2017 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 totaled $4,899,394 for federal fiscal year 2017 and a total Smith-Lever appropriation of $7,052,337, as well as ASU's Evans Allen appropriation and Smith-Lever appropriation.

In 2017, the U.S. Census estimated Mississippi to have approximately 2,984,100 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 FY2017, MSU Extension professionals (231.2 total FTE) carried out 107,461 educational activities with a total of 3,716,310 contacts. [MSU Extension is transitioning to a new reporting system; 2016 was the first year this system was pilot-tested. It may take additional 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 2017, MAFES scientists (91.87 total FTE, based on FFY17 data) produced 418 peer-reviewed scientific publications, 285 other technical publications, 11 patent applications, 2 patents/PVPs, and supported 188 graduate assistants.

Mississippi State University (MSU) has 5 "imperatives" that were identified through a formal statewide needs assessment process:
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.

This Joint Report of Accomplishments for Alcorn State University's Extension and Research programs is a compilation of efforts completed by the Extension Program and Researchers within the School of Agriculture and Applied Sciences (AAS). Educational programs draws upon the organization's unique strengths and its comprehensive delivery system to conduct original research and to deliver educational programs targeting limited-resource audiences. Extension and Research professionals facilitated positive change in the Capital River, Delta, and Coastal regions of Mississippi by implementing jointly-planned programs and activities. State-level Extension Specialists developed programs using research-based information and needs identified during county needs assessments and Environmental Scanning sessions. Researchers conducted scientific investigations on current issues relevant to plants and animals. At the county level, Extension Educators delivered educational programs, events, and activities which allowed limited-resource audiences to obtain and apply new knowledge and skills. Additionally, many of the agricultural concepts and techniques taught to Extension audiences were first tested and substantiated on the Model Farm at ASU and at two off-campus demonstration centers in Mound Bayou and Preston, Mississippi.

Currently, ASU's Extension Program and Research unit are conducting educational programs and inquiries in five programming areas:

- Animal Systems,
- Natural Resources,
- Plant Systems,
- 4-H and Positive Youth Development,
- Family and Consumer Sciences, and
- Community Resources and Economic Development.

These listed programming areas represent those with the greatest need as identified by local advisory groups, community stakeholders, researchers, and Extension staff.

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

- Animal Systems,
- Plant Systems,
- Natural Resources,
- Community Resource and Economic Development, and
- 4-H and Youth Development; and
- 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: 2017	Extension		Research	
	1862	1890	1862	1890
Plan	262.6	36.0	130.0	36.0
Actual	231.2	40.0	219.1	8.0

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, an external advisory committee comprised of USDA representatives, industry experts, local governmental boards, and laypeople helped to legitimize current Research projects and Extension programs. This committee offered expert advice on issues and concerns to be addressed with Extension and Research efforts. Further, an annual review of Extension programs was conducted by an internal review committee. This committee evaluated the need for planned programs, delivery methods, intended audiences, evaluation processes, and verified impacts on people and communities. Environmental scanning sessions will continue to guide program planning and implementation at ASU.

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 2017, at least 150 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.

At ASU, Stakeholder input was primarily gathered using Environmental Scanning processes. Environmental scanning meetings were conducted to assess prevalent programming needs of

limited-income audiences. Extension educators utilized subject-matter advisory councils, comprised of community representatives, that provided suggestions for needed programs. Additionally, ASUEP Educators and MSUES Extension Agents conducted joint needs assessment meetings with individuals representing all major programming areas. Future programming needs were identified during county and state-level educational activities. ASUEP county and state-level staffs also partnered with organizations and agencies with like missions to identify the unique needs of limited income audiences. These community partners were often consulted for program implementation.

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.

At ASU, individuals and group stakeholders were identified though an informal community screening process. Identified stakeholders represented the community's demographic (race, gender, etc.) and geographic (urban, rural, farms, etc.) makeup. Members of advisory groups were recruited with formal letters of invitation, personal contacts, and word-of-mouth. Stakeholders were invited to participate in annual needs assessment meetings and environmental scanning processes. Environmental scanning activities were designed to prioritize and elaborate on identified needs which resulted in meaningful programs for limited-income audiences and their families.

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.

At ASU, input from the State-level, external advisory committee guided decisions for budget allocations, redirection of research and outreach efforts, staffing decisions, and establishment of program priorities. Input from County-level advisory groups guided program planning and implementation in local communities. Although many counties served by ASUEP have similar needs, programs and activities were customized to address the unique needs of each county. Extension Educators created Individual Performance Plans that were unique to the counties they served.

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.

ASU values stakeholders' input and is committed to implementing suggestions when feasible. The needs identified by stakeholders were analyzed to determine those that could be adequately addressed with ASUEP educational programs and activities. Subject-area specialists used the prioritized needs to develop and/or identify relevant curricula for program implementation. Extension educators integrated selected curricula into Individual Performance Plans (Individual Plans of Work). In short, stakeholders' input was used for program development and implementation.

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.

Stakeholders appreciated timely responses to questions and concerns relative to all Extension program areas. Stakeholders valued opportunities to offer feedback to decision makers for improving current and future research and outreach initiatives. Our stakeholders were eager to share positive program outcomes within their communities. In this regard, it is vital to keep stakeholders informed about research projects and outreach programs at ASU.

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
{No Data Entered}	{No Data Entered}	{No Data Entered}	{No Data Entered}

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	7052337	2036654	4712740	2167762
Actual Matching	7052337	2036654	4822883	2167762
Actual All Other	0	0	19658771	0
Total Actual Expended	14104674	4073308	29194394	4335524

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous				
Carryover	502225	0	3558544	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	7%	16%	9%	50%
302	Nutrient Utilization in Animals	12%	4%	20%	0%
303	Genetic Improvement of Animals	5%	0%	1%	0%
304	Animal Genome	5%	0%	3%	0%
305	Animal Physiological Processes	7%	0%	14%	50%
306	Environmental Stress in Animals	4%	0%	7%	0%
307	Animal Management Systems	15%	29%	17%	0%
308	Improved Animal Products (Before Harvest)	4%	0%	3%	0%
311	Animal Diseases	10%	0%	11%	0%
312	External Parasites and Pests of Animals	3%	0%	0%	0%
313	Internal Parasites in Animals	3%	0%	0%	0%
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals	3%	0%	0%	0%
315	Animal Welfare/Well-Being and Protection	10%	0%	0%	0%
402	Engineering Systems and Equipment	5%	0%	0%	0%
501	New and Improved Food Processing Technologies	0%	0%	4%	0%
503	Quality Maintenance in Storing and Marketing Food Products	0%	0%	7%	0%
601	Economics of Agricultural Production and Farm Management	2%	22%	0%	0%
602	Business Management, Finance, and Taxation	0%	26%	0%	0%
603	Market Economics	2%	0%	3%	0%
604	Marketing and Distribution Practices	3%	3%	1%	0%
	Total	100%	100%	100%	100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2017	Extension		Research	
	1862	1890	1862	1890
Plan	30.1	6.0	19.3	4.0
Actual Paid	27.8	5.2	24.8	2.0
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**
846917	275913	812282	531778
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
846917	275913	1950376	531778
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	6784568	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

At MSU, this program involved individuals from multiple disciplines 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.

At MSU, three areas are designed to assist farmers in making their enterprises more profitable:

- The Farm Management Information and Training area provides farmers and agribusiness professionals with timely and relevant information on a variety of topics potentially impacting management decisions on their operations. It offers a number of practical decision aids along with training on the use of these aids as well as providing a resource for managers who need help with business planning.
- The Extension Agricultural Marketing Information and Education area provides producers of major row crops, cattle, milk and dairy products, catfish, fruits and vegetables, and horticultural crops with regular, timely updates on conditions in these commodity markets. In addition, training will be made available on the use of commonly used marketing tools and strategies.
- The Agricultural Policy Analysis and Education area provides producers, lenders and other input providers, and rural community leaders with timely and relevant information on existing farm, conservation, and international trade programs as well as analysis of the potential impact of proposed policy changes.

At ASU, Extension programs focused on presenting relevant content to address identified knowledge and skill needs of 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,

demonstrations, and conferences. Survey instruments were developed to gather input and identify relevant farm management and marketing educational topics. ASU conducted a small farmers' conference, published educational resources, conducted presentations and workshops for farmers, developed marketing plan samples, and offered agricultural tours. Marketing tips and techniques were extended during presentations for Farmers Market start-up meetings and during weekly radio programs.

2. Brief description of the target audience

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

ASU's target audiences included limited-resource and socially disadvantaged farmers, female producers, and youth within the organization's service area (Southwestern, Delta, and some Northern Counties). Limited-resource residents are those earning 80% or less income of Mississippi's Median Household income.

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. As in previous years, 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. Specifically, 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.

ASU's Extension specialists and educators used eXtension as a resource for timely publications and other resources for program development in agriculture, youth development, family and consumer science, and community resource and economic development. Additionally, eXtension was used to seek answers to questions asked by local clientele.

V(E). Planned Program (Outputs)

1. Standard output measures

2017	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	106686	179817	1454	2273

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

Patent Applications Submitted

Year:	2017
Actual:	6

Patents listed

1. Weed, B.C, A. Borazjani, and J. Liao. (2016) Insertable Probe. USPTO No. 9,510,766. Dec. 6, 2016.
2. Smith, J. L, A. Ravichandran, S. Lu, and G. Gu. (2017). Engineering the Production of a Conformational Variant of Occidiofungin that has Enhanced Inhibitory Activity Against Fungal Species. USPTO No. 9,624,270. April 18, 2017.
3. To, F. 2017. Microenvironment Incubation Method and Apparatus. USPTO 62/515,752, patent filed 6/6/2017
4. Wise, D.,G. Chesser, J. Lowe T. Byers, and T. Greenway. 2016. System for delivery of live biologics. Patent Pending, USPTO PCT/US16/066728, PCT Filed 12/14/2016.
5. A. Borazjani, Weed, B.C, and J. Liao. (2016) Imaging Probe Adapter. Patent Pending, USPTO. 15/369,638, RPA CIP, 12/5/2016
6. Smith, J. A, A. Ravichandran, S. Laihing, Lu, Shien, F. Austin, and S. Pruett. (2017). Occidiofungin Formulations and Uses Thereof. Patent Pending. USPTO 15/510,801. RPA - Nationalized PCT (US), 3/13/2017.

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2017	Extension	Research	Total
Actual	62	140	202

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

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

Year	Actual
2017	39599

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
2017	52

Output #3

Output Measure

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

Year	Actual
2017	5

Output #4

Output Measure

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

Year	Actual
2017	4

Output #5

Output Measure

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

Year	Actual
2017	1

Output #6

Output Measure

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

Year	Actual
2017	9019

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 new technologies, practices, production systems developed that enhance production, profitability or environmental stewardship. (MSU)
10	Number of policies, decision support tools, and strategies developed that enhance profitability, inform production decision, and mitigate/manage risk. (MSU)
11	Number of farmers and producers that gain knowledge on Farm Management. (ASU)
12	Number of farmers and producers that keeps accurate records. (ASU)
13	Number of farmers and producers that applies for farm loans. (ASU)
14	Number of clients that gain knowledge on Financial Management. (ASU)

Outcome #1

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	7920

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Technological innovations and applied engineering have drastically changed poultry house operation and management over the last 30 years. Even though poultry is currently the largest agricultural commodity in Mississippi and global consumption continues to increase, most of the general public has a deficient understanding of the modern poultry production process.

What has been done
The Mississippi Energy and Environment Laboratory (MEEL) was developed by MSU Extension as a mobile platform to educate MS residents on the latest technologies and methodologies in the operation of broiler houses. The project was a joint venture between the MSU Department of Agricultural and Biological Engineering and the USDA ARS Poultry Research Unit in Starkville, MS. Specifically, MEEL is a retrofitted 8.5'X 44' cargo trailer that provides a working demonstration of the elements needed to operate a poultry house.

Results
MEEL was exhibited at six events over the past year and reached over 100 adults and over 1,500 students from 19 counties in Mississippi and 12 in Alabama. Four of the events targeted 8th grade and high school students and were opportunities to discuss jobs in agricultural engineering, academia, and the poultry industry. Follow up discussions with students from these events show that they have an increased interest in pursuing degrees in engineering, engineering technology, or poultry science. Over the past 5 years, MEEL has reach over 5,000 students and adults, sparked hundreds of conversations about commercial poultry production and college degrees, and helped the average chicken consumer understand a little bit more about the food they eat.

4. Associated Knowledge Areas

KA Code	Knowledge Area

301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
303	Genetic Improvement of Animals
304	Animal Genome
305	Animal Physiological Processes
306	Environmental Stress in Animals
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)
311	Animal Diseases
312	External Parasites and Pests of Animals
313	Internal Parasites in Animals
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
315	Animal Welfare/Well-Being and Protection
402	Engineering Systems and Equipment
601	Economics of Agricultural Production and Farm Management
603	Market Economics
604	Marketing and Distribution Practices

Outcome #2

1. Outcome Measures

Clientele implement recommended agricultural practices or behaviors. (MSU)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	6336

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
As the sheep and goat industry in Mississippi continues to grow, new producers continue to be added every year that lack training in basic small ruminant management. A recent survey shows approximately 35,000 head of small ruminant livestock present in Mississippi with death loss

estimates ranging from 15-20% due to internal parasite infestation. Death loss numbers from parasites, and the barber pole worm in particular, make parasite management for the barber pole worm a priority in Mississippi.

