of $43.66 for every fed calf marketed due to failure to meet quality standards. The MS Beef Quality Assurance (BQA) program addresses these challenges and documents producers' understanding of management practices. BQA provides certification for producers which can help to increase consumer confidence in beef.

What has been done
As a voluntary program, Mississippi BQA certification can only be obtained by a producer attending a face-to-face training session with a certified trainer. MSU Extension?s BQA program addresses quality challenges outlined in the National Beef Quality Audit, including inconsistent size of meat cuts, non-uniform cattle, injection-site blemishes, branding, excessive external fat, excessive seam fat, inadequate muscling, and dark cutters. Trainings were held at 5 stockyards and 10 multi-county meetings during 2016.

Results
567 producers were certified. At the stockyards, most of the employees who work with cattle on a daily basis were also certified. Increasing awareness and assuring a quality beef product will lead to increased consumer satisfaction. It is estimated that cattle harvested from producers who are BQA-certified show an average return of nearly $50/head from lack of loss due to carcass and hide damages. This program is crucial to strengthening Mississippi's role in producing reputable feeder calves and maintaining a competitive marketplace for MS beef cattle producers.

4. Associated Knowledge Areas

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

604 Marketing and Distribution Practices

Outcome #4

1. Outcome Measures

Number of program participants that improve livestock production efficiency through best management practices. (ASU)

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	7515

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Getting farmers to attend educational workshops during certain times of the year can be challenging. Most traditional workshops require too much time away from the farm, preventing farmers from completing essential tasks. Group activities such as field days and farm demonstrations are designed to provide essential knowledge within a short period of time.

What has been done
Each year, Alcorn State University hosts an Agricultural Field day designed to educate small farmers in Southwestern Mississippi on various topics related to best farm management practices. The activity features USDA/University/Industry speakers, hands-on demonstrations, and educational tours. Farmers attending the event gain useful and practical information that can be readily used on the farm. Over 220 youth and adults attended the 2016 field day activity.

Results
ASU's Agriculture Field Day often attracts repeat participants who report improved farm management practices after implementing skills and techniques learned during the event. Some participants have used gained knowledge to apply for USDA grants and loans to create and/or improve farm infrastructures. Young people attending the event have enrolled in academic programs at the University with more than 85% transitioning into agriculture careers after graduation.

4. Associated Knowledge Areas

KA Code	Knowledge Area

301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
303	Genetic Improvement of Animals
308	Improved Animal Products (Before Harvest)
311	Animal Diseases

Outcome #5

1. Outcome Measures

Number of producers that improve pasture grass fed to livestock. (ASU)

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Number of farmers that utilize artificial insemination and/or embryo transfer to decrease the need to purchase quality male animals and improve herd genetics. (ASU)

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	133

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Most small farmers in Mississippi cannot afford to maintain breeding bulls. Some breeding bulls do not always produce quality, healthy offspring. Artificial insemination (AI) can increase efficiency of semen usage, decrease the need for multiple mating bulls, allow fewer bulls to produce multiple offspring, and allow farmers to be selective in the genetic make-up of their animals. Further, costs associated with maintaining breeding animals are decreased with AI and on-farm safety is increased significantly since aggressive bulls are not kept onsite.

What has been done
ASUEP conducted hands-on trainings, demonstrations and one-on-one technical assistance to teach small farmers how to use AI techniques on their farms. An AI workshop was held at Alcorn

State University on September 29 - October 1, 2016 to teach farmers about the reproductive systems of male and female cattle. The workshop also shared advantages of using AI to improve herd genetics and to increase profitability. Farmers were actively engaged with practicing AI techniques using University-owned animals. An AI demonstration was conducted during ASUEP's 2015 Small Farmers' Conference. Six heifers were used to demonstrate AI methods and procedures. Further, agriculture educators offered technical assistance to farmers interested in using AI. Six heifers were chosen for breeding in one county. Multiple heifers were artificially inseminated in another county because the mating bull was not mature enough to breed.

Results

Nine (9) people were certified after completing the AI training at ASU. Pre and posttests assessed knowledge gained at the end of the course. Evaluation forms indicated that the consensus of the group felt the training was offered at a convenient time and was an appropriate length. The lectures and demonstrations were also beneficial. One participant thought that demonstrating semen collection would have been more beneficial. Sonograms of the six heifers inseminated during the Small Farmers' Conference confirmed four pregnancies of which three calves and one bull were born. On-farm AI in one county resulted in four calves being born with higher-than-usual birth weights. A cattle farmer in another county successfully bred two beef heifers using quality stock from a black angus bull.

4. Associated Knowledge Areas

KA Code	Knowledge Area
303	Genetic Improvement of Animals

Outcome #7

1. Outcome Measures

Number of farmers that adopt pasture or alternative livestock systems as an alternative enterprise. (ASU)

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	96

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Today's consumers are more health conscious than ever. The demand for swine raised without drugs and in animal-friendly environments is also rising. According to a research technical summary written by an Alcorn State University research scientist, "hogs raised outdoors are fresher and of better nutritional value than its counterpart from intensive operations" (REEIS, 2017). The primary goal of the research project, Performance of Sows and the Progeny Raised Under Pasture Based Production in Southwest Mississippi, is to analyze the cost effectiveness and pork quality of pasture-raised swine.

What has been done

Since 2014, research conducted at ASU on pasture-raised swine has sought to determine the effects of ingested purslane on swine health and performance and the quality of these animals' pork products. Purslane crops have been dried for feeding trials and experiments. Fencing for sows and progeny performance trials are being built. A fact sheet, "Raising Swine Outdoors Using Pastures as a Major Source of Nutrients, Different from Confinement or Indoor Systems" has been produced and distributed to local farmers. A patent is pending for feed comprised of Recinodendro Heudelotii and the methods for producing the feed.

Results

Initial pasture-based production of finishing hogs indicated improved pork quality traits in hogs consuming 25% of control diet with full access to pasture. Feedlots are currently being established where sows will graze freely. Fencing will be completed before Fall 2017.

4. Associated Knowledge Areas

KA Code	Knowledge Area
308	Improved Animal Products (Before Harvest)

Outcome #8

1. Outcome Measures

Number of new technologies, production practices, or improved production systems developed. (MSU)

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	14

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Reproductive insufficiencies, resulting in low fertility, are detrimental to all livestock operations because offspring represent the next generation of meat and milk producing animals. Defining fertility as pregnancy rates to a single insemination, researchers have consistently observed moderate to low fertility in beef cattle (45%) and dairy cattle (35%). One factor negatively influencing reproductive performance in cattle is excessive metabolism of hormones thereby preventing the successful establishment of pregnancy.

What has been done
Researchers in the Animal and Dairy Sciences Department are identifying novel pathways of steroid metabolism associated with fertility in cattle. Reproductive tissues were collected 16 days post-artificial insemination, which is an important time point representing maternal recognition of pregnancy. During the sampling period cattle were classified as pregnant or non-pregnant. Enzymes involved in steroid metabolism were examined in reproductive tissues. We hypothesized that pregnant cattle would have decreased steroid metabolizing enzymes compared to cattle failing to conceive.

Results
The current research impacts the reproductive scientific community by expanding knowledge on the relationship of steroid metabolic pathways with the successful establishment of pregnancy. Several studies have supplemented hormones post-artificial insemination to improve pregnancy rates in cattle. These supplementation strategies only mask the fertility issues in livestock without addressing the core problems. Our current model demonstrates excessive steroid metabolism in cattle failing to conceive compared to pregnant cattle. This is an innovative pathway and these results will allow members of the scientific community to investigate novel therapeutic strategies to mitigate excessive embryonic loss during early pregnancy establishment in cattle.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
303	Genetic Improvement of Animals
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)
311	Animal Diseases
402	Engineering Systems and Equipment
501	New and Improved Food Processing Technologies
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

Outcome #9

1. Outcome Measures

Number of farmers and vendors that gain knowledge on Direct Marketing of Alternative Agriculture Enterprises. (ASU)

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	613

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Mississippi is a state rich in agriculture. In 2015, the poultry industry generated $3,219 million dollars in sales revenue, making it the number one agricultural industry in the state that year. Mississippi is home to the largest egg processor in the world, Cal-Maine Foods, Inc. It is evident that Mississippi is the ideal place to learn about the latest trends and processes within the U.S. poultry industry.

What has been done
The ASU Agriculture Educator working in Hinds County, MS hosted a two-day tour for visitors from Thailand who were interested in poultry and livestock production in Mississippi. Tourists visited local farms, food processing plants, and farmers' markets within the southwestern portion of the State. Specific sites visited were Cal-Maine Foods, Inc., Chicken Eggs Growers in in Edwards, MS; CPT Dan Smith Fresh Eggs and Pasture Poultry Trucks in Edwards, MS; and Old Fannin Road Farmers' Market in Brandon, MS. Participants gathered useful information and resources and received one-on-one consultations from site hosts. Fifteen (15) people toured Mississippi poultry producing enterprises.

Results
Tourists from Thailand increased knowledge regarding processing procedures for eggs, pasture poultry, and direct marketing of alternative agriculture enterprises. In addition to increased knowledge, tourists also developed new relationships with Alcorn State University's Extension Program and local poultry farmers and business owners. Participants confirmed that knowledge gained during the tour would be used to improve agricultural practices in their native country. This tour was the first of its kind led by a county-level ASU Extension Educator.

4. Associated Knowledge Areas

KA Code	Knowledge Area
604	Marketing and Distribution Practices

Outcome #10

1. Outcome Measures

Number of new technologies, practices, production systems developed that enhance production, profitability or environmental stewardship. (MSU)

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	9

3c. Qualitative Outcome or Impact Statement

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

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

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

4. Associated Knowledge Areas

KA Code	Knowledge Area
302	Nutrient Utilization in Animals
305	Animal Physiological Processes

306	Environmental Stress in Animals
307	Animal Management Systems
311	Animal Diseases
315	Animal Welfare/Well-Being and Protection
402	Engineering Systems and Equipment

Outcome #11

1. Outcome Measures

Number of policies, decision support tools, and strategies developed that enhance profitability, inform production decision, and mitigate/manage risk. (MSU)

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	7

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Information has been severely lacking on how feeder cattle attributes affect calf sale prices at Mississippi auction markets. Without this information, cattle producers are basing production and marketing decisions on largely anecdotal information. This research effort is the first to provide science-based results from data collected at Mississippi auction markets, the primary cattle market outlets utilized in the state. This information is critical in helping cattle producers to make profitable production and marketing decisions. It is immediately applicable on all of Mississippi?s 15,940 beef cattle operations.

What has been done
The Mississippi Agricultural and Forestry Experiment Station conducted a comprehensive study of the influence of characteristics of feeder calves sold at Mississippi auction markets on calf sale price. Price premiums and discounts for important cattle traits and their different levels were determined. Results reveal how changing a specific cattle characteristic influences calf sale price. Traits covered by this study span key production areas including genetic, nutritional, and health management. Results can be incorporated immediately into cattle production and marketing decisions throughout Mississippi.

Results
Study results provide the first quantifiable Mississippi-specific information for cattle producers to know how a change that alters a specific cattle trait affects calf sale price. When combined with

cost of production information, producers can now reliably assess whether or not and to what extent prospective production or marketing changes will be profitable. This information is critical for making customized decisions on individual operations and has the potential to improve profitability on all Mississippi cattle operations. If even 10% of cattle producers use this information to improve value of production by 15%, then the statewide impact will be a 1.5% increase in value of production. This value of production improvement would have been equal to $6.72 million in 2015.

4. Associated Knowledge Areas

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

Outcome #12

1. Outcome Measures

Percentage of farmers and producers that gain knowledge on Farm and Financial Management. (ASU)

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	58

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Mississippi farmers need assistance with farm and financial management to maintain effective operations. These farmers often lack relevant knowledge to use financial management tools to prepare financial reports. Sound financial management is essential for success within small farm enterprises.

What has been done
Alcorn State University's Small Farm Outreach Training and Technical Assistance Project offered eleven (11) farm management training sessions to provide 432 participants with technical knowledge, hands-on experiences, and one-on-one technical assistance relevant to farm and financial management. Training sessions were conducted in collaborations with federal and state agencies

Results

Farmers are more aware of how the household budget directly affects the farm operational budget. Hands-on activities helped farmers to adapt to new technologies, keeping them current with the latest innovations.

4. Associated Knowledge Areas

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

Outcome #13

1. Outcome Measures

Number of farmers and cooperatives that gain knowledge on the importance of developing and utilizing a marketing plan. (ASU)

Not Reporting on this Outcome Measure

Outcome #14

1. Outcome Measures

Percentage of farmers and producers that keeps accurate records. (ASU)

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	28

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Small, limited resource farmers are at a great disadvantage because many of them do not keep accurate farm records. Accurate record keeping increases the probability of being approved for federal loans, advance agricultural production, and increases profitability.

What has been done
Alcorn State University's Extension Program collaborated with USDA, state agriculture agencies, and community-based organizations to provide training and technical assistance on accurate record keeping. The Mississippi Farm Record Book was the primary resource used to teach record-keeping skills. Sessions included lectures by industry professionals and hands-on

exercises. Three hundred sixty-one (361) participants attended a total of five (5) record keeping trainings.

Results
Training participants used knowledge gained to fulfill requirements to obtain USDA loans. Farmers were better equipped to track financial transactions occurring on the farm. Additionally, participants learned to keep farm and personal financial records separately.

4. Associated Knowledge Areas

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

Outcome #15

1. Outcome Measures

Percentage of farmers and producers that applies for farm loans. (ASU)

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	7

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Mississippi small and limited-resource farmers face economic hardships because of inadequate funding. Most small farmers are unfamiliar with USDA's loan processes. This limited knowledge often prevents farmers from securing necessary funding to support day-to-day operations.

What has been done
Alcorn State University Extension Program's Small Farm Outreach Training and Technical Assistance Project conducted FSA Borrower's training to help participants meet loan requirements. Subject matter included Financial Management, Crop Production, and Livestock Production. Seventy-seven (77) farmers completed these training sessions in 2016.

Results
Potential borrowers gained knowledge, understanding, and skills to obtain loans offered by USDA's Farm Service Agency (FSA). Participants were also eligible to apply for an additional FSA loan after completing the training. In 2016, 100% of trainees applied for and were approved

for loans in excess of $8,115,000 from FSA.

4. Associated Knowledge Areas

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

Outcome #16

1. Outcome Measures

Percentage of farmers and producers that demonstrates minimizing risk on the farm. (ASU)

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	22

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Dairy producers are suffering great financial losses in today's economy. Although earnings have not increased, input costs within the industry have steadily risen. In order to maximize profits, dairy farmers should be proactive in minimizing risks on the farm. Inaccurate milk meters were identified as barriers of profit maximization. These inaccuracies were causing producers to lose money on their dairy products.

