

Mississippi (Alcorn State University, Mississippi State University Combined) Annual Report - FY2021

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Contributing Organizations

Alcorn State University
Mississippi State University

Executive Summary

Overview

Critical Issue: Enhancing the viability and sustainability of Mississippi's diverse agriculture to ensure food security, safety, and quality

Agriculture in Mississippi includes animals (beef, dairy, equine, swine, goats, aquaculture, poultry), row-crops (cotton, soybeans, corn, rice, wheat, grain sorghum, peanuts), horticulture (vegetables and fruit, turf, floriculture, ornamental nurseries), and sweet potatoes. Therefore, research and Extension-related activities are very diverse in Mississippi.

Workshops/programs for backyard poultry keepers are implemented on the basics of poultry production, choosing a flock, and biosecurity. Participants increased their knowledge, and many have reported successfully starting backyard flocks. Workshops on best management practices for livestock production (e.g., animal production, controlling predators, water sources) led to increased knowledge and changed behavior for limited-resource farmers and producers. Feeder calf board sales improved the profitability of the beef production chain. MSU's Cattle Artificial Insemination School has gained national attention and resulted in improved implementation of nutritional, health, and reproductive best management practices that have led to economic growth for producers. Implementation of information gained through forage management programs saves producers approximately \$5.9 million and could translate to a \$5.3 million extra return for the livestock industry.

Crop demonstration programs and trials inform educational activities for producers. Selection of the best varieties improves product quality, enhances efficiency, and reduces expenses. Educational activities related to corn hybrid demonstration trials enhanced corn value by \$107 million. If soybean producers adopted best management practices identified through the soybean demonstration program, the value of soybean production could increase by over \$370 million. Sweet potato clean seed (plants and slips) produced yielded approximately 90,000 bushels of G1 seed. When planted in 2022, harvest has a predicted value of \$56.5 million. The ASU Community and Container Gardens Program reached 5,791 participants through 34 programs and activities focused on high tunnel production, increased yield of specialty crops, risk management for high tunnel production, and value-added methods. Mississippi farmers and limited-income participants developed and utilized skills that produced cost-efficient gardens that generated increased profits and sustainability. Additional crop production and management programs related to sustainability of agriculture practices, weed control, disease and insect identification and management, irrigation, and cover crops led to knowledge increases, intention to change practices to improve their farms, and crop quality and productivity. Nutrient management programs for crops also led to increased knowledge and use of proper soil organic matter management techniques, soil test submission, and the development of soil biology and nutrient balance plans.

Producers also participated in farm and financial management programs, including ASU Extension Program's two-day Women in Agriculture Conference. Farmers markets and marketing programs were also delivered to enhance profitability related to those settings. Over 300 farmers and landowners gained knowledge on land and property rights and heirs' property to learn steps needed to eliminate issues related to heirs' property; 100% of participants reported increased knowledge. Farmers also participated in training courses that would qualify them to apply for Farm Service Agency loans.

Homeowners, landscape professionals, and students are also targeted through agricultural programs. Master Gardeners contributed 53,250 hours in 2021 to reach 55,300 Mississippians; these volunteer hours are valued at \$1.3 million. MSU's Sustainable Home Lawn Management Program increased the knowledge of homeowners and landscape professionals with an economic benefit to the state ranging from \$300,000 to several million. ASU's container and community gardening programs served 5,791 limited-resource and underserved Mississippians on topics related to high tunnel production, specialty crops, and container gardens. Participants increased

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 School of Agriculture and Applied Sciences (AAS). The report therefore includes Extension and Research from Mississippi's 1862 land-grant institution, Mississippi State University (MSU), and its 1890 land-grant institution, Alcorn State University (ASU).

MSU Extension improves the economic, social, and cultural well-being of Mississippians in all 82 counties by providing research and education in a practical and applicable way in the areas of agriculture and natural resources, 4-H youth development, family and consumer science education, and community resource and economic development; by using the latest technology and teaching techniques to serve clients; by developing and using volunteers to help disseminate programs and information; by cooperating with other groups and agencies; and by maintaining a culturally diverse staff responsive to the needs of various audiences at all socioeconomic levels.

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 with the goals of providing safe, nutritious, desirable food and fiber products and processes for consumers, and assuring businesses that comprise Mississippi's agricultural industry have the information required to remain competitive in a global marketplace.

MSU Extension and MAFES have four regional research and Extension (R&E) centers strategically located across the state (north, Delta, Central, Coast) that serve as hubs for Extension outreach and MAFES research in each region. Each R&E center also has satellite stations where scientists conduct research specific to each region as well as research that is part of statewide programs. Research and Extension outreach are conducted on and around the MSU campus and through additional centers and units including Crosby Arboretum, Center for Research on Human-Wildlife Conflict, Extension Center for Government and Community Development, Extension Center for Technology Outreach, Geosystems Research Institute, Water Resources Institute, Stennis Institute of Government and Community Development, and Southern Rural Development Center.

With three locations serving 15 southwest Mississippi counties, Alcorn State University's School of Agriculture and Applied Sciences (AAS) draws upon the organization's unique strengths and its comprehensive delivery system in conducting original research and delivering educational programs. Research and education are targeted to limited-resource audiences, those earning 80% or less of Mississippi's Median Household income, to provide youth and adults the opportunity to obtain and apply new knowledge and skills that will empower citizens. ASU Extension and Research professionals facilitate positive change in the Capital River, Delta, and Coastal regions of Mississippi. Many of the research and education programs are tested and supported by the Model Farm on the ASU campus, two off-campus demonstration centers located in Mound Bayou and Preston, and the Natchez Farmers Market.

MSU Extension, MAFES, and Alcorn share 5 critical issues:

1. Enhancing the viability and sustainability of Mississippi's diverse agriculture to ensure food security, safety, and quality;
2. Growing vibrant, successful, and sustainable Mississippi communities and businesses;
3. Improving the lives of youth through positive 4-H youth development to build Mississippi's future;
4. Strengthening and sustaining Mississippi families to facilitate healthy outcomes and well-being; and
5. Sustaining Mississippi's natural resources and environment and promoting sustainable energy.

knowledge and successfully demonstrated skills. Students in one county completed a service-learning project to design gateway entries to a community, which led to funding from the Mississippi Department of Transportation. The Veterans Horsemanship Program was developed to promote physical, cognitive, social, and emotional growth. Reported feeling more hopeful, less angry and isolated, reduced negative thoughts, and more patience.

Additional Extension programs address beef cattle economic management and nutrition, blueberry production, pecan production, weed and disease identification and management, floral design, irrigation, pest management, horse management, rice production, specialty crops, honey bees, row crop marketing, small ruminant parasite management, sprayer calibration, alternative enterprises, and community gardening.

MAFES research is being conducted to identify production factors, health protocols, interventions, and animal and crop physiology to improve food production and food security. With Mississippi being the top catfish producer in the nation, much research happens in MAFES to improve this commodity and will be highlighted in this report. The catfish industry has undergone significant technological advancements in an attempt to achieve cost efficiencies. Researchers monitored the progress of adoption of alternative and complementary technologies in the U.S. catfish industry. A survey was conducted in Alabama, Arkansas, and Mississippi that revealed an

increased adoption of intensively aerated ponds and split ponds. In addition, automated oxygen monitors and the use of feed-based, oral vaccines against Enteric Septicemia have increased, leading to the 59% increase in foodfish productivity from 2010 to 2019. Aquaculture practices maximize growth, but culture environments and handling practices deviate from normal conditions and may also expose fish to disease agents. Channel, blue and hybrid catfish were compared for physiological responses to different environmental conditions, including low temperatures. Channel catfish differed from blue and hybrid catfish in physiological acclimation to low temperature, showing better growth. Other research involving catfish includes a study to determine host-specificity and potential host range of alloherpesvirus. It was determined that blue catfish suffer high mortality, followed by hybrid catfish fingerlings. Further, higher stocking rates increase mortality. This is a disease that must be carefully managed. Byproducts from catfish production are significant (135.6 million lb) but have little value (2-3 cents per lb). Researchers have developed technologies to recover proteins and oils from this waste to improve value. With this new development, 20 to 56% of the byproducts mass can be recovered for use as ingredients for other products, which is commercially viable.

In addition to catfish production, other seafood commodities such as softshell blue crabs may have production potential. An economic simulation was performed to determine yield gaps toward the economic feasibility of this type of production. The simulations incorporate multiple parameters to help producers determine the effects of the parameters and the associated risks with this type of production system. COVID-19 impacted, and continues to impact, many areas of food production. Researchers developed several economic models that measured the potential impacts of the pandemic on the seafood industry, and this information was shared broadly with individuals and organizations in coastal Mississippi.

As mentioned, a wide variety of other important food commodities are produced in the state. MAFES research on beef cattle evaluating treatment and prevention of Bovine Respiratory Disease (an estimated cost of \$800 to \$900 million annually in the U.S.) is happening, along with research evaluating the health and parasite load of small ruminants. Research evaluating the roles of external factors (such as nutrition and temperature) is ongoing in cattle and swine production. Tomato production is important in the state, and researchers are evaluating the roles of dicamba (an herbicide commonly used on other types of production systems) on harming commercial tomato production. Researchers determined that tomato plants were most sensitive at the vegetative stage and that injury increased as the rate of dicamba increased. Interestingly, none of the fruit samples showed any amount of dicamba.

Critical Issue: Growing vibrant, successful, and sustainable Mississippi communities and businesses

Needs assessments are essential for identifying issues and concerns in a community to guide Extension's work. However, needs assessments can also be used as a platform to convey Extension's services to the public and promote community engagement and unity. Mississippi communities are diverse in size, population, and economic and social conditions. Thus, community leaders play an important role in addressing community needs. Therefore, through the development of economic profiles, Extension increases the knowledge of community leaders regarding their communities' economic and social situations and results in better decisions, improved quality of life, economic development efforts, and improved community amenities. MSU's GEO (Geospatial Education Outreach) Program educates local and state government agency professionals in using GIS systems for assessing and managing the systems and resources they oversee. MSU's Certified Municipal Clerk Program trained 80 new municipal officials in their roles so that reduced knowledge gaps between clerks and oversight agencies can lead to improved services for citizens through more efficient practices, saving taxpayers time and money. The Mississippi Assessor Education and Certification Program certifies appraisal staff in conducting mass appraisals for ad valorem taxes. In 2021, 474 of 495 individuals completed the recertification requirement. Officials and governing boards of public water and wastewater utilities are faced with challenges in providing these fundamental services to local residents. A spreadsheet-based tool was developed for use by utilities to identify appropriate pricing structures based on informed decisions that will maintain or improve the quality of water/wastewater services and their finances.

Addressing sea-level rise requires local, state, regional, and federal agencies, organizations, nonprofits, researchers, and Extension professionals partnering to disseminate information in multiple ways to inform decision making for resilience. Litter is another issue that impacts the environment, stormwater infrastructure, tourism, and industry along coastlines. The Coastal Cleanup Program organizes multiple events that attract volunteers for litter removal. In 2021, 7.1 tons of litter were removed from beaches, waterways, wetlands, and roads of coastal Mississippi through 4,950 volunteer hours. Extension also helps communities develop recycling programs to the amount of material going to the local landfill, thereby extending the landfill's lifespan, generating jobs, and providing feedstock to produce consumer goods.

COVID-19 continued to play a role in Extension's work this year. Extension distributed masks, hand sanitizers, fruits, vegetables, food boxes (meat), and water to increase access to healthy foods and enhance the use of practices that can protect against COVID-19. The ASU Extension Community Outreach Program's workshops and activities serviced 36,449 community residents with food boxes (meats, fruits, vegetables) and essential personal protection equipment against COVID-19. The Community Outreach Program was vital to community

residents with hardships that resulted from the loss of employment and lack of significant finances/resources resulting from COVID-19. Communities in Mississippi are struggling to move forward after the COVID-19 pandemic. MSU's Work Plan Workshop Model that combines economic assessment, market and retail trade analysis, and community planning to create a realistic action plan for towns' Main Street Organizations was used in 22 communities. The communities are in the process of implementing the steps of their action plans.

Additional Extension programs focus on leadership development, building community assets, workforce preparation, estate planning, small business development and marketing, cooperative development, computer training, and ICS 100/200/700 certification.

MAFES research to grow a vibrant Mississippi often revolves around the landscape. Horticulture, ornamental plant production, and coastal habitat are central to MS. An economic survey was conducted to experiment stations and extension offices in Coastal MS. The survey measured annual changes in categories such as sales and expenditures to assess the economic impact of horticulture programs. Results indicate that these programs in coastal MS between 2015 and 2019 exceeded \$8 million per year.

Horticulture crops include vegetables, melons, potatoes, fruits, tree nuts, berries, sod, and Christmas trees. Nurseries, greenhouses, and floriculture centers are important and must evolve to develop sustainable and environmentally sound production practices. MAFES researchers continue work on several important plants to growers of the state. As examples, researchers crossed crape myrtle and passionflower plants and germplasm continues to be evaluated. In grapevine, factors such as the timing of pruning, leaf removal, and shoot thinning on fruit and wine qualities are being evaluated. Marigolds are being evaluated as potential cut flowers, and work continues on Sweetie Pie blackberries and nitrogen application to reduce white dupelets. Deer repellent for peas based on putrescent egg solids were more effective than commercial products. Researchers also determined that Mountain azalea cuttings will root with or without the use of an auxin basal quick dip.

Critical Issue: Improving the lives of youth through positive 4-H youth development to build Mississippi's future

Mississippi youth face several challenges. In 2020, Mississippi ranked 49th in four indicators of child well-being. 4-H promotes positive youth development. In Mississippi, Extension provides both traditional and nontraditional 4-H programming. In general, youth gain knowledge and skills in leadership, communication, citizenship, and various content areas through 4-H activities. Youth who demonstrate civic responsibility, community service, teamwork, and leadership are important to their communities — they are one of our greatest resources for influencing change and are our next generation of leaders. MSU's MyPreparedness Initiative for youth aged 5 to 19 builds these and other skills to empower youth to take an active role in emergency preparedness for themselves, their households, and their communities. In 2021, 372 youth completed the program and impacted 2,604 households with new or enhanced emergency supply kits and family communication plans. Increasing youths' knowledge of sea-level rise and ways to mitigate and adapt to it will lead to more resilient communities. A pilot program trained educators on implementing the Sea-Level Rise in the Classroom curriculum; educators reached 203 students in coastal Mississippi and Alabama. ASU reached 31,437 youth and families through the implementation of nine three-day online youth cooking camps that focused on Healthier Eating Habits and Food Preparation. The results of the youth cooking camps generated a \$500,650 economic impact for Mississippi and low-income families. The 4-H Junior Master Wellness Volunteer program trains teens to provide health promotion information in their communities to improve health literacy and healthy lifestyle choices. In 2021, 69 students trained as volunteers reached 6,056 contacts; those service hours are valued at \$11,860. The students increased their knowledge of various health topics and improved their life skills and leadership via community service projects.