What has been done

MSU Extension provided regional training programs on small ruminant management in MS. Clinics were held in the north, central, and southern parts of MS in an effort to reach every producer. A hands-on approach was used to teach the FAMACHA method of detection for the barber pole worm in small ruminants. The total program used a PowerPoint that included forage management, strategic deworming, and general small ruminant management discussion. Opportunities at the end of the program include budgeting and marketing options for small ruminants.

Results

Over 100 producers and Extension agents have benefited from FAMACHA and Small Ruminant Management training in Mississippi this year. Pre- and post-test evaluations were made to improve response in the future. Producers impacted will continue to increase as those trained at these clinics will teach additional producers the skill set they have learned. The more producers trained will result in decreased death losses. The additional training in strategic deworming, budgeting, marketing, and forage management will increase profit for producers as well. Based on small ruminant numbers in the state (35,000) using an average market value ($150) per head, a reduction by just 5% in death loss calculates to an increase of $262,500 income per year for small ruminant producers in Mississippi.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
303	Genetic Improvement of Animals
304	Animal Genome
305	Animal Physiological Processes
306	Environmental Stress in Animals
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)
311	Animal Diseases
312	External Parasites and Pests of Animals
313	Internal Parasites in Animals
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
315	Animal Welfare/Well-Being and Protection
402	Engineering Systems and Equipment
601	Economics of Agricultural Production and Farm Management
603	Market Economics
604	Marketing and Distribution Practices

Outcome #3

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	3168

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The USDA Food Safety and Inspection Service began inspecting catfish processing facilities in March 2016. A component of the inspection is sampling for residues of chemical compounds. Fillets are tested for over 200 pesticides, veterinary drugs, and contaminants. During 2016 and 2017, there were two recalls of domestic channel catfish. Investigations could not find a direct link between chemical residues and use in the production process. To prevent recalls, farmers and haulers needed training on how to prevent contamination of live fish.

What has been done
A team of Extension Specialists in MS, AL, and AR developed training materials and conducted training opportunities in their states. Participants were provided information on how fish are exposed to products that may result in a tissue residue, regulatory statutes related to pesticide usage, product selection, following label instructions, record keeping, and avoiding pesticide contamination of ponds. Presenters reviewed label rates, application methods, and use restrictions for aquatic herbicides, algicides, and FDA-approved drugs and low regulatory priority drugs.

Results
Two meetings have been held in Mississippi. Generic materials have been sent to other states. In Mississippi, 107 producers and 11 haulers completed the training. This represents 32,645 acres, almost 95% of the acreage reported by USDA NASS. Participants were tested on knowledge gained and asked to complete a program evaluation. The average score for participants was 88.4 out of a possible 100 points. On a scale of 1 to 5 with 1 = Strongly disagree and 5 = Strongly agree, participants responded that they increased knowledge (4.57), learned new skills (4.34), training was relevant (4.46), and they will use the knowledge (4.45). Participants were issued a Certificate of Completion with a unique identifier. Participants can use this identifier to meet HACCP requirements of processors.

4. Associated Knowledge Areas

KA Code	Knowledge Area
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
303	Genetic Improvement of Animals
304	Animal Genome
305	Animal Physiological Processes
306	Environmental Stress in Animals
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)
311	Animal Diseases
312	External Parasites and Pests of Animals
313	Internal Parasites in Animals
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
315	Animal Welfare/Well-Being and Protection
402	Engineering Systems and Equipment
601	Economics of Agricultural Production and Farm Management
603	Market Economics
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
2017	118

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Best Management Practices (BMP), as related to livestock production, prevents animal watering sources from becoming contaminated with sediments from storm runoffs and other naturally occurring events. Implementing BMP on the farm helps conserve and protect natural resources for future generations. BMPs also prevent unnecessary expenditures on farm inputs by providing practical considerations for profitability, sustainability, and production.

What has been done

ASUEP specialists and educators conducted BMP activities related to raising beef cattle and goats. Workshops, demonstrations, and farm visits were primary delivery methods. Topics included Wild Hog Management, Reducing Somatic Cell Counts, Soil and Water Sampling Techniques, and Controlling Soil Erosion. Content was derived using USDA resources. Two thousand twenty-three (2,023) direct adult and youth contacts were made.

Results

Farmers who applied suggested BMPs reduced somatic cell counts by 38% in cows wading in muddy, standing water or sleeping on unclean bedding. Goat farmers significantly reduced amounts of sediments in drinking water by relocating grazing areas. Farmers who used BMPs to control wild hogs decreased soil erosion which had greatly contaminated watering sources. Producers who invested in BMP practices realized a 45% average return on their investments.

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)

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	10

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

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

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
2017	272

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Herd genetics directly influence profitability within the livestock industry. Artificial insemination (AI) is the best approach to rapidly improve herd genetics. Improved herds are linked to increased profits within industry. Unfortunately, limited-resource producers purchase bulls with low genetic merit, which in turn produce mediocre offspring. AI programs at Alcorn State University inform farmers about advantages of purchasing semen over live bulls, the economic impact of improved

cattle genetics, and the process to perform AI.

What has been done
ASU's Extension Program hosted three AI workshops, participated in an international AI training in Bangladesh, and conducted two cattle sales. Participants learned advantages of AI, estrus synchronization, heat detection, handling and thawing frozen semen, and semen selection methods. Other AI issues were also discussed. Farmers purchased quality livestock bred from highly genetic dam and sires during the cattle sales. A total of 8,658 direct and indirect, adult and youth contacts were made.

Results
Students improved skills and knowledge of AI processes. Farmers used AI techniques to improve offspring genetics. Farm record keeping increased by more than 50% as a result of participating in AI activities. Farmers in Bangladesh maintained established standard operating procedures for collecting semen. AI conception rates increased about 10%, based on discussions with AI workers. Quantities of semen sold increased by 60% (from 12,000 to 20,000 doses) per month. Cattle sales generated $10,247 which will be reinvested into the AI program.

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
2017	169

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Raising alternative livestock can be more beneficial than raising traditional animals. Health conscious consumers perceive foods from alternatively raised animals healthier and better tasting

than those raised using conventional methods. Alternative livestock operations are believed to be good for the environment and may even generate more farm income.

What has been done
Extension educators conducted activities on alternative livestock production for youth and adults in Mississippi's Southwestern Counties. Topics included Animal Production, Controlling Predators, Forage Production for Alternative Livestock, Wildlife Production, and Safe Water Sources for Alternative Livestock. Activities were conducted on local farms and during summer camps. One hundred sixty-nine (169) youth and adults participated in alternative livestock activities.

Results
Participants increased awareness and knowledge of the benefits of raising alternative animals. Two farmers applied skills to improve forages for their animals. The average savings from participating in activities on alternative livestock production is estimated at $35 per person, for a total estimated savings of $5,915. These savings contributed to producers' net profits since the sessions were offered cost-free.

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
2017	21

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Lighting programs are an integral management tool for commercial poultry operations. Providing the optimum lighting environment is critical to physiological processes, welfare, and production efficiency. Recent research has shown that light intensity levels in poultry houses are heavily influenced by ambient sunlight conditions. Gaining better control over unwanted light leakage can

improve live performance especially during summer conditions when large fans are frequently used to cool birds.

What has been done

High-efficiency shades were installed on the fans of two commercial broiler houses and light leakage and light uniformity at the floor were evaluated. Mobile carts containing light sensors were constructed and used to collect 600 light intensity measurements in each house with and without fan shades. To date, this project is the most intensive effort to characterize light intensities in modern commercial broiler houses.

Results

Results from this research show that the fan shades were effective at reducing overall light leakage and creating more uniform light intensities within the broiler houses. The maximum light intensity experienced with the fan shades on was over ten times lower (14.48 lx) than with the fan shades off (197.47 lx). Overall variability in light intensity measurements was also significantly lower when the fan shades were on. A collaborative effort with the National Poultry Technology Center at Auburn University is currently underway to create publications and Extension programming related to this project. The results of this project have interested several growers in Mississippi and Alabama to pursue the use of fan shades with the goal of improving overall production efficiency.

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
604	Marketing and Distribution Practices

Outcome #9

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
2017	8

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Past and ongoing research effort with intensive catfish production technologies (split-pond systems and intensively aerated ponds) have shown productivity increase and cost efficiency on catfish farms. With the increased adoption of these practices in U.S. catfish industry, catfish farmers are also incurring greater financial risk owing to the intensified use of key inputs (feed, fingerlings, and aeration). Moreover, the upfront capital needed also are higher for these systems making these systems not an automatic choice for many farmers. Hence it is important to outlay the factors that influence economic risk.

What has been done
Stochastic risk analysis was performed to outline downside risk associated with these systems. The contribution of each risk parameter to variation in net returns was measured as an indicator of its economic risk and stochastic dominance was tested by plotting their cumulative density functions. This methodology identifies the least-risky alternatives by comparing the entire sets of responses generated for the two technologies. Stochastic dominance was examined for both net returns (profitability in $/ha) and cost of production (BEP, $/kg, above total costs) under both short-run and long-run market conditions.

Results
The risk analysis showed that the intensively aerated ponds and split-pond systems had comparatively greater probabilities of being profitable under short-run and long-run market conditions. In the short run, variations in yield was the most important contributor to downside risk (58% to 66%) followed by FCR (26% to 29%). However, in the long run, variability in catfish prices contributed the most to economic risk (32% to 57%). In the short run, split ponds stochastically dominated intensively aerated ponds while the reverse was true in the long run where catfish prices were less favorable. This analysis details the risk averse nature of farmers and underlie the fact that market conditions determine the extent and intensity of adoption of intensive technologies.

4. Associated Knowledge Areas

KA Code	Knowledge Area
501	New and Improved Food Processing Technologies

Outcome #10

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
2017	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Beef cattle producers utilize ?end-point? marketing strategies (EPMSs) in an effort to provide higher-quality and more consistent meat products for consumers. Consumers will pay higher premiums for higher quality grade beef. To capture this market premium feedlot operators try to market their cattle at USDA Choice quality based on visual indicators. (e.g. back fat). Although this approach may address consumer preferences, it may not maximize profits unless cattle feeders are adequately compensated for the added costs of attaining the desired grade. Additionally, cattle in feedlots are individually identified, they rarely are rarely marketed based on individual characteristics. Consequently, it has been estimated that 25% of cattle are ?underfed? and 25% are ?overfed? leading to suboptimal profit outcomes.

What has been done
We developed a market timing decision rule for cattle feeders based on profit maximization. We then compare it with the ?status quo? strategy of feeding cattle to a targeted carcass end point. We estimate individual nonlinear dynamic growth functions to derive each animal?s value of the marginal product
in relation to days on feed.

Results
Our results indicate that the use of a profit maximization rule that incorporates individual dynamic growth models could have increased average profits by $16.56 to $21.09 per head for the cattle of known age, and $7.67 to $11.32 per head if age was unknown.

4. Associated Knowledge Areas

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

604 Marketing and Distribution Practices

Outcome #11

1. Outcome Measures

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

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	386

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Farm management workshops help farmers make wise decisions to maximize production and profits. The most recent U. S. Census reported that 29% of Mississippi's farmers are women who farm 3,173,970 acres. Female-owned operations have resulted in a $342.4 million economic impact in Mississippi. Teaching women to successfully operate farms can create a legacy of female farmers for decades to come.

What has been done
ASU's Extension Small Farm Outreach and Training Specialist conducted a six-part series, "Women in Agriculture: Getting Back to the Basics." Professionals from ASU's Extension Program, Mississippi State University's Extension Service (MSUES), the Mississippi Small Farm and Agribusiness Center at Alcorn State University, and local USDA agencies presented sessions. Topics included Estate Planning, Farm Management, Farm Safety, Farm Equipment, Safe Handing of Animals, Soil Health, Farm Record Keeping, Healthy Eating, Marketing, Risk Management, and Protecting Landowners' Property Rights.

Results
Participants increased knowledge and skills to operate farm equipment, manage goats, keep accurate farm records, write wills, take soil samples, market farm operations, manage farm risks, and to eat healthier meals. Evaluation survey results revealed average ratings of 4.8, on a 5.0 scale, for the following items: value of educational resources, presenters' knowledge, workshop logistics, and intended use of information. Workshops were offered at no cost, for a total savings of $30,895 (average cost of workshop series @ $80 per person).

4. Associated Knowledge Areas

KA Code	Knowledge Area
602	Business Management, Finance, and Taxation

Outcome #12

1. Outcome Measures

Number 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
2017	77

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Many small and disadvantaged farmers and ranchers in Mississippi do not keep accurate farm records. Apathy or lack of knowledge are possible contributors to this problem. Keeping accurate farm records can advance production, which could potentially result in higher revenues. Accurate farm records help farmers make wise decisions, avoid tax related issues, and to comply with legal obligations and requirements.

What has been done
The Small Farm Outreach and Training Specialist provided educational workshops and technical assistance on farm record keeping in the Mississippi Delta and Southwestern counties. Participants learned which transactions to track, how to track transactions, types of record keeping systems, and methods for keeping hand-written and electronic records. Participants received the MS Farm Record Book as a resource.

Results
Forty percent (40%) of farmers attending record keeping workshops reported using knowledge on their farms. These farmers are better prepared to document transactions for tax preparation and legal compliance. Farmers who keep their own records could potentially save $36,000 a year, the average bookkeeper's salary in Mississippi.

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 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
2017	64

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Mississippi's small farmers and ranchers applying for USDA loans often do not understand the process. This limited knowledge has deterred qualified applicants from pursuing much-needed funds. Potential borrowers are often intimidated by the length of the application packet. Some applicants never complete the application or submit packets with a large number of errors.