What has been done
The ASU Agriculture Educator in Pike County, MS used PCDart Dairy Management software to help dairy producers minimize on-farm risks. Milk meters were collected and brought to a central location to be tested and calibrated if necessary. PCDart representatives performed calibrations at no cost to farmers. Ten (10) dairy farmers in Pike County, MS took advantage of this free service.

Results
Producers with newly calibrated milk meters obtained more accurate milk weights. Cows that were not producing acceptable milk levels were culled. Culling these cows decreased production costs, which indirectly increased profits during a time of extremely low milk prices.

4. Associated Knowledge Areas

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

Outcome #17

1. **Outcome Measures**

Number of farmers and vendors that report and demonstrate gained knowledge in Direct Marketing to Farmers Markets. (ASU)

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

ASU was without an animal science specialist for more than half of the 2016 reporting year. The animal science specialist is responsible for providing leadership and programmatic guidance to county Educators who are responsible for programs and activities in the animal systems planned program area. An animal science specialist was hired in June 2016 to assume the responsibilities described above.

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 2016, 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. 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.

MSU also has a Standardized Extension Evaluation Survey 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. The number of agents and specialists utilizing the survey has been increasing.

Alcorn State University Extension educators and specialists used pre and posttests, written evaluation instruments, and observations to assess the effectiveness of educational programs and activities. These tools were either developed by educators/specialists individually or by program planning groups. Evaluation results are attached to required monthly reports and are used to improve future activities or to decide whether activities should be continuously implemented.

Key Items of Evaluation

ASU Educators and specialists measured changes in knowledge and actions during FY 2015-2016.

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Plant Systems

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	14%	0%	0%	13%
111	Conservation and Efficient Use of Water	10%	0%	0%	0%
201	Plant Genome, Genetics, and Genetic Mechanisms	0%	0%	7%	8%
202	Plant Genetic Resources	6%	0%	4%	0%
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	12%	0%	3%	0%
204	Plant Product Quality and Utility (Preharvest)	2%	0%	6%	2%
205	Plant Management Systems	20%	55%	16%	15%
206	Basic Plant Biology	0%	0%	3%	0%
211	Insects, Mites, and Other Arthropods Affecting Plants	8%	0%	10%	8%
212	Diseases and Nematodes Affecting Plants	7%	0%	17%	13%
213	Weeds Affecting Plants	12%	0%	11%	0%
214	Vertebrates, Mollusks, and Other Pests Affecting Plants	0%	0%	1%	0%
216	Integrated Pest Management Systems	3%	4%	6%	5%
402	Engineering Systems and Equipment	0%	0%	1%	0%
502	New and Improved Food Products	0%	0%	7%	3%
511	New and Improved Non-Food Products and Processes	0%	0%	2%	13%
601	Economics of Agricultural Production and Farm Management	6%	37%	6%	0%
604	Marketing and Distribution Practices	0%	2%	0%	8%
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	0%	2%	0%	12%
	Total	100%	100%	100%	100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2016	Extension		Research	
	1862	1890	1862	1890
Plan	38.5	15.0	47.0	7.0
Actual Paid	51.4	15.7	50.0	6.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
1352870	699978	2910456	1062700
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
1352870	699978	1905145	1062700
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	7474577	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

At MSU, activities included:

- Short courses, workshops, or training seminars;
- Field consultations;
- Demonstration and verification programs;
- Newsletters and publications;
- Web-based information, social media, and e-mail;
- Distance learning programs;
- Field manuals or guides;
- Farm management software/components;
- Direct technical assistance/recommendations/interpretation/analysis;
- Information and fact sheets; and
- Curriculum development.

At ASU, educational programs covered the development of enterprise budgets, effective strategy models and how to measure results. Extension programs focused on presenting relevant content materials to address identified knowledge and skills needed by small farmers. Socially disadvantaged farmers in Mississippi received training via small group meetings, one-on-one technical assistance, farm visits, field days, tours, certification sessions, and demonstrations. Advisory council meetings and program evaluation instruments and processes were used to gather input and to identify relevant farm management and marketing educational topics. ASU conducted an annual agriculture field day, wrote publications, conducted presentations and workshops for farmers, created marketing plan samples, conducted agricultural tours of farms, offered marketing tips and demonstrated farming techniques at Alcorn Extension's Farmers Market.

2. Brief description of the target audience

At MSU, target audiences include:

- 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,
- Agricultural consumers,
- Extension Service personnel, and
- Research faculty and personnel.

At ASU, this program was designed specifically for limited-resource and socially disadvantaged farmers and residents in Mississippi. Limited-resource residents are those earning 80% or less income of Mississippi's Median Household income (0.80 of $39,031 = $31,224.80 per year). According to 2014 U.S. Census Bureau estimates, Mississippi had a median household income (2009-2013) of $39,031.

3. How was eXtension used?

At MSU, 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, 104 MSU employees are eXtension users as members of 39 COPs. 9 MSU Extension employees serve as a leader for a COP, leading 7 COPs. 2 MSU Extension personnel are members of the All About Blueberries COP. 1 MSU Extension employee is a member of the Climate, Forests and Woodlands COP. 5 MSU Extension personnel are members of the Consumer Horticulture COP. 1 MSU Extension employee is a leader of the Cooperatives 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. 1 MSU Extension employee is a member of the Internationalizing Extension COP. 5 MSU Extension personnel are members of the Community, Local, and Regional Food Systems COP. 2 MSU Extension employees are members of the Garden Professors CoP COP. 1 MSU Extension employee is a member of the Youth Agriculture COP. 1 MSU Extension employee is a member of the eOrganic COP. 2 MSU Extension personnel are members of the Unmanned Aircraft Systems (UAS) COP. 1 MSU Extension employee is a member of the Map@Syst COP.

In many instances, ASU used eXtension to gather information that was not readily available to educators and specialists to answer technical questions related to plants and their systems. Farmers' with Internet access were also advised to visit eXtension's website for needed resources.

V(E). Planned Program (Outputs)

1. Standard output measures

2016	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	384815	628365	4530	15461

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

Patent Applications Submitted

Year:	2016
Actual:	4

Patents listed

Baldwin, B. and B. Rushing. 2016. Generation of Imazapic Resistance Switchgrass Population (Expt. Desgn. LL PANVI Alamo IR) (Tusca). Provisional Patent. USPTO 62/354,396. 06/24/2017.

Lu, S., J. Smith, F. Austin, and G. Gu. 2016. Use of Burkholderia contamins MS14 and Occidiofungin as a fungicide against plant pathogens. Provisional Patent. USPTO 62/329,282 4/29/2016.

Walker, T. 2015. Rice, CL163. PVPO Certificate No.201400523.

Yu, F., M. Gu, P. Steele, Y. Zhao. 2016. Using biochar as a container substrate for plant growth. USPTO Patent Issued US 9,359,267. 06/07/2016..

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2016	Extension	Research	Total
Actual	63	145	208

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

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

Year	Actual
2016	158924

Output #2

Output Measure

- Develop research papers and publications on the findings of studies focusing on plant systems. (ASU)

Year	Actual
2016	6

Output #3

Output Measure

- Conduct educational field days for limited-resource farm families on sustainable crop production practices. (ASU)

Year	Actual
2016	6

Output #4

Output Measure

- Conduct educational programs on sustainable horticulture production practices to limited-resource farm families. (ASU)

Year	Actual
2016	19

Output #5

Output Measure

- Develop educational fact sheets on sustainable horticulture production practices to limited-resource farm families. (ASU)

Year	Actual
2016	7

Output #6

Output Measure

- Conduct research projects on sustainable crop production practices. (ASU)

Year	Actual
2016	4

Output #7

Output Measure

- Conduct educational programs and demonstrations on alternative crop production. (ASU)

Year	Actual
2016	12

Output #8

Output Measure

- Educate farmers on the importance of producing safe food through the use of Integrated Pest Management. (ASU)

Year	Actual
2016	356

Output #9

Output Measure

- Educate farmers on the importance of producing safe food through the use of Good Agricultural Practices (GAP). (ASU)

Year	Actual
2016	19

Output #10

Output Measure

- Demonstrate the use of Integrated Pest Management. (ASU)

Year	Actual
2016	6

Output #11

Output Measure

- Conduct educational programs and demonstrations on community and container gardening. (ASU)

Year	Actual
2016	14

Output #12

Output Measure

- Conduct, collaborate and participate in educational programs, events, and activities on the utilization of direct marketing of Alternative Agricultural Enterprises at local Farmers Market (ASU)

Year	Actual
2016	6

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Clientele increase knowledge about recommended agricultural practices or behaviors. (MSU)
2	Clientele implement recommended agricultural practices or behaviors. (MSU)
3	Clientele report enhanced agricultural productivity and/or profitability. (MSU)
4	Number of program participants that adopt integrated nutrient management to increase crop production. (ASU)
5	Number of program participants that utilize integrated pest management to improve the quality of vegetable production. (ASU)
6	Number of producers that adopt new crop systems to improve crop yield and quality. (ASU)
7	Number of participants that use recommended cultivar and other production practices to enhance productivity and profitability. (ASU)
8	Number of intended target audience that increase awareness and knowledge and awareness of growing farm products with free or acceptable levels of chemical residue, and safe processing and storage of food products. (ASU)
9	Number of communities that establish community and container gardens to increase the availability of fresh and locally grown produce. (ASU)
10	Number of farmers and vendors that gain knowledge on Direct Marketing of Alternative Agriculture Enterprises. (ASU)
11	Number of participants that improve product handling and sanitation. (ASU)
12	Number of new technologies, crop production practices, or improved crop production systems developed. (MSU)
13	Number of new technologies, practices, production systems developed that enhance production, profitability or environmental stewardship. (MSU)
14	Percentage of farmers and producers that gain knowledge on Farm and Financial Management. (ASU)
15	Number of farmers and cooperatives that gain knowledge on the importance of developing and utilizing a marketing plan. (ASU)
16	Percentage of farmers and producers that keeps accurate records. (ASU)
17	Percentage of farmers and producers that reports minimizing land and farm loss. (ASU)

18	Percentage of farmers and producers that applies for farm loans. (ASU)
19	Percentage of farmers and producers that demonstrates minimizing risk on the farm. (ASU)
20	Number of farmers and vendors that report and demonstrate gained knowledge in Direct Marketing to Farmers Markets. (ASU)
21	Number of policies, decision support tools, and strategies developed that enhance profitability, inform production decision, and mitigate/manage risk. (MSU)

Outcome #1

1. Outcome Measures

Clientele increase knowledge about recommended agricultural practices or behaviors. (MSU)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	31785

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Peanut is an emerging crop in Mississippi and is grown the entire length and width of the state. Growers value peanuts for high profits relative to other commodities, growth benefits received by rotation crops, and its non-host status for common plant-parasitic nematodes found in Mississippi. Through 2016 the biggest peanut pest was stem rot (aka southern blight) caused by the fungus Sclerotium rolfsii. Stem rot resting structures lie dormant in the soil for years, germinate and kill the plant nearest it, then run the row killing many row feet. Yield losses and reduced peanut pod quality can be high.

What has been done
MSU conducted trials examining the timing of fungicide applications to best manage stem rot in grower fields the length and width of the state. The fungicides most consistent in disease management throughout the state were identified. The earliest consistent date for fungicide application reducing harvest yield losses was identified (about 40 days after 100% emergence). Application timing data indicates the disease system is "front" loaded in time. Earlier applications

reduce losses more than late season ones. Perhaps less expensive fungicidal materials or biological agents can be used later in the season.

Results

Yields for different fungicide timing applications, standardized for moisture, ranged from 7264 lb/A to 6074 lb/A, translating to a ca. $253/A difference. The points of greatest yield differences among fungicide application timings were identified. This gives growers a better understanding of when fungicide applications are important and less important. It provides growers with a group of effective fungicides at a range of prices. This might change the number of applications for the disease and type of fungicides applied. Changes will probably relate to peanut prices. It also provides a seed for future work as to when application of a biological control agent might prove beneficial, reducing reliance on traditional chemistries and the environmental impact of traditional chemistries.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
201	Plant Genome, Genetics, and Genetic Mechanisms
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
402	Engineering Systems and Equipment
502	New and Improved Food Products
601	Economics of Agricultural Production and Farm Management

Outcome #2

1. Outcome Measures

Clientele implement recommended agricultural practices or behaviors. (MSU)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	25428

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The Mississippi River Valley Alluvial Aquifer is declining at 300,000 acre-feet a year due primarily to agricultural withdrawals. Producers in the Mississippi Delta are not utilizing irrigation water management practices that could reduce withdrawals from the alluvial aquifer.

What has been done
MSU developed the Row-Crop Irrigation Science Extension and Research Program (RISER) to address declining aquifer levels in the MS Delta. The primary objective of RISER is to evaluate novel irrigation water management (IWM) practices at the micro-plot scale and then demonstrate at the field-scale technologies that improve crop water use efficiency and on-farm profitability.

Results
MSU's on-farm validation trials indicate that if producers adopt RISER approved IWM strategies across all furrow irrigated acres then withdrawals from the alluvial aquifer will be reduced by 433,333 acre-feet/yr. Moreover, the economic impact for reduced fuel consumption is estimated at $25,400,000/yr. As of 2016, producer survey results indicate that Mississippi irrigators are adopting IWM tools at an unprecedented rate. Specifically, adoption of computerized hole selection, sensor based irrigation scheduling, and surge irrigation have increased 1375%, 1125%, and 1900% since 2011.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
402	Engineering Systems and Equipment
601	Economics of Agricultural Production and Farm Management

Outcome #3

1. Outcome Measures

Clientele report enhanced agricultural productivity and/or profitability. (MSU)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	12714

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Tarnished plant bugs are the most economically damaging pest of cotton. Each year in the Delta region of MS growers make and average of 5-9 insecticides application for this pest alone.

What has been done
Over the last decade the MSU Extension team has worked to evaluate a fully Integrated Pest Management approach to manage this pest. This approach includes planting early, limiting nitrogen, incorporating hairy leaf varieties, a window approach to modes of action for insecticides, and shortening treatment intervals during high pressure situations.

