# 2018 Alcorn State University and Mississippi State University Combined Research and Extension Annual Report of Accomplishments and Results

**Status: Accepted**

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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 $4,904,548 for federal fiscal year 2018 and a total Smith-Lever appropriation of $7,052,337, as well as ASU's Evans Allen appropriation and Smith-Lever appropriation.

In 2018, the U.S. Census estimated Mississippi to have approximately 2,985,530 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 FY2018, MSU Extension professionals (242.2 total FTE) carried out 164,452 educational activities with a total of 3,886,072 contacts.

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 2018, MAFES scientists (95.99 total FTE, based on FFY18 data) produced 472 peer-reviewed scientific publications, 295 other technical publications, 7 patent applications, 4 patents/PVPs, and supported 224 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,
- 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: 2018 | Extension | | Research | |
|---|---|---|---|---|
| | 1862 | 1890 | 1862 | 1890 |
| Plan | 262.6 | 36.0 | 130.0 | 34.0 |
| Actual | 242.2 | 36.4 | 244.3 | 12.0 |

## 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 2018, 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. Town Hall meetings were conducted in five Mississippi counties: Bolivar, Claiborne, Quitman, Jefferson,

and Hinds. During the Town Hall meetings, community needs were identified and prioritized. Actions plans to address identified needs were developed during the Focus Group meetings. Extension educators also used 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. Issues identified and prioritized during the Environmental Scanning activities (Town Hall and Focus Group Meetings) were summarized and used to develop research reports. These reports were distributed to Extension administrators and specialists for data-driven decision-making. Specialists developed and/or identified curriculums to address identified needs. Specialists also communicated identified needs with Extension Educators in counties where Environmental Scanning activities were conducted and Educators used this information to plan and conduct meaningful programs and activities.

**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 | 2036655 | 4705185 | 2542744 |
| Actual Matching | 7052337 | 2036655 | 4729339 | 2542744 |
| Actual All Other | 0 | 0 | 21392664 | 0 |
| Total Actual Expended | 14104674 | 4073310 | 30827188 | 5085488 |

| 3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous | | | | |
|---|---|---|---|---|
| **Carryover** | 0 | 0 | 3745194 | 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% | 1% | 8% | 50% |
| 302 | Nutrient Utilization in Animals | 10% | 2% | 16% | 0% |
| 303 | Genetic Improvement of Animals | 5% | 2% | 1% | 0% |
| 304 | Animal Genome | 5% | 0% | 3% | 0% |
| 305 | Animal Physiological Processes | 7% | 0% | 15% | 50% |
| 306 | Environmental Stress in Animals | 4% | 0% | 7% | 0% |
| 307 | Animal Management Systems | 13% | 75% | 17% | 0% |
| 308 | Improved Animal Products (Before Harvest) | 6% | 0% | 3% | 0% |
| 311 | Animal Diseases | 6% | 0% | 15% | 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 | 2% | 0% | 5% | 0% |
| 503 | Quality Maintenance in Storing and Marketing Food Products | 2% | 0% | 8% | 0% |
| 601 | Economics of Agricultural Production and Farm Management | 2% | 0% | 0% | 0% |
| 602 | Business Management, Finance, and Taxation | 2% | 20% | 0% | 0% |
| 603 | Market Economics | 2% | 0% | 2% | 0% |
| 604 | Marketing and Distribution Practices | 3% | 0% | 0% | 0% |
| | **Total** | 100% | 100% | 100% | 100% |

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

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

| Year: 2018 | Extension | | Research | |
|---|---|---|---|---|
| | 1862 | 1890 | 1862 | 1890 |
| **Plan** | 30.1 | 6.0 | 19.3 | 4.0 |
| **Actual Paid** | 18.8 | 4.8 | 27.9 | 4.0 |
| **Actual Volunteer** | 0.0 | 0.0 | 0.0 | 2.0 |

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

| Extension | | Research | |
|---|---|---|---|
| **Smith-Lever 3b & 3c** | **1890 Extension** | **Hatch** | **Evans-Allen** |
| 547752 | 275224 | 642283 | 598030 |
| **1862 Matching** | **1890 Matching** | **1862 Matching** | **1890 Matching** |
| 547752 | 275224 | 2137508 | 598030 |
| **1862 All Other** | **1890 All Other** | **1862 All Other** | **1890 All Other** |
| 0 | 0 | 7862086 | 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 2018.

### 2. Brief description of the target audience

At MSU, target audiences include:

- Commercial and noncommercial 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, **59** MSU employees are eXtension users as members of **46** COPs (some employees are members of more than 1 COP). **8** 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 leader of the Grapes COP. **2** MSU Extension personnel are members of the Invasive Species COP. **2** MSU Extension employee are members of the Internationalizing Extension COP. **8** 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 otherresources 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**

| 2018 | Direct Contacts Adults | Indirect Contacts Adults | Direct Contacts Youth | Indirect Contacts Youth |
|---|---|---|---|---|
| **Actual** | 58491 | 164737 | 21798 | 3194 |

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

**Patent Applications Submitted**

Year: 2018

Actual: 0

**Patents listed**

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

**Number of Peer Reviewed Publications**

| 2018 | Extension | Research | Total |
|---|---|---|---|
| **Actual** | 14 | 192 | 206 |

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

**Output Target**

**Output #1**

**Output Measure**

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

| Year | Actual |
|---|---|
| 2018 | 29104 |

**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 |
|---|---|
| 2018 | 32 |

**Output #3**

**Output Measure**

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

| Year | Actual |
|---|---|
| 2018 | 7 |

**Output #4**

**Output Measure**

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

| Year | Actual |
|---|---|

| | |
|---|---|
| 2018 | 8 |

**Output #5**

**Output Measure**

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

| Year | Actual |
|---|---|
| 2018 | 14 |

**Output #6**

**Output Measure**

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

| Year | Actual |
|---|---|
| 2018 | 4090 |

**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 |
|---|---|
| 2018 | 9701 |

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

**Issue (Who cares and Why)**
The USDA Food Safety Inspection Service recommended three voluntary recalls of domestically produced channel catfish products in late 2017 and early 2018. These products were processed in three separate catfish processing plants in Louisiana and Mississippi. USDA FSIS tests determined these products contained traces of triarylmethane dyes. The source of the contamination was never determined. These recalls caused severe economic hardship to the processors due to lost product and lost sales and to the industry as a whole due to public perception as an unsafe food product.

**What has been done**
To help the U.S. farm-raised catfish industry avoid future domestic catfish recalls due to residues, an MSU Extension Professor and an MSU Veterinarian developed an educational training package for hatchery managers, fingerling producers, haulers, and processors. This package contained PowerPoint presentations, evaluation tools, and post-tests. These materials were shared with Extension counterparts in Alabama, Arkansas, and Texas. These materials were presented at seven workshops across the region in 2017 and 2018. Commodity organizations and processors encouraged their members and providers to attend.

**Results**
To date, nine trainings have been held in MS, AL, AR, and TX. Over 250 producers have attended the trainings and have received certification. Other participants (+85) included haulers, processors, feed mill personnel, and MSU Extension and research personnel. To date, over 95% of the acreage in the region has received training. In the evaluation, producers indicated that attending was worth their time (4.4 out of 5 with 5 = Strongly Agree), content was relevant (4.3 out of 5), knowledge of the subject was increased (4.3 out of 5), and information was provided that they will use (4.2 out of 5). Despite monthly sampling at each of the 19 registered processing plants, there has not been a recall of domestic catfish product since May 2018.

**4. Associated Knowledge Areas**

| KA Code | Knowledge Area |
|---|---|
| 307 | Animal Management Systems |
| 308 | Improved Animal Products (Before Harvest) |
| 501 | New and Improved Food Processing Technologies |
| 503 | Quality Maintenance in Storing and Marketing Food Products |
| 603 | Market Economics |

**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 |
|---|---|
| 2018 | 8246 |

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

**Issue (Who cares and Why)**
Livestock quality assurance programs are producer-driven programs that involve all sectors of that industry, from producers all the way to consumers. These programs are designed to help in the production of meat that is healthy, wholesome and a quality product, and one that is free from defects such as injection-site lesions and bruises. Consumers care a great deal about the safety of the food they eat. Food safety begins on the farm and we must do all that we can to ensure safety and quality of the animals that we raise. This includes animals in the 4-H and FFA livestock program.

**What has been done**
It is mandatory that all 4-H/FFA youth and at least one parent/guardian are certified through the Mississippi 4-H Livestock Quality Assurance Program so they understand their role in producing livestock for the show ring and how their management of their animals could have an effect on the food industry. The training is given to MSU Extension Agents through in-service sessions and they then present the program to clientele in their county to certify them in this quality assurance program.

**Results**
A total of 16 MSU Extension Agents completed the 4-H Livestock Quality Assurance Training during the 2018 year. One of the main components of the training focuses on properly completing our animal health record forms that are reviewed at the state livestock shows. The percentage of properly completed health record forms drastically increased in 2018 compared to previous years, thereby indicating that the training of Extension Agents and having them teach this concept to clientele was successful. A long-term aspect of this program is to train youth of the importance of proper livestock quality assurance practices so they can continue these practices as adult producers.

**4. Associated Knowledge Areas**

| KA Code | Knowledge Area |
|---|---|
| 307 | Animal Management Systems |
| 308 | Improved Animal Products (Before Harvest) |
| 311 | Animal Diseases |

**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 |
|---|---|
| 2018 | 4851 |

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

**Issue (Who cares and Why)**
Timely cattle market analysis and information is a primary objective of MSU Extension's program and position. This information is routinely demanded by Mississippi cattle clientele as evidenced by the many speaking requests, consultation requests, and media requests MSU Extension receives. Given the ever-changing state of market prices, it is the continuous access to up-to-date information in multiple channels that is the most valuable to clientele.

**What has been done**
MSU Extension has responded to stakeholder demand for market analysis and information in a variety of ways. MSU Extension writes a weekly cattle market newsletter; appears regularly on

Farmweek TV and Farm and Family Radio; frequently gives market analysis presentations at the county, state, and national levels; contributes to workshops that target markets and risk management topics; and regularly contributes articles and quotes to national media outlets.

**Results**

MSU Extension employs a cost-savings approach that uses the private market value for pieces of the program to establish a total economic impact. The private market value of the material and support provided to the newsletter subscribers (300 total) is $600 per year for a total of $180,000 in the 2018 plan year. The private value of attending a market outlook presentation provided by the program is $350 per person. With 834 attendees to these presentations in 2018, the economic impact of these presentations was $291,900. The private market value of the Risk Management Workshops held is $790 per attendee for 25 attendees in 2018 for a total of $19,750. Thus the total measurable impact is $491,650. It should be noted that this is a conservative estimate that does not include the impact of TV, radio, etc.

**4. Associated Knowledge Areas**

| KA Code | Knowledge Area |
|---|---|
| 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 |
|---|---|
| 2018 | 31 |

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

**Issue (Who cares and Why)**

Many limited-resource producers are unaware of Best Management Practices (BMP) that are used to prevent pollution generated by nonpoint sources. Watering sources are especially susceptible to contamination from storm runoff. Farmers who adopt recommended BMPs can potentially improve their farm operations

**What has been done**
ASUEP educators and specialists conducted twenty-nine (29) activities on a variety of topics to improve livestock through Best Management Practices. Activities were conducted in nine counties located in Southwest Mississippi and the Mississippi Delta. Activities included workshops, field days, farm visits, youth camps, and weekly radio shows. Direct and indirect contacts for BMP activities totaled 64,054.

**Results**
Farmers who attended BMP activities increased their knowledge and awareness of strategies to prevent contamination to animal watering sources. These farmers were also motivated to seek services provided by Extension and NRCS.

**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 |
|---|---|
| 2018 | 64 |

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

**Issue (Who cares and Why)**
Cattle producers in Southwest Mississippi have problems establishing and sustaining grasses and forages for animal production. Limited-resource farmers are less likely to produce nutrient-rich forages because they lack financial resources to purchase necessary inputs. Additionally,

farmers may not know about federal programs that could increase farm efficiency.

**What has been done**

The Agriculture Educator servicing Warren County, MS collaborated with USDA to plan and conduct an Agriculture Awareness Day at the Farmers Market in Vicksburg, MS. This all-day activity featured workshops and informational sessions to increase awareness of various programs available through Alcorn State University's Extension Program, the Small Farm Development Program, and and USDA. Topics discussed were rotational grazing, fencing, and sustaining productive enterprises. Participants also received information on the loan program through the Mississippi Small Farm and Agribusiness Center. Forage production activities reached 191 people in 2018.

**Results**

One-hundred percent of program participants reported increased knowledge of methods to improve grasses and forages. Eighty-five percent of participants agreed to use information to improve grazing land for their animals and to implement rotational grazing to minimize feed costs. At least five farmers stated that they would apply for the small farm loan to purchase animals, equipment, and fencing.

**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 #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 |
|---|---|
| 2018 | 25 |

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

**Issue (Who cares and Why)**
Embryo survival, recognition, and retention of pregnancy are essential to cattle fertility. However, embryonic retention still remain one of the main factors limiting application of embryo transfer by producers. The major goal of a three-year research project was to improve cattle fertility by developing hormonal protocols to enhance embryos retention and transfer rates.

**What has been done**
This research utilized treatment and control groups. A series of procedures were used to transfer embryos to cattle in the treatment group. After transfers were complete, animals were monitored regularly. Harvested embryos were recorded, frozen, and stored in liquid nitrogen. After cattle were artificially inseminated, pregnancy tests were performed within 60 to 90 days. The research engaged students and scientists.