What has been done
ASU's Extension Program offered structured, 2-day courses to teach potential borrowers how to complete applications to secure USDA loans. Potential borrowers were also required to score at least 70% on an achievement test as outlined by the Farm Service Agency (FSA). In addition to learning about federal loan requirements, farmers were also exposed to farm and financial management and production agriculture.

Results
Participants of this multi-year program continue to acquire credentials necessary for USDA financial assistance. Borrowers learned to create balance sheets, income statements, and other financial records. One hundred percent (100%) of participants scored at least 70% on the achievement test. As a result, FSA loaned over $3,460,300 to borrowers to expand farm operations, purchase equipment, and to increase profits.

4. Associated Knowledge Areas

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

Outcome #14

1. Outcome Measures

Number of clients that gain knowledge on Financial Management. (ASU)

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	305

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Sound financial management is crucial to the success of small farmers and ranchers. Unfortunately, many individuals are unaware of risks associated with careless financial oversight. Poor financial management can potentially decrease farm profits and increase incidences of farm loss. Farm financial management workshops provides practical methods for managing financial matters and increasing on-farm success.

What has been done
Extension specialists and educators conducted four training sessions to provide technical knowledge, demonstrations, and hands-on experiences. Participants used written and computerized tools to prepare budgets and financial statements. Learners used traditional and electronic tools to track business inflows and outflows. Implemented activities directly impacted 170 adults and 135 youths.

Results
Participants increased abilities to prepare financial statements and to track business expenses after attending financial management activities. During a telephone follow-up with participants, 60% reported increased proficiencies to manage farm finances. Over 85% agreed that skills learned during training sessions positively impacted attitudes and approaches toward farm financial management. Eighty-six percent (86%) agreed that implemented activities significantly improved decision-making aptitudes and decreased financial stress.

4. Associated Knowledge Areas

KA Code	Knowledge Area
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation

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

At MSU, budget cuts from the state required Extension Administration to make adjustments in programming and personnel responsibilities to ensure state needs and priorities were addressed.

ASUEP lost an Agriculture Educator to retirement in 2017. This loss left one county-level educator and two state-level professionals to conduct all agricultural related programs and activities within counties served by the organization. Other factors affecting program outcomes were droughts caused by lack of rain and State funding.

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). First, all MSU Extension programs approved for statewide implementation are required to use an evaluation tool approved by Extension Evaluation Specialists. Second, in FY 2017, 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. Digital Measures for quarterly reporting was pilot-tested (Digital Measures is used for annual performance evaluations at MSU). Third, a new app was pilot-tested to allow for real-time collection of information related to contacts. Fourth, a specific request for impact statements from MSU Extension and MAFES faculty and staff is also made once a year in November. Fifth, use of the MSU Standardized Extension Evaluation Survey (designed for use in any MSU Extension Service program, workshop, or event with adults) is creating a culture shift in the system related to program evaluation. The evaluation results shared through MSU impact statements are a combination of this quantitative and qualitative data.

Evaluation results indicated that participants gained knowledge from implemented

programs and activities. Results from the Small Farmers Conference indicated that participants were relatively pleased with concurrent sessions, speakers, panel discussions, and hands-on demonstrations. Most of them; however, preferred hands-on activities and demonstrations over lectures. Some participants indicated an interest in marketing-related sessions over farm production. Others wanted more information on farm loans, available funding, and grant writing. Women in Agriculture was also a topic of high interest.

Key Items of Evaluation

Farmers are interested in loans and grant writing opportunities. Federal loan/grant programs for limited resource farmers and ranchers would be an asset to farmers within ASUEP's target audience.

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	12%	2%	0%	24%
111	Conservation and Efficient Use of Water	11%	0%	0%	0%
201	Plant Genome, Genetics, and Genetic Mechanisms	0%	0%	9%	50%
202	Plant Genetic Resources	5%	0%	6%	0%
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	10%	0%	4%	0%
204	Plant Product Quality and Utility (Preharvest)	3%	0%	5%	0%
205	Plant Management Systems	20%	23%	17%	0%
206	Basic Plant Biology	0%	0%	4%	14%
211	Insects, Mites, and Other Arthropods Affecting Plants	8%	1%	8%	12%
212	Diseases and Nematodes Affecting Plants	7%	0%	15%	0%
213	Weeds Affecting Plants	10%	0%	9%	0%
216	Integrated Pest Management Systems	3%	0%	7%	0%
402	Engineering Systems and Equipment	2%	0%	2%	0%
501	New and Improved Food Processing Technologies	0%	2%	0%	0%
502	New and Improved Food Products	0%	0%	7%	0%
511	New and Improved Non-Food Products and Processes	0%	0%	2%	0%
601	Economics of Agricultural Production and Farm Management	6%	22%	5%	0%
602	Business Management, Finance, and Taxation	0%	24%	0%	0%
604	Marketing and Distribution Practices	3%	24%	0%	0%
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	0%	2%	0%	0%
	Total	100%	100%	100%	100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2017	Extension		Research	
	1862	1890	1862	1890
Plan	61.5	15.0	32.0	7.0
Actual Paid	52.2	13.7	46.2	8.0
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**
1592835	727263	2746768	1015151
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
1592835	727263	1881504	1015151
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	8019201	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, Extension programs presented relevant content and materials to address identified needs of 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, demonstrations and conferences. Further, a Small Farmers Conference and a Women in Agriculture short course were conducted in 2017.

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 is designed specifically for the 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.

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. As in previous years, 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. Specifically, 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.

ASU's Extension specialists and educators used eXtension as a resource for timely publications and other resources for program development in agriculture, youth development, family and consumer science, and community resource and economic development. Additionally, eXtension was used to seek answers to questions asked by local clientele.

V(E). Planned Program (Outputs)

1. Standard output measures

2017	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	293065	1152862	3830	15014

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

Year:	2017
Actual:	4

Patents listed

1. Vitamin C Rich Blueberries in Mississippi
2. Lu, S. Smith, J. L, F. Austin, G. Gu., 2017. Use of Burkholderia contamins MS14 and Occidiofungin as a Fungicide Against Plant Pathogens. Converted Provisional Patent. USPTO 62/492,390.
3. Baldwin, B. 2017. Generation of Imazapic Resistant Switchgrass Population. USPTO 62/524,251. Patent filed 6/23/2017.
4. Redona, E. 2016. Thad (Oryza sativa L. Rice, RU9804054, RU1104077). USPVPO PVP No: 201600309

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2017	Extension	Research	Total
Actual	207	122	329

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
2017	219031

Output #2

Output Measure

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

Year	Actual
2017	3

Output #3

Output Measure

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

Year	Actual
2017	32

Output #4

Output Measure

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

Year	Actual
2017	3

Output #5

Output Measure

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

Year	Actual
2017	32

Output #6

Output Measure

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

Year	Actual
2017	4

Output #7

Output Measure

- Educate farmers on the importance of producing safe food through the use of Good Agricultural Practices (GAP). (ASU)
  Not reporting on this Output for this Annual Report

Output #8

Output Measure

- Demonstrate the use of Integrated Pest Management. (ASU)
  Not reporting on this Output for this Annual Report

Output #9

Output Measure

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

Year	Actual
2017	41

Output #10

Output Measure

- Conduct, collaborate, plan, implement and participate in educational programs, events, and activities in the areas of establish, revitalizing and expanding Farmers Markets, direct marketing and Alternative Agricultural Enterprises. (ASU)

Year	Actual
2017	47

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 participants that improve product handling and sanitation. (ASU)
11	Number of new technologies, crop production practices, or improved crop production systems developed. (MSU)
12	Number of new technologies, practices, production systems developed that enhance production, profitability or environmental stewardship. (MSU)
13	Percentage of farmers and producers that gain knowledge on Farm and Financial Management. (ASU)
14	Percentage of farmers and producers that keeps accurate records. (ASU)
15	Percentage of farmers and producers that reports minimizing land and farm loss. (ASU)
16	Percentage of farmers and producers that applies for farm loans. (ASU)
17	Percentage of farmers and producers that demonstrates minimizing risk on the farm. (ASU)

18	Number of farmers and vendors that report, demonstrate and gained knowledge in Direct Marketing, revitalizing, establishing and or expanding Farmers Markets, and Alternative Agriculture Enterprises.(ASU)
19	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

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	43806

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The Master Gardener Volunteer program allows MSU Extension to reach an increasing gardening audience. It provides a visible way to meet the public demand for information and develop a strong clientele support group. The program also provides municipal garden areas. Master Gardeners request information about plant diseases and their management and indicate they are mystified by them. Therefore, a foundation for understanding and managing plant diseases in the Master Gardener training program was needed.

What has been done
Master Gardeners who graduated from training 2 or more years previously were questioned about core ideas of plant diseases and their management. Few remembered much. The Plant Disease training module was redesigned to stress core concepts related to disease management and reduce its length. A questionnaire was developed by MSU Extension to measure understanding of the core concepts before and after training. The revised course and questionnaire were given to 4 groups of Master Gardeners in 2017. Student responses were used to revise the program after each session. Four classes (52 respondents) participated.

Results
Prior to training, 50% of students indicated they had "little" or "very little" understanding of the selected core ideas about plant disease development and management. The rest of the students indicated they had "some" understanding. After training, student confidence in the "much" or "very much" categories increased to 60%, 75%, 69%, and 97%, respectively, in the four (sequentially

itemized) sessions. Student understanding in the lower, "little" category, decreased from 10% to 0% during the last two sessions. There were no "very little" responses after training. The intent of this training is to develop student understanding so those with interest can resolve or manage common disease and plant condition problems.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
202	Plant Genetic Resources
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Diseases and Nematodes Affecting Plants
213	Weeds Affecting Plants
216	Integrated Pest Management Systems
402	Engineering Systems and Equipment
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

Outcome #2

1. Outcome Measures

Clientele implement recommended agricultural practices or behaviors. (MSU)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	35045

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Agricultural consultants in Mississippi must be licensed by the Mississippi Bureau of Plant

Industry to perform their services for a fee. Licenses must be renewed every 3 years. Renewal can be completed through attendance of workshops approved by the Bureau of Plant Industry for consultant license renewal.

What has been done

The General Pest Management Workshop is a workshop held annually at the MSU Research and Extension Center in Raymond in which entomology, plant pathology, and weed specialists discuss new pests and pest management tactics and review relevant pests and pest management tactics. Consultants attending the workshop increase their knowledge of new pests while reviewing existing pests. Eligible consultants can receive license renewal by attending the approved workshop and submitting the appropriate form to the Bureau of Plant Industry.

Results

In 2017, 18 non-Extension personnel attended the General Pest Management Workshop and were presented information on various topics including disease management in fruits, pecan, vegetables, and ornamentals; weed control for fences; herbicidal weed management in turf and ornamentals; new crop codes on pesticide labels; 2015 revised worker protection standard; insect management in vegetables; and insect pests of hayfields and pastures. Surveys from 72% of these attendees indicated that approximately 31%, 62%, and 62% reported expecting to change their disease, insect, and weed management practices or recommendations, respectively, as a result of knowledge gained from the workshop. Seventeen attendees submitted forms for consultant license renewal from the Bureau of Plant Industry.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
202	Plant Genetic Resources
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Diseases and Nematodes Affecting Plants
213	Weeds Affecting Plants
216	Integrated Pest Management Systems
402	Engineering Systems and Equipment
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

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
2017	17522

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
MS peanut producers have wondered why their yield and profitability lag behind where they should be when considering the fertile soils and the positive environmental conditions commonly experienced during the growing season. Vine growth of peanut plants on these fertile soils is often excessive - so excessive that it has been theorized that these vines are a potential limiting factor for pod development and yield. The issue is magnified on our soils, necessitating on-farm demonstrations and education on methods to remediate this problem.

What has been done
On-farm demonstration plots were set up by MSU Extension to study and display the benefits of a plant growth regulator at multiple application rates and multiple locations within MS. Reduced rates were utilized in response to the cost of the product, which can reach $60/acre at the full rate, making growers hesitant to use the product, even considering potential net benefit. Results from the locations showed an average profitability increase of $139/acre over untreated acres. These are results that have been relayed and explained to growers and other stakeholders.

Results
These on-farm demonstrations, plus the subsequent reporting of results via personal communication, social media, and grower meetings have shown MS peanut growers that this product can increase profitability. Based on grower feedback, approximately 25% of the state's peanut acres will receive an application of this product in 2018, up from approximately 5% in 2017. With an average observed profitability increase of $139/acre, and 8,800 more treated acres, Mississippi growers stand to increase profitability by $1,223,300 based on data obtained and distributed through the MSU Peanut Extension program. Because of these results and discussions with growers, the manufacturer of the product has diverted supply to distributors in MS, giving the state's growers increased access.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
202	Plant Genetic Resources
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Diseases and Nematodes Affecting Plants
213	Weeds Affecting Plants
216	Integrated Pest Management Systems
402	Engineering Systems and Equipment
601	Economics of Agricultural Production and Farm Management
604	Marketing and Distribution Practices

Outcome #4

1. Outcome Measures

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

Not Reporting on this Outcome Measure

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

2017 355

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Integrated Pest Management (IPM) is a sustainable approach for managing pests by combining biological, cultural, physical, and chemical methods to minimize economic, health, and environmental risks. The aim of IPM programs is to promote natural remedies such as natural predators, insect resistant crops, etc. Farmers using IPM practices can potentially increase income by saving money on costly pesticides.

What has been done

Extension specialists and educators in local counties and University outreach centers conducted seven IPM workshops. Audiences included clients managing community gardens and those harvesting produce at the off-campus model farm. Workshop topics included Trap Crops for Insect Management, Crop Rotations for Plant Disease Management, Pest Management in High Tunnels, Cover Crops, and Soil and Water Management. Demonstrations, interactive activities, and lectures were featured elements of the workshops.