Results
In 2016, MS farmers planted 425,000 acres of cotton in MS. 325,000 of those acres were located in the Delta region. Based on MSU Extension recommendations, nearly 75% of growers have adopted 2 or more of the strategies that fit their particular farm. Data suggest this approach saves approximately three insecticide application and increases yield by ~ 200 lbs/acre. This would have a direct impact on 243,000 acres. (325,00 x 75% = 243,000). This would equal direct savings of $34,125,000 in yield (243,000 x 200lb x $0.74/lb = $34,125,000). Additionally, there would be $8,748,000 savings in insecticide cost. (243,000 acres x 3 sprays x $12/spray = $8,748,000). Based on direct actions of MSU Extension, estimated savings to cotton farmers in the MS Delta region would be $42,873,000.00

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
201	Plant Genome, Genetics, and Genetic Mechanisms
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
402	Engineering Systems and Equipment
601	Economics of Agricultural Production and Farm Management

Outcome #4

1. Outcome Measures

Number of program participants that adopt integrated nutrient management to increase crop production. (ASU)

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	1995

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Small and limited resource farmers cannot afford to gamble with the odds of whether or not their crops will mature to harvest. Soil sampling is the most effective and inexpensive method to test nutrient levels in soils and for providing data for proper fertilizer application. Soil samples must be performed correctly to produce accurate results. Therefore, farmers must learn and understand the concepts of collecting quality samples.

What has been done
Alcorn State University agriculture educators and agronomy specialist conducted a series of educational activities to teach farmers the basics of collecting quality soil samples. Activities were conducted in several counties within the state including Pike, Hinds, and Adams. In addition to learning how to take samples, participants also learned how to interpret the soil sample report.

Results
One hundred percent (100%) of program participants reported collecting and submitting soil samples for analysis. Using recommendations provided on the soil sample report, 75% of program participants reported increased crop yields.

4. Associated Knowledge Areas

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

Outcome #5

1. Outcome Measures

Number of program participants that utilize integrated pest management to improve the quality of vegetable production. (ASU)

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	111

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The sugarcane aphid has been reported as a key pest on sorghum and sugarcane and has caused problems in Mississippi and worldwide. The corn earworm, also known as the tomato fruit worm, sorghum head worm and the cotton bollworm, has a wide host range with significant adverse economic impact. Controlling these insects can decrease damage to crops which will ultimately increase profits for sugarcane producers.

What has been done
Two defensive compounds, decylamine and dodecylamine, were isolated from Monomorium minimum and identified by Gas Chromatography - Mass Spectrometry (GC-MS). The insecticidal efficacy of these compounds was determined against sugarcane aphid (Melanaphis sacchari) adults and corn earworm (Helicoverpa zea) larvae in laboratory bioassays. The host plants included cotton, corn, soybeans, sorghum, tomatoes and others. Producers attending agricultural activities at Alcorn State University are abreast of this current and ongoing research.

Results
The high and rapid mortality of H. zea and M. sacchari indicates that these alkaloids may provide an environmentally safe method to control insect pests. Field trials will be conducted for any phytotoxic effects and to determine any toxicity of these compounds to beneficial insects. The use of these compounds as biopesticides will enhance biological control of insect pests, thus increasing organic acreage of different crops in Mississippi.

4. Associated Knowledge Areas

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

205 Plant Management Systems

211 Insects, Mites, and Other Arthropods Affecting Plants

Outcome #6

1. Outcome Measures

Number of producers that adopt new crop systems to improve crop yield and quality. (ASU)

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	1254

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Major agricultural issues are the obligation to produce safe and nutritious foods, increase profits for farming enterprises, and to sustain rural, agricultural communities using environmentally safe agricultural practices. Many producers have abandoned farming because of low profit potential. Some farmers have even moved to urban areas for gainful employment. Multiple cropping of alternative crops is potentially profitable and is beneficial for the environment and soil quality. However, the income generating potential in multiple cropping systems needs improving to attract local farmers.

What has been done
Research scientists at Alcorn State University initiated an ongoing study in 2015 to conduct field experiments in Mississippi and North Carolina to determine the influence of row-intercropping on the productivity of select mushroom species and their vegetable and herb companion crops. Studies were conducted on fields in Jefferson and Claiborne counties in Mississippi. A second activity studied the effects of mono-cropping and intercropping on biodiversity in soil physical and chemical properties and contaminants in runoffs from field plots. Soil samples collected before and after the harvest were submitted for analysis.

Results
Since this research study is only in its second year of implementation, it is too soon to conclude economic impact on profitability. However, researchers are confident that producers who follow outlined recommendations will see an increase in their financial bottom line.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems

Outcome #7

1. Outcome Measures

Number of participants that use recommended cultivar and other production practices to enhance productivity and profitability. (ASU)

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	617

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
High incidences of cancer is apparent among African-Americans living in Mississippi. High dosages of vitamin C has been used to treat cancer patients for the past four decades. Research has proven that the nutrient actually slows the growth of prostate, pancreatic, liver, and colon cancers. Mississippi's farmers can help fight the war against cancer by producing blueberries that are high in Vitamin C.

What has been done
An Alcorn State University, research scientist conducted experiments to increase vitamin C content in organic blueberries. This research project has been ongoing since an earlier collaborative study revealed that blueberries could be successfully grown on the heavy soil, Memphis Silt Loam. This current research used worm castings to significantly increase vitamin C in Rabbiiteye Bluberries. Local small farmers received blueberry plants at no cost as incentives to produce the valuable fruit. Blueberry production is relatively new among Mississippi's African-American farmers and can result in higher profits than traditionally grown produce.

Results
Blueberries produced on worm castings at ASU have 83% higher vitamin C content when compared to blueberries sold on the open market. The success of the research was recognized by the International Society for Horticulture Sciences (ISHS). An article presenting the research

findings has been accepted for publication by ISHS.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems

Outcome #8

1. Outcome Measures

Number of intended target audience that increase awareness and knowledge and awareness of growing farm products with free or acceptable levels of chemical residue, and safe processing and storage of food products. (ASU)

Not Reporting on this Outcome Measure

Outcome #9

1. Outcome Measures

Number of communities that establish community and container gardens to increase the availability of fresh and locally grown produce. (ASU)

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	1072

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Jackson Public Schools in Jackson, MS were concerned about the high obesity rates among students. Officials implemented a gardening initiative to allow students to learn basic agricultural concepts, become physically active, and to increase consumption of fresh fruits and vegetables.

What has been done
The ASU Agriculture Educator in Hinds County worked with local schools to establish on-campus sites for school/community gardens. One (1) elementary, five (5) middle, and three (3) high schools initiated gardening projects. Wingfield High School's project is reportedly more successful

than the others. Teachers have worked diligently with Extension staffs at Alcorn and Mississippi State Universities to create a well-rounded agricultural experience. Students participating in the program are traditionally at-risk with the likelihood of current or future truancy and/or incarceration. Working in the garden has given youth an alternative pastime, keeping them away from crime-related activities. Since 2015, Wingfield High School's Agriculture Academy has served over 300 students.

Results
Wingfield High School's Agriculture Academy has been a pillar educational program in Jackson Mississippi. One teacher working with the project affirmed that agriculture students outperform other students academically. At least 10 students have graduated and enrolled in agriculture programs at Alcorn State University. The project has been featured many times during professional meetings in the Jackson area. The project at Wingfield High has led to the Jackson Gardening initiative which has created at least one community garden in each of Jackson's seven (7) wards.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
213	Weeds Affecting Plants

Outcome #10

1. Outcome Measures

Number of farmers and vendors that gain knowledge on Direct Marketing of Alternative Agriculture Enterprises. (ASU)

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	500

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Farmers and vendors selling at local Farmers' markets were not consistently showcasing products to attract buyers. Product presentation and packaging are important marketing tools

because these factors often communicate the vendor's values and dedication to customer satisfaction. To increase sales volume, merchants needed training on product presentation and packaging.

What has been done

The Marketing Coordinator for Alcorn State University's Extension Program recognized the need to train vendors to effectively present their products. More than a dozen sessions were conducted to teach merchants "The Do's and Don'ts of Visual Marketing." Training sessions were held at the Marks Processing Plant in Marks, MS, and at the Natchez Famers' Market. An exhibit with the same title was displayed at the Mississippi State Fair targeting existing and potential vendors.

Results

Approximately 85% of vendors selling at markets coordinated by ASUEP have visually improved the presentation of their products. An observational evaluation revealed that the majority of farmers who made improvements actually changed signage using vivid colors with more legible writing. Vendors selling value-added products changed label designs and created more rustic, natural-looking displays. Overall, more than 60% of vendors attested that sales have slightly increased since making changes to product displays.

4. Associated Knowledge Areas

KA Code	Knowledge Area
604	Marketing and Distribution Practices

Outcome #11

1. Outcome Measures

Number of participants that improve product handling and sanitation. (ASU)

Not Reporting on this Outcome Measure

Outcome #12

1. Outcome Measures

Number of new technologies, crop production practices, or improved crop production systems developed. (MSU)

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Cotton is one of the most important cash crops around the world, providing the largest renewable natural fiber for the textile industry. The improvement of cotton fiber quality using genetics tools has long been a key interest for cotton breeders. Transgenic cotton plants carrying herbicide-resistance and insecticide genes have resulted in an increase in lint yields. However, the efforts to improve the fiber quality has often led to reduced fiber yields or the size or number of seeds.

What has been done
By silencing a single phytochrome A1 gene (PHYA1) using the RNA interference technology, cotton geneticists had developed PHYA1 RNAi cotton plants with improved fiber quality (longer, stronger and finer fiber) when compared to non-transformed cotton plants. The RNAi plants also exhibited earlier flowering, boll maturing, and produced more flowers and bolls. The fiber RNAs from the RNAi cotton plants have been subjected to next generation sequencing, and messenger RNAs and microRNAs differentially expressed in fiber in PHYA1 lines have been identified and analyzed.

Results
The identification and analysis of differentially expressed mRNAs and miRNAs in PHYA1 RNAi cotton plants will be useful for understanding molecular mechanisms of fiber development and developing early-maturing and productive commercial cotton cultivars with superior fiber quality by using transgenic technology.

4. Associated Knowledge Areas

KA Code	Knowledge Area
202	Plant Genetic Resources
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Diseases and Nematodes Affecting Plants
213	Weeds Affecting Plants

Outcome #13

1. Outcome Measures

Number of new technologies, practices, production systems developed that enhance production, profitability or environmental stewardship. (MSU)

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	46

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Row crop cultivars with transgenic resistances to the synthetic auxin herbicides; 2,4-D and dicamba have been developed to arm producers with alternative control options for resistant weeds. However, the use of auxin herbicides may also increase concerns for issues such as herbicide drift, volatilization, and tank contamination. To combat these concerns, new formulations have been developed that are less prone to volatilization and drift. Current-testing methods can differentiate between formulations; therefore, it is imperative that we develop new analytical methods to ensure an effective stewardship program.

What has been done
We have developed a Fourier transform infrared spectroscopy (FT-IR) method for formulation detection, and preliminary data looks promising. Individual dicamba formulations that have been applied to soybeans and cotton can be identified 28 day after applications. This spectroscopy method is based on the vibrational excitation of molecular bonds by absorption of infrared light energy. The sum vibrational spectra for a compounds structure can be thought of as a spectral fingerprint indicative of its functional groups. As such, these spectra can be used to identify the amine, ester, or choline formulations.

Results
The expected outcome of this study will be the development FT-IR methodologies for identifying low volatility 2,4 - and dicamba formulations, as well as design and participate in a stewardship program so farmers can; provide effective weed management, improve farm productivity and maintain the environmental conservation. This technology could enhance the position of Mississippi as an agricultural leader by exhibiting agricultural responsibility.

4. Associated Knowledge Areas

KA Code	Knowledge Area
402	Engineering Systems and Equipment

Outcome #14

1. Outcome Measures

Percentage of farmers and producers that gain knowledge on Farm and Financial Management. (ASU)

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	58

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Mississippi farmers need assistance with farm and financial management to maintain effective operations. These farmers often lack relevant knowledge to use financial management tools to prepare financial reports. Sound financial management is essential for success within small farm enterprises.

What has been done
Alcorn State University's Small Farm Outreach Training and Technical Assistance Project offered eleven (11) farm management training sessions to provide 432 participants with technical knowledge, hands-on experiences, and one-on-one technical assistance relevant to farm and financial management. Training sessions were conducted in collaborations with federal and state agencies.

Results
Farmers are more aware of how the household budget directly affects the farm operational budget. Hands-on activities helped farmers to adapt to new technologies, keeping them current with the latest innovations.

4. Associated Knowledge Areas

KA Code	Knowledge Area
604	Marketing and Distribution Practices

Outcome #15

1. Outcome Measures

Number of farmers and cooperatives that gain knowledge on the importance of developing and utilizing a marketing plan. (ASU)

Not Reporting on this Outcome Measure

Outcome #16

1. Outcome Measures

Percentage of farmers and producers that keeps accurate records. (ASU)

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	28

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
A high percentage of small and limited resource farmers in Quitman County, MS were not keeping accurate records to track transactions. Failing to keep financial records were causing producers to make unwise business decisions and to forfeit opportunities to apply for USDA funds.

What has been done
The Small Farm Outreach Project and the National Center for Appropriate Technology conducted a farm record keeping workshop to teach farmers the importance of keeping accurate records. Participants used the ASUEP Farm Record Keeping Book as a primary teaching resource.

Results
Evaluation results indicated that 58% of attendees gained relevant knowledge on farm record keeping. Before the session, the average participant's knowledge level was 3.91. After the session, average knowledge of subject-matter content increased to 4.91, up 25.5%. Two farmers expressed interest in an electronic version of the record keeping book. This suggestion is being considered by training staff.

4. Associated Knowledge Areas

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

Outcome #17

1. Outcome Measures

Percentage of farmers and producers that reports minimizing land and farm loss. (ASU)

Not Reporting on this Outcome Measure

Outcome #18

1. Outcome Measures

Percentage of farmers and producers that applies for farm loans. (ASU)

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	7

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Farmers in the Mississippi Delta, one of the most impoverished regions in the state, have difficulties acquiring capital to support farming operations. Many farmers in the Delta region also lost farming structures during a tornado in December 2015. These circumstances dictated the need for activities to help participants to acquire loans for needed resources.

What has been done
The ASU Agribusiness Educator working in the Mississippi Delta conducted producers' outreach meetings in Quitman, Bolivar, and Yalobusha counties to inform attendees about the availability of programs and services offered by the MS Small Farm and Agribusiness Center at ASU and USDA. Credit management workshops were conducted in Sunflower and Tallahatchie Counties to discuss methods for obtaining free credit reports to repair credit. Technical assistance was provided to farmers in Sunflower, Tunica, and Marshall counties to help farmers acquire funds to repair farm-damaged structures.