**Results**
Results indicated a strong, positive correlation in concentration of progesterone between days 5 and 7 in donor cows; however, there were no significant difference in concentrations of progesterone between the two treatment groups. Research results were shared in formal classroom settings at Alcorn State University and Tuskegee University. Results were also shared during conferences and outreach workshops.

**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 |
|---|---|
| 2018 | 47 |

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

**Issue (Who cares and Why)**
Health conscious consumers are concerned about conventional methods of raising livestock for consumption. Many of them feel that animals receive too many antibiotics and other drugs to be safely consumed. Educational activities that provide alternative methods for raising livestock could help farmers fulfill a growing need

**What has been done**
Agriculture educators conducted seven major activities that reached 668 producers in Southwest Mississippi. Activities were conducted in three counties: Claiborne, Hinds, and Madison. Production practices for goats, farrow swine, and cattle were discussed.

**Results**
The demand for programs and activities on alternative livestock production continues to increase each year. The number of people who participated in educational programs on alternative livestock production in 2018 increased in by 295% from 2017. Participants obtained knowledge to raise healthier animals to fulfill consumers' health-related needs. Farmers participating in educational activities saved approximately $23,380 collectively.

**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 |
|---|---|
| 2018 | 32 |

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

**Issue (Who cares and Why)**
Enteric Septicemia of Catfish (ESC),caused by Edwardsiella ictaluri, costs the commercial channel catfish industry $40 million/year. MSU scientists developed a highly efficacious and safe,

live attenuated E. ictaluri vaccine with an oral administration platform. The effectiveness of a vaccine is dependent on the cross protection offered against multiple isolates. To provide a broadly effective solution to ESC, the now commercially available vaccine must be effective against commonly occurring E. ictaluri strains throughout the region.

**What has been done**

We evaluated the cross-protection potential of the current vaccine against 23 archived field isolates recovered from farm-raised catfish in Mississippi and Alabama over a span of 20 years (1997 - 2016). Vaccination followed by bacterial challenge with archived isolates were conducted over a three-year period. In order to differentiate between the bacterial isolates, their clonal relation was determined by molecular characterization.

**Results**

A single dose of the orally delivered live, attenuated E. ictaluri vaccine protected channel catfish against 23 field isolates regardless of host species, geographic region (state and farm location) or isolation year. The homogeneous nature of E. ictaluri isolates revealed by rep-PCR and virulence gene amplification negate the need to develop multivalent vaccines to account for antigenic variations occurring over time. Plasmid profiling revealed the heterogeneity of at least four bacterial isolates. Nevertheless, the vaccine protected fish from exposure to all these challenge isolates confirming the efficacy of the vaccine.

**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 |
| 501 | New and Improved Food Processing Technologies |

**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 |
|---|---|
| 2018 | 23 |

### 3c. Qualitative Outcome or Impact Statement

**Issue (Who cares and Why)**
Catfish fingerlings have a higher dietary protein requirement than food fish. As such, catfish fingerling feeds are more expensive than food fish feeds because of higher protein levels and more expensive feed ingredients. Commercial catfish fingerling feeds typically contain 35% protein with prices in the range of $600-700 per ton. Reducing feed cost without negatively affecting fish growth performance would increase economic returns for fingerling producers.

**What has been done**
We evaluated effects of dietary protein levels and the replacement of fish meal with pork meat and bone meal on channel catfish fingerling growth. Four diets were tested: Diet 1 28% protein, fish meal; Diet 2 32% protein, fish meal; Diet 3 35% protein, fish meal; Diet 4 32% protein, pork meal. Fish meal or pork meal was used at 7.5% of the diet, a level similar to that used in commercial fingerling feeds. Small channel catfish fingerlings (2 inch) were stocked into 20 ponds (1/10 acre) and fed to apparent satiation from mid-July to late October. All fish were harvested at the end of growing season.

**Results**
There were no significant differences in total feed fed, gross yield, final weight, or survival in fish fed various diets. Based on feed prices at purchase (July 2018), a 28% protein diet could save $39 per ton compared with a 35% protein diet. Replacing fish meal with pork meat and bone meal in a 32% protein diet could save $97 per ton. Assuming channel catfish fingerling producers feed about 3 tons of feed per acre in a growing season, there would be annual savings of $117 per acre using the 28% protein diet with fish meal, and $291 per acre using the 32% protein diet with fish meal being replaced by pork meal.

### 4. Associated Knowledge Areas

| KA Code | Knowledge Area |
|---|---|
| 304 | Animal Genome |
| 305 | Animal Physiological Processes |
| 306 | Environmental Stress in Animals |
| 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 |
|---|---|
| 2018 | 3 |

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

**Issue (Who cares and Why)**
Returns from calf sales are the predominant enterprise income source of most commercial cow-calf operations. A myriad of factors influence prices of calves sold at auction markets and these influences may vary over time. Information on implicit prices of calf sale lot characteristics are needed to objectively inform the industry and breeding programs.

**What has been done**
The objective of this study was to determine the effects of various calf sale lot traits on prices received in Mississippi auction markets during a period of historically high market price levels.From May 2014 to 2015, 21,128 calf lots at 4 auctions were evaluated. Observers attended these sales in person and were seated in the public seating section in clear view and within audible range of the sale ring in which cattle entered while being auctioned for sale. Data were collected on 21,128 calf sale lots, representing 21,879 calves sold.

**Results**
Among the top factors that have the largest positive price effect are BCS, muscle score, breed type, and hide color. Calves that have a BCS of 5 or greater are expected to receive a premium of at least $0.30 relative to those with a BCS between 1 and 3. Similarly, heavier muscled calves will sell for between $0.23 and $0.34 more than light muscled calves. Calves that are black will receive $0.18 more than nonblack animals, and Charolais cross will bring $0.17 more than an Angus. The top factors that have the largest negative effect are locomotion, Holsteins, and calves with horns. Calves that are lame will bring an average of $0.51 less than those who are sound, and animals with horns will bring $0.14 less than those without. Holstein and Holstein crossbred calves will bring between $0.31 and $0.44 less than an Angus.

**4. Associated Knowledge Areas**

| KA Code | Knowledge Area |
|---|---|
| 305 | Animal Physiological Processes |
| 503 | Quality Maintenance in Storing and Marketing Food Products |
| 603 | Market Economics |

## 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 |
|---|---|
| 2018 | 743 |

### 3c. Qualitative Outcome or Impact Statement

**Issue (Who cares and Why)**
Financial management skills are necessary components of successful farm businesses. Careless financial oversight can lead to decreased farm profits and increased risks of business failure. Farm financial management workshops provides practical methods for managing farm transactions.

**What has been done**
ASUEP's Small Farm Outreach and Training Specialist and Extension Educators conducted twenty-three activities on farm management. Youth and adults learned about farm financial matters during conferences, workshops, tours, and field days. Many sessions were planned and implemented with USDA partners and school personnel. A total of 6,659 direct and indirect contacts were made in this program area.

**Results**
Workshop and conference participants received useful information on a variety of topics related to farm management. Evidence of knowledge increases were substantiated with written evaluation tools and through sound observation techniques. Overall, more than 85% of participants indicated increased knowledge to manage farm resources. Seventy-five percent reported use of learned skills several months after attending sessions.

### 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 |
|---|---|
| 2018 | 206 |

### 3c. Qualitative Outcome or Impact Statement

**Issue (Who cares and Why)**
The success of any business depends on the accuracy of records. This is especially true for limited-income farmers who are less familiar with the business side of the operation. Failure to track farm expenditures could prove detrimental for tax and legal purposes. Farmers should learn to document expenses for long-term sustainability.

**What has been done**
Seven record keeping activities were conducted by Extension Educators in five Mississippi counties. Activities were conducted during field days and at farmers markets using an ASUEP-developed record-keeping booklet. Lectures and hands-on activities were used for program delivery. Two-hundred six farmers participated in record-keeping activities this past programming year.

**Results**
Participants gained knowledge to keep accurate records on their farms. These documents helped farmers to meet federal requirements for financial assistance. The estimated cost to attend these types of sessions is $80 per person. Farmers attended ASUEP record-keeping activities at no cost for a collective savings of $16,480.

### 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 |
|---|---|
| 2018 | 85 |

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

**Issue (Who cares and Why)**
One prevalent issue continuing to impact farming success is lack of financial resources. Farmers should have access to adequate resources to effectively operate their enterprises. USDA's Farm Services Agency (FSA) provides financial assistance to farmers; however, the application packets are often too long and difficult to understand. ASUEP's Vendors'/Borrowers' trainings are designed to provide knowledge and skills necessary to obtain FSA loans.

**What has been done**
The Vendors'/Borrowers' training is a two-day program offering educational sessions and resources on topics related to financial management and production agriculture. Instructors provide lectures and real-life experiences to increase knowledge, to complete the loan application packet, and to successfully pass a learning assessment with a score of at least 70%. Eighty-eight farmers participated in Vendors'/Borrowers' trainings in 2018.

**Results**
This long-term, educational program provided over 112 hours of valuable training in numerous Mississippi counties. Borrowers gained knowledge and skills to complete the application which resulted in over $4,564,000 extended to farmers. The cost to attend these trainings is approximately $175 per farmer, for a collective total of $15,400, which yields a collective ROI of 295%.

**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 |
|---|---|
| 2018 | 21 |

### 3c. Qualitative Outcome or Impact Statement

**Issue (Who cares and Why)**

**What has been done**

**Results**

### 4. Associated Knowledge Areas

| KA Code | Knowledge Area |
|---|---|
| 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 Extension Educators conducted activities in Animal Systems without the guidance of an Animal Science Specialist. This resulted in decreased activities in this program area.

## 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 2018, 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 was also used for quarterly reporting by some MSU Extension personnel. Third, a new app allows 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.

ASUEP Agriculture Educators used evaluation results to improve educational activities for limited-income audiences. Evaluation results indicated continuous needs for programs and activities on financial management, farm risk management, record keeping, and animal health. Researchers continue to conduct research projects that directly impact limited-resource farmers' ability to raise healthy livestock.

**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 | 15% | 3% | 0% | 0% |
| 201 | Plant Genome, Genetics, and Genetic Mechanisms | 8% | 0% | 10% | 50% |
| 202 | Plant Genetic Resources | 0% | 0% | 6% | 50% |
| 203 | Plant Biological Efficiency and Abiotic Stresses Affecting Plants | 5% | 0% | 5% | 0% |
| 204 | Plant Product Quality and Utility (Preharvest) | 10% | 0% | 2% | 0% |
| 205 | Plant Management Systems | 3% | 0% | 14% | 0% |
| 206 | Basic Plant Biology | 8% | 0% | 4% | 0% |
| 211 | Insects, Mites, and Other Arthropods Affecting Plants | 3% | 0% | 9% | 0% |
| 212 | Diseases and Nematodes Affecting Plants | 8% | 0% | 13% | 0% |
| 213 | Weeds Affecting Plants | 10% | 0% | 7% | 0% |
| 214 | Vertebrates, Mollusks, and Other Pests Affecting Plants | 7% | 0% | 1% | 0% |
| 215 | Biological Control of Pests Affecting Plants | 4% | 0% | 1% | 0% |
| 216 | Integrated Pest Management Systems | 3% | 3% | 6% | 0% |
| 402 | Engineering Systems and Equipment | 4% | 10% | 2% | 0% |
| 501 | New and Improved Food Processing Technologies | 2% | 10% | 0% | 0% |
| 502 | New and Improved Food Products | 1% | 0% | 6% | 0% |
| 511 | New and Improved Non-Food Products and Processes | 3% | 24% | 1% | 0% |
| 601 | Economics of Agricultural Production and Farm Management | 2% | 50% | 13% | 0% |
| 604 | Marketing and Distribution Practices | 2% | 0% | 0% | 0% |
| 712 | Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins | 2% | 0% | 0% | 0% |
| | **Total** | 100% | 100% | 100% | 100% |

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

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

| Year: 2018 | Extension | | Research | |
|---|---|---|---|---|
| | 1862 | 1890 | 1862 | 1890 |
| **Plan** | 61.5 | 15.0 | 32.0 | 7.0 |
| **Actual Paid** | 39.4 | 11.0 | 43.5 | 7.0 |
| **Actual Volunteer** | 0.0 | 0.0 | 0.0 | 4.5 |

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

| Extension | | Research | |
|---|---|---|---|
| **Smith-Lever 3b & 3c** | **1890 Extension** | **Hatch** | **Evans-Allen** |
| 1146172 | 605492 | 2653032 | 1739091 |
| **1862 Matching** | **1890 Matching** | **1862 Matching** | **1890 Matching** |
| 1146172 | 605492 | 1592031 | 1739091 |
| **1862 All Other** | **1890 All Other** | **1862 All Other** | **1890 All Other** |
| 0 | 0 | 8061442 | 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 was conducted in 2018 to introduce and reemphasize skills and knowledge important for the sustainability of small farms.