4-H programs also focus on specific content knowledge. For example, MSU's Hatch-Out program lays the foundation for ag literacy among K-2 graders. In 2021, Hatch-Out was implemented in over 170 classrooms at 27 Mississippi schools. Students' knowledge of chicks, the poultry industry, and its importance to the state significantly increased from pre- to post-program. The Real World Budget Simulation for middle school, high school, community college, and university students increased students' confidence in budgeting. Students also indicated that they would use the information learned to make better financial decisions. School gardens provide hands-on learning for youth in various subjects (e.g., science, math, social studies, nutrition, environment) and produce for students and schools. In 2021, 4,800 elementary and middle school students were introduced to gardening through this approach. MSU's Women and Minorities in STEM project provided online and in-person learning opportunities in food, agriculture, natural resources, and human sciences for female and minority high school students. Retrospective surveys of STEM-related attitudes showed young women's perspectives of college self-efficacy, STEM interest, and STEM careers improved after participating in project activities. Other 4-H programs address bullying and peer pressure, conflict resolution, robotics, livestock showing and judging, animal care, ATV safety, and environmental protection and sustainability.

Critical Issue: Strengthening and sustaining Mississippi families to facilitate healthy outcomes and well-being

Poverty rates in Mississippi are higher than the national average. In 2018, Mississippi's rural poverty rate was 22.7%, and its urban poverty rate was 16.6%, with one-third of children living in poverty. Financial security is the cornerstone of prosperous communities, nurturing neighborhoods, and strong families. Extension teaches financial management skills to families in an effort to put them on a path to financial stability. For example, after MSU Extension implemented the Money Smart curriculum, 50% of participants scored "very high" on the financial well-being score. Extension also offers the Your Money, Your Goals curriculum, which provides lessons tailored to an individual's most pressing needs. All participants reported that the program improved their knowledge of financial management, and 87% planned to make changes in their behaviors.

COVID-19 vaccine hesitancy has been a concern in Mississippi. MSU Extension reached over 181,000 people through multiple approaches to address this issue, with a focus in low-uptake areas. From July to December 2021, the percentage of first dose increased from 25% to 57% (although this is not solely attributable to Extension's efforts). Mississippians have significantly higher morbidity and mortality rates due to chronic diseases related to human behaviors. Mississippi also has the highest obesity rate, and approximately 40% of children are overweight or obese. Therefore, Extension provides nutrition and physical activity education through multiple methods. For example, ASU nutrition, health, and wellness programs and activities reached 1,205 individuals in 2021 – many of whom live in counties considered food deserts. After participation, 55% adopted healthier eating practices and incorporated physical exercise into their daily routines. Additional nutrition programs address smarter lunchrooms, healthy eating for limited-resource parents and caregivers of young children, Dining with Diabetes, and Walk-a-Weigh. At a community level, AIM for CHangE conducted over 100 projects to help communities deal with issues related to access to healthy foods, nutrition, and physical activity (e.g., ride-sharing service, SNAP benefits training for food pantries).

Food safety is also critical to the health of Mississippians and the economic livelihood of businesses that serve food. For example, in 2021, MSU Extension offered ServSafe training for over 400 personnel working in restaurants, school cafeterias, and food businesses, with a 76% pass rate on the certification exam. MSU's TummySafe food safety training (specifically for childcare providers in the state) reached 590 individuals, with an 80% pass rate. Additional food safety trainings focus on acidified canned foods, food safety at home, marination, HACCP, and food as a business.

MSU Extension also addresses mental health needs. Its Equine Assisted Therapy Program's Alcohol and Drug Recovery Group reached 135 individuals in 2021; all participants reported increased self-awareness and communication skills and decreased depression and anxiety. Mental Health First Aid and the Alliance Project trainings reached over 4,600 childcare workers, parents, educators and administrators, and high school students to help them identify and refer or respond to mental health crises. Youth Mental Health First Aid is also offered.

Raising healthy, happy, secure children is essential for Mississippi's future. Parenting education is offered by Extension across the state to improve parenting practices and parent-child relationships. ASU's Active Parenting Program reached 1,154 parents. Through this program, parents increased their knowledge of topics such as understanding nonverbal messages, resolving conflicts, taking responsibility for actions, and developing self-awareness. Another important sector for children is early care and education settings. Unfortunately, Mississippi lacks high-quality requirements for the early care and education workforce. MSU's Care to Read program provides training and resources for childcare staff to promote emergent literacy skills in center- and home-based childcare programs. In 2021, 517 providers were trained, with nearly half demonstrating increased knowledge. An additional early childhood credential can also be earned. Housing security and healthy homes are also important. The Healthy Homes Initiative reached over 4,000 older adults, HUD housing residents, and childcare providers through various methods in 2021. Of the 977 participants who completed workshops, all increased knowledge of healthy home principles and intended to change behaviors (e.g., air quality, mold and moisture control, hazardous products).

MAFES researchers in the areas of human sciences have worked to assess individual, family, and community factors associated with resilience in diverse, rural, low-income families. Interviews were conducted across the country, and webinars were developed to target Extension personnel to help them educate the public and improve resilience among this population.

Improving health among the population of Mississippi is also a major area of research. In Mississippi, cardiovascular disease risk factors such as chronic kidney disease, type 2 diabetes, and hypertension are pervasive. Researchers developed strategies to improve health outcomes and worked with Extension to distribute these programs across the state.

Critical Issue: Sustaining Mississippi's natural resources and environment and promoting sustainable energy

Natural resources are also important to Mississippi's economy; therefore, various Extension programs address the sustainability of natural resources. MSU's Natural Resource Enterprises program educates landowners on income diversification on their lands, natural resource conservation, and enhanced biodiversity on properties. Follow-up evaluation indicated new natural resource enterprises started in 2021 generated \$1 million in new incomes for landowners and local communities. Additional programs address pesticide management, agricultural and community-based recycling, and wild hog damage management. Training in the use of unmanned aerial systems also empowers individuals in sustainability efforts.

Healthy fisheries are fundamental to the cultural and economic well-being of northern Gulf of Mexico residents. MSU's education on fish and fisheries has increased knowledge, with fishermen reporting the intention to change their future fishing practices to ensure the sustainability of these resources. Integrated pest management education is also important for human safety and environmental protection. Additional aquaculture programs address topics such as the regulatory environment, establishing aquaculture enterprises, and fish pond management.

Mississippi is bordered by the Mississippi River on the west and the Gulf of Mexico on the south, with 14,000 miles of streams and 640,000 acres of ponds, large lakes, and reservoirs. Maintaining and protecting Mississippi's water resources through educational programs is essential. Declining aquifer levels in the Mississippi Delta have led to educational efforts for farmers on proven irrigation water management practices, such as using soil moisture sensors and sensor data for decision making. Participants in these efforts report an intention to adopt soil moisture sensors and increase knowledge and confidence related to their use. Many Mississippi coastal habitats are being lost due to development, natural processes, and poor environmental stewardship. Therefore, various educational efforts inform coastal stakeholders about maintaining healthy coastal ecosystems. MSU Research and Extension efforts in 2021 informed decision-making on the protection, restoration, or enhancement of over 7.7 linear miles of shoreline and the protection of 115 acres of estuarine habitat. These efforts produced an annual ecosystem service valuation of nearly \$7.8 million.

Conventional agriculture has led to degradation of soil and water resources. Therefore, conservation education for farmers increases knowledge of practices that can lead to more sustainable and resilient agroecosystems for Mississippi communities, farmers, and the environment. Two Extension programs involve volunteers working on natural resource protection. A new citizen-based water monitoring program has volunteers that spent 530 hours collecting water quality data in 2021. Such programs lead to sustainable water management, identification and remediation of local water quality concerns, and improved water resource security. The Mississippi Master Naturalist Program's volunteers documented 2,289 service hours that improved 662 acres through stewardship activities.

In 2021, forestry was the third-ranked commodity in Mississippi. Increasing 6% from 2020, it is now a \$1.3 billion industry covering over 19.2 million acres with 125,000 forest landowners. The forest industry generated 61,619 jobs. MSU delivers educational and certification programs related to forest certification to improve timber markets, forestry income taxation, hardwood management, landowner education and income improvement, urban forestry, as well as a professional logging manager program. An annual follow-up evaluation found that 31% of participants had implemented practices or other changes as a result of participation in an Extension forestry program. The most common practices were prescribed burns, thinning, and reforestation. Approximately 44,000 acres were impacted by the changes made. Nearly two-thirds of respondents indicated they had avoided poor/bad management decisions or unnecessary costs as a result of the information they received.

Wetlands serve as natural water filtration systems and are often sensitive to pollution effects. Wetlands are threatened from land use change to substantial anthropogenic disturbances such as the Deepwater Horizon Oil Spill. Understanding effective restoration practices is essential for curbing wetland decline and perpetuating the conservation of wetland-dependent species. Therefore, multiple wildlife monitoring programs have been designed and implemented to improve understanding of wetland wildlife use and responses to wetland restoration efforts. For example, a coastwide bird monitoring program estimates bird densities in healthy and unhealthy wetlands during breeding and non-breeding seasons. Work will continue to monitor wetland conditions and implement restorative actions when needed.

One factor working against natural habitat is the wild pig. Wild pigs are ecological engineers capable of decreasing ecological services among inhabited ecosystems between foraging and wallowing behaviors. Despite these concerns, the extent of their damage is relatively unknown. Most work has been focused on property damage, but scant information is available regarding ecological impacts such as direct and indirect competition with native wildlife. Detection techniques were evaluated to assess damage and provide data to support tracking and trapping. Moving forward, a more efficient sub-sampling method will be employed to hopefully provide a rapid means for landowners to assess damage and remedy the situation.

Merit and Scientific Peer Review Processes

Updates

None

Stakeholder Input

Actions to seek stakeholder input that encouraged their participation with a brief explanation

MSU uses two additional mechanisms to seek stakeholder input. Producer Advisory Council (PAC) meetings are held regionally each year for producers and community leaders to communicate concerns, identify needs, and express opinions and feedback. The various agricultural commodities are represented at these meetings. Additionally, each MSU department has an advisory council that meets at least annually to make recommendations for research, programmatic efforts, and expectations for graduates.

Methods to identify individuals and groups and brief explanation

None

Methods for collecting stakeholder input and brief explanation

None

A statement of how the input will be considered and brief explanation of what you learned from your stakeholders

As mentioned in our last annual report, MSU Extension Evaluation Specialists conducted a needs assessment with MSU Extension professionals (agents, specialists, associates) in Spring 2020 to identify opportunities for Extension in meeting the needs of its clients. The identification of needs through that assessment and direct interactions with clients and other stakeholders has resulted in a significant alteration MSU Extension's outreach practices. While face-to-face programming is still desired by many clients in the state, the use of other delivery methods (e.g., social media, videos and blog posts, activity kits, print and online publications, Zoom webinars) has been accepted by our target audience and has allowed MSU Extension to expand its reach to new audiences and expedited responses to emerging needs. MSU Extension has encouraged the modification of existing programs and the development of new programs that can be offered in traditional face-to-face, virtual, or hybrid formats when appropriate (given the topic and nature of the education). An article published in the Journal of Family and Consumer Sciences describes how MSU Extension's FCS professionals responded to the COVID-19 pandemic (<https://doi.org/10.14307/JFCS113.4.46>).

Alcorn State University did not change the way information from stakeholders is gathered or used.

Highlighted Results by Project or Program

Critical Issue

Enhancing the viability and sustainability of Mississippi's diverse agriculture to ensure food security, safety, and quality

Agriculture (Animals and Plants) Achieved Best Practices Skills

Project Director

Brenda Robinson

Organization

Alcorn State University

Accession Number

7002007



Best Management Practices Achieved Livestock Production Efficiency

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Many limited-resource farmers and producers are unaware of Best Management Practices (BMP) relative to livestock production. BMP prevents animal watering sources from becoming contaminated with sediments from storm runoffs and other naturally occurring events. BMPs also prevents unnecessary expenditures on farm inputs by providing practical considerations for profitability, sustainability, and production.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

ASU Extension Program Educators conducted 12 workshops on Best Management Practices that improved Livestock Production. Topics included animal production, controlling predators, forage production for alternative livestock, wildlife production, and safe water sources for alternative livestock. These workshops were conducted to change (increase) knowledge and change behavior (practices).

Briefly describe how your target audience benefited from your project's activities.

A total of 124 participants attended ASUEP workshops on Best Management Practices. Observations and questioning evaluation results showed that 80% of program participants changed (increased) knowledge and 60% changed behavior (utilized practices demonstrated during the workshops). Behavior change was also demonstrated through participants' skill development in their implementation of alternative livestock production and forage production techniques. The goals of this program were achieved.

Briefly describe how the broader public benefited from your project's activities.

The Best Management Practices program equipped farmers to utilize essential knowledge, techniques, and strategies that improved livestock health, alternative livestock selection, predator control, forage production, and location of safe water sources that generated high revenue and lowered input cost. This program is beneficial to the broader public because farmers produced healthy livestock with low overhead cost that ensured the general public would not be recipients of contaminated or diseased livestock produce for consumption. Although all livestock on farms are not for consumer consumption, best management practices assisted farmers to eliminate disease spreading with other livestock herds.



Container/Community Gardens Achieved Speciality Crop Skills

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Container and community gardens are continuously impacting the health and well-being of Mississippi's residents. These cultivated plots increase physical fitness, vegetable and fruit consumption, and residential socialization and cohesiveness. Community gardens are especially important in communities with health disparities and an absence of adequate supermarkets.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

ASUEP's Educators conducted 34 programs, events, and activities (25 workshops, 6 farm visits, and 3 social media-- Zoom/Microsoft Teams) on Container and Community Gardening for limited-resource and underserved farmers and residents in Mississippi. Topics consisted of: high tunnel production, container garden and community support activity (CSA), how to increase the quality of specialty crops, how to increase the yield of specialty crops, risk management for high tunnel production, value-added methods, and techniques for high tunnel production. The goals of this program were to increase knowledge and change behavior.

Briefly describe how your target audience benefited from your project's activities.

A total of 5,791 participants attended ASUEP implementation of Community and Container Garden through workshops, farm visits, and social media (Zoom or Microsoft Teams). Evaluation was conducted through observation and questioning of participants. As a result, 90% of participants' knowledge increased using questioning technique. Using observation evaluation technique, 80% of participants demonstrated increased skills (effective techniques) in their development of high tunnel and container gardens, displayed best management practices, and effectively integrated pest management techniques. Based on the evaluation results, the goals of this program were achieved.

Briefly describe how the broader public benefited from your project's activities.

The Container/Community Gardens program provided farmers and the broader public a platform to work collaboratively in creations of local gardens that benefits the entire community. Farmers acquired knowledge and skills utilizing various techniques to develop container gardens for individual purposes with specialty crops. Farmers also utilized knowledge and skills they acquired from this program to construct larger gardens that allowed community members and the broader public opportunities to engage and interact in the process. Farmers and the broader public benefited because all individuals within local communities had access to the selection of crops to be grown in the gardens, assisted in constant maintenance of the gardens, and they could harvest fruits and vegetables from gardens at any time they choose. Additionally, the broader public benefited from this program because the establishment of these types of gardens was cost efficient. Farmers and community member were able to save monetary funds through harvesting produce for their community gardens instead of purchasing fruit and vegetable products from local grocery stores or farmers' markets.



Crop Management Achieved Increased Crop Production

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

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

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Alcorn State University Extension Program's Educators conducted 25 Crop Production/Management programs, events, and activities that educated growers on the sustainability of agriculture practices, tillage practices, weed control, disease identification and management, insect identification and management, forages, irrigation, and cover crops and their benefit. The goals of this program implementation were to change (increase) knowledge, change behavior (practices/skills), and change condition (increase crop quality, productivity, and yield).

Briefly describe how your target audience benefited from your project's activities.