Results

Participants attending the outreach meetings gained new knowledge relevant to available programs through USDA and ASU's Small Farm and Agribusiness Center. Eighty-five percent (85%) of participants of the credit management workshops used resources to get a free credit report from annualcreditreport.com. Three farmers who received technical assistance submitted loan applications to USDA Farm Service Agency. All three applicants received positive feedback that their loans would be approved.

4. Associated Knowledge Areas

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

Outcome #19

1. Outcome Measures

Percentage of farmers and producers that demonstrates minimizing risk on the farm. (ASU)

Not Reporting on this Outcome Measure

Outcome #20

1. Outcome Measures

Number of farmers and vendors that report and demonstrate gained knowledge in Direct Marketing to Farmers Markets. (ASU)

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	85

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Farmers' markets provides a venue for merchants to sell locally grown produce and value-added products directly to consumers. Produce sold at these sites is often more affordable and of better quality than supermarket goods. Farmers' markets also strengthen local economies because money earned typically remains in the vicinity. Unfortunately, most farmers are unaware of the benefits of direct marketing to farmers' markets and the advantages of alternative marketing outlets.

What has been done
ASUEP's Marketing Coordinator collaborated with agriculture specialists and the Small Farm Outreach Training and Technical Assistance Project (also referred to as 2501) to teach farmers' how to market products directly to farmer's markets. Activities included workshops, training sessions, and demonstrations on marketing strategies, farm record keeping, and farm and financial management. Additionally, the Marketing Coordinator provided certification training to teach valuable marketing techniques to be used when selling at farmers' markets.

Results
Farmers are more knowledgeable and equipped to successfully market and sell products to local consumers. Merchants learned that signage, packaging and displays communicates messages regarding the product's quality. In 2016, over twenty (20) farmers and ten (10) vendors have consistently sold products at the Natchez Farmers' Market adding approximately $350,000 to the local economy.

4. Associated Knowledge Areas

KA Code	Knowledge Area
604	Marketing and Distribution Practices

Outcome #21

1. Outcome Measures

Number of policies, decision support tools, and strategies developed that enhance profitability, inform production decision, and mitigate/manage risk. (MSU)

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	46

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Corn earworm is one of the direct pests (feeds on harvestable portion of crop) of soybeans in Mississippi and can cause substantial damage if not managed. The treatment threshold for corn earworm was developed many years ago for soybean production systems that are very different from the current production system. Also, this treatment threshold for corn earworm was static and did not consider crop value or application cost.

What has been done

Research was conducted as a component of a graduate student project to refine/validate the economic injury level. From these studies an economic threshold that considered crop value and application costs was developed and published in the 2016 Insect Control Guide for Agronomic Crops.

Results

During 2016 the average cost of an insecticide application for corn earworm was $16.50/acre, which is a significant investment. This more refined threshold allowed growers and consultants to make more informed economic and insect management decisions.

4. Associated Knowledge Areas

KA Code	Knowledge Area
511	New and Improved Non-Food Products and Processes
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

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 2016, 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. 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.

MSU also has a Standardized Extension Evaluation Survey 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. The number of agents and specialists utilizing the survey has been increasing.

Alcorn State University Extension educators and specialists used pre and posttests, written evaluation instruments, and observations to assess the effectiveness of educational programs and activities. These tools were either developed by educators/specialists individually or by program planning groups. Evaluation results are attached to required monthly reports and are used to improve future activities or to decide whether activities should be continuously implemented.

Key Items of Evaluation

ASU evaluated levels of knowledge increased and changes in action as a result of participating in educational programs and activities conducted at the county and local levels.

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Natural Resources

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
101	Appraisal of Soil Resources	0%	0%	2%	0%
102	Soil, Plant, Water, Nutrient Relationships	4%	0%	54%	0%
104	Protect Soil from Harmful Effects of Natural Elements	3%	0%	0%	0%
111	Conservation and Efficient Use of Water	6%	0%	8%	0%
112	Watershed Protection and Management	4%	0%	6%	0%
122	Management and Control of Forest and Range Fires	8%	0%	0%	0%
123	Management and Sustainability of Forest Resources	15%	0%	6%	0%
124	Urban Forestry	5%	0%	0%	0%
125	Agroforestry	6%	0%	0%	0%
131	Alternative Uses of Land	0%	0%	1%	0%
132	Weather and Climate	6%	0%	4%	0%
133	Pollution Prevention and Mitigation	4%	0%	1%	0%
135	Aquatic and Terrestrial Wildlife	6%	0%	17%	0%
136	Conservation of Biological Diversity	4%	0%	1%	0%
211	Insects, Mites, and Other Arthropods Affecting Plants	4%	0%	0%	0%
214	Vertebrates, Mollusks, and Other Pests Affecting Plants	4%	0%	0%	0%
216	Integrated Pest Management Systems	4%	0%	0%	0%
403	Waste Disposal, Recycling, and Reuse	5%	0%	0%	0%
405	Drainage and Irrigation Systems and Facilities	5%	0%	0%	0%
605	Natural Resource and Environmental Economics	7%	0%	0%	0%
	Total	100%	0%	100%	0%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2016	Extension		Research	
	1862	1890	1862	1890
Plan	9.0	0.0	4.0	0.0
Actual Paid	26.7	0.0	15.0	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
703303	0	1271913	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
703303	0	338279	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	2418723	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:

- Urban entomology and plant pathology,
- Plant disease and nematode diagnostics,
- Cotton and corn pest management,
- Greenhouse tomato pest management,
- Soybean management by application of research and technology, and
- Public health issues related to vector control.

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

• Development of best management practices to reduce nutrient and sediment transport in row crop and pasture systems,
• Watershed scale assessment of individual and cumulative effects of best management practices on nutrient and sediment transport and water quality,
• Development and evaluation of irrigation technologies that conserve water and energy, and
• 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:

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

Research and Extension programming related to forestry will focus on:

• Forest production and management,
• Timber harvesting,
• Forest recovery, and
• Environmental impacts of forest practices.

In-state and multistate research and Extension activities will also 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

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; consumers; forest landowners; loggers; professional foresters; industry personnel; those who hunt, fish, and watch wildlife; those who interact with wildlife at work and home; those who work in related industries and professions; those who educate our youth (K-12); and the general public.

3. How was eXtension used?

At MSU, 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, 104 MSU employees are eXtension users as members of 39 COPs. 9 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. 3 MSU Extension personnel are members of the Imported Fire Ants COP. 3 MSU Extension personnel are members of the Ant Pests COP. 4 MSU Extension personnel are members of the Feral Hogs COP with 2 being leaders. 3 MSU Extension personnel are members of the Freshwater Aquaculture COP. 2 MSU Extension personnel are members of the Invasive Species COP. 1 MSU Extension employee is a member of the Prescribed Fire COP. 1 MSU Extension employee is a member of the Urban Integrated Pest Management COP. 2 MSU Extension personnel are members of the Marine Aquaculture COP. 1 MSU Extension employee is a member of the Wildlife Damage Management COP. 1 MSU Extension employee is a member of the Wood

Energy COP. 2 MSU Extension personnel are members of the Wood Products COP. 2 MSU Extension personnel are members of the Unmanned Aircraft Systems (UAS) COP. 1 MSU Extension employee is a member of the Map@Syst COP.

V(E). Planned Program (Outputs)

1. Standard output measures

2016	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	171515	173723	0	0

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

Patent Applications Submitted

Year:	2016
Actual:	2

Patents listed

Fei Yu, William Batchelor, Jeremy Yan. 2016. Catalysts for Converting Syngas into Liquid Hydrocarbons and Methods Thereof. USPTO Patent No. US 9,283,551. 3/15/2016.

Fei Yu, Q. Yan. 2016. Nano-structured Catalysts. Provisional Patent USPTO 62/316,075. 3/31/2016.

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2016	Extension	Research	Total
Actual	28	118	146

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

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

Year	Actual
2016	57540

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Landowners, producers, and/or clientele increase their knowledge about responsible use and protection of natural resources and the environment. (MSU)
2	Landowners, producers, and/or clientele implement new sustainability practices based on Extension recommendations. (MSU)
3	Landowners, producers, and/or clientele improve their environmental stewardship. (MSU)
4	Number of new technologies, practices, production systems developed that enhance environmental stewardship while sustaining productivity and profitability. (MSU)
5	Number of new technologies, practices, productions systems developed that enhance forest productivity, environmental stewardship, and profitability. (MSU)
6	Number of new management practices, conservation systems, and policies developed that enhance wildlife conservation and environmental sustainability. (MSU)

Outcome #1

1. Outcome Measures

Landowners, producers, and/or clientele increase their knowledge about responsible use and protection of natural resources and the environment. (MSU)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	11508

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Human-wildlife conflicts have occurred since humans started to spread in into rural areas and during our attempts to tame our natural resources. One of the greatest issues in Mississippi over the last 10 years is the increase in the wild pig population. All Mississippi counties currently have a wild pig population. It is estimated that wild pig damage is in the billions of dollars across the United States. Some residents have no idea on the diseases and the parasites wild pigs can have, the impact on the natural resources, or still rely on hunting and small traps to remove the nuisance species from the state.

What has been done
As humans, we often look for the easiest solution which has not been working on resolving the wild pig problem. MSU Extension has been giving presentations to individuals that wish to learn about the issues with wild pigs since 2014, when two associates were hired to assist with educating landowners, land managers, and the general public on the history, ecology, control, and damage.

Results
57 wild pig presentations were given across the state. 29 presentations were given to 3541 individuals. 28 site visits to 11 individuals on prevention/removal techniques. 28 presentations were given to 715 individuals. A short term evaluation was created in 2014 to verify the potential of the program. 273 of the 715 were in a presentation over 1.75 hours evaluating the program with the 2014 form. They owned/managed 153,938 acres throughout the state that had wild pig damage estimated at $316,090 with an expected reduction of loss by $245,530 from the information. The knowledge on ecology went from a 2.23/5 before to a 4.45/5. Control went from a 2.22/5 before to a 4.52/5 after. Trapping knowledge went from a 2.16/5 before to a 4.52/5 after. Damage went from a 2.53/5 before to a 4.53/5.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
104	Protect Soil from Harmful Effects of Natural Elements
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity
605	Natural Resource and Environmental Economics

Outcome #2

1. Outcome Measures

Landowners, producers, and/or clientele implement new sustainability practices based on Extension recommendations. (MSU)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	9206

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
A majority of imperiled lands and natural resources in Mississippi, including wetlands, coastal marshes, and river basins are in private ownership. Therefore, 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 diversify incomes and increase conservation on their lands by developing fee-access outdoor recreational enterprises.

What has been done
MSU Extension's Natural Resource Enterprises Program has designed educational workshops and demonstrations to train landowners and producers in developing outdoor recreational businesses on working lands that increase conservation and income diversification. NRE staff devised curricula and selected rural properties as host sites for workshops conducted in AR, LA,

and MS. in 2016. Five workshops that included general and advanced seminars were conducted in 2016 with 218 paid participants. Attendees rated workshops on average 4.7 on a 5-point scale with 5 being excellent. Landowners implemented practices on 172,735 acres.

Results

To measure impacts from our programming efforts, a survey was mailed to past workshop participants following participation in workshops. Results in the AR-LA-MS from 2016 indicate that 110 landowners implemented conservation on their lands, totaling 102,640 acres, averaging 933 acres per landholding. Also, $835,502 in revenues were collected from NRE businesses initiated on properties nationally with first year revenues averaging $12,659 per farm and earning $7/acre on lands committed to NRE activities. Sixty-six landowners initiated NRE businesses on their properties.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
104	Protect Soil from Harmful Effects of Natural Elements
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
122	Management and Control of Forest and Range Fires
123	Management and Sustainability of Forest Resources
131	Alternative Uses of Land
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity
605	Natural Resource and Environmental Economics

Outcome #3

1. Outcome Measures

Landowners, producers, and/or clientele improve their environmental stewardship. (MSU)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	4603

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Mississippi farmers and landowners have no way to dispose of expired or unused pesticides, or pesticides that are no longer registered for use in Mississippi.

What has been done
MSU Extension worked with the MS Dept. of Environmental Quality and the MS Dept. of Agriculture and Commerce to fund and implement a Waste Pesticide Disposal program for MS farmers. Through this program, three agricultural waste disposal days were hosted during this reporting period. The first was held at the former Tal Port Building in Yazoo City (Yazoo Co.) on Dec 16, 2015. The second event was held at the Cowart Gin and Tallahatchie Farmers Supply in Cowart (Tallahatchie Co.) on Feb. 24, 2016, and the last event was held at the MSU Black Belt Experiment Station (Noxubee Co.) on Mar. 1, 2016.

Results
This project minimizes the environmental risks associated with the disposal of waste pesticide products by providing Mississippi's farmers and landowners a safe and efficient manner to dispose of agricultural chemicals. Events were in areas of high agricultural activity throughout the state. We collected 17,004 pounds of waste pesticides in 22 loads from eight different counties at the Yazoo City event. We collected 24,238 pounds of waste agricultural chemicals in 28 loads from eight counties at the Cowart event. We also collected waste tires at this event, although the number of tires collected was not recorded. Finally, we collected 10,063 pounds of unused pesticides in 21 loads from four counties at the Noxubee Co. event.

4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
133	Pollution Prevention and Mitigation
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity
216	Integrated Pest Management Systems
403	Waste Disposal, Recycling, and Reuse

Outcome #4

1. Outcome Measures

Number of new technologies, practices, production systems developed that enhance environmental stewardship while sustaining productivity and profitability. (MSU)

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	29

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In a state and nation that are increasingly confronted with difficult choices regarding the use of our environmental resources, valid policy recommendations and cost benefit analyses are needed. However, many environmental outcomes are difficult to value since there is no market for things such as clean water or air. Thus, policy makers are hamstrung in determining the cost/benefit of regulations or other policy interventions. In recent decades, significant progress has been made in deriving improved estimates of non-market values.

What has been done

MAFES scientists Dan Petrolia and Matt Interis have emerged at the forefront of developing more accurate techniques for non-market valuation. Their contributions are both conceptual and empirical. However, in land grant tradition they developed better analytical techniques tp provide more accurate answers to policy questions. For example, their paper ?Location, Location, Habitat: How the Value of Ecosystem Services Varies across Location and by Habitat?, publish in 2016 (Land Economics) examines how ecosystem service values vary across location and, for the first time, across habitats.

Results

Clearly their work is impacting the profession as their 2013 paper, From Hopeless to Curious? Thoughts on Hausman's Dubious to Hopeless Critique of Contingent Valuation has now been cited 71 times reflecting the relevance to others working in this area. Google scholar shows these scientists have been cited over 200 times in 2016 alone.