Results

Twenty percent (20%) of farmers attending workshops on IPM implemented practices. Farmers using IPM strategies greatly reduced health risks associated with chemical use on crops. These farmers have also witnessed decreased insect infestations. Using USDA's estimates, the average small farm is 231 acres or less. The estimated cost for chemical pesticide treatments is $25 per acre. Therefore, the average small farmer could potentially spend $5,775 for individual pesticide applications. Farmers who applied recommended IPM practices saved a collective total of $410,025. If every individual attending ASU's IPM workshops implemented recommended practices, an economic impact of $2,050,125 could be realized for the state of Mississippi. These changes could also improve environmental health.

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
2017	440

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Every farmer should know best methods for successful crop management. Successful cropping systems maximizes plant growth by considering crop selection, field locations, soil health, crop rotation, weed control, watering options, and pest control among other things. These skillsets are especially important for new farmers who are unfamiliar with basic agricultural concepts.

What has been done
Extension specialists and educators conducted an 8-week course to teach new and beginning farmers the basics of production agriculture. Participants learned techniques in identifying field location sites, types of cropping patterns, soil sampling techniques, fertilization options, weed and insect control, plant watering systems, crop selection, existing farming skills, and climate considerations. Community gardens were useful in allowing participants to practice learned skills. One hundred seventeen (117) adults and youth participated in these sessions.

Results
Seventy-four percent (74%) of program participants used new knowledge in some capacity. The majority of learners converted heir property or property inherited directly from parents for farming purposes. Some participants expressed interest in forestry programs, specifically mushroom production. The median farmer's salary in Mississippi is $44,070. All things considered, new farmers could potentially earn between $34,850 and $78,860 after the first three years in business.

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
2017	786

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Ongoing education keeps small farmers abreast of the latest agricultural developments. Informed farmers are more likely to implement on-farm practices when they understand specific purposes and processes. ASU's Extension Program provides educational activities to introduce farmers to new and improved cultivars and plant varieties.

What has been done
The Annual Small Farmers Conference exposed participants to the latest horticultural research and advancements. The 2017 conference was a three-day event with a diverse list of educational offerings including sessions on sustainable agricultural research, fruit crops for Mississippi, and a sustainable agriculture Update. Farmers learned about the origins of fruits and vegetable crops and the economic benefits of producing them. Interactive demonstrations presented procedures for cultivating certain fruits and vegetables to survive better in Mississippi soils. Two hundred eight (208) farmers and business women attended the 2017 conference in Greenville, MS.

Results
Seventy percent (70%) of conference participants were farmers. Participants assessed educational sessions using 5-point rating scales. sustainable agriculture was rated 4.5; fruit crops for Mississippi, 4.4; and the sustainable agriculture update, 4.5. Seventy-six percent (76%) of participants had attended previous conferences. The economic value of the conference, as estimated by participants, was $25 - $500. The conference's approximated, total value (using the mean value of $173) is $35,984. Hence, each participant saved $133 in registration fees,resulting in a 77% return on investment.

4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
501	New and Improved Food Processing Technologies

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)

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	241

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
According to the United States Department of Agriculture (USDA), Good Agricultural Practices (GAP) is a program verifying minimum handling of produce to reduce risks of microbial contamination. GAP is a voluntary program certifying producers' adherence to the Food and Drug Administration's (FDA) recommendations for minimizing food safety hazards. To ensure a safe food supply from farm to table, producers must understand and adhere to food safety practices.

What has been done
Educators and program assistants at ASU's Extension Outreach Centers planned and conducted three GAP trainings in the Mississippi Delta. FDA's "Guide to Minimize Microbial Food Safety Hazards for Fresh Fruits and Vegetables" provided content for the trainings. Participants learned best practices for implementing GAPs on their farms. Adherence to GAPs is a precertification requirement. Participants also learned about a cost share program reimbursing 75% of certification costs up to $500. Fifty farmers participated in the GAP training sessions.

Results
Ten percent (10%) of producers attending the sessions completed the certification process. Certified producers are better equipped to reduce food borne illnesses originating on the farm. Decreased liabilities for foodborne illnesses retains revenue that would otherwise be spent on legal expenses. Certified farmers can sell produce to local supermarkets and schools that require

GAP certification. Being able to brand produce with the GAP logo is an added benefit.

4. Associated Knowledge Areas

KA Code	Knowledge Area
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources

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
2017	37

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Community gardens are continuing to impact the health and well-being of Mississippi's residents. These cultivated plots increase physical fitness, vegetable and fruit consumption, and residential socialization and cohesiveness. Community gardens are especially important in communities with health disparities and an absence of adequate supermarkets. ASUEP actively promotes and conducts community gardening projects in Mississippi's Southwestern Counties and the Mississippi Delta.

What has been done
Extension educators conducted community gardening activities at community centers, local schools/colleges, and churches/Christian outreach centers. Activities covered soil health, cultivation, planting basics, irrigation, insect and weed control, and harvesting techniques. Lectures, demonstrations, and technical assistance were primary delivery processes. Three thousand, five hundred ninety-eight (3,598) direct and indirect, adult and youth contacts were made.

Results

Youth and adults gained knowledge and skills on meaningful and timely gardening concepts. More than 55% of users have increased fruits and vegetables consumption. Community leaders acknowledged that residents have an increased sense of community pride since planting vegetable plots. Garden users estimated saving at least $25 per week on supermarket produce. People with chronic diseases such as hypertension and diabetes are more physically active since working in the gardens. Community gardens in counties served by ASUEP could significantly improve health and reduce doctors' visits for years to come.

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 participants that improve product handling and sanitation. (ASU)

2. Associated Institution Types

- 1890 Extension
- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	90

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Only quantitative data is reported for this outcome.

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
501	New and Improved Food Processing Technologies

Outcome #11

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
2017	22

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?t differentiate between formulations; therefore, it is imperative that we develop new analytical methods to ensure an effective stewardship program.

What has been done
We working to validate 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
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 #12

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
2017	13

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Plant diseases threatening food security worldwide. Biologically-based disease management is an eco-friendly approach for plant protection. Strobilurin fungicides are leading pesticides to fight fungal diseases. Unfortunately, fungal resistance to strobilurins has been identified worldwide since 2011. Only two antibiotics are registered for bacterial plant disease management in USA, and resistance of plant pathogens to the antibiotics has significantly reduced disease control efficacy. Therefore, development of biopesticides for plant disease management, which have different modes of action, is in demand.

What has been done
More than 30 bacterial isolates with significant antimicrobial activities were isolated in 2017. We have identified a polyketide compound responsible for antibacterial activity of strain MS14. Further data were collected to confirm the identity of Pseudomonas sp. strain MS586 as a novel species, which possesses antibiotic activity against the USDA Select Agent Ralstonia solanacearum. Our soybean endophytic study reveals that some endophytic bacteria contribute to resistance to charcoal rot disease and a few genes have been shown to be critical for their

antifungal activities against charcoal rot pathogen.

Results
We have revealed a novel role of siderophores in bacterial functions, which could help us understand bacterial regulations. The MS14 genes dedicated to biosynthesis of the antibacterial activity were identified. The bacterium MS586 represents a novel species of Pseudomonas, which expands the knowledge of the common bacteria in nature. The research also identified some endophytic bacteria with antifungal activity against plant pathogens. Genetic analysis indicates that some endophytic bacteria may produce a novel antifungal compound. These findings have provided important clues to development of biopesticides for plant disease management. One US patent on engineering the production of a conformational variant of occidiofungin was granted.

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

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
2017	24

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
This same outcome appears in the Animal Systems Planned Program for ASU. To avoid duplicated impact statements, only quantitative data for the Plant Systems Planned Program is

reported for this outcome.

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
604	Marketing and Distribution Practices

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
2017	30

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

This same outcome appears in the Animal Systems Planned Program for ASU. To avoid duplicated impact statements, only quantitative data for the Plant Systems Planned Program is reported for this outcome.

What has been done

Results

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 reports minimizing land and farm loss. (ASU)

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	18

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
This same outcome appears in the Animal Systems Planned Program for ASU. To avoid duplicated impact statements, only quantitative data for the Plant Systems Planned Program is reported for this outcome.

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #16

1. Outcome Measures

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

Not Reporting on this Outcome Measure

Outcome #17

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
2017	26

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
This same outcome appears in the Animal Systems Planned Program for ASU. To avoid duplicated impact statements, only quantitative data for the Plant Systems Planned Program is reported for this outcome.

What has been done

Results

4. Associated Knowledge Areas

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

Outcome #18

1. Outcome Measures

Number of farmers and vendors that report, demonstrate and gained knowledge in Direct Marketing, revitalizing, establishing and or expanding Farmers Markets, and Alternative Agriculture Enterprises.(ASU)

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	2403

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Locally grown produce makes fresh fruits and vegetables readily accessible and can boost local economies. Small farmers need a market to sell their produce. Providing fresh produce directly to local supermarkets fulfills consumers' needs and provides a viable market for small farmers. The Purple Hull Pea Project enables farmers to process their produce and provide methods of getting them to the consumer.

What has been done
The Purple Hull Pea Project is a collaboration between ASU's Extension Program and the North Delta Produce Growers Association. Local farmers produce purple hull peas on their farms and transport them to ASU's vegetable processing facility in Mark's MS to be processed. In return, farmers earn an estimated $20 per bushel. Participating farmers must be GAP or GHP certified. They must abide by strict specifications to pack, store and transport peas after harvest. Orientation workshops are conducted to introduce farmers to the project and to the importance of safe food handling from the farm to the facility. Produce failing to meet quality specifications is rejected.

Results
Thirty-seven (37) farmers are actively supplying the Marks Processing Center with fresh, purple hull peas. Twenty five thousand, seven hundred twenty (25,720) reusable plastic crates (RPCs) or 2,572 cases of peas were sold to a national supermarket chain in the Mississippi Delta. The Purple Hull Pea Project generated a combined income of $59,156 for participating farmers. Efforts are underway to recruit additional farmers to grow peas for the center. If total income consistently increase by 15% for the next five years, farmers can earn a combined income of $119,001.95. This would be a significant economic impact for Mississippi Delta counties.

4. Associated Knowledge Areas

KA Code	Knowledge Area
604	Marketing and Distribution Practices

Outcome #19

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
2017	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Many soybean producers loose attainable revenue due to diseases in soybean every year. In 2016 an average of 7.77% of soybean yield was lost across 16 southern states due to disease. Charcoal rot of soybean comprised an average of 51% of those losses. Limited management options make controlling this disease difficult. Southern growers need additional methods to prevent yield and seed quality reductions from this disease.

What has been done
An increased awareness of this issue influenced local and national soybean boards to provide funding for numerous research projects geared toward finding additional methods to prevent losses associated with charcoal rot of soybean. These projects target yield losses of commercial varieties included in but not limited to OVT varieties subjected to high levels of pathogen pressure. These varieties are screened under irrigated and non-irrigation field conditions to mimic on farm situations. Information from this research will give growers an insight into possible losses associated with varieties prior to selection.

Results
Seed company literature doesn't always provide charcoal rot disease ratings for all of the germplasm; therefore, growers can select varieties without knowing all of the necessary management precautions. On a large scale, this research provides additional information to companies, dealers and consultants in areas that need to be addressed when talking to growers about their field plans prior to planting season. On a small scale, these data allow growers to select varieties according to their field history of charcoal rot, and irrigation regimes to prevent losses associated with this disease. Decision support tools posted on the Mississippi Soybean Promotion Board website now include information about susceptibility to aid producers in varietal selection.

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

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

At MSU, budget cuts from the state required Extension Administration to make adjustments in programming and personnel responsibilities to ensure state needs and priorities were addressed.

Some pre-established goals were unmet because of personnel changes within ASUEP's system. The decreased agricultural staff resulted in decreased quantities of implemented programs and activities. Additionally, the percentage of farmers who applied for farm loans was not reported in plant systems since these numbers were already reported in animal systems, thus avoiding contact duplication.

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). First, all MSU Extension programs approved for statewide implementation are required to use an evaluation tool approved by Extension Evaluation Specialists. Second, in FY 2017, 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. Digital Measures for quarterly reporting was pilot-tested (Digital Measures is used for annual performance evaluations at MSU). Third, a new app was pilot-tested to allow for real-time collection of information related to contacts. Fourth, a specific request for impact statements from MSU Extension and MAFES faculty and staff is also made once a year in November. Fifth, use of the MSU Standardized Extension Evaluation Survey (designed for use in any MSU Extension Service program, workshop, or event with adults) is creating a culture shift in the system related to program evaluation. The evaluation results shared through MSU impact

statements are a combination of this quantitative and qualitative data.

The Women in Agriculture short course was a six-part program that taught 178 women the basics of production agriculture. Participants gained knowledge on Estate Planning, Farm Management, Farm Safety, Farm Equipment, Handling Animals, Soil Health, Farm Record Keeping, Healthy Eating, Marketing, Risk Management, and Property Rights. Participants especially enjoyed hands-on demonstrations and workshop speakers. Participants requested additional workshops on Marketing farm products. Suggestions for more printed resources and tangible examples of farm products were expressed.