### 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 ranchers 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 aresource in state-based planning processes. As in previous years, overall, **59** MSU employees are eXtension users as members of **46** COPs (some employees are members of more than 1 COP). **8** 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 leader of the Grapes COP. **2** MSU Extension personnel are members of the Invasive Species COP. **2** MSU Extension employees are members of the Internationalizing Extension COP. **8** 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. **2** MSU Extension personnel are members of the Plant Breeding and Genomics 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**

| 2018 | Direct Contacts Adults | Indirect Contacts Adults | Direct Contacts Youth | Indirect Contacts Youth |
|---|---|---|---|---|
| **Actual** | 237205 | 1244730 | 53418 | 19284 |

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

**Patent Applications Submitted**

| | |
|---|---|
| Year: | 2018 |
| Actual: | 2 |

**Patents listed**

#1 Plant Variety Protection Certificate - "Thad (Oryza sativa L. Ric, RU9804054, RU1104077)" Certificate number 201600309. Issue Date - 3/21/2018

#2 US Patent No. 10,092,622 - "Occidiofungin, a unique antifungal glycopeptide produced by a strain of Burkholderia contaminans" - Issue Date - 10/9/2018

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

**Number of Peer Reviewed Publications**

| 2018 | Extension | Research | Total |
|---|---|---|---|
| **Actual** | 71 | 331 | 402 |

**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 |
|---|---|
| 2018 | 225877 |

**Output #2**

**Output Measure**

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

| Year | Actual |
|---|---|
| 2018 | 20 |

**Output #3**

**Output Measure**

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

| Year | Actual |
|---|---|
| 2018 | 11 |

**Output #4**

**Output Measure**

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

| Year | Actual |
|---|---|
| 2018 | 2 |

**Output #5**

**Output Measure**

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

| Year | Actual |
|---|---|
| 2018 | 20 |

**Output #6**

**Output Measure**

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

| Year | Actual |
|---|---|
| 2018 | 989 |

**Output #7**

**Output Measure**

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

| Year | Actual |
|---|---|
| 2018 | 150 |

**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 |
|---|---|
| 2018 | 54 |

**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 |
|---|---|
| 2018 | 44 |

**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 |
|---|---|
| 2018 | 45175 |

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

**Issue (Who cares and Why)**
Protecting the environment is a hot button issue, and cover crops are well documented to reduce soil erosion and compaction while improving soil health, aggregation and nutrient scavenging. Mississippi producers have a low use rate of cover crops compared to most other states. One could ask why MS producers are so reluctant to implement cover crops into their management plans. Some MS producers are starting to ask the how and why regarding cover crops, but few acres are under a soil management plan. Change is difficult, and producers need hands-on training before they are willing to attempt using the practice.

**What has been done**
MSU Extension developed a SARE project titled Cover-It-Up to teach cover crop benefits to MSU Extension agents, NRCS, and producers. Cover-It-Up provides hands-on experience and technical knowledge of cover crops. Once educators and key producers are proficient, more producers become comfortable adding cover crops into their overall management plan. Demonstration plots and field days garner attention, and attendees receive 4 hours of training and thumb-drives with pertinent publications. Four Extension publications are in development. Developing skills so educators and producers become more comfortable with cover crops is the goal.

**Results**
72 MSU Extension agents, NRCS employees, and producers attended field days. Pre/Post survey for knowledge gained and value indicated that reducing cost-per-acre and government

incentives will increase row crop use while specialty crops are cost effective now. 100% of attendees agreed/strongly agreed: Government programs can increase cover crop use; Have a deeper understanding of cover crops; Will share information with others; Increased knowledge in plant characteristics, planting dates, water quality/erosion, and soil health. 87% of attendees plan to use cover crops. 100% will recommend cover crops. 90% of MSU Extension agents have interest in hosting field days. A radio program touted cover crops. MSU Extension publications are in development. Cover-It-Up is decreasing erosion and improving soil health and water quality.

**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 |
| 212 | Diseases and Nematodes Affecting Plants |
| 213 | Weeds Affecting Plants |
| 511 | New and Improved Non-Food Products and Processes |

**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 |
|---|---|
| 2018 | 36140 |

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

**Issue (Who cares and Why)**

Forage productivity could be increased, along with a reduction in the use of hay, through increased efficiency of grazing systems and species. Implementation of these grazing management practices could increase pasture's carrying capacity, understanding of managed grazing systems, value on optimizing pasture productivity, and extending grazing to reduce winter feed cost. However, many MSU Extension agents and livestock producers lack the knowledge needed to apply advanced pasture management strategies. With improved research and demonstrations, producers could gain the skills and implement new pasture managements.

**What has been done**

An MSU 2017 forage survey indicated that the highest priority topics were: hay quality, fertility, nutrient management, weed control, grazing, and cultivar selection. Fifteen competency in-service webinars were offered to MSU Extension agents in basic forage management practices. Two, six-hour Forage Identification trainings were provided to 97 MSU Extension agents, US Corp of Engineers, and other USDA personnel, so they in turn pass the knowledge to livestock producers. There were also 3 statewide presentations, 7 cattlemen meetings, and 11 field days offered to producers and supported by research data.

**Results**

During FY2018, there were 1,253 attendees to forage management events. Survey results indicated that 73% of the producers reduced fertilizer losses and saved an average of $15 per acre; 65% of the producers indicated that that implementing a rotational grazing system could increase carrying capacity and reduce annual cow production of up $120 per cow. For a typical cow operation of 30 cows and with over 900,000 head of cows statewide, this will represent an annual savings of $1.08 million. Producers also indicated that by testing their hay and developing a better ration, they can reduce their feed cost by $40/head. Research data collected on stockpiling warm-season perennial grasses can extend the grazing season by 45 days and reduce feeding cost by $20/head.

**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 |
| 212 | Diseases and Nematodes Affecting Plants |
| 213 | Weeds Affecting Plants |
| 502 | New and Improved Food Products |
| 511 | New and Improved Non-Food Products and Processes |
| 601 | Economics of Agricultural Production and Farm Management |

**Outcome #3**

**1. Outcome Measures**

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

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Condition Outcome Measure

### 3b. Quantitative Outcome

| Year | Actual |
|---|---|
| 2018 | 18070 |

### 3c. Qualitative Outcome or Impact Statement

**Issue (Who cares and Why)**
MSU County Agricultural Extension Agents need help answering clientele's horticulture questions. Training Master Gardener Volunteers allows for a trained volunteer workforce to assist Agents with this issue.

**What has been done**
A statewide Interactive Video training and multiple county training were conducted to train Master Gardener Volunteers to be able to assist MSU Extension agents in providing horticulture education throughout the state.

**Results**
Over 180 new MSU Master Gardener volunteers were trained to assist the current 1,200 volunteers throughout the state to conduct horticulture education for MS clients. Collectively, these volunteers gave over 80,000 hours to MSU Extension programs. These volunteer hours were valued at $1,906,689 and fulfilled the equivalent of 38 FTE.

### 4. Associated Knowledge Areas

| KA Code | Knowledge Area |
|---|---|
| 102 | Soil, Plant, Water, Nutrient Relationships |
| 204 | Plant Product Quality and Utility (Preharvest) |
| 205 | Plant Management Systems |
| 206 | Basic Plant Biology |
| 211 | Insects, Mites, and Other Arthropods Affecting Plants |
| 212 | Diseases and Nematodes Affecting Plants |
| 213 | Weeds Affecting Plants |
| 216 | Integrated Pest Management Systems |
| 502 | New and Improved Food Products |
| 511 | New and Improved Non-Food Products and Processes |
| 601 | Economics of Agricultural Production and Farm Management |

## Outcome #4

### 1. Outcome Measures

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

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 |
|---|---|
| 2018 | 989 |

**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**
Eleven activities were conducted in four counties to teach farmers basic techniques for minimizing pest infestations. Activities included group meetings, workshops, educational classes, farm visits, and technical assistance. Primary audiences were groups operating community gardens. Nine hundred eighty-nine (989) people participated in IPM activities.

**Results**
The number of people obtaining knowledge on IPM increased by 178% in 2018 (from 355 to 989). Using this knowledge, farmers can decrease amounts of chemical fertilizers used during crop production, resulting in a healthier product. Participants could potentially save $5,711,475 combined if they apply learned skills.

**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)

Not Reporting on this Outcome Measure

**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 |
|---|---|
| 2018 | 632 |

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

**Issue (Who cares and Why)**
Producers need consistent education on viable production practices to sustain farming operations. Knowledgeable farmers who practice recommended practices can greatly increase farming success. Alcorn State University's Extension Program offers educational programs and resources to encourage producers to grow new and improved cultivars and plant varieties.

**What has been done**
The ASUEP horticulture specialist and personnel at the Vegetable Production Model Farm in Mound Bayou, MS collaborated with a local farm in Jackson, MS to host an 8-hour training on pea production. Topics discussed were general pea agronomics, plant diseases, insect and pest control, and weed control. Two corporate sponsors attended and discussed their products. Forty-five growers attended the informative training.

**Results**

The growers attending this meeting farmed a combined 1,125 acres with an approximate gross value of $15,000 per farm. The overall, potential economic impact to the Mississippi economy is approximately $675,000.

**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 |
|---|---|
| 2018 | 150 |

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

**Issue (Who cares and Why)**
Good Agriculture Practices (GAP) and Good Handling Practices (GHP) are necessary requirements to verify the safe consumption of farm-grown foods. These programs help farmers to learn and apply practices to reduce microbial contamination. Farmers who desire to remain marketable should become GAP and/or GHP certified.

**What has been done**
ASUEP Extension Educators attended a train-the-trainer workshop to become GAP certified. This new knowledge was used to prepare limited-income farmers for GAP certification. ASUEP also engaged small, limited-income and new immigrant farmers on issues related to sustainability and profitability. One-hundred fifty (150) producers with the North Delta Vegetable Growers' Association, Winston County Self-help Cooperative, and representatives from commercial markets gathered for a training on a variety of topics. Two major topics included Good Agriculture Practices (GAP) and Good Handling Practices (GHP) which emphasized growing and harvesting safe foods for human consumption. Curriculums on vegetable production, marketing, and farm

management were used to teach content. Skills taught included site selection, soil fertility, composting, crop rotation, tillage, field preparation, harvest, and post-harvest handling.

**Results**
GAP and GHP trainings increased the viability and sustainability of small farm operations in Mississippi. Additionally, these sessions allowed ASUEP to help farmers consider methods for farm expansion and pooling resources to enter local and regional commercial markets. Seventy percent (70%) of participants worked collectively to plan, organize, and pool resources for marketing and producing locally-grown produce for supermarket chains.

**4. Associated Knowledge Areas**

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

**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 |
|---|---|
| 2018 | 55 |

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

**Issue (Who cares and Why)**
The demand for assistance to develop community gardens in Mississippi continues to grow. This was one of the most requested needs during environmental scanning meetings throughout the state in 2018. Community gardens not only provide access to fresh fruits and vegetables, but also serve as mechanisms for community engagement, unity, and growth.

**What has been done**
In 2018, Extension educators in 10 Mississippi counties conducted 54 activities on developing and sustaining community gardens. Activities were conducted at churches, schools, community colleges, community centers, and farmers markets. Educational sessions included lectures and

hands-on, experiential learning activities. More than 12,750 direct and 1,391 indirect youth and adult contacts were counted in 2018.

**Results**

Total direct and indirect contacts for the community gardening programs increased by 10,553 in 2018. Additionally, the number of gardens more than doubled this past year. Communities that developed gardening plots have found new uses for idle land and have built capacity among elected officials and the general public, strengthening community relationships and support.

**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)

Not Reporting on this Outcome Measure

**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 |
|---|---|
| 2018 | 53 |

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

**Issue (Who cares and Why)**

Bacterial blight is a seed borne disease of cotton that caused significant economic losses before development of resistant varieties and acid delinting of planting seed. However, the disease has made a resurgence since 2011. Effective management is dependent on accurate detection of the pathogen, which has historically been done by time-consuming microbiological methods. Rapid and accurate methods of detection are needed for disease prevention.

**What has been done**
MAFES scientists developed a novel and sensitive TaqMan-based qPCR protocol to test for the pathogen in cotton plant tissue. Primers were developed that are specific to five races of the bacteria, but not other non-pathogenic bacteria. The test kit detected the pathogen in 94% of seed samples originating from blight symptomatic bolls.

**Results**
The qPCR protocol provides a rapid and accurate method for diagnosis and detection of bacterial blight and provides a tool for monitoring the pathogen in seed and reducing its spread.

**4. Associated Knowledge Areas**

| KA Code | Knowledge Area |
|---|---|
| 201 | Plant Genome, Genetics, and Genetic Mechanisms |
| 202 | Plant Genetic Resources |
| 203 | Plant Biological Efficiency and Abiotic Stresses Affecting Plants |
| 205 | Plant Management Systems |
| 206 | Basic Plant Biology |
| 211 | Insects, Mites, and Other Arthropods Affecting Plants |
| 212 | Diseases and Nematodes Affecting Plants |
| 213 | Weeds Affecting Plants |
| 214 | Vertebrates, Mollusks, and Other Pests Affecting Plants |
| 215 | Biological Control of Pests Affecting Plants |
| 216 | Integrated Pest Management Systems |

**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 |
|---|---|
| 2018 | 33 |

### 3c. Qualitative Outcome or Impact Statement

**Issue (Who cares and Why)**
The Lower Mississippi River Valley is one of the most intensively irrigated watersheds in the nation. Consequently, the Mississippi River Valley Alluvial Aquifer (MRVAA) is declining at a rapid rate due to withdrawal for agricultural irrigation. Conservation technologies and systems that reduce water usage without diminishing profitability are needed to enhance sustainability of this important resource.