Petrolia and Interis are also focused on numerous empirical applications of the techniques they have developed. Petrolia has researched the implication of the $7.8 Billion Deepwater Horizon disaster. The team also examined the value of a gulf coastal restoration project. They estimate the mean aggregate willingness to pay of $105 billion in excess of the estimated $50 billion cost for restoration.

4. Associated Knowledge Areas

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

Outcome #5

1. Outcome Measures

Number of new technologies, practices, productions systems developed that enhance forest productivity, environmental stewardship, and profitability. (MSU)

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	21

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 from years 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 two decades. 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 obvious knowledge gaps created by this discovery.

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 is novel, and may generate knowledge regarding forest ecology, the impact of insect herbivores and decomposers on carbon cycles, and potentially refine climate change models. We continue to investigate potential for commercialization of blue-stained wood or its derivatives with industry partners.

4. Associated Knowledge Areas

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

Outcome #6

1. Outcome Measures

Number of new management practices, conservation systems, and policies developed that enhance wildlife conservation and environmental sustainability. (MSU)

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	28

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The USDA Farm Bill conservation programs provide landowner incentives to remove less productive and environmentally sensitive lands from agricultural production and reestablish them in natural vegetation (e.g., native grasses, trees, etc.) to achieve conservation objectives. However, removal of arable land from production imposes an opportunity cost associated with loss in revenue from commodities that otherwise would have been produced. Recent Farm Bills have increasingly emphasized targeted practices to achieve specific environmental outcomes that maximize environmental benefits relative to cost. The Habitat
Buffers for Upland Birds practice (CP-33) under the continuous Conservation Reserve Program is an example of a targeted conservation practice that has produced measurable outcomes (increased bobwhite and grassland bird populations) with relatively minor changes in primary land use. However, establishing conservation buffers on profitable farmland may be incompatible with the economic objectives of landowners/producers.

What has been done
Precision agriculture technologies provide a powerful conservation planning tool for identifying environmental and economic opportunities in agricultural systems. Precision implementation of conservation practices, such as CP-33, is the foundation of strategic conservation planning and is essential for optimization of environmental and economic benefits. Toward this end, we developed a geospatial decision support tool (Arc GIS tool) to inform this decision-making process. We illustrate the geoprocessing workflow of the tool and demonstrate the conditions

under which precision implementation of conservation practices can concomitantly increase whole-field profitability and environmental services for an example farm in Mississippi.

Results

Precision conservation provides the necessary tools to implement profitable conservation in a spatially explicit framework that optimizes financial returns for the producer. Our research provides a geospatial DST that identifies conservation and economic opportunities in agricultural landscapes and evaluates the economic tradeoffs of conservation enrollment versus agricultural production. This tool can aid in achieving landscape- or watershed-level conservation goals by increasing adoption of conservation practices.

4. Associated Knowledge Areas

KA Code	Knowledge Area
135	Aquatic and Terrestrial Wildlife

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

MSU Extension agents and specialists, as well as MAFES faculty, used a variety of recommended methods to gather needed information. Specific strategies were initiated and utilized for collecting evaluation information to determine program outputs and outcomes (see impact statements for examples). In FY 2016, 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. 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.

MSU also has a Standardized Extension Evaluation Survey 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. The number of agents and specialists utilizing the survey has been increasing.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 4

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
602	Business Management, Finance, and Taxation	2%	1%	0%	0%
603	Market Economics	5%	0%	0%	0%
605	Natural Resource and Environmental Economics	0%	0%	34%	0%
608	Community Resource Planning and Development	28%	42%	19%	100%
609	Economic Theory and Methods	20%	0%	2%	0%
610	Domestic Policy Analysis	0%	0%	14%	0%
802	Human Development and Family Well-Being	5%	39%	0%	0%
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	15%	7%	0%	0%
805	Community Institutions, Health, and Social Services	25%	11%	19%	0%
901	Program and Project Design, and Statistics	0%	0%	9%	0%
903	Communication, Education, and Information Delivery	0%	0%	3%	0%
	Total	100%	100%	100%	100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2016	Extension		Research	
	1862	1890	1862	1890
Plan	40.0	2.0	5.0	4.0
Actual Paid	34.2	4.5	4.0	1.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
900860	240074	18114	313743
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
900860	240074	151637	313743
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	863303	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Extension and research assisted local communities in conducting the following activities to build human capital for empowering citizens and leaders to promote community and economic development:

- 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;
- Conducting anti-poverty programs; and
- 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.

In 2016, Alcorn State University Extension Program conducted activities in the following areas:

- Small Business development,
- Leadership development,
- Improving local economies,
- Economic climate and civic issues,
- Economic development,
- Home ownership,
- Career/workforce preparation and development,
- School wellness policies, and
- Community development.

2. Brief description of the target audience

The target audience for this program consists of local communities and their leaders, community members interested in improving their community, community-based organizations, nonprofit organizations, cooperatives, entrepreneurs, and limited-resource individuals and families. This includes master Extension volunteers and 4-H volunteers.

3. How was eXtension used?

At MSU, 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, 104 MSU employees are eXtension users as members of 39 COPs. 9 MSU Extension employees serve as a leader for a COP, leading 7 COPs. 2 MSU Extension personnel are members of the Creating Healthy Communities COP. 3 MSU Extension employees are members of the Diversity Equity and Inclusion COP. 3 MSU Extension employees are members of the Enhancing Rural Capacity COP. 5 MSU Extension personnel are members of the Entrepreneurs and Their Communities COP. 4 MSU Extension personnel are members of the Extension Disaster Education Network COP. 1 MSU Extension employee is a member of the Internationalizing Extension COP. 3 MSU Extension personnel are members of the Network Literacy COP. 5 MSU Extension personnel are members of the Community, Local, and Regional Food Systems COP. 1 MSU Extension is a leader of the Cooperatives COP. 5 MSU Extension personnel are members of the Education Technology Learning Network. 2 MSU Extension personnel are members of the Unmanned Aircraft Systems (UAS) COP. 1 MSU Extension employee is a member of the Map@Syst COP.

Alcorn State University Extension Program is a member of the eXtension community. ASUEP educators and specialists used information found on eXtension to develop teaching materials on a variety of topics and to supplement existing learning resources.

V(E). Planned Program (Outputs)

1. Standard output measures

2016	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	121625	121596	1637	148

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

Patent Applications Submitted

Year:	2016
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2016	Extension	Research	Total

Actual	13	23	36

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

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

Year	Actual
2016	39395

Output #2

Output Measure

- Plan, coordinate and conduct meetings and informational activities that will allow for an assessment of community needs in relationship to the services offered by Extension. (ASU)

Year	Actual
2016	10

Output #3

Output Measure

- Promote the usage of electronic technology in the development of communities and local economies. (ASU)

Year	Actual
2016	3

Output #4

Output Measure

- Conduct educational sessions and provide technical assistance on workforce, leadership and business/non-profit development. (ASU)

Year	Actual
2016	20

Output #5

Output Measure

- Conduct or collaborate on educational sessions and provide technical assistance on home ownership, resource/funding opportunities, civic engagement. (ASU)

Year	Actual
2016	13

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Community leaders improving knowledge and skills. (MSU)
2	Community leaders make use of leadership skills by volunteering for community organizations. (MSU)
3	Community leaders implementing strategies to improve public decision-making and/or increase civic engagement. (MSU)
4	Percentage of participants improving their knowledge of extension services, and gaining skills and assistance in addressing identified community assets/issues. (ASU)
5	Increase in the amount of program information made available through Extension websites. (ASU)
6	Percentage of program participants that submit job application(s) and/or become employed. (ASU)
7	Percentage of program participants that submit application(s)/RFP(s) for funding and/or are funded. (ASU)
8	Number of program participants that gain awareness of home ownership opportunities. (ASU)
9	Number of program participants that demonstrate greater knowledge in the development of leadership skills, economic development strategies, and become more involved with civic activities. (ASU)

Outcome #1

1. Outcome Measures

Community leaders improving knowledge and skills. (MSU)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	7879

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Tourism is the state's 4th largest employer, but the majority of the benefits of tourism are often captured in larger communities across the state leaving the more rural communities unable to benefit from this economic stimulus.

What has been done
MSU Extension expanded rural tourism programming to provide skills to those working in rural tourism and to help communities create strategies to tap into this industry. MSU Extension partnered with organizations and institutions across the state and also in rural areas of Louisiana, and Alabama, to reach as many rural communities as possible. Programming was designed to engage local use of technology, increase tourism attraction identification and development, and create an awareness for the value of rural tourism as part of the state's overall tourism product.

Results
MSU Extension trained over 483 people from January 2016 until November 2016 in Rural Tourism. Participants were farmers and landowners, convention and visitors bureau employees, small business owners, state agency leaders and many more. Behavior changes included the state creating marketing initiatives to target rural communities; the adoption of new technologies to market tourism attractions such as the creation of virtual tours; the development of new tourism attractions and packages; and the registration of agritourism operations with regional marketing sites. One specific example of a positive result came from a program "Growing Your Brand" where participants indicated that their knowledge increased on average 29%. This workshop directly resulted in the creation of a local foods bus tour in the community.

4. Associated Knowledge Areas

KA Code	Knowledge Area
602	Business Management, Finance, and Taxation
605	Natural Resource and Environmental Economics
608	Community Resource Planning and Development
609	Economic Theory and Methods
802	Human Development and Family Well-Being
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
805	Community Institutions, Health, and Social Services

Outcome #2

1. Outcome Measures

Community leaders make use of leadership skills by volunteering for community organizations. (MSU)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	6303

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Litter is an issue that impairs the environment, stormwater infrastructure, tourism, and industry in Mississippi.

What has been done
MSU's Coastal Cleanup Program was formed with the mission of preventing and removing litter from the coastal environment through education, outreach, research, and cleanup events.

Results
In 2016, MSU's Coastal Cleanup Program performed 4 site captain trainings leading up to the annual Coastal Cleanup event. Over 2,400 volunteers participated in Coastal Cleanup, which led to the removal of more than 14 tons of litter from the beaches, waterways, wetlands, and roads of coastal Mississippi.

4. Associated Knowledge Areas

KA Code	Knowledge Area
605	Natural Resource and Environmental Economics
608	Community Resource Planning and Development
802	Human Development and Family Well-Being
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
805	Community Institutions, Health, and Social Services

Outcome #3

1. Outcome Measures

Community leaders implementing strategies to improve public decision-making and/or increase civic engagement. (MSU)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	3152

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Local governments/municipalities and water/sewer associations (utility cooperatives) often face the balancing act of meeting the water and sewer infrastructure and treatment needs of the residents they serve and keeping costs for those services affordable. The Sturgis mayor and the town's board of aldermen knew last year that enterprise fund revenues were becoming insufficient to support the water and sewer utilities they provide. The Town of Sturgis was operating on a two percent (2%) profit margin in the enterprise fund and would look to lose money in 2017 should expenses continue to rise.

What has been done
MSU Extension visited with the mayor, water/sewer operator, and the town clerk to get an overall understanding of the water and sewer systems. MSU Extension helped the town streamline its budgeting process to generate the revenue needed to adequately support the utility enterprise funds. To assist, MSU Extension conducted a rate and consumption study comparing the town with peer water and sewer systems of comparable size and treatment classification. As a result of

the rate and consumption study, MSU Extension generated several rate and rate structure options that may be implemented in order to meet the financial demands of the utilities.

Results

The town leaders learned that the town charges less than its peers for every 5,000 gallons for water and significantly less than its peers per 1,000 and for every 5,000 gallons of sewer collected and treated. The mayor and aldermen are proposing to keep the rate structure the same, adjust the sewer rate to match the water rate, and increase the water/sewer rate from an $18 minimum to $22 minimum. By adjusting the sewer rate from the $15 minimum to the $22 minimum, the town will generate an additional annual revenue of $16,716. With both the water and sewer rate minimum at $22, the town generates an additional annual revenue of $31,980. The base rate adjustment will greatly increase the town's profit margin and allow them to operate with a positive cash flow for at least 10 years.

4. Associated Knowledge Areas

KA Code	Knowledge Area
602	Business Management, Finance, and Taxation
608	Community Resource Planning and Development
609	Economic Theory and Methods
610	Domestic Policy Analysis
802	Human Development and Family Well-Being
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
805	Community Institutions, Health, and Social Services

Outcome #4

1. Outcome Measures

Percentage of participants improving their knowledge of extension services, and gaining skills and assistance in addressing identified community assets/issues. (ASU)

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	68

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Mississippians living in some rural communities are unaware of the benefits of Extension educational programs. Programs, activities, and services provided by Alcorn State University's Extension Program (ASUEP) continues to be a well-kept secret in counties serviced by the organization. Increasing awareness of ASUEP's programs and services could potentially motivate residents to become involved in Extension sponsored events and to request technical assistance on a variety of educational topics. Program participation could lead to increased knowledge and skills that can be immediately transferred into real life situations.

What has been done
Extension Awareness events were conducted at farmers' markets in four (4) southwestern Mississippi counties (Adams, Amite, Lincoln, and Pike) to increase knowledge of Extension agricultural programs and services. Exhibits were erected at the Annual Mississippi State Fair to share resources published by ASUEP and to increase public awareness. Two (2) awareness events were conducted to promote family and consumer sciences and 4-H and positive youth development programs in Claiborne and Jefferson Counties. Additionally, Extension educators promoted upcoming Extension events during workshops and group meetings.

Results
A total of 5,506 youth and adults living in Mississippi attended Extension awareness events conducted by ASUEP. Additionally, these events increased program participation, requests for technical assistance and printed resources, and increased community partnerships with local and state agencies.

4. Associated Knowledge Areas

KA Code	Knowledge Area
602	Business Management, Finance, and Taxation
603	Market Economics
608	Community Resource Planning and Development
609	Economic Theory and Methods

Outcome #5

1. Outcome Measures

Increase in the amount of program information made available through Extension websites. (ASU)

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Percentage of program participants that submit job application(s) and/or become employed. (ASU)

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	30

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Mississippi's unemployment rate continues to be among the lowest in the nation at 5.7%. Most youth and some adults lack basic job-seeking skills such as completing online applications, writing cover letters, and preparing for job interviews. Aside from creating job opportunities, preparing a ready and waiting workforce is an effective way to boost the State's employment rate.

What has been done
A CRD Educator partnered with the Pike County WIN Job Center in McComb, MS to operate a mobile office which provided training to job seekers. This educator also partnered with the Summit Learning Center in Summit, MS to teach job readiness skills to 16 participants. One-on-one consultations were provided to assist individuals with creating email accounts, completing online job applications, and to write resumes.