Key Items of Evaluation

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	5%	0%	54%	100%
111	Conservation and Efficient Use of Water	6%	0%	7%	0%
112	Watershed Protection and Management	5%	0%	6%	0%
122	Management and Control of Forest and Range Fires	8%	0%	0%	0%
123	Management and Sustainability of Forest Resources	16%	0%	9%	0%
124	Urban Forestry	5%	0%	0%	0%
125	Agroforestry	6%	0%	0%	0%
132	Weather and Climate	5%	0%	3%	0%
133	Pollution Prevention and Mitigation	5%	0%	1%	0%
135	Aquatic and Terrestrial Wildlife	7%	0%	11%	0%
136	Conservation of Biological Diversity	3%	0%	7%	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%	100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2017	Extension		Research	
	1862	1890	1862	1890

Plan	30.3	0.0	11.0	0.0
Actual Paid	28.3	0.0	11.3	0.5
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**
862171	0	879062	93080
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
862171	0	496983	93080
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	1812967	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

At MSU, varied activities and services were provided and products were developed. These included 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 (e.g., agricultural producers, school teachers, youth, landowners) in environmental education programs; development of publications, fact sheets, web pages and other educational materials as program support; and reporting documents.

Specific MSU programs targeted toward agricultural producers included:

- 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, MSU research and Extension programming was conducted in many IPM areas:

- 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.

MSU research and Extension programming related to water resources focused 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.

MSU research and Extension programming related to renewable fuels focused 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.

MSU research and Extension programming related to forestry focused on:

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

MSU research and Extension activities were also 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 MSU 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. As in previous years, 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. Specifically, 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

2017	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	159352	189794	0	0

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

Patent Applications Submitted

Year: 2017
Actual: 1

Patents listed
1. Yu, F. 2017. Nano-structured catalysts. Patent Pending, USPTO 15/476,546, US RPA 03/31/2017.

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2017	Extension	Research	Total
Actual	156	80	236

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

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

Year	Actual
2017	58191

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

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	11638

3c. Qualitative Outcome or Impact Statement

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

What has been done
MSU Extension has been giving presentations to individuals that wish to learn about the issues with wild pigs. In 2014, 2 associates were hired to assist with educating landowners, land managers, and the general public on the history, ecology, control, and damage. Short-term evaluation is conducted at the end of a workshop. We are developing a middle-term evaluation that will evaluate what changes occurred since the presentation was attended. The results will allow us to adjust our presentations to spend more time on subtopics.

Results
22 wild pig presentations were given across northern MS to 481 individuals. A short-term evaluation was completed by 69 individuals. Landowners managed 49,990 acres throughout the state that had wild pig damage estimated at $156,400. The knowledge on ecology increased from a 2.44/5 before to a 4.42/5 after. Control increased from a 2.39/5 before to a 4.35/5. Trapping knowledge increased from a 2.62/5 before to a 4.42/5. Damage increased from a 2.78/5 before to a 4.39/5. The wildpiginfo.msstate.edu website saw 257,859 page views and 84.6% of the visitors to the information page were new. Through TA, 152 wild pigs were removed in 6 counties where landowners saw the effectiveness of trapping.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
122	Management and Control of Forest and Range Fires
123	Management and Sustainability of Forest Resources
124	Urban Forestry
125	Agroforestry
132	Weather and Climate
133	Pollution Prevention and Mitigation
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity
211	Insects, Mites, and Other Arthropods Affecting Plants
214	Vertebrates, Mollusks, and Other Pests Affecting Plants
216	Integrated Pest Management Systems
403	Waste Disposal, Recycling, and Reuse
405	Drainage and Irrigation Systems and Facilities
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

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	9311

3c. Qualitative Outcome or Impact Statement

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

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

Results
In 2017, the Coastal Cleanup Program performed 4 site captain trainings leading up to the annual Coastal Cleanup event. The cleanup event attracted 1,763 volunteers that contributed 7,052 volunteer hours removing 13 tons of litter from the beaches, waterways, wetlands, and roads of coastal MS. The value of this volunteer effort exceeded $170,024. Additionally, data collection on the specific type of litter was conducted by volunteers to identify sources and design targeted prevention methods.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
122	Management and Control of Forest and Range Fires
123	Management and Sustainability of Forest Resources
124	Urban Forestry
125	Agroforestry
132	Weather and Climate
133	Pollution Prevention and Mitigation
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity
211	Insects, Mites, and Other Arthropods Affecting Plants
214	Vertebrates, Mollusks, and Other Pests Affecting Plants
216	Integrated Pest Management Systems
403	Waste Disposal, Recycling, and Reuse
405	Drainage and Irrigation Systems and Facilities
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

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	4655

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Lack of environmental knowledge often promotes poor stewardship of natural resources. Additionally, many environmentally conscious individuals are eager to help out through volunteer service, but these opportunities are often difficult to find.

What has been done
The Mississippi Master Naturalist Program (MMNP) was formed by MSU Extension with the mission of developing an organization of knowledgeable volunteers to help promote conservation and management of Mississippi's natural resources through education, outreach, and service within their communities.

Results
In 2017, the MMNP held a basic training course for both the Coastal and Central chapters, which led to the certification of 42 new Master Naturalists. These participants' environmental knowledge improved an average of 10%. Post-course evaluations showed that 100% of the students gained knowledge and 100% of the students intend to apply their newly gained knowledge. Class cost was $250 for the Central course and $300 for the Coastal course, but participants indicated an average value of $1,000 for the knowledge gained in the course. During 2017, program participants documented 3,043 volunteer service hours, valued at $73,367. Through these volunteer hours, participants reached or educated more than 54,554 people and directly improved 415 acres through stewardship activities.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
111	Conservation and Efficient Use of Water
112	Watershed Protection and Management
122	Management and Control of Forest and Range Fires
123	Management and Sustainability of Forest Resources
124	Urban Forestry
125	Agroforestry
132	Weather and Climate

133	Pollution Prevention and Mitigation
135	Aquatic and Terrestrial Wildlife
136	Conservation of Biological Diversity
211	Insects, Mites, and Other Arthropods Affecting Plants
214	Vertebrates, Mollusks, and Other Pests Affecting Plants
216	Integrated Pest Management Systems
403	Waste Disposal, Recycling, and Reuse
405	Drainage and Irrigation Systems and Facilities
605	Natural Resource and Environmental Economics

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
2017	19

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Intensification of conventional agriculture will increase degradation of soil and water resources. Significant investments in landscape improvements by the Federal government and producers through conservation cost-share programs warrant the need for documentation of conservation effectiveness, and continued extension efforts to increase adoption. Moreover, considering potential regulation related to numeric nutrient criteria and declining groundwater supplies, its critical to document the many benefits (agronomic, environmental, and economic) accrued by these conservation efforts of Mississippi?s farmers.

What has been done
REACH was developed as producer-driven program to create a network of cooperative farms in Mississippi, with variable agricultural systems, degrees of conservation practices, and ecosystem monitoring to document and demonstrate the benefits of implementing conservation practices. REACH monitors water quality, specifically nutrient and sediment in runoff, along with water quantity savings, which is used to quantify efficiencies of conservation practices and document

environmental stewardship.

Results

REACH conducted on-farm research in seven Mississippi counties, collaborating with 16 producers to conduct on-farm monitoring and demonstrate conservation systems. REACH monitored water quality, water quantity, or soil health parameters on 6,200 farmed acres in priority watersheds across Mississippi. Collected data related to water quality and quantity was summarized to extend knowledge of conservation benefits through four extension publications and five scientific publications. Through a Sustainability Training in Agricultural Resource Systems (STARS) program, more than 20 MSU Extension agents and other state agency personnel received professional development training in sustainable agriculture practices and programs.

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
2017	11

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Currently, Mississippi is experiencing its worst pine beetle outbreak in more than 30 years with more than 4,000 spots throughout the state?s forests infested with the southern pine beetle ? a major cause for concern to the $12.79 billon dollar forestry industry. Warming temperatures have allowed expansion of southern pine beetle range as far north as New Jersey. As the climate becomes more variable, pine beetle outbreaks occur more frequently, which in turn, could cause entire forests to shift from carbon sinks to carbon sources.

What has been done

Scientists are working to study the relationship between southern pine beetles, blue stain fungus and subterranean termites - pine beetles and termites are considered keystone species, which drive the structure and function of an ecosystem through their activities. With a simulated pine beetle, they determined that some termite species preferentially feed on wood from bark-beetle-killed trees due to the presence of fungi called blue stain carried by eightlegged mites that live on the pine beetles. The team is studying the impact of above- and belowground invertebrate, fungi, and microbes, measuring woody decomposition to determine how each species contributes to the breakdown of wood, and measuring the carbon and nitrogen in the tree, and the carbon being released into the atmosphere.

Results

Terrestrial carbon models incorporate a numerical value for woody decomposition and often there is a high degree of variability that is unexplained by climate data. This study will help to explain part of that variability using biological interactions between decomposer organisms. Currently, models for forest decomposition don?t factor in the biological influences of invertebrates, fungi, or microbes. All of the current models use temperature and rainfall to predict the rate of turnover, which is critical in determining whether carbon is released back into the atmosphere or incorporated into the terrestrial carbon pool. We hope that by understanding the role decomposers play, we can improve our predictive capability in determining how a forest stores and cycles carbon.

4. Associated Knowledge Areas

KA Code	Knowledge Area
123	Management and Sustainability of Forest Resources

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
2017	15

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The Mississippi Gulf Coast produces more than 75% of the nation?s oysters, 69% of domestic shrimp and is a leading producer of domestic hard and soft-shell blue crabs with an economic impact in 2014 of $199 million and 4700 jobs. Gulf seafood contain many of the nutritional qualities desired by consumers including: excellent source of high quality protein, high in vitamins, low in calories and saturated fats, and high in omega-3 fatty acids. It is important to ensure that production and harvest are balanced, as the industry and ecosystem recover from back-to-back disasters in hurricane Katrina and the BP Deep Water Horizon oil spill.

What has been done

Environmental economists at Mississippi State are working to optimize oyster sustainability through the development of a new decision support tool that will inform the distribution of production and harvest. This shellfish portfolio assessment tool, called SPAT, will assist resource managers and oyster farmers to determine the best oyster cultivation practice that will minimize risk while maximizing benefits. The study will determine the benefits derived from three different oyster cultivation practices?restored oyster reefs, traditional shell plantings, and off-bottom oyster farms.

Results

This collaboration between MSU, Auburn University; Dauphin Island Sea Lab; and the Mississippi Department of Marine Resources will help to ensure the recovery and growth of oyster populations in the northern gulf and the economic viability of the seafood industry.

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
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Other (Personnel availability)

Brief Explanation

At MSU, budget cuts from the state required Extension Administration to make adjustments in programming and personnel responsibilities to ensure state needs and priorities were addressed.

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). First, all MSU Extension programs approved for statewide implementation are required to use an evaluation tool approved by Extension Evaluation Specialists. Second, in FY 2017, 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. Digital Measures for quarterly reporting was pilot-tested (Digital Measures is used for annual performance evaluations at MSU). Third, a new app was pilot-tested to allow for real-time collection of information related to contacts. Fourth, a specific request for impact statements from MSU Extension and MAFES faculty and staff is also made once a year in November. Fifth, use of the MSU Standardized Extension Evaluation Survey (designed for use in any MSU Extension Service program, workshop, or event with adults) is creating a culture shift in the system related to program evaluation. The evaluation results shared through MSU impact statements are a combination of this quantitative and qualitative data.

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%	3%	0%	0%
603	Market Economics	5%	0%	0%	0%
605	Natural Resource and Environmental Economics	0%	6%	37%	0%
608	Community Resource Planning and Development	30%	53%	25%	100%
609	Economic Theory and Methods	20%	0%	2%	0%
610	Domestic Policy Analysis	0%	0%	11%	0%
801	Individual and Family Resource Management	0%	11%	0%	0%
802	Human Development and Family Well-Being	3%	18%	0%	0%
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	15%	0%	0%	0%
805	Community Institutions, Health, and Social Services	25%	9%	25%	0%
	Total	100%	100%	100%	100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2017	Extension		Research	
	1862	1890	1862	1890
Plan	29.2	2.0	2.5	4.0
Actual Paid	27.9	2.9	2.3	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**
852103	153108	135325	368671
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
852103	153108	69420	368671
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	681218	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

MSU 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.

ASUEP's Community and Resource Development programs and activities focused on:

- Small business development;
- Extension awareness;
- Home ownership;
- Needs assessment and environmental scanning processes;
- Stakeholder involvement in program development;
- Developing community partnerships;
- Estate planning and managing heir property;
- Adult leadership development; and
- Workforce development.

2. Brief description of the target audience

At MSU and ASU, the target audience for this program consisted 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. As in previous years, 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. Specifically, 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.

ASU's Extension specialists and educators used eXtension as a resource for timely publications and other resources for program development in agriculture, youth development, family and consumer science, and community resource and economic development. Additionally, eXtension was used to seek answers to questions asked by local clientele.

V(E). Planned Program (Outputs)

1. Standard output measures

2017	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	153133	159212	909	123

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

Patent Applications Submitted

Year:	2017
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2017	Extension	Research	Total
Actual	916	21	937

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

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

Year	Actual
2017	40962

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
2017	7

Output #3

Output Measure

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

Year	Actual
2017	1

Output #4

Output Measure

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

Year	Actual
2017	50

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

2017 5

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Community leaders improve knowledge and skills. (MSU)
2	Community leaders make use of leadership skills by volunteering for community organizations. (MSU)
3	Community leaders implement 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 improve knowledge and skills. (MSU)

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	8192

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
MS derives its drinking water from a public water system or a private well. Public water systems are regulated by MSDH who requires mandatory weekly/daily operational oversight and monthly water quality testing. A private well owner is responsible for the maintenance/replacement of equipment and testing of the water quality. MS has 133,059 households that derive their drinking water from a private well. The majority of private well owners are not knowledgeable of how to maintain a private well, who to contact for assistance, or how to determine water quality.