**What has been done**
This research was conducted to develop a sensor-based irrigation threshold for cotton (Gossypium hirsutum L.) that maximizes net returns and irrigation water use efficiency (IWUE). The effects of irrigation based on growth stage (full season, emergence to first bloom, first bloom to peak bloom, and peak bloom to first cracked boll) and irrigation threshold (non-irrigated, ?50 kPa, ?90 kPa, and ?130 kPa) on cotton lint yield, net returns above irrigation costs, and IWUE were evaluated on a Leeper silty clay loam (fine, smectitic, nonacid, thermic Vertic Epiaquepts).

**Results**
Net returns above irrigation costs were $142/acre greater when the threshold was maintained at ?90 kPa rather than ?50 kPa. Maintaining the threshold at ?90 kPa also increased IWUE at least 61% relative to the ?50 and ?130 kPa thresholds. Neither increasing nor decreasing the threshold as a function of growth stage improved yield relative to a season?long threshold of ?90 kPa. Yield, net returns above irrigation costs, and IWUE were maximized by maintaining a season-long threshold of ?90 kPa. Adoption of this technique could reduce agriculture withdrawal from the MRVAA and thus improve its sustainability.

### 4. Associated Knowledge Areas

| KA Code | Knowledge Area |
|---|---|
| 402 | Engineering Systems and Equipment |
| 502 | New and Improved Food Products |
| 511 | New and Improved Non-Food Products and Processes |
| 601 | Economics of Agricultural Production and Farm Management |

## 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 |
|---|---|
| 2018 | 75 |

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

**Issue (Who cares and Why)**
This outcome is also listed under Animal Systems. The impact statement for this outcome is the same as the one written for Animal Systems.

**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 |
|---|---|
| 2018 | 12 |

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

**Issue (Who cares and Why)**
This outcome is also listed under Animal Systems. The impact statement for this outcome is the same as the one written for Animal Systems.

**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 |
|---|---|
| 2018 | 140 |

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

**Issue (Who cares and Why)**
Farmers operating farms on property owned by multiple heirs face numerous issues. First, they cannot obtain clear titles to the property which disqualifies them from receiving federal financial assistance. Secondly, they cannot make farm-related decisions without the consensus of all heirs. Third, all farm profits must be shared equally with heirs, regardless of their participation in the operation. With all these drawbacks, farmers should be aware of the consequences of operating their farm on property owned by multiple heirs.

**What has been done**
The Agriculture Business Management Specialist and Director of Special Projects collaborated to plan and conduct six activities on Estate Planning and Land and Property Rights. These educational activities were conducted in Oktibbeha, Scott, Lee, and Hinds counties. Participants learned about the importance of writing will, how to handle family conflicts arising over heirs' property, the consequences of heirs' property such as forced partition sales, and ways to secure

legal assistance to properly divide property among heirs.

**Results**

After participating in workshops on Estate Planning and Land and Property Rights, farmers are more aware of the consequences associated with operating farms on land without clear titles. They are also more knowledgeable of methods for managing complicated heirs' property situations. More than 85% of participants agreed to meet with family to determine the best ways to divide property among themselves. Seventy-seven percent agreed to seek legal advice to help form legal business organizations. Eighty-seven percent agreed that content presented in the workshops was effective in creating awareness and motivating them to find solutions to issues related to heirs' property. Collectively, these activities resulted in an estimated savings of $7,000.

**4. Associated Knowledge Areas**

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

**Outcome #16**

**1. Outcome Measures**

Percentage of farmers and producers that 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 |
|---|---|
| 2018 | 8 |

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

**Issue (Who cares and Why)**

This outcome is also listed under Animal Systems. The impact statement for this outcome is the same as the one written for Animal Systems.

**What has been done**

**Results**

**4. Associated Knowledge Areas**

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

**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 |
|---|---|
| 2018 | 1145 |

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

**Issue (Who cares and Why)**
Farmers Markets contribute to the health of residents by improving the availability of fresh, nutritious, and affordable food within the community. Markets also build local economies by providing local producers with opportunities to sell their produce directly to consumers. Yet, the participating farmers and vendors do not have adequate skills to label, price and package produce to enhance sales. Additionally, farmers markets can provide helpful nutrition information to communities to prepare and consume fresh produce. Across the state of Mississippi various organizations have initiated efforts to increase the number of farmers markets in underserved communities.

**What has been done**
The ASUEP Marketing Specialist and Agriculture Educators hosted forty-four (44) activities on farmers markets development and management, alternative agriculture enterprises, marketing and distribution practices, and value-added goods and services in 2018. Activities included field days, outreach meetings, radio shows, farm visits, fairs, and exhibits. Participants learned about

product packaging, labeling, and pricing. Customer service was also emphasized during workshops and other activities.

**Results**
Farmers markets provided secure and safe place to sell produce. Limited-income families had access to fresh fruits and vegetables at affordable prices. Youth and adults are eating healthier, adding fruits and vegetables to diets once dominated by fats and sweets. Fourteen farmers markets in Southwest Mississippi completed surveys and reported the following information: weekly traffic counts for all markets, 5,600 people; average amount spent per week by individual customers, $20; average annual income for all markets, $5,824,000

**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 |
|---|---|
| 2018 | 28 |

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

**Issue (Who cares and Why)**
Early season soybean production systems have been broadly adopted across the Mid-south, increasing the complexity of managing multiple pest species that occur at sub-threshold levels. Neonicotinoid seed treatments are commonly used for control of arthropod pests in southern production systems. However, concerns about environmental impacts and data from midwestern states suggesting that they may not be agronomically or economically warranted raise questions about this management practice.

**What has been done**
To understand the agronomic benefits of Neonicotinoid seed treatments in the Midsouth, MAFES scientists conducted a metanalysis of 170 trials conducted in Arkansas, Louisiana, Mississippi, and Tennessee from 2005 to 2014. The study compared soybean yields and net returns from

seed treated with a neonicotinoid insecticide and a fungicide with soybean seed only treated with the same fungicide.

**Results**

Across the Mid-South, 67% of trials showed a positive yield response when a neonicotinoid seed treatment was used from 2005-2014. When analyzed by state, soybean yields were greater in all states when neonicotinoid seed treatments were used compared with fungicide-only treatments. Economic returns for neonicotinoid seed treatments were greater than fungicide-only treated seed in 4 out of the 10 yr. When analyzed by state, economic returns for the neonicotinoid seed treatments were greater than fungicide-only treated seed in Louisiana and Mississippi. In some areas and years, neonicotinoid seed treatments provide significant economic benefits in Mid-South soybean. As such, producers may elect to use or not use seed treatments based on commodity prices, tillage, and cover crop practices, previous field history, or personal preference.

**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.

## 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 2018, 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 was also used for quarterly reporting by some MSU Extension personnel. Third, a new app allows 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.

Participants gained knowledge on Estate Planning, Farm Management, Farm Safety, Farm Equipment, 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 | 2% | 0% | 4% | 0% |
| 102 | Soil, Plant, Water, Nutrient Relationships | 5% | 0% | 40% | 0% |
| 104 | Protect Soil from Harmful Effects of Natural Elements | 6% | 0% | 1% | 0% |
| 111 | Conservation and Efficient Use of Water | 5% | 0% | 6% | 0% |
| 112 | Watershed Protection and Management | 8% | 0% | 10% | 0% |
| 122 | Management and Control of Forest and Range Fires | 7% | 0% | 0% | 0% |
| 123 | Management and Sustainability of Forest Resources | 11% | 0% | 7% | 0% |
| 124 | Urban Forestry | 6% | 0% | 0% | 0% |
| 125 | Agroforestry | 9% | 0% | 0% | 100% |
| 132 | Weather and Climate | 5% | 0% | 5% | 0% |
| 133 | Pollution Prevention and Mitigation | 6% | 0% | 0% | 0% |
| 135 | Aquatic and Terrestrial Wildlife | 13% | 0% | 15% | 0% |
| 136 | Conservation of Biological Diversity | 4% | 0% | 12% | 0% |
| 403 | Waste Disposal, Recycling, and Reuse | 4% | 0% | 0% | 0% |
| 405 | Drainage and Irrigation Systems and Facilities | 4% | 0% | 0% | 0% |
| 605 | Natural Resource and Environmental Economics | 5% | 0% | 0% | 0% |
| | **Total** | 100% | 0% | 100% | 100% |

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

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

| Year: 2018 | Extension | | Research | |
|---|---|---|---|---|
| | 1862 | 1890 | 1862 | 1890 |
| **Plan** | 30.3 | 0.0 | 11.0 | 0.0 |
| **Actual Paid** | 36.7 | 0.0 | 13.7 | 1.0 |

| | | | | |
|---|---|---|---|---|
| **Actual Volunteer** | 0.0 | 0.0 | 0.0 | 1.0 |

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

| Extension | | Research | |
|---|---|---|---|
| **Smith-Lever 3b & 3c** | **1890 Extension** | **Hatch** | **Evans-Allen** |
| 1069586 | 0 | 1008894 | 46540 |
| **1862 Matching** | **1890 Matching** | **1862 Matching** | **1890 Matching** |
| 1069586 | 0 | 442062 | 46540 |
| **1862 All Other** | **1890 All Other** | **1862 All Other** | **1890 All Other** |
| 0 | 0 | 1625663 | 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, **59** MSU employees are eXtension users as members of **46** COPs (some employees are members of more than 1 COP). **8** 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. **4** MSU Extension personnel are members of the Imported Fire Ants COP. **4** MSU Extension personnel are members of the Ant Pests COP. **2** MSU Extension personnel are members of the Feral Hogs COP with **2** being leaders. **2** MSU Extension personnel are members of the Freshwater Aquaculture COP. **2** MSU Extension personnel are members of the Invasive Species COP. **2** MSU Extension employees are members 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 personnel is a member 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. **1** MSU Extension employee is a member of Drinking Water and Human Health COP.

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

### 1. Standard output measures

| 2018 | Direct Contacts Adults | Indirect Contacts Adults | Direct Contacts Youth | Indirect Contacts Youth |
|---|---|---|---|---|
| **Actual** | 139296 | 183721 | 9815 | 19991 |

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

**Patent Applications Submitted**

Year: 2018

Actual: 1

**Patents listed**

U.S. Patent No. 9,924,706 - System and Method for Pest Reduction. Issue date - 03/27/2018

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

**Number of Peer Reviewed Publications**

| 2018 | Extension | Research | Total |
|---|---|---|---|
| **Actual** | 60 | 243 | 303 |

## V(F). State Defined Outputs

**Output Target**

**Output #1**

**Output Measure**

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

| Year | Actual |
|---|---|
| 2018 | 58800 |

**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 |
|---|---|
| 2018 | 11760 |

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

**Issue (Who cares and Why)**
During 2017 and 2018, the MSU Extension office in Pontotoc County responded to 25 client questions concerning farm fish pond management. Based on the volume of client questions concerning farm fish ponds, it was clear that landowners in Pontotoc County needed more information on this topic. Fish pond water quality management is the foundation for creating a productive fishery. It is important for landowners to understand how water chemistry, including water alkalinity, impacts water quality. It is also important for landowners to understand how to test water alkalinity problems.

**What has been done**
The MSU Extension office in Pontotoc County conducted a "Water Chemistry and Fish Pond Management" program on March 6, 2018. The program covered topics including fish stocking, population management, aquatic vegetation management, water sampling techniques, and the relationship of water chemistry to pond health. Program participants were encouraged to bring water samples from their ponds. The samples were tested to determine the pond water alkalinity. Pond management recommendations were made based on the test results.

**Results**
All participants brought water samples from their ponds to be tested for alkalinity. The water chemistry test results enabled participants to properly manage their farm ponds. Evaluation data showed that 69% of the participants reported increased knowledge of water chemistry from the program. 62% of the participants also indicated that their skill level associated with using water chemistry testing equipment increased.

**4. Associated Knowledge Areas**

| KA Code | Knowledge Area |
|---|---|

135 Aquatic and Terrestrial Wildlife

**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 |
|---|---|
| 2018 | 9408 |

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

**Issue (Who cares and Why)**
Mississippi's population continues to urbanize with over 50% of the population living in Census-designated urban places as of 2016. Education is needed to provide information and develop capacity for residents, municipal workers, arborists, MSU Extension agents, and others to better manage their urban trees. This statewide program aims to improve knowledge and skills in a variety of topics, including protecting trees in construction zones, climbing and working in trees safely, tree support systems, disorders, biology, risk assessment, urban soils, water management, installation and establishment, nutrition and fertilization, plant health care, and identification and selection.

**What has been done**
Thirty four programs were conducted, and included workshops, lectures, field days, and webinars. Programs were reinforced with six new MSU Extension publications. Of the many programs conducted, one was Diagnosis and Treatment of Tree Pests and Diseases which provided information about current pest/disease outbreaks. Another was Saluting Branches, a field day involving pruning approximately 75 live oaks at Biloxi National Cemetery. A third program continued the Municipal Arborist Series with programs providing instruction to municipal tree crews on risk assessment, planting and establishment, and utility pruning.

**Results**
Nearly 1,500 MS residents and MSU Extension agents have benefitted from the program this year. Pre- and post-evaluations indicated high satisfaction with the programs. Students reported the trainings will contribute to the success of their municipal forestry programs, businesses, and enjoyment of their yard trees. Tests demonstrated that 100% of students gained knowledge, and all intended to apply their newly gained knowledge. Most trainings were free of charge, other than a nominal fee for lunch. However, participants indicated an average range of values between $50

and $500, depending on the audience and the training. Arborist training led to five new ISA certified arborists in MS, a 4% increase over 2017, which is considered a success in this state given the number of of arborists and difficulty of the exam. Biloxi National Cemetery has requested the program return on an annual basis.