A total of 2,242 participants attended ASUEP programs, events, and activities on Crop Production/Management. Observation and questioning techniques were utilized to evaluate participants. As a result, 90% of participants indicated/demonstrated their knowledge increased; 85% indicated that they would change practices by using information they were exposed to from programs, events, and activities to improve their farms; and 60% of participants noted that using techniques from the programs, events, and activities increase the quality and productivity of their crops. The goals of this program to increase knowledge, change behavior, and change condition were achieved.

Briefly describe how the broader public benefited from your project's activities.

The Crop Production program benefited the broader public through farmers' growth and delivery of fresh fruits and vegetables to local supermarkets and Farmers Markets for consumer consumption. Farmers gained knowledge and skills on agriculture practices that ensured healthy crop cultivating, crop management, and successful harvesting techniques for production that increased profits. The broader public benefits from access to and consumption of fruits and vegetables for healthier eating and less chronic diseases. Crop management and production are vital for a healthier society.



Farm Operations Achieved Sustainability Through Government Funds

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Mississippi farmers and ranchers continue to face difficulties in their farming operation due to the lack of money. 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 ASUEP's Vendors/Borrowers trainings are designed to equip farmers with the

knowledge and skills necessary to obtain FSA loans.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

ASUEP implemented three training courses to Farm Service Agency (FSA) borrowers throughout Mississippi. The trainings were designed to increase profitability and better prepare farmers for business sustainability using real-world problems through practical exercise and application. Borrowers must obtain a passing score of 70 to help meet the requirements for borrowers training as outlined by FSA guidelines. The training courses were implemented to change knowledge and behavior which would lead to increased profitability for their farms.

Briefly describe how your target audience benefited from your project's activities.

A total of 21 borrowers attended the training courses implemented by ASUEP. Participants were qualified to apply for additional loans after completion of the course. Borrowers were introduced to current tools and methods which assisted them in current farming practices and to minimize farm risks. Borrowers gained skills and the understanding of the application process by completing 12 hours of Farm and Financial Management, six hours of Crop Production, and six hours of Livestock Production. After program completion, participants received a Certificate of Completion. The Certificate qualifies the borrowers to receive additional funding from USDA FSA. USDA FSA issued over \$714,169 in funding for borrowers to increase their farm operations to purchase equipment, additional land, and increase profit. Results from this program's implementation showed participants increased their knowledge (understanding of current tools, methods, and application process) and changed behavior (gained skills in current practices to minimize farm risks).

Briefly describe how the broader public benefited from your project's activities.

The broader public benefited from this program was significant to the longevity of farm operations sustainability. Farmers gained knowledge and skills that prepared them to seek and acquire government funds to ensure their farms were successful. Without governmental fund assistance, many farmers would go out of business. The acquisition of government funds allowed farmers to continuously maintain their farms, produce fruit and vegetable products, and readily distribute products to the general public upon demand. The broader public benefited by the farms continued existence, through government loan programs, to provide healthy foods for consumer consumption.



Farmers Achieved Farmers Market and Marketing Skills

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Locally grown produce makes fresh fruits and vegetables readily accessible and can boost local economies. Small farmers need a viable market to sell their produce. It is essential that farmers and ranchers become knowledgeable and develop marketing skills that contribute to sound decision-making and use effective marketing strategies to ensure the overall success of their farming operations.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

ASUEP conducted two in-person and four virtual workshops on Farmers Markets and Marketing for limited-resource and socially disadvantaged farmers and residents in Mississippi. The topics of the workshops consisted of: farmers market establishment, direct marketing, branding, and promotions. The goals of ASUEP programs, events, and activities conducted were to change (increase) knowledge and change behavior (increase skills/practices).

Briefly describe how your target audience benefited from your project's activities.

As a result, 436 participants attended the Farmers Market and Direct Marketing in-person and virtual workshops. Observation evaluation was utilized for the in-person workshops. As a result, 90% of participants increased knowledge on establishing a Farmers Market and Marketing techniques. Additionally, 85% demonstrated skills (developed strategies) using Marketing techniques. The post evaluation (poll) results from the virtual workshops showed 90% of participants rated their knowledge

gained High on a “low to high” scale. The post evaluation (poll) results showed that 100% of participants rated clarity of information High on a “low to high” scale. The evaluation was completed within five minutes. Based on the evaluation results, the goals of this program were achieved.

Briefly describe how the broader public benefited from your project's activities.

The Farmers Market and Marketing program equipped farmer to establish farmers markets, brand their produce, and effectively promote their products to appeal to the general public. Farmers' markets benefits to the broader public consisted of: (a) access to fresh fruits and vegetables, (b) one-on-one engagement and interaction with local farmers and producers, (c) low cost of fruits and vegetables, and (d) knowledge of fruits and vegetables production and quality compared to the unknown processes of products purchased from grocery stores. Marketing branding is vital to differentiate identity and uniqueness of product from other competition. Additionally, marketing products using promotional techniques ensured that the broader public recognized the product's visibility (symbol and design) which enhanced the public's desire to purchase.



Landowners Gained Knowledge on Heirs' Property

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

According to the Census Bureau, eighty percent (80%) of land owned by blacks has been lost since 1910 due to heirs' property. Heirs' property is land that has been passed down from generation-to-generation from landowners who do not have a will in place at death. It is difficult to receive loans or government assistance with heirs' property, therefore, Mississippians must be educated on heirs' property and the laws affiliated with it.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

ASUEP conducted 11 workshops on Land and Property Rights and Heirs' Property for limited-resource and socially disadvantaged farmers and residents in Mississippi. The workshops were designed to educate farmers and landowners on land ownership and heirs' property, common problems that affected heirs' property, and techniques to use to avoid heirs' property. The goal of these workshops was to change (increase) knowledge.

Briefly describe how your target audience benefited from your project's activities.

A total of 332 participants attended the Land and Property Rights and Heirs' Property workshops. Mississippi farmers and landowners gained knowledge and were provided one-on-one interactions with attorneys specializing in Land and Property Rights and Heirs' Property. Farmer and landowner interactions occurred at no cost. Participants learned the proper steps to take that would help eliminate their issues with heirs' property. Through observation and a question/answer session, 100% participants changed (increased) knowledge.

Briefly describe how the broader public benefited from your project's activities.

The Land and Property Rights and Heirs' Property program benefited the broader public to understand the concepts and laws associated with wills and heir property that affects many farmers. Limited-resource and socially disadvantaged farmers received crucial information from ASUEP and attorneys that they needed and could apply relative to heirs' property. The knowledge gained by farmers assisted them and the broader public to avoid many issues, disagreements, and court disputes that often occurred between family members over heirs' property. Without a will or deed in place, heirs' property cannot be sold, leased, built on, or lived on unless consensus is acquired from all family members. Additionally, according to the United States Department of Agriculture Farmers.gov website, without proof of ownership, it is difficult for heirs' to acquire federal funds for farms. Although the 2018 Farm Bill provided an alternative for heirs' property owners to participate in USDA lending programs, farmers are required to have a farm number. This program benefited the broader public as a platform that educated them on the processes, do's and don'ts that applied to heir's property ownership.



Nutrient Management Achieved Sustainable Soil Balance

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Producers involved in ASU Extension Advisory Councils are demanding sustainable soil management practices that are cost efficient and environmentally sustainable. Integrated Nutrient Management (INM) is a sustainable tool that can offer good options and economic choices to supply plants with a sufficient amount of needed nutrients while reducing total costs. INM also creates favorable soil microbial and physiochemical conditions, as well as, establishing a healthy environment by safeguarding the soil nutrient balance.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

ASUEP's Specialist and Educators conducted 15 programs, events, and activities on Nutrient Management to limited resource and underserved farmers in Mississippi. Topics consisted of crop organic fertilizer applications, integrating nutrient management, organic manures, vermicomposting, and increasing agriculture production with sustainable practices. The goals of this program were to change (increase) knowledge on integrated nutrient management and to change behavior (practices) using techniques to create safe nutrient balance for their crops.

Briefly describe how your target audience benefited from your project's activities.

A total of 135 participants attended the Nutrient Management programs, events, and activities. Evaluation was completed using a Survey monkey.com production survey. The survey completion time was 10 minutes. Survey results showed 85% of participants increased their knowledge on nutrient management. Observation evaluation results showed 60% of producers demonstrated proper soil organic matter management techniques, submitted soil tests accurately, and established soil biology and nutrient balance plans. The goals of this program to change knowledge and change behavior were achieved.

Briefly describe how the broader public benefited from your project's activities.

Nutrient management is essential to maintain soil balance for crops. The Nutrient Management program benefited the broader public because the knowledge and skills farmers acquired ensured crops contained certain amounts of fertilizers and organic materials that were safe for consumption. Individuals must consume a specific amount of nutrients in the body to sustain proper balance. This program allowed farmers to assess and apply appropriate fertilizers and other nutrients to their crops that were not harmful to the general public.



Successful Farm Operations Achieved Through Farm and Financial Management

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

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. It is essential that farmers and ranchers become knowledgeable and develop skills that contribute to sound decision-making and use effective financial management skills to ensure the success of their farming operations.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

ASUEP conducted three virtual workshops and two-day Women in Agriculture Conference on Farm and Financial Management. The topics of the virtual workshops consisted of financial capital, land/lease agreement, soil health, and soil testing. The Women in Agriculture Conference was entitled "Enterprising Women in Agriculture Sustaining the World" implemented for limited-resource and socially disadvantaged farmers/residents in Mississippi. The topics of the virtual workshops consisted of financial capital, land/lease agreement, soil health, and soil testing. The Women in Agriculture Conference was designed to educate and promote the future generations of women farmers. Women farmers and landowners gained knowledge through lectures on the Farm Bill Updates, Farm Taxes, USDA/NRCS Program Eligibility, Opportunities in Industrial Hemp, The Annie's Project, Heir's Property, Livestock/Animal Handling, Farm Management Safety, Farm Equipment, and Succession Planning. The conference addressed issues that affected women farmers, marketing situations, and opportunities. The expected outcome of the conference was to move women farmers to the next level to become successful farmers. Participants were allowed to interact one-on-one with the presenters. The conference brought together a diversified group of women farmers, veteran farmers, federal and state agencies, university personnel, and representatives from the

agriculture industry. Conference participants received a record-keeping kit to aid in the financial management of their farm operation. The goals of the Farm and Financial Management program was to increase knowledge (educates farmers) and to change behavior (practices/skills) that will enhance their farming operations to generate sustainable profits.

Briefly describe how your target audience benefited from your project's activities.

As a result of the Farm and Financial Management virtual workshops and Women in Agriculture Conference implemented by ASUEP, 209 participants attended. The post evaluation (poll) results from the virtual workshops showed 97% of participants rated their knowledge gained High on a “low to high” scale. The post evaluation (poll) results showed that 94% of participants rated clarity of information High on a “low to high” scale. The evaluation was completed within five minutes. Based on the evaluation results from the Women in Agriculture Conference showed 100% of the participants increased their knowledge and indicated that they would utilize the practices learned in their farm operations. Based on the evaluation results, the goal of this program was achieved.

Briefly describe how the broader public benefited from your project's activities.

The Farm and Financial Management program is extremely significant in the survival of farm operations and enterprises. Farmers need adequate financial resources for farm operations to be successful. It is essential that farmers can make sound decisions, acquire sufficient funding, and can utilize finance effectively that increase farm profits and sustainability. The program benefited the broader public because it equipped farmers to make sound farming decisions, apply vital financial management skills, achieve increased profits, and acquire sustainability for their operations and enterprises. Additionally, this program also benefited the broader public to continuously receive fresh fruits and vegetables from farming operations for consumer consumption.

[Enhancing the viability and sustainability of Mississippi's diverse agriculture to ensure food security, safety, and quality](#)

Project Director

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Organization

Mississippi State University

Accession Number

7000214



Cattle Artificial Insemination School

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

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

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

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

Briefly describe how your target audience benefited from your project's activities.

The Cattle Artificial Insemination School has gained national attention attracting participants from 20 states and one foreign country. Participant feedback indicates notable artificial insemination adoption as a result of this school. Two schools were held this year in March and October. The program's annual economic impact grew by approximately \$70,000 as another 56

cattle breeders implemented artificial insemination as a result of this program. The program's additional monetary benefits are also realized from improved implementation of nutritional, health, and reproductive best management practices emphasized through this school.

Briefly describe how the broader public benefited from your project's activities.

Artificial insemination provides a means to rapidly improve cattle genetics, which results in higher quality and often more efficient end products for consumers.



Corn Hybrid Selection

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Industry develops and releases new corn seed products. However, there is little basis to compare products prior to commercial release. Multiple companies may also sell the same product under different names. While the industry does research products within their portfolio, their purpose is to enhance marketability for their proprietary products, so the information disseminated is partial to their brand. Although industry data are available, they have marginal value for growers to identify and select superior genetics available in the competitive corn seed market.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

MSU Extension's variety testing programs play a vital role in generating sound, unbiased data that Mississippi growers can use to identify superior genetics. Our role is unique because we evaluate an enormous number of hybrids from all companies. Using this research, we develop lists of superior hybrids, which are published and widely distributed. These elite hybrids are further evaluated and showcased in numerous demonstration plots where producers and consultants can observe throughout the state. These programs provide growers with valuable information to better assess corn hybrids in Mississippi.

Briefly describe how your target audience benefited from your project's activities.

Selecting the best corn hybrids improves productivity on every acre planted while reducing losses from environmental stress, weeds, diseases, and insect damage. Our efforts greatly enhance knowledge of row crop producers, professional crop consultants, and retail and commercial industry by generating and delivering unbiased information. Using superior genetics identified by our specialists, corn yields achieved in our Corn Hybrid Demonstration trials exceeded the 2021 state average yield by 28 bushels per acre. Thus, these educational activities enhanced corn value by \$107 million in Mississippi. Utilization of improved genetics also often improves product quality, increases production efficiency and reduces input expenses.

Briefly describe how the broader public benefited from your project's activities.

The public benefits from these efforts because agricultural efficiency improves our economy by ensuring our food and other essential supplies are healthy, abundant, affordable, and sustainable for an increasing population.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

Larson, E. J. (2021). *2021 MSU corn hybrid suggestions* [Publication 3694]. Mississippi State University Extension.

Larson, E. J. (2021). *2021 corn hybrid demonstration program results* [Publication 3695]. Mississippi State University Extension.



Feeder Calf Marketing

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Beef cattle producer input from advisory meetings, program evaluations, and personal contacts indicates a need for organized feeder calf marketing efforts statewide. Producers recognize that to improve profitability, marketing programs must capture value-added management.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

MSU Extension Beef Cattle Specialists and Area Livestock Agents, in cooperation with other beef cattle commodity groups, have successfully established a new marketing option for feeder cattle across the state. These board sales have successfully brought together cattle producers and livestock marketers to improve the profitability of multiple sectors of the beef production chain. This type of marketing option is extremely efficient for all the parties involved. One to two annual sales are currently held within Mississippi.

Briefly describe how your target audience benefited from your project's activities.

Since initiation in 2008, 31,329 head of cattle in 437 truckload lots have been marketed in these board sales. Together, the receipts from these sales exceeded \$28 million. If even half of the home-raised calves in Mississippi are marketed in this manner, it would return more than \$12.7 million annually to the cow-calf producers and leave more revenue from these transactions in the state.

Briefly describe how the broader public benefited from your project's activities.

Increased value of calves marketed in Mississippi allows cattle producers more access to funds to invest in communities. Increased investment in local economies serves to strengthen the Mississippi economy.