Results
Participants attending training on the mobile unit submitted job applications and developed resumes. Of the twelve, three later reported that they received offers for interviews. One client who received one-on-one consultation submitted four online applications and was granted an interview while another was offered a job with a rail road company. Follow-up conversations with participants revealed the usefulness of broad-band Internet service offered by the CRD unit which allowed submission of electronic documents.

4. Associated Knowledge Areas

KA Code	Knowledge Area
602	Business Management, Finance, and Taxation
603	Market Economics

Outcome #7

1. Outcome Measures

Percentage of program participants that submit application(s)/RFP(s) for funding and/or are funded. (ASU)

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

Number of program participants that gain awareness of home ownership opportunities. (ASU)

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	737

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Home ownership is the "American Dream." For many Mississippians, however; this dream may never become a reality. Bad credit, no credit, low wages, unemployment, and a shortage of affordable homes are often barriers to home ownership. Although federal and state programs are available to increase home ownership among individuals with low incomes, many who qualify either don't know they exist or don't know how to access them.

What has been done
A two-day, home-ownership workshop was conducted in July 2016 in Vicksburg, MS. CRD educators also partnered with HUD to offer a four-hour workshop at the Jackson Medical Mall. Topics discussed were "The Ten Steps to Home Ownership," developing a budget, mortgage options, the Fair Housing Act, and the home buying and refinancing process. Educators also participated in community outreach events and distributed resources on home ownership.

Results
Twelve (12) participants who attended the two-day training in Vicksburg, MS completed evaluation instruments that measured change in knowledge. Fifty percent (50%)of participants

rated existing knowledge of subject matter prior to session as poor (25% fair, 25% good). After the session, 42% rated knowledge of subject matter as excellent (33% very good, 25% good). Other items evaluated were comprehension level of subject matter (66% excellent, 25% very good, 8% good), presenter's knowledge of subject matter (92% excellent, 8% very good), and overall quality of session (83% excellent, 17% very good). Participants commented that the workshops were valuable to people seeking home ownership and the new knowledge would increase their chances of being approved.

4. Associated Knowledge Areas

KA Code	Knowledge Area
603	Market Economics
608	Community Resource Planning and Development

Outcome #9

1. Outcome Measures

Number of program participants that demonstrate greater knowledge in the development of leadership skills, economic development strategies, and become more involved with civic activities. (ASU)

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	1038

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Small Mississippi towns have experienced problems retaining and attracting businesses. Mechanization has replaced the need for human labor on farms. A large number of college graduates leave the state annually because of limited job opportunities. Most manufacturing jobs are concentrated in larger, metropolitan areas leaving smaller communities struggling to survive. Perhaps the best way to boost the economy in small, rural towns is from within through small business and entrepreneurship development.

What has been done
CRD educators partnered with the Mississippi Development Authority to conduct an eight-hour business development training in Copiah County, Mississippi. The session taught participants the

basics of starting a small business: Evaluating Potential Retail Markets, Determining Start-Up Costs, Applying for Licenses and Permits, Developing Business Plans and Cash Flow Statements, Business Financing, and Legal Business Structures (including insurance and risk management). Forty-three (43) participants attended this training session. Additionally, technical assistance was provided to individuals on basic business start-up during the year.

Results

Thirty-six (84%) participants completed evaluation surveys. Before the workshop, 25% of evaluators reported excellent knowledge of subject matter. At the end of the session, 44% reported excellent knowledge of subject matter resulting in a 19% increase. Participants attending this training saved $936 collectively in registration fees as compared to participants attending similar trainings sponsored by other colleges and universities. Since FY 2015, ASU has increased participation in business development and entrepreneurship activities by 55%.

4. Associated Knowledge Areas

KA Code	Knowledge Area
602	Business Management, Finance, and Taxation
603	Market Economics
608	Community Resource Planning and Development
609	Economic Theory and Methods

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

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 2016, 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. 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.

MSU also has a Standardized Extension Evaluation Survey 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. The number of agents and specialists utilizing the survey has been increasing.

Alcorn State University Extension educators and specialists used pre and posttests, written evaluation instruments, and observations to assess the effectiveness of educational programs and activities. These tools were either developed by educators/specialists individually or by program planning groups. Evaluation results are attached to required monthly reports and are used to improve future activities or to decide whether activities should be continuously implemented.

Key Items of Evaluation

ASU Educators and specialists measured changes in knowledge and actions during FY 2015-2016.

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

4-H and Positive 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
724	Healthy Lifestyle	0%	38%	0%	0%
801	Individual and Family Resource Management	0%	3%	0%	0%
802	Human Development and Family Well-Being	0%	31%	0%	0%
806	Youth Development	100%	28%	100%	0%
	Total	100%	100%	100%	0%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2016	Extension		Research	
	1862	1890	1862	1890
Plan	75.0	9.0	0.0	0.0
Actual Paid	85.8	7.0	0.1	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
2260051	423954	449	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
2260051	423954	6580	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	20551	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Activities included:

- Recruit youth and volunteers;
- Provide educational programs, events and activities in local schools and community settings to aid youth in resisting risky behaviors and promoting healthy development;
- Coordinate leadership camps;
- Provide financial resource management programs and career days/fairs;
- Provide programs, events, and activities to improve parenting practices that will enhance parent-child relationships;
- Provide programs on child development for developing and enhancing afterschool programs and other learning environments for children;
- Conduct research to address the nutrition, health, fitness, wellness, and obesity issues facing youth;
- Provide volunteer leader training for youth leaders and adult volunteers;
- Provide training on organization and maintenance of community clubs;
- Provide recognition events for youth to exhibit project skills, including 4-H Club Congress, District Achievement Days, County, State, & Regional Fairs, and Livestock and Horse Shows, National 4-H Congress; and
- Provide training to Extension personnel on experiential education through subject-matter work, as well as Chartering all 4-H Clubs and groups, Four Essential Elements, Legal Use of the Name and Emblem, Diversity Training, and Financial Management.

In 2016, ASUEP 4-H Educators and specialist conducted the following activities:

- Teenage pregnancy prevention workshops,
- Bullying prevention,
- Healthy lifestyles activities to teach youth about nutrition and physical fitness,
- Career and workforce development which included completing applications, preparing resumes and cover letters, and the interview process,
- Leadership development activities to prepare 4-H for district Project Achievement Day and State Club Congress,
- Volunteer management which included recruiting volunteer leaders, submitting packets for background checks, and volunteer leader training sessions, and
- Financial management workshops for youth.
-

2. Brief description of the target audience

4-H targets all Mississippians between the ages of 5 and 18 and volunteers. Other programs, activities, and events in this area target youth between the ages of 5 and 19, adult volunteers, and families.

3. How was eXtension used?

At MSU, 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, 104 MSU employees are eXtension users as members of 39 COPs. 9 MSU Extension employees serve as a leader for a COP, leading 7 COPs. 2 MSU Extension personnel are members 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. 11 MSU Extension personnel are members of the Families, Food and Fitness COP, with 2 being leaders. 3 MSU Extension personnel are members of the Family Caregiving COP. 2 MSU Extension employees are members of the Financial Security for All COP, with 1 being a leader. 2 MSU Extension personnel are members of the Healthy Food Choices in Schools COP. 1 MSU Extension employee is a member of the Youth Agriculture

COP.

ASU used eXtension to gather information to supplement educational resources for 4-H programs and activities.

V(E). Planned Program (Outputs)

1. Standard output measures

2016	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	124914	150285	298166	337815

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

Patent Applications Submitted

Year:	2016
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2016	Extension	Research	Total
Actual	3	2	5

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of youth enrolled in 4-H Clubs. (MSU)

Year	Actual
2016	61618

Output #2

Output Measure

- Number of clubs operating on military bases. (MSU)

Year	Actual

2016	4

Output #3

Output Measure

- Conduct educational programs, events, and activities on risky behaviors affecting youth. (ASU)

Year	Actual
2016	32

Output #4

Output Measure

- Conduct career/workforce educational sessions in local schools and communities. (ASU)

Year	Actual
2016	15

Output #5

Output Measure

- Conduct leadership development educational programs, events, and activities to provide opportunities at the county, regional, state, and national levels (e.g., Youth Leadership Academy, 4-H Achievement Day, State Club Congress, MS State Fair, Citizenship Washington Focus, and National 4-H Congress). (ASU)

Year	Actual
2016	32

Output #6

Output Measure

- Conduct science, engineering, and technology programs, events, and activities to attract the interest of youth in these educational fields. (ASU)

Year	Actual
2016	2

Output #7

Output Measure

- Conduct educational training for volunteer leaders to organize and maintain school and community clubs. (ASU)

Year	Actual
2016	7

Output #8

Output Measure

- Increase number of limited resource youth to utilize their skills to analyze their financial well-being and make effective financial management decisions. (ASU)

Year	Actual
2016	4

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Youth increase their knowledge in subject-matter areas. (MSU)
2	Youth improve life skills. (MSU)
3	Youth increase their involvement in 4-H leadership events and activities at the district, state, and national levels. (MSU)
4	Number of youth that report reduction of risky behavior that benefits his/her social and educational development. (ASU)
5	Number of minority youth that independently select to participate in leadership competitions, youth events, activities, and community projects. (ASU)
6	Number of trained volunteer leaders that independently organize and manage school and community youth clubs. (ASU)
7	Number of youth that report seeking and gaining employment based on training and guidance provided by the 4-H program on financial well-being. (ASU)
8	Number of youth that participate in science, engineering, and technology programs. (ASU)
9	Number of youth that participate in career/workforce development program to prepare for the future. (ASU)

Outcome #1

1. Outcome Measures

Youth increase their knowledge in subject-matter areas. (MSU)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	15877

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
According to the Office of Mississippi Physicians Workforce, Mississippi has the lowest number of active primary care physicians per capita in the nation. Almost half of all Mississippians lack access to a primary care physician. Clearly, this limits access to care and contributes to many of the negative health status indicators plaguing the state such as heart disease, incidence of adult diabetes and lowest life expectancy at birth. We need a pipeline of future medical providers. This program increases knowledge and self-efficacy of students at a young age attempting to narrow the gap of medical providers.

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. Scholars enroll in two pre-medicine courses, "shadow" physicians, and participate in various activities relative to the life of a rural physician. They are also trained as 4-H Junior Master Wellness Volunteers. The volunteer component equips the scholars to provide health promotion aimed at improving health literacy and healthy lifestyle choices in their communities while earning community service hours.

Results
To date, 367 students have completed the program. Through the class of 2016, 367 grads; 146 males (40%), 221 females (60%), from 66 of the state's counties have attended the program. Diversity is shown with a 26% minority ranking. A total of 37 went to medical school, 32 are practicing physicians (residency or private practice) as of today. Of the 32 practicing physicians, 14 are practicing in Mississippi and 24 in primary care. Approximately 71% of the graduates have gone on to pursue other health-related careers such as nursing, pharmacy, counseling, dentistry, physical or occupational therapy, and medical research. The program provides substantial benefits to the state. A recent study indicated that the addition of one physician to a typical Mississippi county results in increased economic output of $2 million plus up to 21 new direct and

indirect jobs. The long-term impact equals improved access to healthcare plus economic improvement.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #2

1. Outcome Measures

Youth improve life skills. (MSU)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	13496

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
It can be difficult for children to make healthy food choices when they are exposed to unhealthy food environments at home and in the community ("Childhood Obesity," 2014). Having a healthy diet along with regular physical activity is important to long term health. Heart disease is the number one cause of death in Calhoun County. There is a need for educating youth on healthy food choices and healthy food preparation. Youth who make healthy choices today will have a positive outcome in the future.

What has been done
Calhoun County 4-H holds monthly Kids in the Kitchen meetings. Youth ages 5 to 18 years of age are allowed to participate. Local school buses transport youth directly from school to the MSU Extension office in Calhoun County along with some 4-H parents who bring their youth. Kids in the Kitchen provides education on healthy eating choices, preparing healthy foods, purchasing healthy foods, and practicing safety standards in the kitchen through hands-on cooking activity at monthly meetings. This education will have an overall positive effect on the health and future of these youth.

Results
To see if the Kids in the Kitchen program was having a positive impact on the youth participants, a pre-test and post-test was used to determine any increase in knowledge. The survey also

assessed youth satisfaction with the program. Participants reported over a 50% increase in knowledge in the areas of healthy foods, healthy food choices, and safe food practices. 68% of the youth stated that they learned something new at Kids in the Kitchen. 80% of youth said they would prepare the food again at home. All attending said they would tell a friend about 4-H Kids in the Kitchen.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #3

1. Outcome Measures

Youth increase their involvement in 4-H leadership events and activities at the district, state, and national levels. (MSU)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	7939

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
There is a misunderstanding of how emergency response is conducted. This misunderstanding was evident by the number of complaints regarding recent change to a 911 address system. Starting with the youth to make a change, the Mississippi Youth Preparedness Initiative (MYPI) program was introduced.

What has been done
MSU Extension's MYPI program was implemented to the second year students of the Health Science Class at the Career and Technology Center in Calhoun County. The MYPI program teaches basic information regarding different types of disasters, how to respond, how emergency officials are responding, and how to help others during an emergency. This program allows for community leaders and responders to come in the classroom and discuss what they do. It also requires the students to go out and teach six families (plus their own) how to prepare an emergency preparedness kit.

Results

This program created the needed curriculum to be filled by the Career and Technology Program, educated the senior students about job possibilities, allowed youth to see and meet decision makers in their community and allowed them to learn more about their community, taught participants what they need to do and corrected any misunderstandings they had regarding emergencies, allowed these 14 students to go out and teach 98 families how to be better prepared for an emergency, and started the conversation of how this county's emergency response leaders are trained and what they do during an emergency. With the help of local and social media, this program was thoroughly covered in our county and brought about conversations to clear up misconceptions.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #4

1. Outcome Measures

Number of youth that report reduction of risky behavior that benefits his/her social and educational development. (ASU)

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	35

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Young people are faced with a plethora of social issues such as poverty, racial disparity, abuse, and lack of organized youth activities. To cope, many engage in underage drinking, alcohol abuse, bullying, drug use, crime, and sex (among other things). For the past four decades, ASUEP has provided programs and activities designed to steer young people towards a productive way of life.

What has been done
Distractive Driving activities were conducted at the MS State Fair in Jackson, MS; ASU's SMART Saturday Science Academy; a community festival in McComb, MS; and at local grade schools in Port Gibson, Brandon, and Vicksburg, MS. Twelve (12) Bullying and Cyberbullying workshops were conducted in Meadville and Natchez, MS. Peer Pressure workshops were conducted in Walthall County and Natchez, MS. Two (2) Character Education workshops were conducted in

Walthall County. Workshops on Sexually Transmitted Infections (STIs) and Teenage Pregnancy Prevention were conducted in Jefferson County, MS.