**4. Associated Knowledge Areas**

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

**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 |
|---|---|
| 2018 | 4704 |

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

**Issue (Who cares and Why)**
The forest products industry is crucial to Mississippi. It contributes in excess of $12 billion to the state's economy annually, and employs over 70,000 Mississippians. In addition, trees are harvested for the industry in each of the 82 counties. Over 90% of the wood harvested from Mississippi's forests is delivered to a mill certified under the Sustainable Forestry Initiative. The mills require that the loggers who harvest these trees meet the initial training requirements set forth in that certification standard. This qualification to harvest trees for SFI Certified mills must be maintained by earning continuing education hours every two years. A list of qualified logging companies must be provided to them mills for their use in selecting logging companies with whom to contract.

**What has been done**
The MSU Extension Professional Logging Manager (PLM) program was developed, in cooperation with the Mississippi Implementation Committee for the Sustainable Forestry Initiative, to develop and provide this training. The PLM program sought the assistance of the MSU Extension Center for Technology Outreach to develop a database to track individuals and companies who have completed training and continuing education programs. The database

calculates the qualification expiration dates for each person and company. Access to this list is through a website. Forest products companies can track the progress of their logging.

**Results**

The PLM program has been active for quite some time. 2018 was a qualification year for loggers, meaning they had to complete their continuing education requirements and the PLM program had to issue cards for proof of qualification. Last year, to ensure a maximum number of qualified loggers, the program sponsored 13 half or full day programs which provided 459 individuals with 2,892 hours of educational credits. In addition, PLM coordinated the educational events at the Mid-South Forestry Equipment show which enabled 713 individuals to earn 3,659 credits. By the end of 2018, some 1,700 individuals earned the required hours and 950 companies maintained their qualification to deliver to certified mills.

**4. Associated Knowledge Areas**

| KA Code | Knowledge Area |
|---|---|
| 123 | Management and Sustainability of Forest Resources |
| 125 | Agroforestry |
| 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 Action Outcome Measure

**3b. Quantitative Outcome**

| Year | Actual |
|---|---|
| 2018 | 18 |

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

**Issue (Who cares and Why)**

Unsustainable groundwater use for agricultural irrigation has led to declining aquifer levels across the United States, necessitating implementation of water conservation practices. Tailwater recovery (TWR) systems, that collect and store surface water for irrigation, are being implemented throughout the lower Mississippi River alluvial valley (LMAV) as a water conservation practice.

**What has been done**
The objective of this study was to develop a water budget for TWR systems in Mississippi. Eight TWR systems were continuously monitored for water depth and withdrawal, allowing rates of water gain and loss to be quantified. Volumes of water movement were calculated based on change in water depth and system dimensions.

**Results**
Water volume in TWR was calculated and found to be gaining, except during months of irrigation. Extrapolating the water budget to all TWR systems shows a total offset of 15% of the annual groundwater deficit. Tailwater recovery system efficiencies show designs may be altered to improve the water savings and use of these systems.

**4. Associated Knowledge Areas**

| KA Code | Knowledge Area |
|---|---|
| 101 | Appraisal of Soil Resources |
| 102 | Soil, Plant, Water, Nutrient Relationships |
| 104 | Protect Soil from Harmful Effects of Natural Elements |
| 111 | Conservation and Efficient Use of Water |
| 112 | Watershed Protection and Management |
| 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 |
|---|---|
| 2018 | 8 |

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

**Issue (Who cares and Why)**
Oaks (Quercus spp.) are a dominant component of eastern and southeastern upland forest systems. Acorn mast produced by oaks are essential for forest regeneration and an important source of food for wildlife species that inhabit these systems. Forest management practices that

influence mast production in oaks are ecologically and economically important for regeneration of future oak forests, timber products, and wildlife that consume acorns.

**What has been done**
We conducted a 10-year experiment in upland oak-hickory forests of eastern Tennessee to determine the influence of canopy release, fertilization (addition of nitrogen, phosphorus, and potassium), and their combined influence on white oak (Quercus alba) acorn production, acorn size and quality, and acorn depredation. We measured acorn production of 120 white oaks for 5 years before and 5 years after applying canopy release and fertilizer treatments.

**Results**
Acorn production varied among years and individual trees. Six of 10 years were near complete mast failures and 11% of trees classified as excellent producers accounted for 31% of all acorns produced. Canopy-released and canopy-released-and-fertilized trees increased acorn production 65% and 47%, respectively, relative to control trees, with effects greatest in trees classified as poor producers. Fertilization did not influence acorn production or size and did not consistently influence acorn quality. Crown release is an important management practice when management objectives include increasing white oak acorn production in closed-canopy conditions, whereas fertilization does not influence acorn production.

**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 |
|---|---|
| 2018 | 39 |

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

**Issue (Who cares and Why)**
Wild pig (Sus scrofa) population expansion and associated damage to crops, wildlife, and the environment is a growing concern in the United States. Economic costs associated with feral pig

crop destruction and control have been estimated as $1.5 ? 1.9. The destructive rooting behavior of wild pigs indicates where they have foraged and their general presence on the landscape. Improved and rapid methods for assessing pig damage are needed.

**What has been done**

We used aerial imagery collected from a small unmanned aerial system to assess damage of corn (Zea mays) fields by wild pigs in the Mississippi Alluvial Valley of Mississippi, USA, during the 2016 growing season. Images were automatically classified using segmentation-based fractal texture analysis and support vector machines. We assessed the accuracy of automated classification with 5,400 Global Positioning System ground reference points collected in the fields.

**Results**

Classification accuracies for identification of damaged and nondamaged areas were between 65% and 78%. In general, although remote sensing using the UAV platform was effective and efficient, automated classification underestimated the area of damage present within fields. Small unmanned aerial systems overcome limitations of existing methods because they can survey an entire field rapidly and without significant field labor.

**4. Associated Knowledge Areas**

| KA Code | Knowledge Area |
|---|---|
| 135 | Aquatic and Terrestrial Wildlife |
| 136 | Conservation of Biological Diversity |

## V(H). Planned Program (External Factors)

**External factors which affected outcomes**

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

**Brief Explanation**

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 2018, 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 was also used for quarterly reporting by some MSU Extension personnel. Third, a new app allows 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 | 5% | 15% | 0% | 0% |
| 603 | Market Economics | 8% | 0% | 0% | 0% |
| 605 | Natural Resource and Environmental Economics | 5% | 0% | 47% | 0% |
| 608 | Community Resource Planning and Development | 30% | 85% | 22% | 0% |
| 609 | Economic Theory and Methods | 20% | 0% | 2% | 0% |
| 610 | Domestic Policy Analysis | 4% | 0% | 8% | 0% |
| 803 | Sociological and Technological Change Affecting Individuals, Families, and Communities | 3% | 0% | 0% | 0% |
| 805 | Community Institutions, Health, and Social Services | 15% | 0% | 21% | 0% |
| 901 | Program and Project Design, and Statistics | 7% | 0% | 0% | 0% |
| 903 | Communication, Education, and Information Delivery | 3% | 0% | 0% | 0% |
| | **Total** | 100% | 100% | 100% | 0% |

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

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

| Year: 2018 | Extension | | Research | |
|---|---|---|---|---|
| | 1862 | 1890 | 1862 | 1890 |
| **Plan** | 29.2 | 2.0 | 2.5 | 4.0 |
| **Actual Paid** | 26.6 | 3.0 | 2.6 | 0.0 |
| **Actual Volunteer** | 0.0 | 0.0 | 0.0 | 0.0 |

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

| Extension | | Research | |
|---|---|---|---|
| **Smith-Lever 3b & 3c** | **1890 Extension** | **Hatch** | **Evans-Allen** |
| 773724 | 165134 | 245393 | 0 |
| **1862 Matching** | **1890 Matching** | **1862 Matching** | **1890 Matching** |
| 773724 | 165134 | 126902 | 0 |
| **1862 All Other** | **1890 All Other** | **1862 All Other** | **1890 All Other** |
| 0 | 0 | 851858 | 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;
- Needs assessment and environmental scanning processes;
- Stakeholder involvement in program development; and
- Adult leadership 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, **59** MSU employees are eXtension users as members of **46** COPs (some employees are members of more than 1 COP). **8** 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. **1** MSU Extension employees is a member of the Diversity Equity and Inclusion COP. **4** MSU Extension employees are members of the Enhancing Rural Capacity COP and **1** is a leader. **4** 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. **2** MSU Extension employees are members of the Internationalizing Extension COP. **3** MSU Extension personnel are members of the Network Literacy COP. **8** MSU Extension personnel are members of the Community, Local, and Regional Food Systems COP. **1** MSU Extension is a leader of the Cooperatives COP. **7** 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. **2** MSU Extension personnel are members of the Fostering Civil Discourse COP, with **2** being leaders.

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**

| 2018 | Direct Contacts Adults | Indirect Contacts Adults | Direct Contacts Youth | Indirect Contacts Youth |
|---|---|---|---|---|
| **Actual** | 129553 | 141586 | 1176 | 9207 |

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

**Patent Applications Submitted**

| | |
|---|---|
| Year: | 2018 |
| Actual: | 0 |

**Patents listed**

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

**Number of Peer Reviewed Publications**

| 2018 | Extension | Research | Total |
|---|---|---|---|

| | | | |
|---|---|---|---|
| **Actual** | 908 | 29 | 937 |

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

**Output Target**

**Output #1**

**Output Measure**

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

| Year | Actual |
|---|---|
| 2018 | 44187 |

**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 |
|---|---|
| 2018 | 32 |

**Output #3**

**Output Measure**

- Promote the usage of electronic technology in the development of communities and local economies. (ASU)
  Not reporting on this Output for this Annual Report

**Output #4**

**Output Measure**

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

| Year | Actual |
|---|---|
| 2018 | 4 |

**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 |
|---|---|
| 2018 | 7 |

**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) |
| 10 | Number of program participants that demonstrate greater knowledge in the development of leadership skills, economic development strategies, and become more involved with civic activities. (MSU) |

## 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 |
|---|---|
| 2018 | 8837 |

### 3c. Qualitative Outcome or Impact Statement

**Issue (Who cares and Why)**
Mississippians truly have two drinking water options: a public water system or a private well. Public water systems are regulated by the State Department of Health, which mandates weekly/daily operational oversight and monthly water quality testing. A private well owner is solely responsible for the maintenance/replacement of equipment and testing of the water quality. MS has approximately 133,059 households that derive their drinking water from a private well. Most private well owners are not knowledgeable about how to maintain a private well, who to contact for assistance, or how to determine water quality.

**What has been done**
MSU Extension offered 6 private well water workshops with a bacteria screening option in collaboration with local, state, and federal agencies and nonprofits to organize, promote, and host. Private well owners had the option to have their drinking water screened for bacteria by retrieving a sample bottle and sample instructions from their local MSU Extension office. The workshops included presenters from Illinois State Water Survey addressing groundwater hydrology, local well drillers addressing well construction/maintenance, and MSU Extension addressing private well information specific to MS residents.

**Results**
220 well owners attended the 3-hour workshop and/or had their private well screened for bacteria. 96% of the participants communicated that they either had no hazards present around their well or they removed them. 91% of the participants said they had applied the resources/material provided to them at the training, and 71% said they had shared the resources/materials with others. 70% of participants said they pumped their septic tank or pumping was not needed and 25% still planned to. 98% of the respondents said they were satisfied with the resources/materials provided at the workshop. 42% of participants plan to screen their water again within a year, 27% within two years, and 22% said they would screen if they notice a change in their drinking water.

**4. Associated Knowledge Areas**

| KA Code | Knowledge Area |
|---|---|
| 805 | Community Institutions, Health, and Social Services |
| 903 | Communication, Education, and Information Delivery |

**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 |
|---|---|
| 2018 | 7070 |

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

**Issue (Who cares and Why)**
ProsperityNow.org ranks MS last in the nation on the prosperity index. 21% of MS's population lived in poverty in 2016 (13% nationally), with 10% in deep poverty - having resources less than 50% of the poverty rate (6.7% nationally). Almost 32% of MS children lived in poverty compared to 21% for the US. Black Mississippians had a poverty rate of 35% compared to 14% of whites. Communities with higher poverty have higher crime rates and drug use and lower educational and health outcomes, reducing productivity. Policies and programs to prevent poverty have been written by people with resources.

**What has been done**
MSU Extension's Coaching Communities Program was developed to respond to the need for policy and program makers to improve their understanding of decisions made in a scarcity mindset. Community leaders and employers learned skills for listening, income distribution in a market economy, systemic causes of poverty, behavioral economics and how the brain works when in a scarcity mindset, the importance of hidden rules, the spectrum of resources individuals have, and the impact of different registers of language.

**Results**
In FY2018, MSU Extension partnered with Jackson County Civic Action, Multi-County Civic Action in Meridian, and the South MS PDD to deliver four workshops to 86 community leaders and employers in Meridian and Moss Point, MS. Almost 90% of participants reported that the

workshops helped them build knowledge and skills. Participants repeatedly reported that they were able to release judgment for people in poverty enabling them to do their jobs better. Participants found the content on the brain science and hidden rules most important for the shift in their learning. Participants reported they would work more with other agencies serving the same clients rather than operate in a silo.