Implementation of Pinpoint Grazing and Forage Management Practices to Extend Forage Production

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Producers invest considerable amounts of money and time in producing low-quality hay or utilizing improper grazing management practices that, in the long-term, can increase the cost of commodity supplementation and reduce economic return. Forage crops provide 90% of the feed consumed by livestock in Mississippi. There is a lack of diverse forage systems in more livestock farms in the state, impacting animal performance and economic return. However, many livestock producers and Extension agriculture and lack the knowledge needed to apply advanced pasture management strategies.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

To address these issues, MSU Extension provided grazing and research demonstrations to producers with systems that could be used to extend the grazing season. Due to COVID-19, the program was presented through 10 webinars and four competency in-service webinars offered to Extension agriculture agents and USDA-NRCS personnel in basic forage management practices. Data were also disseminated to producers using social media through 36 Facebook live videos. One-on-one farm visits and assessments were also implemented.

Briefly describe how your target audience benefited from your project's activities.

During FY2021, 784 producers participated in the forage management events. Research data collected on cool-season annual grass with legumes can reduce hay supplementation by 85 days and reduce the cost of feeding from \$2.50 per head per day to approximately \$0.80 per head per day. Using the recommended grazing management strategies, producers indicated an increase of 100 lbs of beef gain per animal. Implementation of these programs can represent a savings of approximately \$5.9 million in supplementation due to low-quality hay. Supplementation of summer annual grasses to increase gains in traditional perennial warm-season grasses such as bahiagrass also indicated an increase of 90 pounds of beef per acre that could translate in an extra return of \$5.3 million to the livestock industry.

Briefly describe how the broader public benefited from your project's activities.

The target audience for this project benefited by participating in hands-on demonstrations through the dissemination of information at field days, social media, agent training, and direct technical services. The information also benefited the scientific community by presenting the outcomes of the projects at regional and national meetings. The program also mentored undergraduate students who have become agricultural Extension agents or pursued master's graduate programs.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

Lemus, R., Cox, M., & Rivera, J. D. (2021). Annual ryegrass response to seasonal RyzUp Smartgrass® application. *Journal of the NACAA*, 14(1). <https://t.nacaa.com/journal/index.php?jid=1197>

Lemus, R. & White, J. A. (2021). Performance of cattle grazing stockpiled tall fescue as late fall supplemental grazing in the upper southern USA. *Journal of the NACAA*, 14(1). <https://t.nacaa.com/journal/index.php?jid=1196>

Rushing, B., Lemus, R., Maples, J., Rivera, J. D., & Lyles, J. (2021). Beef cattle feed cost as impacted by hay yield and quality. *Agronomy Journal*, 113(5), 4085-4098. <https://doi.org/10.1002/agj2.20806>

White, J. A., Lemus, R., & Varco, J. (2021). The recovery of 15N in the aerial biomass of alfalfa-bahiagrass mixtures. *Crop, Forage & Turfgrass Management*, 7(1), e20104. <https://doi.org/10.1002/cft2.20104>



MSU Extension Equine Assisted Therapy Program Veterans Horsemanship Program

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Many veterans experience readjustment issues when returning to civilian life after being deployed or serving in the military. Veterans often find themselves having difficulty making connections with civilians, friends, and family after their service time is complete, frequently due to PTSD, depression, or anxiety symptoms. Their lack of trust and connection can lead to a profound sense of isolation and despondency.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

The MSU Extension Veterans Horsemanship Program was developed to offer hope and encouragement to veterans through activities with horses that promote physical, cognitive, social, and emotional growth. During FY2021, there were a total of 18 veteran participants. Programming is offered in the spring, summer, and fall in 6- to 10-week blocks. Veterans come once a week for their class that lasts approximately two hours. Classes are structured to foster a bond between the horse and veteran that is based on mutual trust and respect, facilitating the beginning of healing for the veteran.

Briefly describe how your target audience benefited from your project's activities.

After completing the Horsemanship Program, veterans reported feeling more hopeful, less angry, less isolated, reduced negative thoughts, and more patience with themselves and others. Using self-report assessments, veterans, on average, reported experiencing a 40-50% decrease in their symptoms of anxiety and depression and a 50% reduction in their PTSD symptoms after participation in the horsemanship program. One veteran reported, "If y'all have ever wondered if you're making a positive impact, you need to know that I worked all last night at the police department and could only sleep about an hour or so today because I was so excited to get here and ride my horse." Another veteran in law enforcement stated that his wife insisted that he come and ride his horse every week because it has such a positive impact on him.

Briefly describe how the broader public benefited from your project's activities.

Reduced depression and anxiety as well as increased social connectedness leads to improved relationships with veterans' family and friends, integration in their communities, and support for other individuals who have served or will serve in the military. Improved physical, cognitive, social, and emotional health and well-being can ease the demand for services.



In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Horticulture information is the most common request for county Extension offices. Agents have difficulty meeting these requests, so they seek assistance from Master Gardener Volunteers (MGVs). These volunteers must first be trained on horticulture issues.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

MGVs are trained by MSU Extension specialists on numerous home gardening topics. MGVs use this knowledge to provide horticultural education in local communities, which helps Extension agents meet the home horticulture needs of the community.

Briefly describe how your target audience benefited from your project's activities.

In 2021, through the new online MGVs training, 215 participants completed the online course to begin the process of becoming a certified MGV. They increased their science-based horticulture knowledge and skills.

Briefly describe how the broader public benefited from your project's activities.

In 2021, 751 MGs volunteered 19,250 times for 53,250 hours, reaching 55,300 Mississippians. They drove over 293,000 miles to make these contacts. They provided home horticulture educational opportunities to assist the local county Extension office and agents throughout the state. MGV efforts equaled a value of \$1,354,174.00.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

Yow, Z., Denny, M. D., Wilson, J., & Downey, L. (2021). Determining Master Gardener Volunteer management competencies for Extension agents. *Journal of the NACAA*, 14(1). <https://www.nacaa.com/journal/index.php?jid=1180>.



In 2-3 sentences, briefly describe the issue or problem that your project addresses.

The National Park Service (NPS) Rivers, Trails, and Conservation Assistance Program contacted MSU Extension for design assistance for community planning in Marks, Mississippi (Quitman County). Quitman County is one of the poorest counties in the nation, and more than one-third of all Quitman County residents are below the poverty level. MSU Extension and other faculty met with NPS personnel and Marks community leaders to explore developing a series of planning alternatives that the community can use for long-term planning and green infrastructure.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

MSU Extension and the Department of Landscape Architecture developed a service-learning project for a student course (LA 4514) to explore planning alternatives for gateway entries to the community. In a four-week project, students met with community leaders via ZOOM (due to COVID-19 restrictions) and traveled independently to conduct a site inventory and analysis. Students completed and presented design alternatives for the gateway entries to community leaders in May 2021.

Briefly describe how your target audience benefited from your project's activities.

The planning proposals generated by students resulted in a grant written by Quitman County administrators and successfully awarded by the Mississippi Department of Transportation. Two additional student service projects were conducted, presented, and accepted for Marks planning efforts, including a master plan for Marks Park (LA 8000 May 2021) and a community grocery store (LA 4000 August 2021).

Briefly describe how the broader public benefited from your project's activities.

Graduate and undergraduate students benefited from conducting service work in an underserved, predominantly minority community to provide solutions that will attract additional tourism and community pride.



Mississippi Soybean Demonstration Program

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Mississippi's soybean producers are faced with many challenges each growing season. Many of these challenges affect Mississippi's soybean producer's ability to improve yields and ultimately profitability each year.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

The MSU Extension Mississippi (MS) Soybean Demo Program was created to serve as a resource to demonstrate new and/or improved practices that may allow for yield improvement, profitability, and sustainability. Demonstration activities implemented through the MS Soybean Demo Program include soybean variety selection, fertility challenges, pest management strategies, irrigation fundamentals, among several others. Through this program, long-term data are collected and used to determine specific management recommendations for sustaining or improving yield and profits for Mississippi soybean producers.

Briefly describe how your target audience benefited from your project's activities.

Since the program's inception, over 220 demonstrations with more than 45 participating producers have been conducted across MS. Based on 2021 data, the economic impact of selecting a top-performing variety and implementing fungicides to protect yield potential would result in a profit of \$168.86 and \$49.43 per acre, respectively. If all MS soybean producers adopted best management practices as demonstrated in 2021, the potential exists to increase the value of soybean production by over \$370 million.

Briefly describe how the broader public benefited from your project's activities.

Improved yield and profits for Mississippi soybean producers enhances Mississippi's economy and the agriculture industry.



Poultry Biosecurity

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Many backyard poultry enthusiasts across Mississippi are unaware of how to manage poultry flocks properly. From the beginning phases of starting flocks, such as choosing birds and basic production, to more challenging areas such as the importance of biosecurity and disease prevention. All of this aids in protecting their flocks as well as the commercial poultry industry in Mississippi. Successful adoption of proper management, production, and biosecurity practices can protect backyard flocks and Mississippi's commercial industry. However, there are limited opportunities for backyard poultry keepers to learn the proper information pertaining to these subjects.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

A series of workshops were developed by MSU Extension to educate backyard poultry keepers on the basics of poultry production, how to choose the right flock for your needs, biosecurity, and disease prevention. The program was first offered in Hattiesburg in collaboration with the MSU Coastal Research and Extension Center in August 2019. Since then, the program has been offered in Verona in collaboration with the North MS Research and Extension Center and in individual county offices based on the needs of individual county agents and their clientele.

Briefly describe how your target audience benefited from your project's activities.

Based on a survey conducted after the workshop, participants became aware of how to spot disease symptoms in their flocks, the ability of the diagnostic lab to conduct necropsies and determine the cause of death in birds, biosecurity practices to follow to protect their flocks, how easily diseases can be transported from one location to another, and who to contact for assistance with sick birds. Participants now understand the main paths of disease transmission and risky practices that can threaten their flocks. They also understand how to search the Extension Service website for poultry-related articles and how to contact poultry Extension specialists on campus if they need assistance. Due to COVID-19 restrictions, this program was not implemented to its fullest capacity. However, a biosecurity seminar was given in Franklin County with 20 participants in attendance as well as two extension agents, who were given the resources to be able to implement this program with other individuals. The basic production and choosing a flock were also implemented in Lowndes County and Forest County, with approximately 30 participants in attendance. All of these participants reported they have successfully started backyard flocks since this talk.

Briefly describe how the broader public benefited from your project's activities.

Participants know how to report sick birds and are aware of the roles of the Mississippi Board of Animal Health, the Mississippi Veterinary Research and Diagnostic Lab, the Mississippi State University Poultry Science Department, and their local county agent play in keeping all the chickens in Mississippi (both backyard and commercial birds) safe. This contributes to the success and sustainability of the poultry industry in Mississippi.



Sustainable Home Lawn Management Program

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Home lawns account for approximately 300,000 acres of turf in Mississippi. Benefits of turf are well documented and include recreational health, erosion control, increased water infiltration, reduced nutrient leaching, aesthetics, carbon sequestration, and mediation of the heat-island effect. Yet, the ecological impact of turf is often questioned, due in part to nutrient and water requirements and its often-unsustainable monoculture cultivation. Turfgrass managers must follow best management practices that minimize their environmental impact.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

MSU Extension's Sustainable Home Lawn Management educational program targets homeowners and lawn maintainers through agent-deliverable programming, specialist-delivered educational events, and online coursework. This program has grown to include a USDA-NIFA funded RefugeLawn project that seeks to include forage and nesting sites for pollinators within sustainably managed home lawns. The Sustainable Home Lawn Management Program was delivered to more than 300 professional audience members and approximately 50 homeowners during 2021.

Briefly describe how your target audience benefited from your project's activities.

Homeowners increased their understanding of suitable turf types for Mississippi lawns, for shaded lawns, and for lawns with soil pH that is above or below optimal. They learned how to interpret soil reports and translate that into fertility recommendations for their lawns and how to apply those materials safely and sustainably. They learned about sustainable and responsible cultural practices and pest management. The least understood concept was spreader and sprayer calibration. Participants, on average, had only a poor understanding of this topic prior to attendance and reported that their understanding had increased to fair following attendance. All respondents agreed that they would decrease irrigation water use – a major component of sustainable turfgrass culture. And all agreed they would adjust mowing heights to sustain their lawn better.

Briefly describe how the broader public benefited from your project's activities.

Homeowner participants account for an estimated 50 acres of the total turf within Mississippi, yet the professional attendees at various events account for an estimated 6,000 to 12,000 acres in the state (based upon the conservative figure that each professional manages at least 20 to 40 acres). The economic benefit across 6,000 acres, assuming a conservative \$50 to \$249/acre benefit, amounts to at least \$300,000 and perhaps several million dollars to benefit the state's economy.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

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Tucker, M. A., Bronzato-Badial, A., King, J., McCurdy, J. D., Vines, P., & Tomaso-Peterson, M. (2021). Identification, frequency of occurrence, and inoculum density of select ectotrophic root-infecting fungi within ultradwarf hybrid bermudagrass greens in Mississippi. *International Turfgrass Society Research Journal*. <https://doi.org/10.1002/its2.104>

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Sweet Potato CleanSEED Project

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Sweet potato seeds are storage roots that are stored through the winter in a controlled environment, then bedded in the spring to produce slips. These slips are cut for use in commercial sweet potato production. If a grower continues the cycle of saving storage roots for seed over several years (generations), the planting stock can become infected with viruses that reduce yield and quality. Even though viruses in planting material can reduce yields by 25-40%, many growers have not adopted the use of clean foundation seed (CFS) in their farming operations.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

The Pontotoc Ridge-Flatwoods Branch Experiment Station of Mississippi State University operates one of the United States' six Clean Plant Centers for sweet potato. It provides the state's industry with virus-tested and true-to-type G0 planting material. In addition, we are the lead institution for the national CleanSEED Project to ensure the sustainability of U.S. sweet potato seed programs.

Briefly describe how your target audience benefited from your project's activities.

More than 10,000 clean plants were provided by the Mississippi sweet potato clean foundation seed program at the Pontotoc Branch to growers with greenhouse capacity in February 2021. In May of 2021, an additional 32,000 slips were sold to a certified grower for field plantings. An estimated 180 acres of clean seed was produced, which yielded approximately 90,000 bushels of G1 seed. This G1 seed will be stored in climate-controlled conditions and bedded the next spring, resulting in G1 slips transitioning to G2 slips. In 2022, 2.25 million bushels are predicted to be harvested from the G2 slips, grossing \$56.5 million.

Briefly describe how the broader public benefited from your project's activities.

A CleanSEED National Stakeholder Survey was conducted, and a 2-day grant planning workshop was held on July 20-21, 2021, in Starkville, MS, to identify top priority issues of the U.S. sweet potato industry. These activities reached industry stakeholders across AR, CA, HI, LA, MS, NC, and SC. Attendees included grower/packer/shippers, processors, and certified seed producers to ensure input was provided from all aspects of the commercial industry. In addition, university (research and Extension) and federal/state agencies participated in the grant planning process. Areas of specialty included plant breeding, virology/pathology, pest management, sociology, communications, economics, along with the governing directors of crop improvement associations from states that currently have a seed certification program. In addition, all six of the National Clean Plant Network-Sweetpotato Centers were represented. The goals and objectives of a multi-state, transdisciplinary proposal were identified and refined during the 2-day grant planning workshop.