Results
Teachers and school administrators within the Natchez-Adams County school district have reported a reduced number of bullying incidences since the implementation of anti-bullying programs and activities. Students also indicated that they are more inclined to report bullying incidents to teachers, principals, or other adults. Antibullying and other "risky behavior" activities could potentially improve overall student behavior and decrease school truancy and visits to the principal's office.

4. Associated Knowledge Areas

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

Outcome #5

1. Outcome Measures

Number of minority youth that independently select to participate in leadership competitions, youth events, activities, and community projects. (ASU)

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	12329

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Most 4-Hers look forward to annual competitions to display accomplishments made over the year. In Mississippi, premiere competitions are district Project Achievement Days for junior 4-Hers and State Club Congress for seniors. These summer activities motivate youth to establish goals and to work diligently to achieve them.

What has been done
4-H Educators working in Adams, Claiborne, Copiah, Hinds, Walthall and Warren counties recruited and trained junior and senior 4-Hers to participate in the Southwest District's Project Achievement Day and State Club Congress competitions. Twenty-one (21) 4-Hers served by ASUEP participated in summer competitions.

Results

Since 2015, the number of minority youth participating in leadership competitions and other youth related events has increased by 69%. 4-H enrollment in school based clubs in Warren County has also experienced a slight 5% increase. Participation in the 2016 competitions also increased with more attendees winning 1st and 3rd place awards. Winners of state competitions advanced to National 4-H Congress in Washington, DC. For more than ten years, ASUEP has been represented at National 4-H Congress by at least three (3) youth delegates each year.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #6

1. Outcome Measures

Number of trained volunteer leaders that independently organize and manage school and community youth clubs. (ASU)

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	13

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Recruiting and maintaining active 4-H volunteer leaders is a challenging task. Volunteer leaders are vital for sustaining successful 4-H programs. They manage a club's day-to-day activities and contribute toward 4-Hers' personal, social and educational growth.

What has been done

Volunteer recruitment meetings were conducted in Claiborne, Warren, and Hinds counties. The 4-H Educator serving Hinds and four other counties conducted a "Welcome to 4-H" activity in Utica, MS to introduce participants to the basics of becoming a 4-H volunteer in Mississippi. This meeting was a follow-up from a previous event where participants expressed interest in forming a community club. Twenty (20) adults received 4-H packets which included a request for a criminal background check.

Results

Two (2) community-based clubs were organized with three (3) new volunteer leaders successfully completing background checks. Both clubs were chartered, granting rights to use the official 4-H emblem on correspondences and apparel. Club members are now eligible to compete in upcoming state and national 4-H competitions. The number of volunteers trained to organize and manage school-based and community clubs increased by 54% in 2016.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #7

1. Outcome Measures

Number of youth that report seeking and gaining employment based on training and guidance provided by the 4-H program on financial well-being. (ASU)

Not Reporting on this Outcome Measure

Outcome #8

1. Outcome Measures

Number of youth that participate in science, engineering, and technology programs. (ASU)

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	8

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Young people today were literally born into technology. Although most are quite comfortable using the latest gadgets, many do not realize how technology can enrich their lives beyond texts and "selfies." A major goal of ASUEP is to expose young people to beneficial learning opportunities that impact lives for years to come.

What has been done

Educators working in Claiborne and Copiah counties conducted a photography educational tour in Natchez and Woodville, MS. 4-Hers visited historic, antebellum mansions and a renowned waterfall to photograph landscapes using skills learned during club meetings. Eight 4-Hers were actively engaged in using their smartphone cameras to capture unique images.

Results
Although the primary purpose of this activity was to teach participants basic photography skills, an unintended and more meaningful result was achieved. None of the participants had ever visited a plantation or knew that waterfalls existed in Mississippi. Therefore, this activity exposed at-risk youth to environments that may not have been discovered otherwise. Youth found a new purpose for their camera phones and half (50%) of those who attended the tour are still photographing things found in nature.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #9

1. Outcome Measures

Number of youth that participate in career/workforce development program to prepare for the future. (ASU)

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	2289

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
A large percentage of high school graduates will not immediately enter college. In this case, seeking gainful employment becomes challenging for candidates with no experience or college credits. It is not wise to convince graduates that a college education is the only way to secure the best jobs. Rather, students should learn to set employment goals and objectives and to devise plans to achieve them.

What has been done
ASUEP staff conducted career and workforce development activities in eleven (11) Mississippi municipalities: Port Gibson, Coahoma, Clarksdale, Jackson, Hazlehurst, Brandon, Natchez,

Fayette, and Bolton. Activities were conducted for elementary, middle, and high school students and provided basic knowledge on conducting job search and career awareness. An agricultural high school day was conducted at Alcorn State University to expose students to a variety of agriculture careers. Additionally, a "College Night" was conducted at the Annie Thompson Jeffers Library in Bolton, MS to help students understand requirements for college admission.

Results

Students at the Jefferson County Career and Technical Center used learned skills to compete in the State's Skills USA competition. The Jefferson County delegation won the Chapter Business, Opening and Closing, and Job Interviewing categories. The winners represented Mississippi at the National competition in Louisville, KY. A member competing in the Extemporaneous Speaking competition ranked 14th in the nation. A member of the Chapter Business team scored higher than all other competitors in that category. Further, the Chapter Business team ranked 6th in the nation. Students participating in career/workforce development activities experienced a boost in confidence levels and are better prepared to find and maintain employment.

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.)
- Economy
- Appropriations changes
- Public Policy changes
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)
- Other (Relocation of youth)

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 2016, 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. 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.

MSU also has a Standardized Extension Evaluation Survey 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. The number of agents and specialists utilizing the survey has been increasing.

Alcorn State University Extension educators and specialists used pre and posttests, written evaluation instruments, and observations to assess the effectiveness of educational programs and activities. These tools were either developed by educators/specialists individually or by program planning groups. Evaluation results are attached to required monthly reports and are used to improve future activities or to decide whether activities should be continuously implemented.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Family and Consumer Sciences

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
701	Nutrient Composition of Food	0%	0%	1%	0%
702	Requirements and Function of Nutrients and Other Food Components	0%	0%	1%	0%
703	Nutrition Education and Behavior	20%	45%	1%	100%
704	Nutrition and Hunger in the Population	0%	0%	1%	0%
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	5%	0%	3%	0%
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	3%	4%	33%	0%
721	Insects and Other Pests Affecting Humans	0%	0%	3%	0%
722	Zoonotic Diseases and Parasites Affecting Humans	0%	0%	4%	0%
723	Hazards to Human Health and Safety	5%	0%	16%	0%
724	Healthy Lifestyle	25%	20%	3%	0%
801	Individual and Family Resource Management	15%	16%	3%	0%
802	Human Development and Family Well-Being	27%	15%	27%	0%
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	0%	0%	1%	0%
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures	0%	0%	3%	0%
	Total	100%	100%	100%	100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2016	Extension		Research	
	1862	1890	1862	1890

Plan	39.9	6.0	11.0	0.0
Actual Paid	45.3	8.0	7.1	1.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
1193507	433556	52459	134371
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
1193507	433556	469224	134371
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	2974012	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Considering the breadth of this program, Extension and research focused on numerous areas:

- healthy lifestyles education (nutrition, health, fitness, wellness, and obesity),
- proper food handling,
- family resource management,
- preparing a competent early child care workforce, and
- human development.

A variety of approaches were utilized:

- Educational programs, events, and activities, as well as research, in local schools and communities;
- Hands-on application and demonstration related to community gardens, nutrition education, and physical fitness; and
- Training, technical assistance, and certification for childcare workers and centers.

In 2016, ASUEP Educators and specialist conducted activities in the following broad program areas:

- Food and nutrition,
- Health and well-being,
- Effective parenting,
- Healthy lifestyles
- Financial management for individuals and families, and
- Foods safety.

Many activities targeted both youth and adults. The primary focus of activities related to healthy lifestyles was increased physical fitness. Food safety activities exclusively targeted safe food preparation and handling and did not include food preservation.
The primary mode of program delivery was workshops, but also included health fairs, demonstrations, and one-on-one technical assistance.

2. Brief description of the target audience

At MSU, 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 (Mississippi Child Care Research and Referral Network). Other activities in this program--such as those focused on childhood obesity and human health and nutrition--will have a broader focus.

At ASU, the target audiences were at-risk youth age 5 to 19, adults, volunteers, limited-resource families, and limited-resource and socially disadvantaged communities.

3. How was eXtension used?

At MSU, 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, 104 MSU employees are eXtension users as members of 39 COPs. 9 MSU Extension employees serve as a leader for a COP, leading 7 COPs. 1 MSU Extension personnel is a member of the Community Nutrition Education COP. 5 MSU Extension personnel are members of the Community, Local and Regional Food Systems COP. 2 MSU Extension personnel are members of the Creating Healthy Communities COP. 4 MSU Extension personnel are members of the Educational Technology Learning Network. 2 MSU Extension personnel are members of the eXtension Alliance for Better Child Care COP. 4 MSU Extension personnel are members of the Extension Disaster Education Network. 2 MSU Extension personnel are members of the Families and Child Well-Being Learning Network COP. 11 MSU Extension personnel are members of the Families, Food, and Fitness COP, with 2 being leaders. 3 MSU Extension personnel are members of the Family Caregiving COP. 2 MSU Extension employees are members of the Financial Security for All COP, with 1 being a leader. 3 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. 3 MSU Extension personnel are members of the Network Literacy COP.

At ASU, information from eXtension was used to supplement existing teaching resources, to create new teaching content, and to provide solutions to questions asked by clients on the local and state levels.

V(E). Planned Program (Outputs)

1. Standard output measures

2016	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	210520	274390	293778	379361

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

Patent Applications Submitted

Year:	2016
Actual:	5

Patents listed

Chambers, J, H. Chambers, and E. Meeks, 2016. Phenoxyalkyl Pyridinium Oxime Therapeutics for Treatment of Organophosphate Poisoning. USPTO US.9,227,937, issued 01/05/2016.

Chambers, J, H. Chambers, and E. Meeks, 2016. Novel Oximes for Reactivation of Acetylcholinesterase Inhibited by a Cyclosarin Surrogate. Provisional Patent filed 03/14/2016.

Chambers, J, H. Chambers, and E. Meeks, 2016. Novel Oximes for Reactivating Butyrylcholinesterase. Provisional Patent filed 03/14/2016.

Schilling, W. 2016. Compositions of Food Grade Coatings to Control Pest Infestations and Methods of Applications. USPTO PCT/US16/61667. 11/11/2016

Kim, T. J. and J. Silva. 2016. Salmonella and Listeria Assay Methods and Kit. USPTO Patent Application number 14/871836, 7/14/2016.

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2016	Extension	Research	Total
Actual	30	64	94

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

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

Year	Actual
2016	45953

Output #2

Output Measure

- Number of people attending certification courses. (MSU)

Year	Actual
2016	1021

Output #3

Output Measure

- Conduct educational programs on nutrition, health, physical fitness, and wellness for limited-resource adults. (ASU)

Year	Actual
2016	52

Output #4

Output Measure

- Conduct research on nutrition, health, wellness, obesity, and opportunities for physical fitness on youth and adults. (ASU)

Year	Actual
2016	1

Output #5

Output Measure

- Disseminate information about nutrition, chronic diseases, and weight management. (ASU)

Year	Actual
2016	125370

Output #6

Output Measure

- Conduct educational programs, events, and activities on effective parenting practices. (ASU)

Year	Actual
2016	19

Output #7

Output Measure

- Conduct educational programs on nutrition, health, physical fitness, and wellness for limited-resource youth. (ASU)

Year	Actual
2016	10

Output #8

Output Measure

- Conduct educational programs, events, and activities on family financial resource management. (ASU)

Year	Actual
2016	20

Output #9

Output Measure

- Conduct educational programs, events, and activities on food safety practices to preserve food quality and food sanitation. (ASU)
  Not reporting on this Output for this Annual Report

Output #10

Output Measure

- Conduct educational programs of food safety and sanitation practices. (ASU)

Year	Actual
2016	5

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Individuals and/or families increase their knowledge about health or child/family well-being. (MSU)
2	Individuals and/or families report changes in behavior to improve health or child/family well-being. (MSU)
3	Individuals and/or families report improved health or child/family well-being. (MSU)
4	Number of clientele (limited access to fresh fruit and vegetables) that report increase in access to healthy food and vegetables as the main sources of their everyday diets.(ASU)
5	Number of clientele (limited access to exercise equipment and facilities) that report positive changes in physical activity, decreased caloric intake, and behavior changes connected to adoption of new recommendations on how to prepare healthier meals. (ASU)
6	Number of limited-resource families and youth that report using better healthy eating practices and increased physical activity to manage obesity, weight, and health-related diseases. (ASU)
7	Percentage of participants that utilized knowledge gained and made adjustments in their nutrition and lifestyle behaviors. (ASU)
8	Number of limited-resource participants that demonstrate the adoption of effective parenting practices to improve parent/child relationships. (ASU)
9	Number of limited-resource families and youth that report using learned skills to analyze their financial well-being and make effective financial management decisions. (ASU)
10	Number of new technologies developed that enhance food safety and nutritional quality. (ASU)

Outcome #1

1. Outcome Measures

Individuals and/or families increase their knowledge about health or child/family well-being. (MSU)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	9191

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Preventable health risk behaviors are often established during childhood or adolescence and continue into adulthood, contributing to the leading causes of death, disability, and social problems. Data from the Youth Risk Behavior Surveillance System indicate that adolescents in MS and TN show consistently lower rates of consuming necessary fruits and vegetables and higher rates of consuming soda than the U.S. average. They also report higher rates of television viewing and lower rates of physical activity each week.

What has been done
To improve knowledge and actions of physical activity and healthy eating among rural youth through evidence-based programming, MSU Extension implemented Jump Into Foods and Fitness curriculum was implemented in 4 rural counties in MS, and UT Extension implemented it in 1 rural county in TN. Approximately 830 youth in MS 950 youth in TN were reached using a 12-session curriculum delivered in multiple settings: elementary schools, middle schools, community centers, and a housing authority.