**4. Associated Knowledge Areas**

| KA Code | Knowledge Area |
|---|---|
| 609 | Economic Theory and Methods |
| 805 | Community Institutions, Health, and Social Services |
| 903 | Communication, Education, and Information Delivery |

**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 |
|---|---|
| 2018 | 3535 |

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

**Issue (Who cares and Why)**
County government in Mississippi is largely funded by ad-valorem taxes. Ad-valorem tax assessment is a highly specialized and technical field. Each county is required to have qualified staff to conduct tax assessment duties that result in fair and equitable taxation. Currently, there is not a formal path of secondary or postsecondary education that prepares individuals for the qualifications needed in ad-valorem taxation and mass appraisal.

**What has been done**
MSU Extension developed (1981) and directs the Mississippi Assessor Education & Certification Program (MECP). The objective of the program is to develop participant appraisal skills so they can maintain the valuation of property for ad-valorem purposes at a current level; continually maintain and upgrade participant skills, knowledge, and competence; and provide participants with a path for gaining state-required certification and higher levels of recognized certifications. During the program, participants enroll in a 2-week certification program, maintain yearly

recertification, and earn additional designations.

**Results**
There are currently 507 participants in the program. 75% of participants hold an advanced designation. During the reporting period, 36 county employees became certified in the program, and 46 participants gained a new designation in the program. 470 participants took part in one or more education program offered by the MSU Extension to maintain their state-required certification. As a result of the program in 2017-2018, participants earned an additional $809,000 for MECP designations.

**4. Associated Knowledge Areas**

| KA Code | Knowledge Area |
|---|---|
| 602 | Business Management, Finance, and Taxation |
| 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 |
|---|---|
| 2018 | 100 |

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

**Issue (Who cares and Why)**
Small, rural communities in Mississippi are plagued with a multitude of issues. Poor access to healthy foods, inadequate schools, failing infrastructures, and lack of unity among residents are common in small municipalities. Finding common ground is not always easy in small communities. Unfortunately, it is a necessary component for positive solutions. ASUEP is committed to helping residents identify needs and work toward communal interests through its Environmental Scanning process.

**What has been done**

The ASUEP Program Development Coordinator collaborated with Extension educators, elected officials, and programming partners to plan and conduct Environmental Scanning meetings in Bolivar, Claiborne, Quitman, Jefferson, and Hinds counties. The purpose of these sessions was to identify community needs and strategies to address identified issues. This two-part process included town hall and focus-group meetings. Participants identified and prioritized needs during town hall meetings. Focus group meetings granted opportunities to discuss best-methods for addressing prioritized needs. Participants completed surveys to identify prevalent needs. One-hundred forty (140) people were involved in this process

**Results**

Two community gardens were developed in Bolivar County to provide access to fruits and vegetables in a food desert. Town hall and focus group meetings initiated capacity building actions in rural communities. This capacity can motivate residents to pursue other joint efforts to improve the vitality of local communities. Survey results revealed that access to healthy foods was the most significant need identified. Other top priorities included lack of jobs, educational programs, limited access to Internet, other technologies, and affordable housing. Continuous environmental scanning activities could have positive economic impacts by sparking job creation and entrepreneurship opportunities. These ventures could potentially add thousands of dollars to local economies.

**4. Associated Knowledge Areas**

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

**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 |
|---|---|
| 2018 | 56 |

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

**Issue (Who cares and Why)**
In the last few years, Mississippi has become home to many popular brands including Toyota and Nissan. The state has also become the hub for top performing healthcare facilities including hospitals and home health agencies. This growing influx of businesses and industries requires a well-prepared workforce. Extension career development activities offers education and resources to prepare participants for gainful employment.

**What has been done**
Extension educators participated in college career fairs and conducted career awareness workshops in local communities in Jefferson and Claiborne Counties. Participants received resources to complete employment forms and to prepare for interviews. Events were held at local schools and on college campuses. Events were attended by youth and adults.

**Results**
Youth and adults gained essential knowledge to complete job applications, develop resumes, and prepare for interviews during career building activities. These participants increased their chances of becoming employed which will enhance their way of life. Since these activities were offered at no charge, participants saved an estimated total of $28,000.

**4. Associated Knowledge Areas**

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

**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)

Not Reporting on this Outcome Measure

**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 |
|---|---|
| 2018 | 1695 |

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

**Issue (Who cares and Why)**
Thriving communities are only as strong at their leaders. Community leaders help facilitate decision-making processes and problem solving. Additionally, good leaders know how to work with others to improve the economic status of the community. Community leaders are not necessarily born with innate skills to lead. In these situations, leadership development programs and activities are beneficial.

**What has been done**
Twenty-nine (29) activities were conducted in five (5) Southwestern counties to build leadership skills, facilitate economic development, and to encourage civic engagement. Extension educators used a variety of techniques and curricula to accomplish goals in this program area. More than 10,700 direct and indirect contacts were made in 2018.

**Results**
Program participants increased knowledge to facilitate community engagement and to facilitate economic development. Additionally, participants gained confidence to use leadership skills for

the good of their communities. The long-term effects of Extension programs aimed to increase leadership development skills and facilitate civic engagement are positive. In 2018, activities in this area were valued at $535,500.

**4. Associated Knowledge Areas**

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

**Outcome #10**

**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. (MSU)

**2. Associated Institution Types**

- 1862 Research

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

| Year | Actual |
|---|---|
| 2018 | 221 |

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

**Issue (Who cares and Why)**
U.S farm policy has moved from traditional farm programs to a system focused on crop insurance as the risk protection offered to crop producers. The 2014 Farm Bill increased federal funding for crop insurance by $5.7 billion. The recently passed 2018 Farm Bill reaffirmed the role of crop insurance on 300 million U.S. acres. The 'wicked problem' of making crop insurance a viable risk management tool is estimating the fair premium to charge for crop insurance. This matters for the entire country, but particularly for the regions of the country with lower crop insurance participation such as Mississippi.

**What has been done**
MSU agricultural economists developed rating improvements adopted by USDA/RMA for area and individual crop insurance. Our team developed models to rate area-triggered products introduced due to the 2014 Farm Bill. More recent work has focused on rating revenue insurance product appropriately and how to use precision agricultural data for rating. This research has been shared with producers, USDA, and congressional staffers as they modify the program. Our

team has published 23 science citation indexed journal articles which address crop insurance rating. These articles have been cited 221 times.

**Results**

This analysis impacts insurance programs that provide $84 billion in risk protection/year. The impact of this work is categorized in three forms. First, this analysis facilitated providing coverage in counties with limited historical data - expanding area crop insurance to hundreds of counties. Second, more accurate rates concurrently reduced program adverse selection and increased participation. Nationally, the actuarial soundness of the program in the last 10 years has improved 8 percent relative to the preceding 10 years. Third, analysis is being shared with producers evaluating the optimal crop insurance coverage levels. An example of the benefit of better rating in Mississippi is an 80% increase insured liability with an 18% decline in premium rates during the last decade.

**4. Associated Knowledge Areas**

| KA Code | Knowledge Area |
|---|---|
| 605 | Natural Resource and Environmental Economics |
| 608 | Community Resource Planning and Development |
| 609 | Economic Theory and Methods |
| 610 | Domestic Policy Analysis |
| 805 | Community Institutions, Health, and Social Services |

## V(H). Planned Program (External Factors)

**External factors which affected outcomes**

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

**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 in 2018.

## 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 2018, 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 was also used for quarterly reporting by some MSU Extension personnel. Third, a new app allows 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.

Town Hall and Focus Group meetings revealed the most prevalent community needs. Specific needs identifies were affordable housing, lack of jobs, transportation, health and wellness, and education. ASUEP used these needs to plan and implement meaningful programs and activities.

### 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% | 30% | 0% | 0% |
| 724 | Healthy Lifestyle | 0% | 15% | 0% | 0% |
| 801 | Individual and Family Resource Management | 0% | 7% | 0% | 0% |
| 802 | Human Development and Family Well-Being | 0% | 48% | 0% | 0% |
| 806 | Youth Development | 100% | 0% | 100% | 0% |
| | **Total** | 100% | 100% | 100% | 0% |

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

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

| Year: 2018 | Extension | | Research | |
|---|---|---|---|---|
| | 1862 | 1890 | 1862 | 1890 |
| **Plan** | 65.3 | 9.0 | 0.0 | 0.0 |
| **Actual Paid** | 68.3 | 8.0 | 0.1 | 0.0 |
| **Actual Volunteer** | 0.0 | 0.0 | 0.0 | 0.0 |

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

| Extension | | Research | |
|---|---|---|---|
| **Smith-Lever 3b & 3c** | **1890 Extension** | **Hatch** | **Evans-Allen** |
| 1989494 | 440358 | 6490 | 0 |
| **1862 Matching** | **1890 Matching** | **1862 Matching** | **1890 Matching** |
| 1989494 | 440358 | 1649 | 0 |
| **1862 All Other** | **1890 All Other** | **1862 All Other** | **1890 All Other** |
| 0 | 0 | 21059 | 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, **59** MSU employees are eXtension users as members of **46** COPs (some employees are members of more than 1 COP). **8** 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. **10** MSU Extension personnel are members of the Families, Food and Fitness COP. **3** MSU Extension personnel are members of the Family Caregiving COP. **1** MSU Extension employee is a member 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. **1** MSU Extension employee is a member of the 4-H Learning Network 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

| 2018 | Direct Contacts Adults | Indirect Contacts Adults | Direct Contacts Youth | Indirect Contacts Youth |
|---|---|---|---|---|
| **Actual** | 147071 | 167769 | 367054 | 234911 |

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

**Patent Applications Submitted**

| | |
|---|---|
| Year: | 2018 |
| Actual: | 0 |

**Patents listed**

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

**Number of Peer Reviewed Publications**

| 2018 | Extension | Research | Total |
|---|---|---|---|
| **Actual** | 19 | 20 | 39 |

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

**Output Target**

**Output #1**

**Output Measure**

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

| Year | Actual |
|---|---|
| 2018 | 20789 |

**Output #2**

**Output Measure**

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

| Year | Actual |
|---|---|
| 2018 | 4 |

**Output #3**

**Output Measure**

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

| Year | Actual |
|---|---|

| | |
|---|---|
| 2018 | 38 |

**Output #4**

**Output Measure**

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

| Year | Actual |
|---|---|
| 2018 | 34 |

**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 |
|---|---|
| 2018 | 63 |

**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 |
|---|---|
| 2018 | 8 |

**Output #7**

**Output Measure**

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

| Year | Actual |
|---|---|
| 2018 | 8 |

**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 |
|---|---|
| 2018 | 151 |

**Output #9**

**Output Measure**

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

| Year | Actual |
|---|---|
| 2018 | 68 |

**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) |
| 11 | Number of youth that participate in science, engineering, and technology programs. (MSU) |

## 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 |
|---|---|
| 2018 | 29498 |

### 3c. Qualitative Outcome or Impact Statement

**Issue (Who cares and Why)**
In the state of Mississippi alone, there are over 50,000 children with disabilities. Even though there are various types of therapies offered throughout the state, very few are able to have concurrent, positive effects on multiple areas of impairment at the same time. There are also many children that have peaked in therapy and are discharged, and family members are left desperately searching for something that will provide benefits and meaningfulness to their child's lives.

**What has been done**
Current evidence suggests therapeutic horse-back riding has a huge impact on the quality of life for children with special needs by providing specialized activities that use the horse to provide physical, emotional, and psychological benefits. The MSU Extension Equine Assisted Therapy Programs serves children and youth in the Golden Triangle and surrounding area. The program uses 13 horses to offer sessions four days a week for 10-weeks in the fall and spring. In addition to the semester sessions, there are also 6-week summer sessions.

**Results**
Pre and Post-assessments, using the Naples Equestrian Participant Evaluation tool, are completed on each participant by an instructor. Of the 58 participants in the program, 95% made gains in one or more areas of social, communication, balance and posture and motor skills. Data indicated 14% of participants demonstrated gains in social skills, 21% in communication skills, 7% in posture skills, 31% in balance skills, and 22% in motor skills. Additional anecdotal data from family members indicated the differences they see in their children. For example, one parent noted, "I can tell a huge difference in my child's communication and speech for up to 48 hours after she rides."

### 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 |
|---|---|
| 2018 | 23598 |

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

**Issue (Who cares and Why)**
There is a need for youth to learn how to make healthy food choices as well as prepare food. Many families in today's society have a busy schedule that does not allow for family meal preparation that involves the entire family working in the kitchen. 4-H parents have expressed the need for their youth to participate in 4-H Kids in the Kitchen activities to increase their knowledge of preparing foods in a healthy and safe manner. Kids in the Kitchen provides a positive, fun environment for youth to learn about healthy foods. When the educational environment is fun, youth become more engaged.

**What has been done**
MSU Extension held monthly 4-H Kids in the Kitchen programs. Youth attending the program are divided into 4 work groups. Youth work through a recipe to properly prepare the food they will then cook. This program is an afterschool program in which school buses assist with transporting youth to the program. MSU Extension allows for 4-Hers to have input on the meal planning choices. The youth work as a group and have fun while learning about proper measuring, mixing, and safe kitchen equipment practices.

**Results**
Parents consistently give feedback as to how participants return home and indicate that the youth use the recipe to prepare meals with their own family. Parents have stated they have gone to the grocery store with their children to purchase the items used at Kids in the Kitchen. Thus youth return home and prepare the meal with their parents showing that these youth utilize the skills learned with their own parents as family time in the kitchen. Parents also said that their children returned from 4-H and taught them how to make some of the foods, such as homemade biscuits.

These youth had fun while they learned kitchen safety, healthy choices as well as increased family time.