Critical Issue

Growing vibrant, successful, and sustainable Mississippi communities and businesses

Community Needs Achieved Through Community Involvement and Outreach

Project Director

Brenda Robinson

Organization

Alcorn State University

Accession Number

7002009



Community Outreach Achieved to Combat COVID-19

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

The COVID-19 pandemic significantly contributed to modifications in organizations capacity to safely and effectively distribute research-based information and to implement community outreach programs, events, and activities to limited-resource and underserved Mississippians. It is essential that residents gain consensus and unity in addressing common issues and concerns that may adversely affect their communities, such as, the spread of coronavirus.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Alcorn State University Extension Program's Educators in Adams and Claiborne Counties conducted 64 COVID-19 workshops, distributed COVID-19 fact sheets, provided personal protective equipment/items, and distributed food boxes to community residents. ASU Educators collaborated with Mississippi State University Agents and 16 other organizations/businesses in Adams and Claiborne Counties. The workshop topics consisted of: COVID-19, CDC Guidelines, coronavirus preventive measures, protective, hand-washing safety, proper procedures for cleaning cloth masks, and COVID safety in emergency shelter areas. The personal protective items provided during these collaborative outreach efforts consisted of the distribution of masks and hand sanitizers. The distribution of food products to residents included fruits, vegetables, meat boxes, and water. The goals of this program were to increase knowledge, change behavior, and improve condition relative to COVID-19.

Briefly describe how your target audience benefited from your project's activities.

As a result of ASUEP community outreach workshops and activities, a total of 36,449 participants/community residents were served. COVID-19 contributed to the loss of employment and lack of substantial finances for many community residents. The availability of funds for community residents to purchase masks, hand sanitizers, water, fruits, and vegetables were drastically limited. The distribution of masks and hand sanitizers provided safety measures that community members utilized for prevention against COVID-19 infection. The distribution of fruits, vegetables, food boxes (meat) and water provided residents' access to healthy foods without any out-of-pocket cost. Community outreach observation results showed 90% of participants' knowledge increased about COVID-19, 85% of participants' utilized masks and hand sanitizers that demonstrated change in practice for protection against COVID-19, and 80% of participants showed their condition improved through the food distributions which they were unable adequately acquire due to the lack of funds. The collaboration between ASUEP and other organizations provided hardship relief to limited-resource and underserved families in Mississippi communities. In addition, families' accessibility to mask, hand sanitizers, foods and water improved their capacity to save much of their available, on-hand funds. The community outreach goals to increase knowledge, change practice, and change (improve) condition were achieved.

Briefly describe how the broader public benefited from your project's activities.

Community outreach programs, events, and activities benefited the broader public through increased interaction and engagement of residents focused on a common goal. These outreach efforts provided a platform that directly encouraged community residents to become proactive in addressing their community needs during the COVID-19 pandemic, as well as, demonstrating unity in keeping community residents safe.



Needs Assessment Achieved Community Unity

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

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. It is essential that communities identify needs and work toward communal interests through engagement in an environmental scanning process.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

ASUEP conducted three needs assessment meetings in Adams County. The purpose of the meetings were (a) to identify community needs for alignment of Extension's programs with those identified needs and (b) to provide community members research-based information and strategies for community engagement. The target audience consisted of local communities and their leaders, community members interested in improving their communities, community-based organizations, nonprofit organizations, cooperatives, entrepreneurs, and limited-resource individuals and families in Mississippi. Educational programs were developed and/or purchased that addressed community needs. Weekly radio programs (on and off campus) promoted planned state and county-level programs and featured segments on topics relevant to ASUEP's planned program areas. The meetings were implemented to change (increase) knowledge.

Briefly describe how your target audience benefited from your project's activities.

As a result of ASUEP implementation of needs assessment/community profile meetings, 90 participants attended. The implementation of ASUEP's needs assessments and community profile meetings were beneficial in identifying community needs/concerns, the distribution of research-based information, and the provision of a platform to convey Extension's services offered to the general public. Results acquired from observation and questioning session showed 80% of participants' knowledge increased relative to ASUEP and the services it offered. Additionally, 65% of participants indicated that they would apply community engagement strategies that encouraged and recruited others to become more active in the community. The goal to change (increase) knowledge was achieved.

Briefly describe how the broader public benefited from your project's activities.

The broader public benefited from this program because communities and the general public were exposed to the services offered by the Alcorn State University Extension Program. Community residents' were engaged and interacted collaboratively in the identification of issues/concerns relevant to their neighborhoods and other local areas. The broader general public benefited because residents demonstrated the capacity to work together and in unity toward a common goal.

Growing vibrant, successful, and sustainable Mississippi communities and businesses

Project Director

Donna Peterson

Organization

Mississippi State University

Accession Number

7000216



Coastal Cleanup Program

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Litter is an issue that impairs the environment, stormwater infrastructure, tourism, and industry along coastlines.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

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

Briefly describe how your target audience benefited from your project's activities.

In 2021, the program organized or facilitated a total of 32 cleanup events which attracted 1,650 volunteers who contributed 4,950 volunteer hours to remove 7.1 tons of litter from the beaches, waterways, wetlands, and roads of coastal Mississippi. During these events, volunteers collected data on the specific type of litter removed to identify sources and design targeted prevention methods. The value of this volunteer effort exceeds \$142,263.

Briefly describe how the broader public benefited from your project's activities.

As a result of this program, beaches, waterways, wetlands, and roads of coastal Mississippi are cleaner and improve the area's aesthetic.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

Posadas, B., Sparks, E. L., Cunningham, S. R., & Rodolfich, A. E. (2021). Qualitative assessment of the impacts of marine debris on Mississippi commercial shrimping. *Marine Pollution Bulletin*, 166, 112245.

<https://doi.org/10.1016/j.marpolbul.2021.112245>

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Downtown Revitalization

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Mississippi Main Street, the Mississippi Hills and Heritage Area, and MSU Extension Center for Government created the Work Plan Workshop Model. The Model combines economic assessment, market and retail trade analysis, and community planning to create a realistic action plan for the Main Street Organization for the town. The plans are designed to eliminate initiatives with little return for investment and choose actionable objectives that focus on design, economic development, promotion, and organization.

Briefly describe how your target audience benefited from your project's activities.

Mississippi Main Street communities in northeast Mississippi conducted 22 work plan workshops to address the needs of their communities better. Twenty-two new action plans were adopted to guide the community and economic development activities. The communities are currently implementing the steps of their action plans. Results of these activities include new marketing strategies, special events, and business recruitment.

Briefly describe how the broader public benefited from your project's activities.

The project was viewed as extremely successful by the funder of the Hills Heritage Area, and they are continuing to work with both MSU Extension and MS Main Street on revitalization and tourism efforts. The project gained the attention of the Mississippi Development Authority and the Kellogg Foundation. Both have provided funding to work in 18 additional towns and fund a comprehensive study of best practices for community and economic development success.



GEO (Geospatial Education Outreach) Program

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Mississippi has an abundance of natural resources. However, these resources are susceptible to natural and man-made disasters. Proper management of these resources is important in sustaining and improving the quality of life throughout Mississippi. Geospatial data and technologies are critical for the management of these resources, and House Bill 861 (Mississippi Digital Earth Model) was initiated to develop a state-of-the-art, publicly accessible, digital base map for the people of Mississippi. Many state and local government agencies are limited in training opportunities for these enhanced data products.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

To facilitate the adoption and use of Mississippi Digital Earth Model data, MSU's Geospatial Education and Outreach (GEO) Project delivers training in GIS courses and workshops with both commercial and open-source software. The GEO Project assists local and state government agencies in assessing and designing workflow systems for agencies represented in the workshops. Additional activities have led to the development of web-based applications for improved understanding of sea-level rise impacts on infrastructure and applications for data dissemination to improve utilization by the general public.

Briefly describe how your target audience benefited from your project's activities.

The GEO Project transitioned workshops to online and hybrid offerings to adapt to COVID-19 restrictions. In 2021, the GEO Project offered 10 workshops to 103 participants. These workshops improved the geospatial abilities of the professional workforce in numerous state and local government offices, allowing for enhanced assessment and management of various items related to the resources they manage. The GEO Project provided situational-specific training to state and local government agencies and saved approximately \$170,000 in workforce development by offering no-cost workshops.

Briefly describe how the broader public benefited from your project's activities.

Local and state agencies apply the skills obtained from the workshops and technology support/outreach to manage their resources more effectively. A tax assessor might use GIS skills to improve the mapping of parcels and tax rolls for their county. Agents with the Department of Marine Resources can use GIS skills to look at the spatial variations of water quality to close public beaches or fisheries to ensure public health. Building these skills in our local and state government offices improves the quality of life for residents in the communities they serve.



How to Implement Agricultural and Community-Based Recycling

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

The City of Starkville Board of Aldermen created an ad-hoc committee to evaluate recycling efforts in the city in early 2019. The committee's work culminated in recommendations submitted to the Board of Aldermen on November 19, 2019. The City of Starkville faced many challenges during the pandemic in 2020, including the unfortunate need to furlough some employees. Curbside recycling pick-up was suspended in March as a cost-saving measure during the initial peak of the pandemic, and the curbside program was suspended entirely on October 1 due to ongoing budgetary constraints stemming from the pandemic.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

After the suspension of the curbside recycling program, MSU Extension worked with several members of the ad-hoc recycling committee to make recommendations to the Board of Aldermen on how to best establish a drop-off site for select recyclable materials. MSU Extension also helped write a grant application for the City to apply for Solid Waste Assistance Grant funds from the Mississippi Department of Environmental Quality (MDEQ) to help support and advance the City's recycling program.

Briefly describe how your target audience benefited from your project's activities.

The Board of Aldermen voted on December 15, 2020, to enter into a contract with Waste Pro to service the drop-off recycling site. After contract negotiations and site preparation during January and February, the site was open for customers on March 8, 2021, and it accepts mixed paper, aluminum and steel, and cardboard. MDEQ awarded the City \$25,000 in grant funds to improve the City's recycling education and data collection efforts. Citizens in Starkville and the surrounding area continue to benefit from the drop-off recycling site.

Briefly describe how the broader public benefited from your project's activities.

The recycling site is not restricted to only Starkville residents, so citizens from surrounding communities can also drop off their recyclables. Increases in recycling reduce the amount of material going to the local landfill, thereby extending the landfill's lifespan. Recycling also supports the local economy by generating jobs and providing feedstock to produce consumer goods. According to the Southeast Recycling Development Council, 11 manufacturers in Mississippi rely on recycled material.



Mississippi Assessor Education and Certification Program

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Mississippi Code 27-3-52 requires counties to have certified appraisal staff conduct mass appraisals for ad-valorem taxes. Ad-valorem taxes are needed for local government to provide essential services to citizens, like infrastructure, education, and safety. As such, 495 individuals are required to maintain their certification through annual recertification. As a result of COVID-19, an online option was needed.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

The MSU Extension Center for Government and Community Development developed an online self-paced course that allowed individuals to obtain the required contact hours needed for recertification. Over 14 hours of educational content was developed and hosted.

Briefly describe how your target audience benefited from your project's activities.

In 2021, 474 individuals completed the recertification requirement using the online course and maintained their certification.

Briefly describe how the broader public benefited from your project's activities.

The public is served by individuals who constantly refresh their skills and abilities to perform their job. Services for citizens are improved through more efficient practices, saving taxpayers time and money.



Mississippi Certified Municipal Clerk Program

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

For forty years, the Certification Training Program for Municipal Clerks, Deputy Municipal Clerks, and Tax Collectors has offered these municipal officials an opportunity to achieve both state and national certification in their positions. Mississippi State University has developed a strong relationship with the municipalities. In 2021, Mississippi municipalities held elections. This new term resulted in a large turnover of municipal clerks and the need for training for new clerks.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

The MSU Extension Mississippi Certified Municipal Clerk Program is presented over a three-year period with two, two and one-half day sessions each year (a session in the Spring and Fall). For convenience and accessibility, each of the two annual sessions is presented in three locations: north Mississippi, central Mississippi, and southern Mississippi. The certification program is present in all 299 Mississippi municipalities and is designed to allow entry at any of the sessions during the year. Training and education were provided for 80 first-time municipal clerks.

Briefly describe how your target audience benefited from your project's activities.

New clerks established a relationship with the Center for Government and Community Development, which gives them direct contact for technical assistance and education. Training provided to clerks empowered them to continue to serve their local communities.

Briefly describe how the broader public benefited from your project's activities.

The public benefits from these activities by having educated individuals serving in official roles within their local community. Reduced knowledge gaps between municipal clerks and oversight agencies leads to improved services for citizens through more efficient practices, saving taxpayers time and money.



Mississippi Economic Profiles

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Community leaders must continually seek innovative solutions to address economic/social issues. Solutions should be data-driven, but the overwhelming quantity and inaccessibility of available data are beyond the comprehension of most community leaders, both urban and rural. Complicated sites to access available data, combined with high subscription rates for proprietary data, leave many community leaders with an incomplete or incorrect idea of their community's position. These leaders must make decisions based on incomplete or incorrect information, and the resulting consequences are often detrimental to the community.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

MSU Extension developed a set of ten easily understood pdf-based economic profiles (and accompanying presentation materials) based on various political geographies to assist community leaders in understanding the current situation and historical trends. Specific economic/demographic topics are addressed, and detailed data keys are provided to assist in topic understanding. Profiles are developed annually or monthly and distributed to over 1,100 community leaders, economic developers, elected officials, and government agencies regularly, not including the state's Extension professionals.

Briefly describe how your target audience benefited from your project's activities.

Targeted group feedback indicates that these educational publications have increased stakeholder knowledge regarding their communities' economic/social situation. In addition, many communities have accessed Extension knowledge and resources for further knowledge regarding specific issues for which they have no expertise, including fiscal, economic impact, and competitiveness analyses.

Briefly describe how the broader public benefited from your project's activities.

Feedback indicates that this knowledge has enabled programs or strategies to be implemented and that better, more knowledgeable decision making has improved quality of life, economic development efforts, and improved community amenities. Examples include better-informed comprehensive plans, higher success in grant applications, and the proposition of special levies to fund specific community projects.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

Barefield, D. A., & Durr, E. V. (2021). *City/town retail analysis (2021)* [Publication P2945-1 through P2945-306]. Mississippi State University Extension Service.

Barefield, D. A., Durr, E. V., & Nathan, A. R. (2021). *County retail profile (2021)* [Publication P2943-1 through P2943-91]. Mississippi State University Extension Service.

Barefield, D. A., Durr, E. V., Nathan, A. R., Webb, T. A., Davletova, Z., & Sims, W. A. (2021). *City sales as indicated by sales tax (2021 - monthly publication)* [Publication 3480-1 through 3480-383]. Mississippi State University Extension Service.

Barefield, D. A., Durr, E. V., & Webb, T. A. (2021). *City/town retail sales profile (2021)* [Publication P2944-1 through P2944-306]. Mississippi State University Extension Service.

Barefield, D. A., Locke, B. S., & Sims, W. A. (2021). *Veterans Affairs spending (2021)* [Publication P3377-1 through 3377-91]. Mississippi State University Extension Service.

Barefield, D. A., & Nathan, A. R. (2021). *County health economics profile (2021)* [Publication P2978-1 through P2978-91]. Mississippi State University Extension Service.

Barefield, D. A., Nathan, A. R., Durr, E. V., & Webb, T. A. (2021). *County economic profile (2021)* [Publication P2977-1 through P2977-91]. Mississippi State University Extension Service.

Barefield, D. A., & Webb, T. A. (2021). *Census populations (2010-2020)* [Publication 3716-1 through Publication 3716-447]. Mississippi State University Extension Service.