What has been done
MSU Extension collaborated with state/federal agencies and non-profits to organize, promote, and host 6 private well water screenings/workshops. Private well owners could have their drinking water screened by retrieving a sample bottle and sample instructions from the MSU Extension office. The workshops had presenters from IL State Water Survey address groundwater hydrology; local well drillers address well construction/maintenance; and MSU Extension address private well information specific to MS residents. The target audience was private well owners.

Results
81 well owners attended the workshops and had their private well screened for bacteria. All attendees stayed for the 3 hour workshop in each county. 85% of the participants communicated that they either had no hazards present around their well or they removed them. 89% of the participants said they had applied the resources/material provided to them at the training, and 64% said they had shared the resources/materials with others. 87% of participants said they pumped their septic tank or pumping was not needed. 100% or the respondents said they were satisfied with the resources/materials provided to them at the workshop. 48% of participants plan to screen their water again within a year, 34% within two years, and 18% said they would screen if they noticed a change in their drinking water.

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
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

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	6554

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Rural America represents 72% of land in the United States including 46 million residents. Rural business prosperity is heavily dependent on businesses selling beyond their rural borders to expand sales and employment. Access to high-speed Internet (broadband e-connectivity) coupled with online marketing and economic education (e-commerce) are increasingly needed to achieve rural business prosperity.

What has been done
Using the Bricks-To-Clicks (B2C) MSU Extension educational program in online marketing, businesses in Mississippi can increase access to new customers, increase their company's intangible brand value, and expand sales and employment. The B2C program provides online marketing and economic education when using Facebook, Instagram, e-commerce, and LinkedIn to assist entrepreneurs and communities with starting and growing their businesses.

Results
In 2017, the B2C program trained 18 companies, supported/saved a total of 302 jobs, increased access to 630,000 potentially new online customers, and increased the collective intangible asset value of 18 company brands by $196,000. The B2C program reached an additional 5,323 businesses that accessed online B2C educational content via social media and the program's website. Some participating companies included Alliance of Sustainable Farms, Hogeye, Inc., Oktibbeha County Co-op, Starkville Veterinary Hospital, and Deep South Pout, among others.

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	3277

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Municipal Clerks face numerous challenges in the areas of public administration, social and interpersonal skills. These public officials seek technical assistance as a municipalities central contact position due to the result of the Mississippi Legislature's new laws and regulations for local government.

What has been done

In conjunction with the Mississippi Municipal Clerks and Collectors Association, the MSU Extension Certified Municipal Clerk (CMC) program provides designation to Municipal Clerks, Tax Collectors, and Deputies who complete the exam-based Certification Program for Municipal Clerks and Collectors. Standards for the achievement of certification have been designed by the Certification Standards Committee of the Mississippi Municipal Clerks and Collectors Association (MMCCA).

Results

Some 30 individual, exam-based, half-day courses are part of the three-year curriculum of 120 contact hours of instruction. On average, upwards of 150 Municipal clerks, Tax Collectors, and Deputies, representing over 75 different municipalities, work towards certification. In 2017, 8 Municipal Clerks received the Mississippi-CMC designation and 15 Deputies received the Mississippi-CDMC designation. To date, beyond Mississippi certification, 47 Mississippi municipal clerks hold the IIMC-CMC designation and 11 hold the IIMC-Master Municipal Clerk (MMC) designation. The program has closed knowledge gaps between municipal clerks and oversight agencies, improved services for citizens through more efficient practices, saving taxpayers time and money.

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
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
2017	74

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Alcorn State University's Extension Program began serving the public in 1971. After 47 years, many people are still unaware of Extension's diverse and beneficial services. To increase visibility, ASUEP consistently markets its brand and promotes program offerings to an unaware public. The mission of the organization is to improve the lives of limited-income farmers and families using research-based knowledge and resources.

What has been done
Extension specialists and educators conducted a series of Extension Awareness events to introduce valuable services and resources to potential clientele. Exhibits were erected at local farmers markets, health fairs, county libraries, court houses, and schools. County needs assessment meetings were held to identify needs to be addressed with Extension programs. Educational programs were developed around identified needs. Weekly radio programs (on and off campus) promoted planned state and county-level programs and featured segments on topics relevant to ASUEP's planned program areas. Extension awareness events and activities reached more than 81,660 people directly and indirectly.

Results
Since 2016, the percentage of ASU Extension users has increased by 6%. This percentage increase equates to about 3,000 additional Extension users. Extension Educators have received increased requests for workshops in all program areas, especially youth development. Stakeholder input and involvement in program planning has also increased. Extension's educational programs will continue to positively impact lives in Mississippi by influencing positive changes in behavior, communities, and local economies.

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
2017	39

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Only quantitative data is being reported for this outcome.

What has been done

Results

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
2017	156

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Limited-income families in Mississippi have difficulties securing loans to purchase new homes. For this reason, they often live in rental houses paying hundreds of dollars that could be used to purchase their own residences. Bad credit and low wages are barriers preventing well-deserving families from attaining home-ownership goals. Home ownership programs are available to assist needy families, but most people who qualify don't know they exist or don't know how to access them.

What has been done
Community Resource Development Educators conducted two-day home ownership seminars in two Southwestern counties in Mississippi. The seminars provided information on types of loans available (HUD and USDA Rural Development), specific loan features, refinancing options, credit requirements, and credit repair. Fifty-four people participated in these seminars.

Results
Seminar participants are knowledgeable of the types of loans available to purchase homes. Thirty percent (30%) ordered copies of their credit reports to analyze for errors. Fifteen percent (15%) later reported applying and being approved for loans through Rural Development. Participants approved for home loans are able to apply 100% of money previously paid for rent toward their own dwellings. Seminar participants valued these free seminars at an average cost of $50, for a combined savings of $2,700. More in-depth home ownership programs can have a significant economic impact for the housing industry in Mississippi and could positively impact the lives of limited-resource families.

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
2017	852

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Overwhelming requests for business development activities and consultations were being issued by residents in local communities. The majority of requests were from individuals wanting to start non-agricultural enterprises in South Mississippi. Experts believe that the success of Mississippi's business economy depends on small-business development. In 2017, 217 new businesses were initiated in Mississippi, creating 998 new jobs. ASU's Extension CRD Educators were responsive to consumers' requests.

What has been done
Extension CRD Educators presented a five-week training course, "How To Start and Grow Your Business" to address needs for business development opportunities. Representatives from the following agencies and organizations taught classes and offered advice and resources: Mississippi Development Authority (MDA), Small Business Entrepreneur Center, Small Business Administration (SBA), Alcorn State University Small Farm Outreach unit, Hinds Community College Small Business Development Center, Southwest Community College Regional Workforce Development Center, Mississippi State University Extension Service, U. S. Department of Transportation, St. Andrew's Mission Business Incubator, Renaissance Financial Services, Small Business Capital Funds of MS, Southwest MS Planning and Development District and the U. S. Department of Agriculture (USDA). Topics Included: Starting a Business: First Steps, Business Management 101, Doing Business with the Government, and Contracting and Certification. One

hundred fifty-three (153) people participated in these training sessions.

Results

As a result of participating in the "How To Start and Grow Your Business" courses, 100% of participants reported increased knowledge of business development concepts. Follow-up evaluations indicated that approximately 45% had begun the business certification process and 64% had initiated steps to conduct market comparisons. Mississippi small business owners earn an average $109,000 (USD averages, 2014). If 5% of participants attending these sessions started their own businesses, over $872,000 could be added to local economies in Mississippi.

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

At MSU, budget cuts from the state required Extension Administration to make adjustments in programming and personnel responsibilities to ensure state needs and priorities were addressed.

In 2017, ASU's Extension Program experienced a minor restructuring. Prior to 2017, the organization employed Community Resource Development (CRD) educators, primarily responsible for planning, implementing, and evaluating programs to improve local communities. These CRD Educators were later reassigned to assume responsibilities in either Family and Consumer Sciences or 4-H and Positive Youth Development. CRD responsibilities were subsequently assigned to all Extension educators, becoming 10% of their total program load. Because of this restructuring, some planned activities in CRD were not accomplished.

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). First, all MSU Extension programs approved for statewide implementation are required to use an evaluation tool approved by Extension Evaluation Specialists. Second, in FY 2017, 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. Digital Measures for quarterly reporting was pilot-tested (Digital Measures is used for annual performance evaluations at MSU). Third, a new app was pilot-tested to allow for real-time collection of information related to contacts. Fourth, a specific request for impact statements from MSU Extension and MAFES faculty and staff is also made once a year in November. Fifth, use of the MSU Standardized Extension Evaluation Survey (designed for use in any MSU Extension Service program, workshop, or event with adults) is creating a culture shift in the system related to program evaluation. The evaluation results shared through MSU impact statements are a combination of this quantitative and qualitative data.

There were no major evaluation results in CRD for ASUEP this past programming year.

Key Items of Evaluation

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
703	Nutrition Education and Behavior	0%	2%	0%	0%
724	Healthy Lifestyle	0%	31%	0%	0%
801	Individual and Family Resource Management	0%	1%	0%	0%
802	Human Development and Family Well-Being	0%	25%	0%	0%
806	Youth Development	100%	41%	100%	0%
	Total	100%	100%	100%	0%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2017	Extension		Research	
	1862	1890	1862	1890
Plan	65.3	9.0	0.0	0.0
Actual Paid	54.3	7.8	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**
1655088	413604	2224	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
1655088	413604	4317	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	17751	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.

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. As in previous years, 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. Specifically, 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's Extension specialists and educators used eXtension as a resource for timely publications and other resources for program development in agriculture, youth development, family and consumer science, and community resource and economic development. Additionally, eXtension was used to seek answers to questions asked by local clientele.

V(E). Planned Program (Outputs)

1. Standard output measures

2017	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	137143	311673	327216	321485

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

Patent Applications Submitted

Year:	2017
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2017	Extension	Research	Total
Actual	38	1	39

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

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

Year	Actual
2017	22257

Output #2

Output Measure

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

Year	Actual
2017	4

Output #3

Output Measure

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

Year	Actual

2017	96

Output #4

Output Measure

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

Year	Actual
2017	52

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
2017	100

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
2017	12

Output #7

Output Measure

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

Year	Actual
2017	32

Output #8

Output Measure

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

Year	Actual
2017	55

Output #9

Output Measure

- Conduct Health & Wellness educational programs, events and activities for limited resource youth and families. (ASU)

Year	Actual
2017	62

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 reporting utilizing skills to improve their 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)
10	Increase the number that participate in Health & Wellness Program, events and activities for limited resource youth and families.(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
2017	17179

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The US Financial Capability Study consistently finds that MS ranks worst in the US in having unpaid medical bills, lack of rainy day savings, and facing financial instability: 70% lacked a fundamental level of financial knowledge, 64% had no rainy day savings fund, and 47% had no traditional bank savings or checking account. Further, 22% of the population and 31% of children lived in poverty, and 7.8% of the eligible population were unemployed. Impacts of low financial readiness has significant ripple effects on families and communities.

What has been done
MSU Extension agents deliver lessons from the FDIC's Money Smart for Young People financial education curriculum to respond to Mississippians' extensive challenges related to financial readiness and management of family financial resources, including youth that struggle to understand the principles related to earning, saving, investing, borrowing, and protecting money. Emphasis is placed on understanding the difference between needs and wants, spending money, analyzing different careers, and maintaining a good credit score.

Results
In FY 2017, six lessons from FDIC's Money Smart for Young People were delivered to approximately 50 student audiences in Lowndes, Lafayette, and Panola Counties. Locations included the Extension county office, a high school class, and a Boys and Girls club, respectively. Students self-evaluated as having improved across the spectrum of "Was Poor," "Was Fair," "Was Good," and "Was Excellent" on questions including ability to name sources of income, determine personal values and financial goals, make a financial plan, keep records, cash flow, relate saving to well-being, explain compound interest, research savings products, compute interest, improve credit worthiness and scores, identify costs of college and managing student loans, and earning potential of certain majors.

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
2017	14602

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Young people's understanding of natural science and environmental issues is deficient, resulting in students who are ill-prepared to enter society ready to adequately address complex environmental issues that have societal consequences, such as sustainable use of soil, water, and other natural resources; conservation of plant and animal species; climate change; and quality and quantity of water.

What has been done
Outreach efforts were employed in 2017 by MSU to address this issue. Two multi-day Conservation Camps were offered in June to provide experiential learning opportunities in natural science and conservation. The 4-H Wildlife Habitat Education Program (WHEP) builds knowledge of management practices in junior and senior 4-H'ers. Professional and volunteer training events for 4-H volunteers, 4-agents, and teachers employ a "train the trainer" model. Collaboration with natural resource agencies on youth outreach programs allows for impact through synergy and pooled resources.

Results
Forty-five junior 4-H youth from 14 counties and 24 senior 4-H youth from 5 counties participated in WHEP in 2017. Fifty-seven youth-serving adults received training at three workshops on teaching wildlife science and conservation to youth, resulting in the potential to impact more than 1,000 youth. Twenty-four junior- and senior-high students participated in the 2017 Conservation Camps and showed an average 22% improvement on post-camp knowledge assessments when compared to their pretest scores, demonstrating knowledge gains as a result of the Camp's

curriculum and instructional practices. Seven camp participants received Hunter Safety certification during a camp, which may result in fewer hunting accidents and greater respect for firearms and hunting ethics.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #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
2017	8589

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Mississippi's health status is consistently among those with the worst outcomes. Many teens are experiencing peer pressure, lack of good role models, and poor lifestyle choices. Teens are tomorrow's leaders and can affect change today in the home, in the schools, and in the community, if empowered and given the tools to advocate for a healthier Mississippi for generations to come.