Results
Data from 582 matched pre/posttest surveys revealed statistically significant changes from before to after the program in the desired direction (more positive). After the program, youth were more likely to report that they use information to make decisions, don't let friends talk them into doing something they don't want to do, are comfortable sharing their thoughts and feelings with others, and are connected to adults who are not their parents. Youth reported having learned the foods that they should eat every day, what makes up a balanced diet, why it is important to eat a healthy diet, and how to make healthy food choices. They also reported eating more fruits, vegetables, and whole grains; eating fewer junk foods; and drinking more water. Finally, youth reported doing moderate physical activities like walking, helping around the house, raking leaves,

or using the stairs; exercising 60 minutes every day; and agreeing that physical activity will help them stay fit.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
723	Hazards to Human Health and Safety
724	Healthy Lifestyle
802	Human Development and Family Well-Being

Outcome #2

1. Outcome Measures

Individuals and/or families report changes in behavior to improve health or child/family well-being. (MSU)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	7352

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Under the Mississippi Food Code, anyone serving food for pay is required to have a permit to operate a foodservice facility. As outlined by the Mississippi Food Code, facilities are required to show documentation of food safety knowledge and practice through training documentation and inspection. This requirement applies to commercial, institutional, catering operations, and other foodservice establishments. By completing food safety training, facilities have a better understanding of how to maintain a cleaner and safer facility, which reduces the risk of a potential foodborne illness outbreak. By extending the food safety knowledge to employees through job training and group in-service opportunities owners and managers can equip their employees with the knowledge and skills to understand how food becomes unsafe, which groups are at an increased risk of a foodborne illnesses and how to take action to reduce the risk of a foodborne illness in their operation.

What has been done

Mississippi State University Extension in partnership with the Mississippi Hospitality and Restaurant Association and the Mississippi State Department of Health, provides the primary food safety management certification course utilized in Mississippi. The ServSafe program is offered as a face to face training in both an 8-hour and 16-hour format. The length of the training is determined by the agent and the county where the training is being offered. Successful completion of the national certification exam requires that an individual has a score of 75% or higher on a secure, proctored exam offered by the National Restaurant Association Educational Foundation. Certification is good for a five-year period. To maintain certification, an individual must take an updated course and complete the current course exam prior to the expiration of their current certification. MSU Extension employees provides a managerial course to personnel in a variety of foodservice operations. Available dates for courses are provided on the MSU Extension website and the Mississippi Hospitality and Restaurant Association website. The Mississippi State Department of Health employees will direct those interested in completing the ServSafe certification to Mississippi State University Extension for assistance in finding a class that meets their needs.

Results

From October 2015 to September 30, 2016, 52 classes were taught by seventeen ServSafe certified MSU Extension instructors. A total of 470 participants completed the ServSafe Certification training. Passage rate for all attendees taking the certification exam was 66%. ServSafe certification courses were offered at seventeen primary locations throughout the state of MS during the program year. MSU Extension instructors have been praised for their dedication and professionalism regarding the curriculum and training by many of the participants. The MSU Extension ServSafe program continues to be recommended by the Mississippi State Department of Health to businesses and individuals seeking certification in MS.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
723	Hazards to Human Health and Safety
724	Healthy Lifestyle
802	Human Development and Family Well-Being

Outcome #3

1. Outcome Measures

Individuals and/or families report improved health or child/family well-being. (MSU)

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	3676

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Data from the Department of Housing and Urban Development's Comprehensive Housing Affordability Strategy survey shows that 17% of Mississippi's houses have severe housing problems as measured by overcrowding (>1.5 person per room); expense (housing costs over 50% of household monthly income); incomplete plumbing facilities; or incomplete kitchen facilities. Poor housing conditions have been linked with poor health outcomes of the residents living in them. Addressing housing conditions is among the most important primary prevention strategies that Extension can offer to its communities.

What has been done
MSU Extension's Healthy Homes Initiative provides training and resources on healthy homes in communities throughout Mississippi. Curriculum content focuses on indoor air quality, radon, asthma and allergies, mold and mildew, carbon monoxide, lead, drinking water, home safety and accessibility, hazardous household products, and integrated pest management. During FY2016, MSU Extension Agents reached 1091 community-dwelling older adults, residents of HUD-subsidized housing units, child care providers, and families with healthy homes education.

Results
Participants increased knowledge of healthy homes principles and intention to change behaviors that improve housing conditions. Among a representative sample of 39 child care providers, 100% increased knowledge and behavioral intent related to indoor air quality, asthma and allergies, mold and moisture control, safety and accessibility, hazardous household products and pest management. A second targeted evaluation of 14 independent living residents of a regional mental health provider showed 78% had purchased and replaced batteries for their smoke detectors in response to safety and accessibility education. Changes in housing environments such as these reduce asthma risk and exacerbations, falls, and accidents at home related to lead poisoning and chemical ingestion.

4. Associated Knowledge Areas

KA Code	Knowledge Area
721	Insects and Other Pests Affecting Humans
723	Hazards to Human Health and Safety
724	Healthy Lifestyle

801	Individual and Family Resource Management
802	Human Development and Family Well-Being
803	Sociological and Technological Change Affecting Individuals, Families, and Communities

Outcome #4

1. Outcome Measures

Number of clientele (limited access to fresh fruit and vegetables) that report increase in access to healthy food and vegetables as the main sources of their everyday diets.(ASU)

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	1891

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Healthy foods are abundantly available at some local supermarkets. For individuals on fixed incomes, however; these fresh alternatives remain inaccessible because they simply cost too much. Fruits and vegetables are even less accessible for people living in small, rural communities because smaller supermarkets do stock the freshest selections. Local farmers' markets offer fresh fruits, vegetables, and value-added products at affordable prices and provide additional benefits to residents living on fixed incomes.

What has been done
For almost 20 years, ASU's Extension Program has operated a farmers' market in Natchez, MS to meet the nutritional needs of families with limited incomes. ASUEP has partnered with the City of Natchez, MS to provide a place where local farmers' can sell home-grown produce at affordable prices. The market has also been commonplace to sell homemade jellies, jams, and hand-made items. Special vouchers are provided by the Mississippi Department of Agriculture and Commerce and the Mississippi State Department of Health's Women Infants and Children's program to qualifying individuals to purchase fruits and vegetables from participating farmers' markets.

Results
Since its conception, the Natchez farmers' market has served over 10,000 people living in Natchez and surrounding areas. More than half of those served used vouchers, valued at $15 per person, to purchase produce for an approximate out-of-pocket savings of $97,500 over the life of the market. The Natchez Farmer's Market has also inspired the creation of the mobile

farmers' market initiative funded by the Mississippi State Department of Health which makes fresh produce available in rural communities. Additionally, farmers markets have also been established in Utica and Durant, MS.

4. Associated Knowledge Areas

KA Code	Knowledge Area
724	Healthy Lifestyle

Outcome #5

1. Outcome Measures

Number of clientele (limited access to exercise equipment and facilities) that report positive changes in physical activity, decreased caloric intake, and behavior changes connected to adoption of new recommendations on how to prepare healthier meals. (ASU)

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	649

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Youth and adults with poor eating habits often don't know the benefits associated with eating healthy. Poor diets can possibly lead to diseases such as obesity, heart disease, hypertension, diabetes, high cholesterol, and certain types of cancer. Youth who learn to cook healthy meals decrease caloric intake, consume more fruits and vegetables, and often practice healthy lifestyles as adults.

What has been done
The ASUEP 4-H Food-Smart-Families program was designed to help youth and their families make healthy life choices. The 4-H Development staff along with EFNEP staff members, four (4) adult volunteers, and five (5) Youth Health Ambassadors conducted two (2), week-long cooking camps in Natchez, MS (June 6-10, 2016) and at Alcorn State University (June 27-July 1, 2016). Youth learned the importance of (1) eating more fruits and vegetables, (2) drinking more water, (3) choosing healthier snacks, (4) eating breakfast, (5) preparing healthy meals on a budget, and (6) practicing food-safety principles to prepare and preserve foods. Forty-two (42) children participated in these camps collectively.

Results

After participating in the cooking camps, 45% of participants agreed they could make healthier food choices. Forty-five percent (45%) agreed to eat more fruits and vegetables. Twenty-five percent (25%) agreed to drink more water and consume fewer sugary drinks. Sixty percent (60%) agreed to use knowledge and skills to prepare or choose healthier snacks. Seventy-one percent (71%) reported plans to make better food choices. Eligible parents and adult volunteers enrolled in EFNEP and requested an adult cooking school. This activity saved participants an estimated $7,350 in camp fees. If continued, these camps could produce a healthier youth population with fewer doctor's visits resulting in approximately $110 saved annually per child.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

Outcome #6

1. Outcome Measures

Number of limited-resource families and youth that report using better healthy eating practices and increased physical activity to manage obesity, weight, and health-related diseases. (ASU)

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	7879

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The 2016 State of Obesity Report ranks Mississippi third among states with the highest obesity rates at 35.5%. Obesity is a prerequisite for many chronic and terminal diseases. Along with healthy eating, regular physical activity can control weight, reduce risks of disease, strengthen bones, improve mental health and moods, prevent falls, and increase longevity (CDC, 2015).

What has been done
ASUEP collaborated with Pathway to Wellness, LLC and Natchez High School to implement the "Biggest Loser Challenge." The eight-week fitness program began with an initial weigh-in, BMI stats, body measurements, and blood pressure checks. Weekly sessions included nutritional lessons, food demonstrations, and an exercise routine. Twenty (20) people completed intake forms and the initial weigh-in.

Results

Forty-five percent (45%) of initial registrants completed the eight-week program. The highest individual weight loss was 27 pounds with 22 pounds second. Participants lost an average of six (6) pounds each. Follow-up interviews indicated that the contest's winner continued to lose weight after the program ended. Seven (7) participants maintained weight lost. Only one participant reported regaining weight (five pounds). Participants also reported increased water intake, eating smaller meal portions, and daily physical activity. Participants saved an average of $150 each in program fees as a result of participating in this free, educational program.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
724	Healthy Lifestyle
801	Individual and Family Resource Management
802	Human Development and Family Well-Being

Outcome #7

1. Outcome Measures

Percentage of participants that utilized knowledge gained and made adjustments in their nutrition and lifestyle behaviors. (ASU)

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	46

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
According to the Center for Disease Control, a balanced diet is vital for a healthy lifestyle. The Dietary Guidelines for Americans 2015-2020 emphasize eating fruits and vegetables, whole grains, fat-free or low fat milk and milk products, lean meats and meat substitutes, foods low in saturated fats and cholesterol, low salt and added sugars, and low calorie foods. A 2013 USDA study provided evidence that well planned, nutrition education programs can help participants make wise food choices.

What has been done
Family and Consumer Science Educators conducted nutrition educational activities to promote healthy eating habits for adults and youth. Nutrition activities were conducted at a youth

leadership camp at Alcorn State University in June 2016, the Children's Learning Center in Vicksburg, MS, the Educare Senior Day Centers in Vicksburg and Jackson, MS, and during a Health and Wellness Fair at Alcorn State University. Workshop lessons and activities were primarily based on the Dietary Guidelines for Americans and USDA's MYPLATE eating plan. One thousand ninety-one (1,891) people participated in nutrition education programs in 2016.

Results

Evaluation results from pre and posts tests indicated 95% of program participants retained at least 85% of extended nutrition knowledge. Forty-six percent (46%) of participants self-reported using new knowledge to read food labels, include more fruits and vegetable in their diets, to reduce sodium and sugar intake, and to exercise at least 15-30 minutes each day. Programs and activities that teach participants how to make healthy adjustments to their diets and lifestyles could positively impact the obesity rate in Mississippi.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
724	Healthy Lifestyle
801	Individual and Family Resource Management
802	Human Development and Family Well-Being

Outcome #8

1. Outcome Measures

Number of limited-resource participants that demonstrate the adoption of effective parenting practices to improve parent/child relationships. (ASU)

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	192

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The Child Abuse Prevention and Treatment Act (CAPTA) of 2010 identified parent education "as a core prevention service." According to CAPTA, parenting education improves communication skills and reduce risks of child abuse and disruptive behaviors. ASUEP is committed to helping individuals overcome parenting obstacles to produce positive outcomes for both children and

parents.

What has been done

A series of parenting education classes were taught in Claiborne, Franklin, and Wilkinson counties by two Extension educators. Most sessions were taught using the Effective Parenting curriculum in small, group settings. Sessions included direct teaching, videos, and open dialog. Most participants were ordered by the Mississippi Department of Human Services to acquire training on the prevention of child abuse and neglect, anger management, and acceptable disciplining techniques.

Results

One hundred percent (100%) of participants successfully met requirements established by the Mississippi Department of Human Services by attending all sessions. Participants received a certificate of participation to document class attendance. In addition to learning new skills, participants expressed confidence in their ability to properly care for their children. Because these classes were offered free to participants, approximately $770 was saved collectively.

4. Associated Knowledge Areas

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

Outcome #9

1. Outcome Measures

Number of limited-resource families and youth that report using learned skills to analyze their financial well-being and make effective financial management decisions. (ASU)

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2016	963

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Some adults with low-incomes do not make wise financial decisions. These bad decisions can cause a myriad of problems such as bankruptcies repossessions, foreclosures, and homelessness. Money management education can help low income families make better use of their resources and can provide a sense of stability in an unstable economy.

What has been done

A Financial Literacy workshop was conducted at the Claiborne County Department of Human Service in Port Gibson, MS for families receiving financial assistance. Participants learned effective ways to spend and save money. During Financial Literacy Month in April, money management resources were distributed to students attending Alcorn State University and offered tips to avoid credit pitfalls. Budgeting workshops were conducted in Jefferson County to teach participants to develop and follow a monthly spending plan. Financial management activities were also conducted at the Educare Senior Day Center in Jackson, MS for senior citizens living on fixed incomes.

Results

As a result of participating in money management activities, participants were able to make wiser spending decisions. Participants in Jefferson County used new knowledge to purchase and recycle materials to make home décor such as wreaths and hand painted items. Many of these items have been sold to create a secondary source of income. One participant reported earning more than $200 a month for hand-made items. In essence, money management activities offered by ASUEP have given participants a sense of control over their own financial futures.

4. Associated Knowledge Areas

KA Code	Knowledge Area
801	Individual and Family Resource Management

Outcome #10

1. Outcome Measures

Number of new technologies developed that enhance food safety and nutritional quality. (ASU)

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

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 2016, 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. 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.

MSU also has a Standardized Extension Evaluation Survey 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. The number of agents and specialists utilizing the survey has been increasing.

At Alcorn State University, results of written and oral evaluation processes have indicated a need for programs in the following areas:

- Financial literacy for adults,
- High school financial literacy,
- Shopping on a budget,
- Managing chronic diseases, and
- Recipe modification.

Key Items of Evaluation

VI. National Outcomes and Indicators

1. NIFA Selected Outcomes and Indicators

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