**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 |
|---|---|
| 2018 | 11799 |

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

**Issue (Who cares and Why)**
Young people's understanding of emergency preparedness in the event of natural hazards is deficient, leaving students ill-prepared to cope with the emotional and physical struggles that may come after a disaster has occurred.

**What has been done**
The American Red Cross Pillowcase Project is a free, interactive preparedness program designed for youth ages 8-11 provided by MSU Extension. The program aims to increase awareness and understanding of natural hazards and teaches safety, emotional coping skills, and personal preparedness. Students learn the best ways to stay safe and how to create their own emergency supply kits by packing essential items in a pillowcase for easy transport during a disaster. Students also have the opportunity to decorate their pillowcase.

**Results**
108 total young people went through the Pillowcase Project. 63 of those were in Monroe County and 45 were in Pontotoc County. Combined, 81% knew how quickly to get outside during a house fire, 71% said the most important thing during a house fire is to get out safely as quickly as possible, 78% knew the main cause of tornadoes, and 79% knew what to do if a tornado was spotted in their area. Overall, 92% of the students in Monroe County said they felt better prepared for an emergency after going through the Pillowcase Project. In Pontotoc County, 89% said they

felt better prepared for an emergency after going through the Pillowcase Project.

**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 |
|---|---|
| 2018 | 39 |

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

**Issue (Who cares and Why)**
Bullying in schools continues to be a persistent problem in Mississippi and in the nation as a whole. Research shows that one in seven students is either a victim of bullying or a bully themselves. Considering the many consequences of bullying (suicides, school violence, failing grades, etc.), the seriousness of the issue must be expressed to young people. Youth should be aware of legal and social consequences associated with bullying incidents.

**What has been done**
Thirty-one anti-bullying activities were conducted by ASUEP's 4-H staff in four counties. The most impactful activity was a Peer Pressure and Anti-bullying Summit in Natchez, MS. This activity was planned and implemented in collaboration with the Natchez-Adams School District. Workshop topics included bulling, cyber bullying, consequences of bullying, and methods for reporting bullying and cyber bullying. One hundred thirty-nine youth attended the summit.

**Results**
One hundred twenty-five students (90%) demonstrated the ability to conceptualize and apply skills necessary to effectively diffuse bullying situations; 132 (95%) demonstrated effective communication skills to convey clear messages to report bullying;  and 125 (90%) demonstrated learned techniques using role playing scenarios.

**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 |
|---|---|
| 2018 | 256 |

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

**Issue (Who cares and Why)**
Preparing today's youth for 21st Century learning and their roles as tomorrow's leaders is challenging. To become productive and contributing citizens, youth should develop positive leadership skills, attitudes, and aspirations. ASUEP's 4-H and Youth Development Programs and 4-H clubs help transform lives by equipping young people with positive options that can be used for a lifetime.

**What has been done**
A series of Youth Leadership Development Trainings were conducted to provide 4-H members with skills and knowledge on the following topics: Becoming a Leadership Team Member, Career Options, Social Interactions, Team Building, Maintaining Healthy Relationships, Effective Communication, Decision Making Skills, and Preparing for 4-H Competitions. Activities were conducted in Claiborne, Warren, and Hinds Counties. Approximately 100 youth attended.

**Results**
Over 80% of participants attending leadership development activities and 4-H training sessions acknowledged increased knowledge on topics discussed. Ninety percent agreed that youth leadership development activities improved their leadership, communication, teambuilding, and problems solving skills. Four Leadership Team members developed a school-wide campaign to elect a king and queen to represent their school. These youth proved their abilities to serve as ambassadors for positive change.

**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 |
|---|---|
| 2018 | 86 |

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

**Issue (Who cares and Why)**
4-H Adult volunteer leaders recruit 4-H club members, manage school and community-based clubs, and contribute to 4-Hers personal, social, and mental growth and well-being. 4-H and Youth Development Extension educators cannot fulfill educational demands alone and rely on trustworthy volunteers to assist in this effort. Together, Extension and adult volunteers can make lasting impacts on the lives of 4-H members.

**What has been done**
Extension 4-H personnel reported 22 activities related to volunteerism. Activities were primarily reported for Hinds, Pike, Madison, and Warren Counties. Volunteers hosted club meetings within their communities and prepared 4-Hers for district and state-level competitions held throughout the year.

**Results**
4-H Educators reported working with 86 volunteer leaders. This number has increased by 62 volunteers in 2018 accounting for a 258% increase. Volunteer-trained 4-Hers competed at district and state competitions. One hundred percent (100%) won first place blue ribbons and trophies in robotics, engineering, clothing selection, and Share the Fun competitions. Thirty percent (30%) competed in multiple competitions. Each volunteer served approximately 20 hours per month for a collective total of 20,640 hours. The Independent Sector valued volunteer time at $24.69 per hour in 2018, for an annual total of $509,602.

**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)

Not Reporting on this Outcome Measure

**Outcome #8**

**1. Outcome Measures**

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

**2. Associated Institution Types**

- 1890 Extension

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

| Year | Actual |
|---|---|
| 2018 | 1516 |

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

**Issue (Who cares and Why)**
4-H SET/STEM is a curriculum with contents on science, technology, engineering and mathematics. Rather than teach the four disciplines separately, STEM integrates them into one unified learning model. The United States has traditionally dominated STEM fields of study; however, the U.S. Department of Education revealed that only 16% of high school students are interested in STEM careers. Nearly 28% of high school freshmen declare interests in STEM-related fields, but 57% lose interest by their senior year. ASUEP's 4-H unit is determined to address STEM-literacy needs by providing programs on science, engineering, math, and technology.

**What has been done**
A series of SET/STEM activities were conducted in Copiah, Claiborne, and Hinds County to engage students in fun, hands-on activities. The long-term objective of these activities were to motivate youth to become interested in SET/STEM careers. Specific activities included a Biofuel

demonstration, a Robotics Camp, two volunteer leaders' trainings, and two exhibits at the Mississippi Children's museum.

**Results**
STEM activities successfully engaged student learning and increased interests in technical careers. Students who attended the robotics camp demonstrated comprehension of skills by building a simple robot capable of maneuvering an obstacle course. The seventeen children attending the robotics camp saved approximately $2,550 ($150 per participant) collectively. The total economic impact for all reported STEM activities in 2018 is $2,046,600.

**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 |
|---|---|
| 2018 | 5539 |

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

**Issue (Who cares and Why)**
According to the National Employment Standards, thousands of high school students graduate each year unprepared to enter the workforce. This statistic greatly impacts students who do not attend college immediately after graduation. If these same students lack basic career exploration skills, they are impacted even more. One goal of Extension's youth development programs is to prepare interested students for the workforce using a variety of educational methods

**What has been done**
Extension 4-H and Youth Development educators conducted a three-week Career and Workforce Development program using the Working Class Curriculum. This program was conducted at three County high schools and vocational/technical centers. Workshop content covered the job search process, cover letters, job applications, resumes, the interview, dressing for success, navigating the workforce, retaining employment, goal setting, and decision-making. Four hundred thirty-four

(434) youth benefited from Career Development programs in 2018.

**Results**
Participants gained knowledge and skills to obtain and retain employment. After observing students during mock interviews, 75% could convey knowledge gained when responding to interview questions. Students appeared confident, judging their body language and gestures. Ongoing career and workforce educational programs will strengthen job readiness skills and improve students' future outlooks.

**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 |
|---|---|
| 2018 | 4359 |

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

**Issue (Who cares and Why)**
Adequate fruits and vegetables consumption is linked to the prevention of chronic diseases such as heart disease, some cancers, and diabetes. However, only three percent of children meet daily recommendations for fruits and vegetables intake, according to Mississippi's statistics. Research has confirmed that hands-on culinary, nutrition education, and gardening activities can increase consumption of fruits and vegetables in children.

**What has been done**
Extension 4-H staff conducted four cooking camps called "4-H Food Smart Families." These camps were held in three counties (Simpson, Lauderdale, and Harrison) for four weeks each. Instructors used the "4-H Cooking 101" curriculum developed by the University of Illinois Extension Service. The curriculum included eight lessons that provided 12 hours of instruction on food preparation activities. Two hundred ninety-seven youth participated in all four camps.

**Results**
Sixty percent of participants reported increased knowledge of nutrition, food safety, and healthy-living concepts. Seventy-five percent indicated that they were eating "enough" fruits and vegetables; 70% reported reading food labels to guide food choices; and 80% felt "totally confident" in following a recipe. Participants' feedback, interest, and enthusiasm were high from the beginning to the end of camps. Several inquiries were made regarding future camps and suggestions for conducting the program in other communities. 4-H Food Smart Families camps contributed to public value by improving quality of life and by helping families save thousands of dollars in collective healthcare costs of Mississippians throughout their lifetime. Participants attending these camps saved a collective total of $41,850.

**4. Associated Knowledge Areas**

| KA Code | Knowledge Area |
|---|---|
| 806 | Youth Development |

**Outcome #11**

**1. Outcome Measures**

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

**2. Associated Institution Types**

- 1862 Research

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

| Year | Actual |
|---|---|
| 2018 | 0 |

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

**Issue (Who cares and Why)**
The U.S. Labor Department estimates that through 2020, we will have 58,000 job openings per year for graduates in food, agriculture, renewable natural resource or the environment but we are currently meeting only 61 % of this demand. Increasing the number of STEM graduates in these disciplines is essential to address the U.S. priorities for food security. Historically, high school chemistry has been the predominate venue for the introduction of food science curriculum to students. With the current decline in chemistry as a required course for graduation, the possibility of exposure to food science in high school could equally decline.

**What has been done**

The purpose of this research was to determine if high school students in a biology class without a chemistry background could comprehend eight basic food science principles equally as well as students in a chemistry class that were taught the same principles. This study assessed baseline knowledge of high school students, determined the effect of food science-based lessons on baseline knowledge and level of understanding, and determined the effect of food science-based lessons on students' awareness of and interest in food science.

**Results**

Baseline knowledge and awareness of food science was low. Food science-based instruction resulted in higher posttest scores. Results indicated no differences in students' knowledge base and level of understanding between biology and chemistry classes and supported the idea of further incorporating a food science curriculum into high school biology.

**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.

At ASU, there were no external factors affecting educational outcomes in 4-H and Youth Development.

## 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 2018, 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 was also used for quarterly reporting by some MSU Extension personnel. Third, a new app allows 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 | 22% | 8% | 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% | 3% | 0% |
| 712 | Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins | 5% | 0% | 16% | 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% | 0% | 0% |
| 724 | Healthy Lifestyle | 20% | 90% | 5% | 0% |
| 801 | Individual and Family Resource Management | 10% | 1% | 0% | 0% |
| 802 | Human Development and Family Well-Being | 23% | 1% | 51% | 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 | 7% | 0% | 2% | 0% |
| 901 | Program and Project Design, and Statistics | 0% | 0% | 3% | 0% |
| 903 | Communication, Education, and Information Delivery | 3% | 0% | 0% | 0% |
| | **Total** | 100% | 100% | 100% | 100% |

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

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

| Year: 2018 | Extension | | Research | |
|---|---|---|---|---|
| | 1862 | 1890 | 1862 | 1890 |
| **Plan** | 46.2 | 6.0 | 4.0 | 0.0 |
| **Actual Paid** | 52.4 | 10.0 | 8.3 | 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** |
| 1525609 | 550447 | 149093 | 159083 |
| **1862 Matching** | **1890 Matching** | **1862 Matching** | **1890 Matching** |
| 1525609 | 550447 | 429187 | 159083 |
| **1862 All Other** | **1890 All Other** | **1862 All Other** | **1890 All Other** |
| 0 | 0 | 2970556 | 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. At ASU, the target audiences included families with limited-incomes.

**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, **59** MSU employees are eXtension users as members of **46** COPs (some employees are members of more than 1 COP). **8** 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. **10** MSU Extension personnel are members of the Families, Food and Fitness COP. **3** MSU Extension personnel are members of the Family Caregiving COP. **1** MSU Extension employee is a member 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. **3** MSU Extension personnel are members of the Community Nutrition Education COP. **1** MSU Extension employee is a member of the Drinking Water and Human Health COP. **4** MSU Extension personnel are members of the Food Safety COP. **3** MSU Extension personnel are members of the Just in Time Parenting COP. **1** MSU Extension employee is a member of the Military Families 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**

| 2018 | Direct Contacts Adults | Indirect Contacts Adults | Direct Contacts Youth | Indirect Contacts Youth |
|---|---|---|---|---|
| **Actual** | 156297 | 639818 | 113721 | 102851 |

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

**Patent Applications Submitted**

| | |
|---|---|
| Year: | 2018 |
| Actual: | 1 |

**Patents listed**

U.S. Patent No. 9,820,522 - Shock wave mitigating helmets. Issue date - 11/21/2017

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

**Number of Peer Reviewed Publications**

| 2018 | Extension | Research | Total |
|---|---|---|---|
| Actual | 17 | 93 | 110 |

### V(F). State Defined Outputs

**Output Target**

**Output #1**

**Output Measure**

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

| Year | Actual |
|---|---|
| 2018 | 142234 |

**Output #2**

**Output Measure**

- Number of people attending certification courses. (MSU)

| Year | Actual |
|---|---|
| 2018 | 279 |

**Output #3**

**Output Measure**

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

| Year | Actual |
|---|---|
| 2018 | 29 |

**Output #4**

**Output Measure**

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

| Year | Actual |
|---|---|
| 2018 | 2 |

**Output #5**

**Output Measure**

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

| Year | Actual |
|---|---|
| 2018 | 15683 |

**Output #6**

**Output Measure**

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

| Year | Actual |
|---|---|
| 2018 | 26 |

**Output #7**

**Output Measure**

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

| Year | Actual |
|---|---|
| 2018 | 272 |

**Output #8**

**Output Measure**

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

| Year | Actual |
|---|---|
| 2018 | 59 |

**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 |
|---|---|
| 2018 | 7 |

**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 |
|---|---|
| 2018 | 28447 |

### 3c. Qualitative Outcome or Impact Statement

**Issue (Who cares and Why)**
Our teens are tomorrow's leaders and can affect change today starting in their own families eating and exercise habits and extend to peers and community members. Empowering teens to provide health promotion aimed at improving heath literacy and healthy lifestyle choices is the undergirding objective of the Junior Master Wellness Volunteer program. Likewise, providing opportunities for teens to earn community service hours, advocate for change, and be an active role model for change helps instill leadership, teamwork, social skills, and importance of volunteering.