What has been done
MSU Extension developed the Jr Master Wellness Volunteer (JMWV) program for teens 14-18 to promote health literacy in their families and communities using an evidence-based curriculum on portion control, chronic diseases, interpreting prescription instructions, communicating with a health provider, oral health, managing stress, and cultural competency. Extension agents deliver the program in partnership with Career Technology Education (CTE)/Health Sciences teachers; Extension agents mentor students through the required 24 hours of community-based health promotion outreach.

Results
During FY17, JMWV leadership trained 36 Extension agents in 33 counties. Agents trained 81 students as JMWVs; collectively, they made 1,020 contacts carrying out community service

projects, delivering health messages in group settings or via individual one-on-one messaging. They provided a total of 1,443 hours in service which is valued at $34,834.02. Qualitative evaluation (focus groups) indicates that participants increased their knowledge of health conditions and their skills and self-efficacy related to health promotion and behavior change interventions. Participants also reported a greater willingness to engage in community service and improvements in the health behaviors and outcomes of those they reached.

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
2017	5303

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
More than 160,000 children miss school every day because they fear being attacked by their peers. Statistics reveal that 56% of a school's population have personally witnessed some type of bullying incident. Seventy-one percent (71%) of students in a research study perceived bullying as a major problem at school. Children should not be subjected to bodily harm in learning environments. Anti-bullying programs can decrease bullying incidents and subsequent suicides.

What has been done
Sixteen (16) anti-bullying activities and a one-day anti-bullying youth summit were conducted by 4-H Youth Development Educators. Activities were held at local schools, community centers, churches, and on ASU's campus. Workshop topics included: Recognizing Bullying Personality Traits, Reasons for Bullying Behavior, Cyberbullying, Reporting Bullying Incidents, and Internet Safety. Educators also conducted 9 alcohol and substance abuse activities, an 8-week life skills school program, 8 workshops on preventing teenage pregnancy and sexually transmitted infections (STIs), and a peer-pressure workshop. Six thousand, seven hundred, fifty-five (6,755) direct youth and adult contacts were made in this program area.

Results
Anti-bullying activities increased awareness of dangers and consequences related to bullying acts. Students learned to safely engage on social media sites such as Facebook, Twitter, Instagram, and Expose. Oral program evaluations revealed 96% of students understood program content. Student-led follow-up activities demonstrated mastered skills to make wise decisions and to think critically in dangerous situations. Ninety-six percent (96%) demonstrated proper techniques to avoid and defuse bullying incidents. One school retained $20,000 that would have covered fees to discipline accused bullies. This same school reported fewer office referrals and a decreased need for multiple security officers.

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
2017	18001

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
According to a Mississippi 4-H Youth Development Status/Statistics Report, 60% of youth enrolled in 4-H live in rural communities and towns. Many of them are not active because they lack resources and family support. To increase youth participation, Extension should market organizational benefits, actively recruit club members, and prepare youth to successfully compete in various district and state competitions. Training is key to maintaining youth involvement in school and community 4-H clubs.

What has been done
Thirty-nine (39) youth leadership development activities were conducted. 4-H Educators and volunteers trained 102 junior and senior 4-Hers to compete in district and state-wide competitions. Youth competed in nutrition education, food preparation, public speaking, Share-the-Fun, clothing

selection, clothing construction, consumer education, creative arts, robotics, and photography. Youth also attended activities on team building, effective communication, and general leadership development.

Results
4-Hers participating in District Project Achievement Day and State Club Congress won blue ribbons and plaques in Share-the-Fun, consumer education, clothing construction, public speaking, and robotics. Total premiums for all winners were valued at approximately $500.

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
2017	24

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Caring adult volunteers are the backbone of any youth development program. ASU's Extension Program trusts its volunteer leaders to recruit 4-H club members, manage school and community-based clubs, and contribute to 4-Hers personal, social, and mental growth and well-being.

What has been done
4-H Youth Educators made 639 direct and indirect contacts to recruit and train 4-H volunteer leaders. Twenty-four leaders assumed responsibility to help prepare 4-Hers for state and district competitions. Sixteen volunteers attended a state-wide forum to strengthen and expand leadership skills. Volunteer leaders also assisted Educators during youth development workshops and other activities throughout the year. Annual awards programs recognized volunteer leaders' contributions to county 4-H programs.

Results

The number of volunteer leaders serving ASUEP has increased by 85% (from 13 to 24) since 2016. Training sessions strengthened volunteers' leadership competencies and abilities. One volunteer hour in Mississippi is worth $19.85 (Independent Sector, 2016). Volunteers serving ASUEP contributed approximately 1,920 hours for a total economic value of $38,112.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #7

1. Outcome Measures

Number of youth reporting utilizing skills to improve their financial well-being.(ASU)

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	20

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Only quantitative data is being reported for this State outcome.

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

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
2017	258

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The 4-H Science Engineering & Technology program mandates Extension to use math and science related activities to challenge young minds. 4-H SET programs encourage young people to pursue occupations in science and technology. Featured components of the program are robotics, rocketry, environmental science, agri-science, biotechnology, and veterinary science.

What has been done
The 4-H Specialist and Educators conducted a four-day Science, Engineering, and Technology (SET) camp for elementary, middle, and high school students. Emerging technologies was the primary focus of the camp. Participants experimented with unmanned aerial systems platforms (UAS&P), robots, animal health and safety, farm and environmental safety, and growing Shiitake mushrooms. Additional activities conducted in 2017 included National Youth Science Day and a STEM robotics workshop. Youth attending the 4-H science day activity built and tested their own drones.

Results
As a result of participating in STEM activities, participants had a new interest in STEM fields and careers. They seemed less intimidated by technology and were eager to engage in camp activities. Some parents reported increased requests for drones during birthdays and Christmas. A weeklong, youth technology camp at most major universities costs approximately $850 per camper. The 24 youth participating in ASU's STEM camp saved a shared total of $20,400.

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
2017	4290

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Some young people in Mississippi leave high school without sufficient job readiness skills to successfully transition from school to work. Most small communities do not have enough youth job opportunities which forces them work in other states. To successfully navigate these transitions, educational training is necessary to prevent communities from becoming drained of future workers, community leaders, and economic resources.

What has been done
Twenty-six (26) activities were conducted within the career/workforce development program at schools statewide. Subject matter included performing job searches, completing manual and online applications, resume writing, appropriate workplace apparel, and interview techniques. The Working-Class curriculum was used for content delivery. Activities appealed to students' diverse learning styles. More than 6,396 direct and indirect contacts were made within this program.

Results
Pre and posttest surveys indicated 45% understood delivered content. Another 45% stated they intended to set realistic future career goals. Sixty-five percent (65%) agreed to use knowledge to identify and explore current employment opportunities, make informed decisions, and use job readiness skills to seek and secure a job.

4. Associated Knowledge Areas

KA Code	Knowledge Area
806	Youth Development

Outcome #10

1. Outcome Measures

Increase the number that participate in Health & Wellness Program, events and activities for limited resource youth and families.(ASU)

2. Associated Institution Types

- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	5934

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Young people in Mississippi, like most youth nationwide, do not consume adequate amounts of healthy foods. Working parents are often too busy to prepare healthy meals, forcing them to eat whatever is available. 4-H Food Smart Families is a program designed to teach children healthier eating habits and food preparation skills. Children who learn to prepare their own meals are more independent and are in control of the foods they consume. These habits are often carried into adulthood.

What has been done
The 4-H Youth Specialist and volunteer leaders conducted six, three-day youth cooking classes - 4-H Food Smart Families. These classes were premier activities for the 4-H Health and Wellness program. Activities were conducted in Central and Northern Mississippi counties. 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) using food-safety principles to prepare and preserve foods. One thousand, one hundred, seventy-one (1,171) children participated in these classes.

Results
Participants retained knowledge and developed skills to prepare healthy, balanced meals. Seventy-five percent (75%) agreed to eat more fruits and vegetables. Seventy percent (70) vowed to drink more water and fewer sugary beverages. Sixty-five percent (65%) said they would prepare and choose healthier snacks over calorie latent ones. Over 85% reported preparing meals at least 3 days per week for themselves and their families after attending the classes. Participants saved approximately $250 each, resulting in a $292,750 economic impact for Mississippi and limited-income families.

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

At MSU, budget cuts from the state required Extension Administration to make adjustments in programming and personnel responsibilities to ensure state needs and priorities were addressed.

After the minor restructuring of ASU's Extension Program, Agriculture, Family and Consumer Sciences, and CRD Educators were reassigned 20% 4-H responsibilities. This change increased the number of 4-H direct and indirect contacts this past programming year. The number of 4-H activities also increased.

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). First, all MSU Extension programs approved for statewide implementation are required to use an evaluation tool approved by Extension Evaluation Specialists. Second, in FY 2017, 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. Digital Measures for quarterly reporting was pilot-tested (Digital Measures is used for annual performance evaluations at MSU). Third, a new app was pilot-tested to allow for real-time collection of information related to contacts. Fourth, a specific request for impact statements from MSU Extension and MAFES faculty and staff is also made once a year in November. Fifth, use of the MSU Standardized Extension Evaluation Survey (designed for use in any MSU Extension Service program, workshop, or event with adults) is creating a culture shift in the system related to program evaluation. The evaluation results shared through MSU impact statements are a combination of this quantitative and qualitative data.

Major activities conducted in ASU's 4-H and Positive Youth Development were a bullying summit, youth leadership camps, a SET camp, and a youth and family cooking school (4-H Food Smart Families). Evaluations results were overwhelmingly positive. Participants gained

knowledge to improve their health, mental well-being, and technical skillsets. Additionally, participants gained social skills, teamwork abilities, and decision-making techniques. Participants indicated a need for additional programs and activities related to science and technology. Parents participating in the cooking schools were motivated to enroll in the Expanded Foods and Nutrition Education Program (EFNEP)

Key Items of Evaluation

Additional funds to implement SET programs are needed to expand youth's technical knowledge and skills.

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%	5%	0%
703	Nutrition Education and Behavior	20%	7%	1%	100%
704	Nutrition and Hunger in the Population	2%	0%	4%	0%
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	3%	0%	6%	0%
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	3%	8%	29%	0%
721	Insects and Other Pests Affecting Humans	0%	0%	6%	0%
722	Zoonotic Diseases and Parasites Affecting Humans	0%	0%	2%	0%
723	Hazards to Human Health and Safety	5%	0%	5%	0%
724	Healthy Lifestyle	25%	70%	5%	0%
801	Individual and Family Resource Management	15%	7%	0%	0%
802	Human Development and Family Well-Being	25%	8%	29%	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	2%	0%	2%	0%
901	Program and Project Design, and Statistics	0%	0%	4%	0%
	Total	100%	100%	100%	100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2017	Extension		Research	
	1862	1890	1862	1890
Plan	46.2	6.0	4.0	0.0
Actual Paid	40.8	8.8	8.5	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**
1243223	466766	137079	159082
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
1243223	466766	420283	159082
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	2343066	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Considering the breadth of this program at MSU, 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.

At MSU, 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
- Trainings, technical assistance, and certification for childcare workers and centers.

ASUEP conducted Family and Consumer Sciences activities on the following topics in 2017:

- Parenting education;
- Physical fitness;
- Nutrition education;
- Family financial management;
- Food safety;
- Home décor on a budget;
- Health and wellness (healthy lifestyles); and
- Family and child well-being.

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 (Early Years 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 are 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. As in previous years, 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. Specifically, 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's Extension specialists and educators used eXtension as a resource for timely publications and other resources for program development in agriculture, youth development, family and consumer science, and community resource and economic development. Additionally, eXtension was used to seek answers to questions asked by local clientele.

V(E). Planned Program (Outputs)

1. Standard output measures

2017	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	157308	209315	195331	241600

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

Patent Applications Submitted

Year:	2017
Actual:	2

Patents listed

1. Schilling, M.W. 2017. Compositions of Food-grade Coatings to Control Pest Infestations and Methods of Applications. Patent Pending, USPTO PCT/US2016/061667; RPA ? PCT. 11/11/2016.
2. Chambers, J, and H. Chambers. 2017. Novel Oximes for Reactivating Butyrylcholinesterase. Patent Pending, USPTO 15/458,957, U.S. RPA. 03/14/2017.

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2017	Extension	Research	Total
Actual	47	57	104

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

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

Year	Actual
2017	29734

Output #2

Output Measure

- Number of people attending certification courses. (MSU)

Year	Actual
2017	812

Output #3

Output Measure

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

Year	Actual
2017	88

Output #4

Output Measure

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

Year	Actual
2017	1

Output #5

Output Measure

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

Year	Actual
2017	2329

Output #6

Output Measure

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

Year	Actual
2017	12

Output #7

Output Measure

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

Year	Actual
2017	25

Output #8

Output Measure

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

Year	Actual
2017	11

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
2017	13

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

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

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	5947

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Ninety-three percent of US adults consider homeownership an important factor in achieving the American Dream and 74% strongly or somewhat agree that the home buying process is complicated. Owning a home is one of the most important ways of building family wealth as well as reducing the racial wealth gap. The need for homebuyer education in Mississippi is especially large because Mississippi lags the nation in the proportion of household assets arising from homeownership: 43% vs. 38%.