Barefield, D. A., & Webb, T. A. (2021). *Poverty and well-being profiles (2021)* [Publication P3267-1 through P3267-91]. Mississippi State University Extension Service.



Northern Gulf of Mexico Sentinel Site Cooperative Advanced Dialogue around Sea-level Rise Resilience

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Sea-level rise (SLR) is a ubiquitous stressor, negatively impacting nearly all aspects of coastal ecosystems and communities. To adequately adapt to these changes, it is vital that coastal stewards of built and natural environments have the tools, products, and services needed to understand and address changing conditions as accurately as possible. These resources come in a variety of formats and levels of accessibility, making it difficult for coastal stewards to find and utilize them.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

A partnership spanning local, state, regional, and federal agencies, organizations, non-profits, and researchers worked together to support the transition and translation of SLR information into coastal decision-making. The MSU-supported Northern Gulf of Mexico Sentinel Site Cooperative (Cooperative) conducted trainings, developed Extension and outreach products, conducted research projects, and successfully obtained funding to fill SLR needs and gaps.

Briefly describe how your target audience benefited from your project's activities.

The Cooperative increased accurate consideration of SLR among Gulf municipal, state, and federal entities for planning, restoration, and infrastructure investments. An illustrative example is when the Jackson County Utility Authority used the Cooperative developed risk-tolerance approach to determine their plan for six feet of SLR in an upcoming critical infrastructure project. They would have considered much less SLR without this approach, which was built on the years of work from the Cooperative.

Briefly describe how the broader public benefited from your project's activities.

Resources from this program can be used to communicate the risks associated with sea-level rise to the local community and to make decisions on improving resilience in the area.



Public Water Rate Studies

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Officials and governing boards of public water/wastewater utilities are facing increased financial and operational challenges regarding the provision of these fundamental services to local residents. Rapidly increasing input prices, shrinking opportunities for funding (including both grants and loans), and the use of outdated ideas regarding pricing structures for these services have combined to place many utilities in precarious financial positions. In addition, many technical service providers utilize blatantly simple analysis tools designed to provide quick analyses with little thought of forecasting accuracy.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

MSU Extension developed a spreadsheet-based tool that utilities can use to identify appropriate pricing structures and develop informed strategies to strengthen their financial positions. This tool utilizes the rich set of data contained in the utility's billing system to develop statistically superior forecasts of revenues designed to assist utility management in determining the optimal method to cover operational and capital improvement costs. MSU Extension provides analysis assistance as needed and provides guidance designed to enable a utility to derive a workable solution in specific situations.

Briefly describe how your target audience benefited from your project's activities.

Five studies (tools) encompassing eight utilities were developed in FY2021. These utilities served an estimated 18,905 households/businesses with a population of 46,703 residents. Client feedback indicates that knowledge regarding effective pricing was improved and that the tool provided valuable assistance in developing adequate rate structures. In addition, MSU Extension's assistance facilitated the examination and assessment of rate structures on an annual basis to assess their adequacy in covering costs.

Briefly describe how the broader public benefited from your project's activities.

The information provided impacted the health of these residents by enabling informed decisions that will maintain/improve the quality of water/wastewater services and their finances by providing information regarding the establishment of utility rates.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

Barefield, D. A., Coatney, K. T., Nathan, A. R., & Durr, E. V. (2021). *Mississippi survey of drinking water/wastewater systems characteristics and rate structures* [Publication 2803]. Mississippi State University Extension Service. Submitted.

Barefield, D. A., Nathan, A. R., & Coatney, K. T. (2021). *Water utility compensation and employee/contractor retention survey results* [Publication 3692]. Mississippi State University Extension Service. Submitted.

Critical Issue

Improving the lives of youth through positive 4-H youth development to build Mississippi's future

Preparing Youth Through Positive Youth Development is Essential to Improving Lives for Successful Futures

Project Director

Brenda Robinson

Organization

Alcorn State University

Accession Number

7000399



4-H Adults Volunteers Recruit, Organize, and Manage

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

A caring adult volunteer is the backbone of any youth development program. The core of ASUEP is the adult volunteer leaders. Adult volunteer leaders are needed to recruit 4-H club members, manage school and community-based clubs, which inevitably, contributes to 4-Hers personal, social, and mental growth.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

4-H Youth Educators conducted 8 programs, events, and activities to recruit and train 4-H volunteer leaders. The volunteer leaders' role consisted of recruitment of youth, as well as, organization and maintenance of school/community-based clubs. The goal of the programs, events, and activities was to change knowledge (increase volunteer leaders' knowledge in effective student recruitment, organization processes, and maintenance of 4-H clubs). Topics consisted of: Volunteerism, Leadership, Officer Training, Parliamentary Procedures, Public Speaking, Club Recruitment, Development and Maintenance, and Youth Competition and Projects.

Briefly describe how your target audience benefited from your project's activities.

A total of 405 potential volunteers attended the programs, events, and activities implemented by ASUEP. As a result, 20 volunteers assumed responsibility and prepared 4-Hers for local, state, and district competitions, 10 volunteers attended a state-wide forum that strengthened and expanded their leadership skills, and 15 school and community-based clubs were organized and maintained totaling 500 members. Training sessions strengthened volunteers' leadership competencies and abilities. One volunteer hour in Mississippi is worth \$25.43/per hour. Volunteers serving ASUEP contributed approximately 1,525 hours for a total economic value of \$38,780.

Briefly describe how the broader public benefited from your project's activities.

The broader public benefitted due to the dedication of adult volunteer leaders assistance in guiding youth to be effective leaders, public speakers, competitive in local, state, and district competitions, and to become members in school-based and community clubs. Additionally, adult volunteer leaders teach youth values and ethical standards which demonstrates appropriate behaviors in today's society.



ASU 4-H Encourages Youth to Pursue STEM Careers

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Science, Technology, Engineering, and Math (STEM) are the wave of the future. Experts with the Pew Research Center credit technological innovation with almost half of United State economic growth over the past 50 years. The 4-H Science program mandates Extension to use math and science related activities to challenge young minds and encourage youth to pursue occupations in science and technology.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

The 4-H Specialist and Educators conducted two (2) four-day Science, Engineering, and Technology (SET) camps for elementary, middle, and high school students. Emerging technologies were the primary focus of the camp. Participants experimented with unmanned aerial systems platforms (UAS&P), robots, animal health and safety, farm and environmental safety, rockets and Biofuels. Additional activities conducted in 2021 included Six (6) National 4-H STEM Challenges entitled "Galactic Quest". The "Galactic Quest" explored the history of humans in space, the technology and resources needed for missions, and the obstacles humans encounter in orbit. The challenge allowed youth to develop inquiry, observational, and problem-solving skills while they made discoveries, as well as, developed their STEM identities. The goals of the science, engineering, and technology camp were to increase knowledge and improve skills.

Briefly describe how your target audience benefited from your project's activities.

As a result of 895 youth participating in 4-H STEM activities, 75% of the participants had a new interest in STEM fields and careers. Fifty- five percent of participants were less intimidated by science and technology and eagerly engaged in other events and activities. A week-long 4-H Science program at most major universities costs approximately \$550 per camper. The 895-youth participating in ASU's 4-H Science events and activities saved a shared total of \$45,600.

Briefly describe how the broader public benefited from your project's activities.

The broader public benefited because youth who participated in this program's activities saved \$45,600 for the 4-day event. Youth exposure and experimentation with aerial systems platforms, robotics, Biofuels, as well as, technology and resources needed for space orbit missions benefits the broader public because of the assurance that STEM careers/employment opportunities are widely pursued and competitive globally.



Job Readiness Skills Achieved for Youth Entering Workforce

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Most young people in Mississippi leave high school without sufficient job readiness skills to successfully transition from school to work. They usually don't understand/know about career opportunities and are unprepared for college or trade school. To successfully navigate youth transition from school to work, educational training is necessary to assist students develop job readiness skills, seek workforce opportunities, and to prevent communities from losing future workers, community leaders, and economic resources.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Alcorn State University Extension Program's Specialist and Educators conducted 32 workshops utilizing the career/workforce development program at schools statewide. Subject matter included job search, manual and online job applications, resume writing, appropriate workplace apparel, and interview techniques. The Working-Class curriculum was used for content delivery. Activities appealed to students' diverse learning styles. More than 7,467 direct and indirect contacts were made within this program.

Briefly describe how your target audience benefited from your project's activities.

A total of 7,467 participants attended the career/workforce development program implemented by ASUEP. Pre and posttest surveys were administered to participants. The survey instruments time for completion was 15 minutes. Survey results indicated that 57% of participants understood delivered content; 52% stated they intended to set realistic future career goals; and 77% agreed to use knowledge gained to identify/explore current employment opportunities, make informed decisions, and utilize job readiness skills to seek and secure a job.

Briefly describe how the broader public benefited from your project's activities.

The preparation of youth to gain job readiness skills to compete for employment opportunities is essentially beneficial to the broader public and boosts the economy. This program ensures that the workers are trained, equipped, and ready to enter the workforce. The substantial number of public jobs require fulfillment by individuals who can gain employment by educational background, training, and skills relevant to position. The broader public benefits overall by having a large, competent, skilled workforce population that generates substantial growth in the economy for many, many years.



Leadership Development Prepared Youth for Leadership Roles

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Youth must acquire leadership skills to compete for leadership roles in their schools and communities. These skills are essential for them to be able to become effective leaders. Additionally, youth need to acquire skills in team building, problem solving, and decision-making.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

The Alcorn State University Extension 4-H Program Staff implemented eight (8) virtual Leadership Development programs with Career and Technical Education (CTE) Programs. The workshops were delivered through one in-person and seven (7) online sessions. The goals of the Leadership Development program were to increase knowledge and improve skills needed to become effective leaders to secure leadership roles in their clubs, schools, and communities. The topics presented in first session consisted of: (a) understanding leadership, (b) types of leadership styles, (c) developing leaders, and (d) team building skills. The second session topics consisted of: (a) effective communication, (b) decision-making, and (c) listening skills.

Briefly describe how your target audience benefited from your project's activities.

A total of 6,393 youth participated and benefited from Alcorn State University Extension Program's programs, events, and activities implemented in Leadership Development. Based on the post-test results, 48% of the youth participating in the program learned essential characteristics required to become an effective leader; 49% understood the concept of verbal and nonverbal communication; 47% reported that they could use the decision-making process to make important decisions; 48%

felt that the team building skills they obtained would help them work better on teams; and 49% understood the definition of leadership and could differentiate between three types of leadership styles. The post-test instrument time for completion was 15 minutes. Additional post-test results showed 59% of students gained knowledge and understood leadership concepts and styles, and, 46% and 49%, respectively, developed and utilized decision-making and team-building skills that enhanced their leadership processes and practices. The objectives of this programmatic area were achieved.

Briefly describe how the broader public benefited from your project's activities.

The broader public benefited from this program through youth acquisition of skills that enhanced their ability to lead others effectively. Youth demonstrated effective communication skills for engagement and interaction with diverse audiences. The acquisition of sound decision-making skills benefited youth to evaluate and develop solutions that are needed to be effective leaders and productive citizen in their schools, communities, other organizations.



Youth Acquired Healthier Eating Habits and Food Preparation Skills

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Young people in Mississippi, like most youth nationwide, do not consume adequate amounts of healthy foods. Often youth are forced to eat whatever is available because working parents may be too busy to prepare healthy meals. Youth need to be educated on healthier eating habits and to develop food preparation skills to obtain control of the foods they consume.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Alcorn State University Extension Program's 4-H Youth Specialist, 4-H Youth Health Ambassadors, and volunteer leaders conducted nine three-day online youth cooking camps, 91 online Nutrition Health and Wellness educational programs and activities, and, 12 Physical Fitness activities. Two-thousand six hundred educational packets were distributed through the Grab and Go Feeding Program at local schools. The cooking classes were premier activities for the 4-H Health and Wellness education workshops, events, and activities. Activities were conducted in Central, Southwest and Northern Mississippi counties. Youth learned the importance of (1) eating more fruits and vegetables; (2) drinking more water; (3) choosing healthier snacks; (4) eating breakfast; (5) preparing healthy meals on a budget; and, (6) using food-safety principles to prepare and preserve foods. The goals of the Health and Wellness Program were to change (increase) knowledge and change behavior through utilization of healthier eating practices and engagement in physical fitness activities.

Briefly describe how your target audience benefited from your project's activities.

A total of 31,437 youth and families participated in online cooking classes, virtual workshops, events, and activities implemented by ASUEP. Participants retained knowledge and developed skills to prepare healthy, balanced meals. As a result, 88% of participants agreed to eat more fruits and vegetables; 82% vowed to drink more water and fewer sugary beverages; 79% said they would prepare and choose healthier snacks over calorie latent ones; and over 89% reported preparing meals at least 4 days per week for themselves and their families after attending the classes. Participants saved approximately \$350 each, resulting in a \$500,650 economic impact for Mississippi and limited-income families. Participants' knowledge retention and assertions to demonstrate healthy eating practices showed knowledge and behavior change.

Briefly describe how the broader public benefited from your project's activities.

Individuals acquisition of knowledge, healthy eating practices, and physical exercise generates positive outcomes for the broader public. The broader public benefited because this program produces self-consciousness of individuals on healthy foods, healthier eating practices, and daily physical activities. Individuals adaption of healthy eating practices and exercise benefits the broader public in the prevention of chronic diseases that can be detrimental in today's society.



Youth Learn about Risky Behavior Prevention

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

More than 160,000 children miss school every day because they fear being attacked by their peers. Statistics reveal that 56% of a school's population has personally witnessed some type of bullying incident. Seventy-one percent (71%) of students in a research study perceived bullying as a major problem at school. Anti-bullying programs can decrease bullying incidents and subsequent suicides.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Twelve (12) virtual cyber bullying programs, events, and activities were conducted by 4-H Youth Development Educators. The goals and objectives of this program were to change (increase) knowledge and change behavior. Activities were held at local schools, community centers, churches, and on ASU's campus. Workshop topics included: Recognizing Bullying Personality Traits, Reasons for Bullying Behavior, Cyber bullying, Reporting Bullying Incidents, and Internet Safety. In addition, six (6) virtual alcohol and substance abuse activities, two (2) workshops on preventing teenage pregnancy, two (2) sexually transmitted infections (STIs) workshops, and a peer-pressure workshop were conducted. These Risky Behavior programs, events, and activities provided significant information and prevention techniques instrumental in changing (increasing) youth knowledge and behavior (practices/skills) to combat bullying, prevent teenage pregnancy, STIs, and to eliminate peer-pressure.

Briefly describe how your target audience benefited from your project's activities.

4-H targets all Mississippians between the ages of 5 and 18 and volunteers. A total of 2,898 youth participated in the Risky Behavior Program. Oral program evaluations revealed 91% of students understood program content. Student-led follow-up activities demonstrated mastered skills to make wise decisions and to think critically in dangerous situations. Eighty-nine (89%) of students demonstrated proper techniques to utilize in the diffusion of bullying incidents and other risky behaviors. Youth adapted practices and developed skills that enhanced their behaviors to avoid and not engage in risky behavior activities. Youth role playing activities demonstrated effective application of practices and skills that improved their skill levels to combat risky behaviors that are detrimental to their social and educational growth.

Briefly describe how the broader public benefited from your project's activities.

The broader public benefited from the Risky Behavior program because of the production of youth who can understand and apply sound decision-making, practices, and skills that generates positive behavior outcomes. Youth application of techniques and methods necessary to avoid detrimental situations (risky behavior) provides the pathway to becoming great citizens and receiving acceptance in today's society.