**What has been done**
MSU Extension developed the Junior Master Wellness Volunteer Program to 1) develop volunteer leadership and teambuilding skills to 2) support on-going and new programs in communities aimed at 3) providing health promotion information to improve health literacy and healthy lifestyle choices. The curriculum consists of a volunteer component, social media component, health messaging component, and community service component, requiring 24 hours of community service. Additionally, the curriculum is co-authored by experts from the University of Mississippi Medical Center.

**Results**
A total of 323 students were trained as Junior Master Wellness Volunteers in 36 counties. They reported completing 2,690 community service hours, reaching 5,788 contacts. The program enhanced efforts in the classroom and increased socialization and leadership skills, self-efficacy, and knowledge. Participants, teachers, and Extension agents reported satisfaction with the experience. This program can be implemented with all teen groups, in a school setting or via other youth organizations. Additionally, the enrichment experience can help clarify career paths. This program can easily be replicated statewide.

**4. Associated Knowledge Areas**

| KA Code | Knowledge Area |
|---|---|
| 703 | Nutrition Education and Behavior |
| 724 | Healthy Lifestyle |
| 802 | Human Development and Family Well-Being |
| 903 | Communication, Education, and Information Delivery |

**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 |
|---|---|
| 2018 | 22757 |

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

**Issue (Who cares and Why)**
Food insecurity is defined by the U.S. Department of Agriculture as a lack of access to enough food for an active, healthy lifestyle. It may also include limited or uncertain availability of nutritionally-adequate foods. Food insecurity may reflect a need to make trade-offs between important basic needs, such as housing or medical bills, and purchasing nutritionally adequate foods.

**What has been done**
MSU Extension's Cooking Matters for Adults is a curriculum offered by the Office of Nutrition Education to teach adults, primarily caring for children ages 13 and younger, how to shop smarter, use nutrition information to make healthier choices and cook delicious, affordable meals. Objectives include learning to plan meals ahead of time, use a grocery list when shopping, use the nutrition facts on food labels, and eat food from each food group every day.

**Results**
During FY2018, 93 participants graduated from Cooking Matters for Adults. Participants showed an increase in all of the above-mentioned learning objectives. From before taking the course to the last class session, the average Cooking Matters for Adults graduate increased how often they

planned meals ahead of time by 11%, moving from 2.29 to 2.54 on a 5-point never to always scale. A 9% increase was seen by participants who reported using a grocery list when shopping (2.83 to 3.08), 6% reported an increase in using the nutrition facts on food labels (2.64 to 2.81), and 16% reported eating food from each food group every day (2.35 to 2.73).

**4. Associated Knowledge Areas**

| KA Code | Knowledge Area |
|---|---|
| 701 | Nutrient Composition of Food |
| 702 | Requirements and Function of Nutrients and Other Food Components |
| 703 | Nutrition Education and Behavior |
| 724 | Healthy Lifestyle |
| 802 | Human Development and Family Well-Being |
| 903 | Communication, Education, and Information Delivery |

**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 |
|---|---|
| 2018 | 11379 |

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

**Issue (Who cares and Why)**
The locally grown produce and food products market continues to grow, and producers are seeking opportunities to meet this demand. This multidisciplinary project addressed food safety and business development for Mississippi stakeholders including limited resource producers, beginning farmers, and small farms/ranches. The project aim was to increase participants' awareness and skills related to food safety and regulations, business/marketing strategies, and financial recordkeeping for agribusinesses to mitigate financial, marketing, and legal risks.

**What has been done**
MSU Extension "Food as a Business for Producers" workshops incorporated information, presentations, and access to experts with topics on proper business set-up, costing and pricing,

online marketing, labor regulations, agricultural state programs, food processing regulations, and food safety. Five workshops (n=72 participants total) were held in regional locations in Mississippi. Participants evaluated their change in knowledge using a Likert scale pre- and post-workshop (1=very little to 5=very much). A six-month follow-up online survey was emailed to participants to assess practice implementation.

**Results**

On average across topics, participants had Little knowledge before the workshop and Much knowledge after the workshop (n=59; 82% response rate). Financially, 46% of the attendees indicated that they expect the practices they were going to adopt as a result of the workshops to save them money. Fifty-nine percent also indicated that practice adoption would result in higher sales, approximately 38% higher on average. The six-month survey respondents (n=22; 29% response rate) revealed that 77-91% have adopted (to different degrees) practices. Also, of the six-month survey respondents, fourteen participants indicated that implementing practices has resulted in cost reductions and/or an increase in sales. The workshops were successful at increasing knowledge and practice implementation.

**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 |
| 801 | Individual and Family Resource Management |
| 802 | Human Development and Family Well-Being |
| 903 | Communication, Education, and Information Delivery |

**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 |
|---|---|
| 2018 | 295 |

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

**Issue (Who cares and Why)**
Youth and adults in Mississippi often make unhealthy decisions concerning food and lifestyle choices and many live sedentary lifestyles. These decisions occur in all communities with people of all ages. These choices result in 41.7% of the population becoming obese or overweight. According to the United States Surgeon General, being overweight is a risk factor for health issues such as increased blood pressure (hypertension), type ii diabetes, heart disease, increased cholesterol, insulin resistance, sleep apnea, depression, and anxiety. Nutritional behavioral changes can greatly prevent and decrease these diseases.

**What has been done**
Family and Consumer Sciences Educators conducted 38 nutrition education activities in 10 counties throughout Southwest Mississippi. Activities included group meetings, health fairs, workshops, field days, and radio shows. Specific topics included accessing fruits and vegetables, portion control, recipe modification, and increased water consumption. Multiple curriculums and other research-based resources were used to teach content. More than 9,000 direct and indirect contacts were reported in this area.

**Results**
Youth and adults attending nutrition activities increased knowledge to decrease intake of fats, oils and sweets and to substitute healthy fruits and vegetables. Impacts from nutrition programs conducted within the past three years has been verbally reported by previous participants. Participants who changed their diets reported decreased weight and improved blood pressure and glucose measurements. Additionally, participants have increased water intake and credits workshops on infusing water with fruits and vegetables as their motivation.

**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 |
|---|---|

2018 267

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

**Issue (Who cares and Why)**
Preschool children are at increased risks of developing diabetes, heart disease, and obesity primarily because of the foods they eat. Twenty-seven percent of preschool children are overweight and 12% are considered obese. Obesity can threaten the lives of young children, therefore, prevention and intervention should begin in the early years of development.

**What has been done**
The goal of the research project, "Parents and Children Engaged (PACE) to Prevent Childhood Obesity" was to prevent childhood obesity using a multi-factorial approach. The project employed multilevel assessments, using the results to construct customized interventions for parents and children. Intervention strategies included physical activities and nutritional behavior modification. Children and parents were screened for weight status, dietary behaviors, physical fitness, and home environments. Results from these screenings helped researchers to implement culturally appropriate and sustainable interventions to promote healthy behaviors in parents and children. Thirty parents and children from Head Start Centers in Adams, Jefferson, Amite, and Wilkinson counties in Southwest Mississippi.

**Results**
This completed research provided opportunities for undergraduate students to collect data, prepared educational resources, and present results during various on-campus presentations. Researchers established collaborative partnerships with Head Start personnel in four counties and with community residents. Program participants gained knowledge and skills related to obesity prevention and management and experienced positive changes in weight and nutritional behaviors.

**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 |
|---|---|
| 2018 | 135 |

### 3c. Qualitative Outcome or Impact Statement

**Issue (Who cares and Why)**
Sedentary lifestyles can lead to obesity, chronic diseases, muscles and bone loss, and problems with mobility. There is strong evidence that fitness and exercise programs offered in community settings can actually increase physical activity and overall health. Coupled with social support interventions, these types of programs can have additional benefits such as mental clarity, improved moods, and positive outlooks on life. Get Up - Get Active - Get Fit was designed to inspire and motivate participants to improve their quality of life and to adopt healthier lifestyles.

**What has been done**
The Health and Wellness Coordinator piloted the 6-week fitness program,"Get Up - Get Active - Get Fit" in Jefferson County with 15 women working for the County's government. Participants labeled themselves as "Women of the County" and met 3 days per week. Each 1.5-hours session consisted of a short lecture and a series of exercise routines. Stretching prior to exercise was emphasized. Participants were diverse in age and ability levels.

**Results**
In addition to increased knowledge of factors influencing weight loss, participants also experienced weight loss. On average, participants reported losing more than 12 pounds each. Additionally, those who lost weight also reported losing inches, evidenced by better-fitting garments. The success of the pilot program sparked interests in other counties including Adams and Claiborne. Plans are underway to implement the program throughout the Southwestern portion of the state. Several components have also been adapted exclusively for senior citizens to increase mobility and to prevent falls. This program could potentially decrease doctors' visits associated with managing chronic diseases. Overall, program participants saved a total of $3,000 since there was not charge to attend.

### 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)

Not Reporting on this Outcome Measure

**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 |
|---|---|
| 2018 | 252 |

**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**
Family and Consumer Science Educators conducted 19 parenting education activities in Adams, Claiborne, Franklin, and Warren Counties. Sessions conducted in Franklin County were with court-appointed parents who were at jeopardy of losing their children to the foster care system. Participants in other counties voluntarily attended because they wanted to improve their parenting skills. Educators used the Active Parenting curriculum to deliver content. The parenting education program is an ongoing effort that has made impacts along the way.

**Results**
Ninety percent of the court-ordered parents completed all sessions and received certificates for their achievements. Because they met the requirements of the course, they are no longer at risk

of losing their children. Parents attending classes in other counties gained knowledge to become more effective in raising their children. Good parents can keep children out of jail. The average cost to house youth in detention centers is $25 dollars a day, equating to $9,125 annual per child. Assuming that each court-appointed parent had at least one child results in a $748,250 savings to the public justice system.

**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 |
|---|---|
| 2018 | 1232 |

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

**Issue (Who cares and Why)**
Financial hardships continue to be a distressing issue for Mississippi families. Although the number of jobs in the state has risen in recent years, many families still struggle to make ends meet. In most cases, the flow of money into the household is not the issue. Problems arise when "bread winners" fail to properly manage financial resources.

**What has been done**
Financial literacy workshops continue to be a focus of the Alcorn State University Extension Program. Most people attending outreach activities have limited resources and benefit greatly from activities related to financial management. In 2018, FCS Educators conducted 55 activities in 11 counties. Topics included budgeting, understanding credit reports, disputing discrepancies on credit reports, avoiding credit pitfalls, identity theft, and credit management. A total of 2,054 direct and indirect contacts were reported for this program area.

**Results**
One hundred percent of participants increased knowledge of financial literacy topics. Ninety-five percent could accurately identify steps to obtain credit reports from the three major credit

bureaus. Eighty-five percent could explain the five major factors impacting credit scores. Sixty-five percent reported that they had shared knowledge with others who were experiencing financial difficulties.

**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 Action Outcome Measure

**3b. Quantitative Outcome**

| Year | Actual |
|---|---|
| 2018 | 36 |

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

**Issue (Who cares and Why)**
The ham mite is a common and economically important mite species that infests a wide variety of stored foods, including dry-cured hams. It is controlled in the U.S. dry cured ham industry with methyl bromide (MB) fumigation. However, MB fumigation is being phased out of use since it is an ozone depleting substance. Safe, effective, and economically viable options are needed for control of the mite in this industry.

**What has been done**
We evaluated the effectiveness of ham nets that were infused with lard, propylene glycol (PG) and polysaccharide coating in controlling mite infestations on dry cured ham cubes from hams

aged for 4 to 6 mo.

**Results**

Nets treated with propylene glycol reduced mites on ham cubes compared to untreated nets over 10 wk of storage. Lard infused nets without PG did not decrease the mite population. Treated nets containing a medium concentration of PG effectively inhibited mite reproduction and fungal growth on dry cured ham and could potentially be used in an integrated pest management program to control mites on dry cured hams.

**4. Associated Knowledge Areas**

| KA Code | Knowledge Area |
|---|---|
| 701 | Nutrient Composition of Food |
| 702 | Requirements and Function of Nutrients and Other Food Components |
| 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 |
| 721 | Insects and Other Pests Affecting Humans |
| 722 | Zoonotic Diseases and Parasites Affecting Humans |
| 724 | Healthy Lifestyle |
| 802 | Human Development and Family Well-Being |
| 803 | Sociological and Technological Change Affecting Individuals, Families, and Communities |
| 804 | Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures |
| 901 | Program and Project Design, and Statistics |

## 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 2018, 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 was also used for quarterly reporting by some MSU Extension personnel. Third, a new app allows 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. |