What has been done
Utilizing MSU Extension's NeighborWorksTM America's homebuyer education curriculum, Realizing the American Dream, prospective homeowners learn the home buying process including financing options and foreclosure prevention. Topics include money management, credit building, obtaining a mortgage, shopping for and protecting. Clients are normally referred by USDA RD. The eight-hour program can be done in one day or several days, depending on client availability. Workbooks cost families $40 which is competitive and appeals to individuals who prefer F2F or who do not have access to a computer.

Results
During FY 2017, thirty-seven families participated in the Realizing the American Dream program. Overall, participants showed that their understanding of the home buying process, financial security, and mortgage loans increased significantly. Thirty-five participants (95%) stated that they felt "Very Confident" in their knowledge of the home buying process after taking the class. When it came to understanding the financial requirements of purchasing a home and paying off the mortgage, 33 participants (89%) rated the course as "Excellent."

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
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
801	Individual and Family Resource Management
802	Human Development and Family Well-Being
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

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

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	4757

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
According to the Mississippi State Department of Health, almost 1 in 10 teens reports being physically abused by a boyfriend or girlfriend in the last year. Research demonstrates that patterns of dating violence that develop in adolescence continue into adulthood for both victims and perpetrators. Teen victims of dating violence are also at greater risk for drug use, risky sexual behaviors, and suicide. Teaching teens about healthy relationships can help them recognize the signs of an abusive relationship and can provide them with tools to end unhealthy relationships before they experience negative consequences.

What has been done
MSU Extension utilizes Relationship Smarts Plus, a research-based curriculum that incorporates activities to teach knowledge and skills necessary for healthy dating relationships during

adolescence. Seven of the 12 lessons were delivered to ten junior and senior high school students at Winston Academy during Fall 2017. The lessons delivered address issues such as the seven principles of smart relationships, distinguishing between healthy and unhealthy relationships, red flags of dating violence, strategies for determining when to break up, as well as communication and conflict resolution skills.

Results

All of the eight teens who completed the overall program evaluation, indicated that they were either "very likely" (n=5) or "likely" (n=3) to use the skills they learned in the program. Overall, teens reported a one point improvement in their awareness of the early warning signs of abusive behavior as well as an increased ability to assert themselves at the first sign of disrespect (0.78). One teen indicated that "[the program] has helped me grow as a person in all relationships in my life. I feel like I can handle a lot more social circumstances." These results demonstrate that the program equipped teens with the knowledge and skills to recognize and end unhealthy relationships which may prevent them from experiencing negative consequences such as dating violence.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
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
801	Individual and Family Resource Management
802	Human Development and Family Well-Being
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

Outcome #3

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	2379

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Licensed resource (foster) parents in the state of Mississippi are required to acquire a minimum of 10 contact hours of parent education training annually to maintain their licensure. However, there is a shortage of parent education trainings available so foster parents often struggle to complete the minimum number of hours of training or complete training that is not relevant to their interests and needs. Parents who do not complete the required annual training lose their license requiring that the children in their care be removed and placed with another family.

What has been done
MSU Family and Consumer Sciences (FCS) Extension Specialists collaborated with the Mississippi Department of Child Protection Services (CPS) to provide two all-day parent training workshops to licensed foster parents. The program presented, Residential-Caregiver Education on Sleep and Trauma (REST), is a recently developed MSU Extension program that addresses issues such as the impact of trauma on children's brain development and caregiver strategies for promoting adequate sleep among children. Each workshop provided eight contact hours toward resource home renewal.

Results
Sixty-four licensed foster parents obtained eight of the ten contact hours required annually to maintain licensure. Of the 59 parents who completed surveys, 93% (n=55) specified that the content was relevant to their needs, and 92% (n=54) indicated that they would use information they learned in the program. Several foster parents identified that the most important thing they learned through the program was about the effects of trauma on the developing brain. For instance: "The brain is fragile yet complicated. There are many factors in life that can affect it greatly." Sixteen parents mentioned they plan to use the knowledge they learned about the importance of sleep on children. For instance: "take the TV out of the child's room" and "setting more boundaries at bedtime."

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
704	Nutrition and Hunger in the Population
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
801	Individual and Family Resource Management
802	Human Development and Family Well-Being

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

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
2017	1946

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Food deserts are plentiful in Mississippi. In food deserts, access to nutritional foods, such as produce, is more than 10 miles away. High calorie foods, such as those sold at convenience stores and fast food restaurants, are readily available which leads to poor eating habits. Poor diets are linked to obesity and chronic illnesses which significantly decrease lifespans. Farmers' markets stocked with locally grown produce can provide access to healthy foods and can boost local economies.

What has been done
ASUEP operated a mobile farmers market to make farm-grown fruits and vegetables available to limited income families and other stakeholders. The mobile market traveled to various Extension sponsored events held throughout the state selling sweet potatoes, purple hull peas, a variety of greens, and other vegetable varieties. Produce was sold well below retail price to accommodate limited budgets. This market-on-wheels was accompanied by educational presentations and displays on healthy eating, physical fitness, and initiating community gardens. Over 400 people were reached with mobile market services in 2017.

Results
The mobile farmers' market has been successful in providing accessibility to fresh produce in small, rural communities. Residents have been encouraged to plant personal gardens or to initiate community garden plots. Food deserts have also gained public attention because of the mobile farmers' market project. The mobile market can positively impact patrons' health by improving eating habits and decreasing obesity rates. Customers can potentially save more than 70% on produce by purchasing from farmers markets over supermarkets.

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
2017	838

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
This outcome contains quantitative data only.

What has been done

Results

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
2017	9730

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Obesity and chronic diseases are epidemics in Mississippi. In 2016, the adult obesity rate was 37%. Mississippi has the 2nd highest obesity rate in the nation, a slight improvement from previous years. African-Americans suffer most from obesity and chronic diseases such as hypertension, diabetes, elevated cholesterol levels, and certain types of cancers. The best way to manage weight and chronic diseases is with physical fitness and healthy eating.

What has been done
The Project Director for the Health and Wellness program conducted three, six-week physical fitness programs and two walking programs in several counties in Southwestern Mississippi. Classes were designed to accommodate the varying fitness levels of participants. Low and high-impact exercises were introduced along with suggestions for decreasing caloric intake. Each week, participants were exposed to nutrition lessons and exercise routines. Pre and post assessments measured beginning and ending weight, BMI, and blood pressure.

Results
Seventy-five (75%) of participants lost at least 5 pounds at the end of six weeks. Forty-five percent (45%) lost more than 10 pounds. Sixty-five percent (65%) lost at least seven inches of body fat. Sixty-five percent (65%) reported changing the way they prepare meals (less fat and sodium). Thirty-seven percent (37%) noticed decreased blood pressure and 25% reported smaller BMI measurements. Twenty-five percent (25%) reported some level of physical fitness four weeks after classes ended. If program participants continue practicing healthy lifestyles, they could significantly increase their health and decrease health care costs. Mississippi insurance companies could potentially reduce payouts for doctor and hospital visits by more than 40%.

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
2017	39

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The majority of Americans consume insufficient amounts of fruits, vegetables, and whole grains. Limited-income groups are particularly vulnerable to poor eating habits. Chronic diseases and poor eating habits are interrelated. Consumers should understand this link and learn to prevent and manage chronic diseases throughout their lifecycle.

What has been done
Extension specialists and Educators conducted nutrition workshop series in various Southwestern Mississippi counties. Subject matter included heart healthy eating, using MYPLATE, childhood obesity prevention, fruits and vegetables consumption, Water-with-a-Twist, and Kids-in-the Kitchen. Visual presentations and demonstrations were used to deliver educational content. Activities were held at County Extension offices, local schools, community centers, and churches. Six hundred, fifty-four (654) direct youth and adult contacts were made in this program area.

Results
Workshop participants learned to manage health using healthy eating practices. Over 95% agreed that information and knowledge would help them to live healthier, longer lives. Ninety percent (90%) reported they would make immediate changes to their current diets. Fifteen percent (15%) agreed to consult physicians regarding medication and food interactions. Program participants also reported losing weight and decreasing blood pressure after adopting healthy

eating habits.

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
2017	298

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Good parenting skills can positively impact children, societal well-being, and a community's economic health. Research indicates that parents with risk factors such as poverty, single-parenthood, limited education, and substance abuse may not positively interact with their children. Poorly-nurtured children are more susceptible to at-risk behaviors and criminal activities. Parenting education programs provide tools to raise children in healthy, loving environments.

What has been done

Extension Educators partnered with County Departments of Human Services to conduct thirteen (13) parenting education workshops for court-appointed parents. These parents had either lost or were in jeopardy of losing their children because of adverse behaviors. Participants agreed to attend parenting classes to retain or regain custody. Sessions were taught using the Active Parenting Curriculum which included lessons on Nonviolent Disciplining Techniques, Communication Skills, Character Building, Alcohol and Drug Abuse, Encouraging School Success, and Defusing Power Struggles with Children. Sessions were conducted at County Extension Offices and facilities operated by the State's Department of Human Services.

Participants completed weekly homework assignments to strengthen comprehension of competences.

Results

Ninety seven percent (97%) completed courses and were awarded certificates of completion. One-hundred percent (100%) of parents who had lost custody regained guardianship after fulfilling additional requirements established by DHS and the courts. One-hundred percent (100%) of those in jeopardy of losing their children retained custody. One hundred percent (100%) of those completing the program still care for their children at home. Since positive parenting is linked to decreased youth-related crimes, these workshops theoretically saved Mississippi an annual, per-child cost of $90,000. Since program participants had at least one child, total savings exceeded $26,820,000.

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
2017	3503

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Eighty percent (80%) of Americans are in debt, according to the Pew Charitable Trust. At the end of 2015, household debt in the U. S. was $12.12 trillion. These statistics are likely the results of poor financial literacy and misunderstandings of how money work. Limited-income families account for the majority of people in this situation. These families often do not have enough money to manage in the first place. Extension educators are challenged to teach limited-resource families how to make every dollar count.

What has been done

FCS Educators planned and implemented 12 financial management activities in five counties served by ASUEP. Workshop announcements were published in local newspapers and featured on local radio stations. Educators used various resources to teach lessons on budgeting, saving money, paying bills on time, applying for loans, credit management, analyzing credit reports, and creating home décor on a budget. Workshops were conducted at sites accessible to the general public.

Results

Program participants developed personal budgets and savings plans. They learned how to dispute errors on their credit reports and methods for increasing credit scores. Those attending the Home Décor on a Budget series sold items to boost personal incomes. Consumers are more financially literate and have increased their ability to eliminate personal debt in a shorter time frame. These workshops were offered free to the public, saving participants over $50,000 total.

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

Outcome #11

1. Outcome Measures

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

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2017	17

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Nearly half of all rice produced in the U.S. is exported, so Mississippi farmers need rice variety options to ensure strong foreign demand for their harvests. To be economically viable, producers must grow high-yielding varieties that have the nutritional and cereal chemistry attributes desired by consumers in a variety of markets. The MAFES rice breeding program seeks to develop new and improved varieties that are locally adapted for Mississippi?s production systems, climate, and soils, and have high yield and consumer-preferred grain quality.

What has been done

MAFES released a new rice variety to help growers meet global demand. ?Thad,? named after U.S. Senator Thad Cochran, is a high-amylose rice with excellent milling qualities. Amylose is the primary component of starch in rice and determines the market for rice. Cooked high-amylose rice is loose and fluffy, popular in Latin American markets and commonly parboiled in the U.S. MAFES released Rex, a conventional variety with strong yields and a medium amylose level, capturing nearly 15% of Mississippi rice acreage.

Results

In MAFES Official Variety Trials, the current most popular high-amylose conventional variety yielded 190 to 200 bushels per acre. Thad yielded between 235 and 240 bushels per acre, comparable to REX, with the cereal chemistry qualities desired in Central and South American markets. It?s going to be a good substitute for our producers who are marketing the parboiled, loose rice market. MAFES developed a Clearfield counterpart to Thad, CL163, which became commercially available in 2016. Thad will be commercially available for purchase as certified seed for the 2017 season. This suite of conventional and Clearfield, high- and medium-amylose high yielding varieties provide Mississippi Rice producers locally adapted varieties to meet their production systems and target markets.

4. Associated Knowledge Areas

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

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

At MSU, budget cuts from the state required Extension Administration to make adjustments in programming and personnel responsibilities to ensure state needs and priorities were

addressed.

After ASUEP's minor restructuring, one CRD Educator was reassigned 60% FCS program responsibility. This personnel change increased programs efforts in FCS, thus increasing the quantity of activities conducted. The number of direct and indirect contacts for adults and youth also increased.

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). First, all MSU Extension programs approved for statewide implementation are required to use an evaluation tool approved by Extension Evaluation Specialists. Second, in FY 2017, 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. Digital Measures for quarterly reporting was pilot-tested (Digital Measures is used for annual performance evaluations at MSU). Third, a new app was pilot-tested to allow for real-time collection of information related to contacts. Fourth, a specific request for impact statements from MSU Extension and MAFES faculty and staff is also made once a year in November. Fifth, use of the MSU Standardized Extension Evaluation Survey (designed for use in any MSU Extension Service program, workshop, or event with adults) is creating a culture shift in the system related to program evaluation. The evaluation results shared through MSU impact statements are a combination of this quantitative and qualitative data.

Major programs conducted in Family and Consumer Sciences were nutrition education, health and wellness, and parenting education. Evaluation results were positive. Participants expressed needs for additional programs in physical fitness and healthy weight loss. Participants attending parenting education classes reported positive results at the end of the sessions. Many of them were appointed by the youth court system as a requirement to regain custody rights. One hundred percent (100%) of parents who lost custody of their children regained guardianship after completing the Active Parenting series.

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.