Improving the lives of youth through positive 4-H youth development to build Mississippi's future

Project Director

Donna Peterson

Organization

Mississippi State University

Accession Number

7000217



College and Career Readiness

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

The U.S. Financial Capability Study consistently finds that Mississippi ranks worst in having unpaid medical bills, lack of rainy day savings, and facing financial instability (46% of individuals with credit cards paid only the minimum during some months in the last year, 49% had no rainy day savings fund, and 22% reported that their household spent more than they earned in the past year) (<http://www.usfinancialcapability.org/>). Further, 19.6% of the population and 30% of children lived in poverty, and 7.4% of the eligible population were unemployed. Impacts of low financial readiness have significant ripple effects on families and communities.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

MSU Extension agents deliver lessons from the Dallas Federal Reserve Banks' *Navigate* curriculum and the Real World budget simulation to meet this issue. Participants are given a scenario with occupation, gross and net income, and family status. Participants visit different tables and choose different spending options across major categories (housing, transportation, entertainment, etc.). If they run out of money, they can get a second job. At one of the stations, they draw from "chance" cards.

Briefly describe how your target audience benefited from your project's activities.

In FY2021, over 162 middle school, high school, community college, and university students across Mississippi participated in the Real World Budget Simulation. Some participants stated they appreciated their new knowledge of budgeting. Many students reported that they planned to use the information from the class to start making better financial decisions. Most (96.91%) participants agreed that participating in the program would help them long-term. When comparing students' confidence from before and after the workshop, there was a 60% increase in students who believe in their ability to be productive adults.

Briefly describe how the broader public benefited from your project's activities.

Research has well established that household financial wellness is a key bridge to a better life, relationships, workplace, community, and economy. It has also been established that financial literacy programs through schools are effective for increasing credit scores, lowering debt delinquency, improving savings to be ready for financial shocks, and preparing for retirement.



Gardens Strengthen Schools and Communities

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Whether focused on fruits and vegetables, native plants, or wildlife, school gardens provide hands-on learning in a variety of subjects, including science, math, social studies, language arts, nutrition, and the environment. A connection to gardening has been shown to improve test scores, behavioral problems, and emotional issues. Moreover, tasting and learning to prepare the food they grow helps kids develop healthy eating habits that will last a lifetime. With childhood obesity and diabetes on the rise, this is more important than ever.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

MSU Extension provided direct technical assistance and training to 28 schools. Twenty-seven teachers received training on establishing and maintaining a school garden. Direct technical assistance was provided to school nutrition personnel. Approximately 4,800 students have been given the opportunity to learn valuable lessons, including mathematics, science, agriculture, and language arts within a school garden setting.

Briefly describe how your target audience benefited from your project's activities.

In 2021, 19% of teachers surveyed reported that they would start a garden at their school, 48% reported that they would implement a garden into their curriculum, and 95% learned how to anticipate challenges in the garden so they can be better managed. All (100%) program participants demonstrated gaining knowledge in the topics presented: identifying stakeholders, designing a school garden, making a budget, identifying horticultural needs, incorporating garden curriculum, garden safety, community involvement, and challenges. Additionally, 4,800 elementary and middle school students were introduced to gardening.

Briefly describe how the broader public benefited from your project's activities.

School gardens provide produce to not only students but also educational and community-building opportunities. School gardens can help alleviate the lack of fresh foods while at the same time serving as an educational platform for nutrition as well as gardening skills.



In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Teens are one of our greatest resources for influencing change that leads to healthier communities; they are our next generation of leaders. The primary objective of the 4-H Jr. Master Wellness Volunteer (JMWW) Program is to provide health promotion aimed at improving health literacy and healthy lifestyle choices. Additionally, the 4-H motto is “learn by doing,” and the JMWW Program creates that opportunity.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

MSU Extension developed the Junior Master Wellness Volunteer (JMWW) Program to provide health promotion information to improve health literacy and healthy lifestyle choices. The curriculum consists of a volunteer component, a social media component, a health messaging component, and a community service component, requiring 24 hours of community service. Additionally, the curriculum is co-authored by experts from the University of Mississippi Medical Center. Extension agents partnered with Career and Technology Centers to disseminate the curriculum, which aligns with the educational standards for CTE education.

Briefly describe how your target audience benefited from your project's activities.

A total of 69 students were trained as Jr. Master Wellness Volunteers in six counties during the FY 2020-2021 school year. The total volunteer hours were reported at 519.50 reaching 6,056 contacts. The value of service hours totals \$11,860 per hourly rate of \$21.23 for Mississippi. This was a very difficult year, and entry back into the schools was not easy. Several health awareness initiatives were led by JMWWs, such as Sun and Safety Awareness for the fire department and public works personnel, Homeless Hygiene Kit Giveaway, and Hinds County StoryWalk. Social media graphics were posted per lesson modules in an effort to bring awareness and knowledge to Facebook and Instagram social media platforms. Teens increased their knowledge of various health topics and improved their life skills and leadership via community service projects.

Briefly describe how the broader public benefited from your project's activities.

Community members increased their health-related awareness and knowledge via the community service projects implemented by 4-H Junior Master Wellness Volunteers.



My Preparedness Initiative (MyPI)

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Children and youth are a remarkably overlooked population group regarding engagement in emergency preparedness education. This runs counterproductive to effective preparedness and resilience. In an era defined by increasing numbers of destructive natural disasters and emergencies, society must provide plentiful opportunities to engage youth in preparedness directly. The problem is that there is little national focus on youth regarding preparedness education. The number of truly engaging and comprehensive disaster preparedness education programs for youth across the country is even smaller.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Seeking to provide a remedy for this problem and to increase awareness, leadership, civic responsibility, community service, teamwork, family communication, and cohesion, among other concepts, and to enhance individual, family, and community preparedness and resilience, MSU Extension has created award-winning programs and partnered with national entities to offer additional programs that directly educate, enable, and empower youth aged 5 to 19 to take an active role in their preparedness, that of their household, and in their communities. One example of this programming is the My Preparedness Initiative (MyPI).

Briefly describe how your target audience benefited from your project's activities.

MyPI utilizes a pre- and post-test based on the national CERT test. It measures knowledge gain and retention. MyPI also utilizes a pre- and post-survey based on national 4-H Common Measures. The surveys measure growth across several themes, including positive choice and communication; connections and contributions; self-esteem; civic engagement; sense of responsibility; and family cohesion. MyPI also measures community impact by the number of graduates and the number of households reached through the capstone emergency preparedness project, PREP+6. During this reporting timeframe, MyPI Mississippi graduated 372 students, which increases preparedness for each student (and their household) by developing emergency supply kits and family communication plans. Graduates showed increased knowledge gain and increases in knowledge comprehension, and increased leadership skills, such as communication, self-esteem, and sense of civic engagement.

Briefly describe how the broader public benefited from your project's activities.

With the successful graduation of 372 students in MyPI, 2,604 households were positively impacted with new or enhanced emergency supply kits and family communication plans. This increases community preparedness and resilience profiles. Additionally, the community benefits from a new generation aware of risks and hazards and from a new generation's civic duty and leadership characteristics.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

Akers, C. R. (2020). MyPI National - Engaging, equipping, and empowering today's teens: Building youth preparedness and leadership through mentorship and outreach. *CERT Responder Magazine*, 12-17.



Poultry Hatch-Out

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Currently, most Americans are two to four generations removed from the farm, as only 2% are involved with agriculture. This verifies the importance of agricultural education to build agricultural literacy and promote the agriculture industry.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

The MSU Extension Hatch-Out program is a week-long program where students observe and take care of hatching chicks. It was designed with curriculum, materials, and how-to guides for teachers to easily implement the program in K-2 classrooms statewide in Mississippi. Teachers are also provided with equipment and hatching eggs at no cost. While this program has been implemented in the past, it was limited in its guides, curriculum, and the number of resources. The curriculum was tested and validated in a hybrid online form in recent years. A face-to-face course was developed to determine its effectiveness as well as to attempt to reach a larger population. These units were implemented with pre- and post-testing and surveys for teachers who implemented the programs.

Briefly describe how your target audience benefited from your project's activities.

The face-to-face program was implemented in 160 classrooms at 25 different schools across Mississippi, reaching a total of 3,607 students. The survey data results from a selection of the teachers and the pre- and post-data collected from 1,607 students demonstrate that the program has been effective in educating K-2 on the poultry industry and its importance to the state. Students showed a significant change in total overall scores from pre-test (LSMEAN=53) to post-test (LSMEAN=83); $p < .0001$. In addition, there was a 100% satisfaction rate among teachers with the overall program. This program demonstrates promising results to aid in agricultural literacy in the state of Mississippi and potential long-term impacts. The hybrid online version of this program was implemented in two additional schools reaching 14 classrooms and approximately 322 students. There was a significant change in the total overall scores of students from pre-test ($M=8.8880$, $SD=1.65693$) to post-test ($M=13.3200$, $SD=2.20191$); $t(124)=-21.275$, $p=0.0001$. As observed in the face-to-face program, this hybrid online version of the program demonstrated effectiveness in students learning information about the poultry industry and poultry production.

Briefly describe how the broader public benefited from your project's activities.

Hatch-Out aids in educating the public and changing some public perceptions of the poultry industry. It could spark interest in future poultry careers.



Sea-Level Rise in the Classroom Curriculum

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Educators express interest in connecting classroom lessons to locally relevant sea-level rise and climate change impacts but often cite uncertainty in data sources, lack of confidence in climate science fundamentals, and minimal available resources as barriers. This gap in education leads to a population of coastal residents that lack a comprehensive understanding of ongoing changes that directly and indirectly impact their well-being.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

A team of MSU Extension subject matter experts and high school science and social studies educators collaborated to pilot- and beta-test a newly developed curriculum, Sea-Level Rise in the Classroom. Stipend-supported educators used the four-module curriculum to enhance teacher and student understanding. The curriculum development team supported educators throughout the classroom, and educators provided student and educator feedback to enhance the curriculum further.

Briefly describe how your target audience benefited from your project's activities.

Thirteen educators were involved in the pilot- and beta-test. Sixty percent of the educators indicated that they were very likely to recommend this curriculum to a friend or colleague. These educators reached 203 students from coastal Mississippi and Alabama. Analysis of beta-test student pre- and post-tests indicated statistically significant improvement in some content areas related to sea-level rise causes and impacts. Evaluation data suggest that educators felt confident in the sea-level rise information and students learned about the impacts and solutions for community resilience by using the curriculum.

Briefly describe how the broader public benefited from your project's activities.

Educators who participated in the classroom testing have continued to apply the curriculum even without fiscal support from the project team. Empowering coastal residents with knowledge and tools to mitigate and adapt to sea-level rise will lead to more resilient communities.



Women and Minorities in STEM

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Rural women and minorities are underrepresented in food, agriculture, natural resources, and human sciences due to lower recruitment and retention rates. Students in rural areas often have inferior academic resources, less exposure to career options, and limited access to experiential learning, science enrichment, and STEM role models. Mississippi has a significant minority population, the fourth largest rural population, and only 21% of state residents achieve baccalaureate degrees. There is a critical need to build a qualified STEM workforce representative of and beneficial for rural women and minorities in Mississippi.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

The Women and Minorities in STEM project provided online and in-person learning opportunities in food, agriculture, natural resources, and human sciences for female and minority high school students. The Science Scholars course hosted in MSU Extension's Canvas platform features 11 learning modules taught by women and/or minority STEM faculty on topics ranging

from animal and dairy science to wildlife and forestry, as well as biomedical engineering and food sciences. Quizzes assess knowledge change, and post-program surveys assess attitude changes. Science Saturday was held on the MSU campus and offered additional in-person learning for females and minorities.

Briefly describe how your target audience benefited from your project's activities.

Twenty-three minority (African American, Hispanic, mixed race, and/or female) high school students participated in Science Scholars in the reporting period. Fourteen minority (African American, Hispanic, Native American, mixed race, and/or female) high school students participated in Science Saturday. Knowledge test scores averaged 86% for Science Scholars course participants, indicating students benefited by increased knowledge in course topics. Student participation in optional, online discussions showed interest was engendered, and career awareness was enhanced. Retrospective surveys of STEM-related attitudes showed the event improved participants' perspectives of college self-efficacy, STEM interest, and STEM careers.

Briefly describe how the broader public benefited from your project's activities.

The online program has been made accessible to parents and youth educators (public school teachers, homeschool parents, and 4-H agents/volunteers), increasing parents' potential to support their students' STEM interests. Furthermore, five parents attended Science Saturday and learned alongside their child.

Critical Issue

Strengthening and sustaining Mississippi families to facilitate healthy outcomes and well-being

Family Well-Being Achieved Through Healthy Eating, Active Parenting, and Financial Stability

Project Director

Brenda Robinson

Organization

Alcorn State University

Accession Number

7002010



Financially Challenged Individuals Achieved Money Smart Skills

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

More than half of Americans report living paycheck-to-paycheck and experiencing financial crisis because of inadequate savings, too much debt, and poor planning. It is essential that people acquire the knowledge, skills, and motivation needed to build financial security. Financial security is the cornerstone of prosperous communities, nurturing neighborhoods, and strong families.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

ASUEP Educators implemented 11 programs and activities in collaboration with organizations in the 15 counties to teach Financial Management skills using the Money Smart Curriculum. Workshops focused on educating and empowering financially challenged individuals as they learned effective financial management techniques that would generate financial stability and place families on a path to financial freedom. The lesson series taught consisted of: financial well-being; budgeting; and parenting. Additionally, participants were assessed using a financial well-being questionnaire to evaluate their current financial well-being. The assessment was conducted as a part of each activity. Assessments allowed participants to see how well their current money situation was in providing their financial security and freedom of choice. The goals of the ASUEP FCS were to change (increase) participants' knowledge and change behavior regarding their personal finance practices (skills).

Briefly describe how your target audience benefited from your project's activities.

A total of 249 participants attended the Money Smart Curriculum workshops presented by ASUEP. As a result of the Money Smart Curriculum implementation, Educators reported all participants scored above the national average of 50. Participants were assessed with a financial well-being questionnaire to evaluate their current financial well-being, financial security, and freedom of choice. The assessment was conducted during each activity. The timeframe for completion of the questionnaire was 15 minutes. Questionnaire results showed that all participants scored above the national average of 50% and 6 groups scored 60% within the high financial well-being range. This indicated that most people in these groups could come up with \$2,000 for an emergency, could always stay on budget, and very few have experienced a credit rejection or are concerned about credit rejection. Fifty percent (50%) of the participants scored very high according to the financial well-being score range (73, 76, 78, and 85). This range indicated that these participants could have high levels of savings or more in liquid savings, could make automated deposits into a savings or retirement account, and they had health insurance. The remaining groups had a medium high financial well-being score range (55, 55, and 67). Participants in this range are assumed to have automated deposits into a savings or retirement account, always pay off credit card debts, and sometimes or often experience food insecurity or hardship. Based on participants' questionnaire results, the goals for this program were achieved.

Briefly describe how the broader public benefited from your project's activities.

The program benefited the broader public to gain financial security through techniques/strategies that leads to overall financial freedom from debt. Budgeting is a benefit for the broader public. People develop a budget to assist them to manage their finances. A budget can be used to review and compare monthly bills with paycheck. Paychecks that is smaller that the monthly bills signify that financial adjustments are necessary and must be made. Budgeting also benefits the broader public to save finances, set aside monies to use as rainy day funds. Additionally, this program helps to guide people toward the proper path for financial freedom. Financial management knowledge and skills are essential to families and the broader public becoming financially stable.



Good Health Achieved Through Nutrition and Physical Activity

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Healthy eating can help lower the risk of chronic disease. Poor nutrition and an unhealthy diet are considered to be risk factors for high blood pressure, diabetes, and cancer.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

ASUEP's Family and Consumer Science Educators conducted 28 educational programs and activities in collaboration with the 15 counties we serve to encourage individuals and families to eat more fruits and vegetables and to engage in 30 minutes of physical activity daily. ASUEP's goal was to educate and empower health challenged individuals to learn and try different, effective health and wellness practices that improved their overall health and well-being. The following series of lessons were taught: fruit and vegetable consumption, physical activity, benefits of eating a diet rich with fruits/vegetables, and getting 30 minutes of physical activity most days. ASUEP's FCS goals for implementation of these programs and activities were to increase knowledge, change behavior (practices), and change condition (overall health).

Briefly describe how your target audience benefited from your project's activities.

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A total of 1,205 people participated in ASUEP Nutrition, Health and Wellness programs and activities. Educators noted that there were only a few local places to buy quality fresh fruits and vegetables. Many of these counties are considered food deserts. Many counties have local small physical fitness centers that are rarely used. A pre and post-test survey was administered to participants. The time allotted for completion of each survey instrument was 15 minutes. Based on the participants post-test results, 60% of participants' gained knowledge on fruits and vegetables, 55% of participants adopted healthier eating practices and incorporated physical exercise into their daily routines, and 45% changed condition (health improved). The goals of this program to change (increase) knowledge, change behavior (practices), and change condition (improve health) were achieved.

Briefly describe how the broader public benefited from your project's activities.

The broader public benefited from this program through the knowledge and practices participants acquired that will generate healthier and more physically fit individuals into the general population. Chronic illnesses, such as, diabetes, high blood pressure, and cancer are detrimental to society as a whole. These illnesses can be preventable through healthier eating practices and daily physical exercise. This benefits the broader public because of potential decreases in deaths relative to chronic illness so that life longevity can be prevalent.



Parenting Skills Achieved Family Well-Being

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Parenting may come naturally for some; others need additional support and guidance to understand child development, to respond appropriately to their child's needs, and to cope with the challenges of parenting. Parents or caregivers need to be educated on the tools and strategies necessary to provide a positive and nurturing home environment where their children will thrive physically, emotionally, and cognitively. Engaging families as active participants in problem-solving and goal setting can help them identify and use their own strengths to address the challenges they face.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Alcorn State University Extension Program's Family and Consumer Science Educators collaborated with organizations in the 15 counties and conducted 27 programs and activities. Parents were trained to use basic life skills practices to enhance their lives and the lives of their families. Educators used the Active Parenting Curriculum that contained a series of six lessons. The Active Parenting Curriculum included: question/answer observations, worksheets, role play, and check-list observations to assess knowledge gained. Educators taught lessons on the following topics: understanding nonverbal messages; making decisions-big and small; managing personal resources; resolving conflicts; and looking to the future. The goals of ACEP's FCS were to change knowledge, change behavior, and change condition as it relates to improving parenting practices to improve parent/child relationships.

Briefly describe how your target audience benefited from your project's activities.

ASUEP implementation of the Active Parenting Program benefited a total of 1,154 participants. Observations and questioning technique were used to evaluate participants. There was 100% participation from all participants in a related activity (role-play). Participants were asked questions and they gave examples on each topic covered. Educators observed that 100% of participants believed that having life skills is an essential part of being able to meet the challenges of everyday life. They relayed that having basic life skills will help them to find new ways to problem solve, understand their actions, take responsibility for their actions, and develop a better sense of self-awareness. Based on observation and questioning technique, 50% of participants knowledge increased, changed behavior (developed skills), and changed condition (enhanced their lives and relationships with family). The goals for this program were achieved.

Briefly describe how the broader public benefited from your project's activities.

Parenting skills are significant in the production and growth of respectable, well-mannered, exceptional children in today's society. Active parent assist children to thrive educationally, socially, and economically. Active parents provide the foundation, guidance, ethical standards, and norms that are acceptable in today's society. Children of active parents excel especially well and positively in grades K-12, college/university, employment sectors, and throughout their lives. The broader public benefited from this program because parents generated the production of citizenry (children) that were honest,

trustworthy, highly educated, and socially acceptable in major positions and leadership roles throughout today's global society. The broader public is also benefited from this program because respectable, well-mannered individuals often easily enters the workforce resulting with growth in the economy.

Strengthening and sustaining Mississippi families to facilitate healthy outcomes and well-being

Project Director

Donna Peterson

Organization

Mississippi State University

Accession Number

7000218



AIM for CHangE

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

According to the Centers for Disease Control and Prevention, more than half of all Americans live with a preventable chronic disease, and many such diseases are related to obesity, poor nutrition, and physical inactivity. Mississippi has the second highest rate of adult obesity in the nation, according to the 2016 Behavioral Risk Factor Surveillance System. Adult obesity in Mississippi has increased dramatically, from 15% in 1990, 23.7% in 2000, and 37.3% in 2020. The obesity rate in MS is expected to increase significantly in the next 20 years (State of Obesity: Better Policies).

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

MSU Extension's AIM for CHangE Program realizes obesity and related health problems can be overwhelming and create barriers, especially at the community level. Communities cannot be sustained by just one person or group working alone. The AIM for CHangE Team aims to bring together diverse people and organizations. Communities of invested stakeholders can make a difference. Through AIM for ChangE, MSU Extension provides technical assistance and training to help communities deal with issues related to accessing healthy foods, nutrition, and physical activity.

Briefly describe how your target audience benefited from your project's activities.

In 2021, AIM for CHangE conducted over 100 projects to improve and enhance communities in Mississippi as it relates to access to healthy foods and physical activity. We conducted six SNAP Benefits trainings for coalitions and communities to educate food pantries in communities served about SNAP Benefits available to their communities as a resource to aid in purchasing healthy foods and moving towards self-sufficiency. We initiated the Healthy Destination Access ride-sharing service that provided transportation to the food pantries in the Delta, which is a major barrier in the Delta and throughout Mississippi, through a partnership with Bolivar County Council on Aging and the Mississippi Department of Transportation.

Briefly describe how the broader public benefited from your project's activities.

In the next year, we will be looking at how we can make this process adaptable for other areas. We partnered with over 40 health and community-based organizations to improve the overall health of populations served.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

Canales, E., Fan, L., Buys, D. R., & Cantave, M. D. (2021). A market basket assessment: Prices and availability of healthy foods across SNAP-authorized food outlets in counties with high obesity rates in Mississippi. *Preventing Chronic Disease, 18*, 210173. <http://dx.doi.org/10.5888/pcd18.210173>

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

There are minimal requirements for Mississippi's early care and education workforce except for Head Start teachers. Research has indicated that the first three years of life have the largest developmental impacts on children and their trajectory throughout their lifespan. The lack of high-quality requirements for the early care and education workforce creates a large disparity for an individual's most vulnerable years of life. The Mississippi State Department of Health requires 15 professional development hours per year; however, very few programs in Mississippi provide these necessary services.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

MSU Extension Family and Consumer Science agents were trained to deliver face-to-face trainings to early care and education providers to increase the knowledge of the early care and education workforce. Since the COVID-19 pandemic, some trainings were offered virtually. The provided training included information and examples of developmentally appropriate practices targeted toward infants/toddlers and preschool-age children.

Briefly describe how your target audience benefited from your project's activities.

From October 2020 to September 2021, 517 early care and education providers received Care to Read training, with MSU Extension agents delivering 1,034 hours of professional development. Participants completed a pre- and post-assessment to measure knowledge gained from the training. Of these participants, 47.4% (n = 245) demonstrated increased knowledge after training.

Briefly describe how the broader public benefited from your project's activities.

High-quality early care and education programs benefit children and families enrolled in these programs by helping close the achievement gap and prepare young children for school and life skills to build stronger communities.

 **MSU Extension Equine Assisted Therapy Program Equine Assisted Alcohol and Drug Recovery Groups**

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Many families struggle with the trauma and burden that the disease of addiction can bring to their homes and relationships. Abuse, domestic violence, anger, resentment, distrust, helplessness, instability, financial insecurity, child abuse and neglect, and division are commonly experienced issues when an addict or alcoholic in the family is untreated. Children living with a parent with a substance use disorder (SUD) have been found to have more difficulties in academic, social, and family functioning. They are also more likely to have higher rates of mental and behavioral disorders and are more likely to develop SUD themselves.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

The MSU Extension Equine Assisted Therapy Programs (EATP) A&D (Alcohol and Drug) Recovery Groups were developed to facilitate recovery through equine-assisted learning and personal growth sessions. The process is hands-on, solution-oriented group therapy with horses designed to address issues those with addictions struggle with daily. Our team coordinates treatment with the Pines and Cady Hill Recovery Center in Columbus, Mississippi. A group of eight women and eight men come each week in the spring, summer, and fall in 6-10-week blocks. A counselor from the inpatient facility comes with the participants each week to assist and provide continuity of care.

Briefly describe how your target audience benefited from your project's activities.

A total of 61 women and 74 men participated in the EATP A&D recovery groups during FY2021. After participating in groups, 100% of participants reported an increase in self-awareness, in the ability to communicate, and in their ability to trust themselves. All of the participants reported that they were able to build healthy relationships with others because of

advances they made through their participation in the program. Most reported a decrease in depression and anxiety. 100% of participants reported that they were able to make significant gains in their recovery as a result of participating in the program and that they would highly recommend it to others in recovery.

Briefly describe how the broader public benefited from your project's activities.

Substance use disorder recovery programs can help reduce resource costs of substance abuse (e.g., health, police, fire department, adjudication, education, child/family assistance) and the loss of potential productivity and earnings.



MSU Extension Pandemic Response: Vaccine Education

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Early in the pandemic, vaccination rates in Mississippi lagged behind many other US states. Mississippi had one of the worst COVID-19 vaccination racial gaps in the country. Although a majority of vaccinations were received by non-Hispanic whites, rural, white Republicans were found to be the least likely to be vaccinated. Mississippi's COVID-19 vaccination record can be partially explained by a distrust of the medical community and access to care issues most prevalent among Black, Hispanics, and lower-income adults. To increase vaccination rates, it became essential to address these barriers to vaccination.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

MSU Extension sought funding from the Centers for Disease Control and Prevention, the National Institutes of Health, and the Health Resources and Services Administration. Multiple approaches were used to address vaccine hesitancy, including 1) using trusted Extension personnel to provide vaccine education; 2) organizing vaccine clinics; 3) creating, testing, and distributing culturally-sensitive vaccine messages via social media; 4) engaging youth as vaccine messengers through social media; 5) developing a public health curriculum to address COVID-19 relevant topics like vaccines, herd immunity, and disease outbreak investigations; and 6) promoting farm family health through vaccine, nutrition, stress management, etc., education.

Briefly describe how your target audience benefited from your project's activities.

Extension personnel have reached more than 181,000 people through community-based education activities and health promotion events, as well as through promotional mailings to households who meet criteria for being vaccine-hesitant. From July 2021 to December 2021, the percentage of first dose increased from approximately 25% to 57.7%. While the increase is not solely attributable to Extension efforts, the focus of our personnel in previously low-uptake areas is certainly a factor that drove this success.

Briefly describe how the broader public benefited from your project's activities.

By not getting vaccinated, COVID-19 will keep spreading and mutating, which will affect the whole state of Mississippi. Our continued goal through MSU Extension is to educate as many Mississippians as possible across the state by having compassionate conversations about the vaccine.



Mississippi State University Healthy Homes Initiative

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

According to the Department of Housing and Urban Development's Comprehensive Housing Affordability Strategy survey, 15% of Mississippi's houses have severe housing problems measured by overcrowding (>1.5 persons per room), expenses (housing costs over 50% of monthly household income), incomplete plumbing facilities, or incomplete kitchen facilities. Poor housing conditions are linked to poor health outcomes. Addressing housing conditions is among the most important primary prevention strategies MSU Extension offers its communities through its Healthy Homes Initiative (HHI).

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Overall, during FY2021, 12 HHI staff and agents reached over 4,000 older adults, HUD housing residents, and childcare providers through workshops, exhibits, newsletters, social media connections, and health fairs. We also created Facebook videos and social media graphics to engage clients on relevant topics. Education was heavily focused on building partnerships with community members doing similar work. Specifically, we developed two lead poisoning prevention videos with the Mississippi State Department of Health and multiple de-cluttering resources in partnership with the University of Georgia Extension.

Briefly describe how your target audience benefited from your project's activities.

There were 977 participants who completed workshops, and 100% increased knowledge of healthy homes principles and intention to change behaviors related to indoor air quality, asthma and allergies, mold and moisture control, safety and accessibility, hazardous household products, lead poisoning prevention, and pest management. Participants pledged to use less toxic household cleaners, use a HEPA vacuum cleaner, install carbon monoxide monitors, and not allow smoking in the car or home.

Briefly describe how the broader public benefited from your project's activities.

Changes in housing environments such as these reduce asthma risk, falls, and accidents at home related to lead poisoning and chemical ingestion which translates into fewer days of missed school for children, less missed work for adults, and lower health care costs for families.



ServSafe

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

ServSafe is a nationally recognized food safety management curriculum and certification process recognized by the Mississippi State Department of Health as meeting the food safety criteria required of any licensed foodservice facility in Mississippi.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

MSU Extension offers ServSafe training for personnel working in our state's restaurants, school cafeterias, and food businesses across the state. We strive to provide the services needed to educate our clientele through traditional face-to-face or online services. In 2021, MSU Extension agents and staff offered 67 face-to-face classes and 54 individual online proctored exams.

Briefly describe how your target audience benefited from your project's activities.

In 2021, MSU Extension agents and staff trained over 400 participants face-to-face through ServSafe Manager's Certification Training and 54 participants through online onsite proctoring. Almost 99% of participants stated that they would recommend this course to someone interested in the ServSafe certification. Of the exam sessions offered, the pass rate was 76% on average. Our agents strive to make the content relevant and related to participant operations. One participant said her agent instructor "took time to ask and answer anything I did not understand and was an effective educator."

Briefly describe how the broader public benefited from your project's activities.

Food safety is critical to the health of Mississippians as well as the economic livelihood of businesses supplying or serving food. Food safety programs, such as ServSafe, aim to reduce the incidence of foodborne illness while improving the safety of the food supply.



TummySafe© Food Safety Training for Child Care Providers in Mississippi

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

The Mississippi Department of Health (MSDH) maintains and enforces a comprehensive set of regulations for child care providers in Mississippi. These regulations require Food Manager's Certification for licensed child care facilities. This certification requirement results in training for employees on specific food safety protocols and situations specific to child care centers. Child care centers are unique from other food establishments in that children are particularly susceptible to illness, and the routine care of diapered children creates an added potential for increased risk.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

MSU Extension provides the program TummySafe as the primary food safety course used to fulfill this requirement in Mississippi. In 2021, 590 child care providers enrolled in TummySafe online, and no traditional face-to-face courses were taught. No attempts were made to schedule face-to-face offerings due to COVID-19 restrictions. Of the 590, 183 providers used the education for contact hours only. These are typically classroom child care providers. The remaining 407, typically directors or cooks, took the certification exam in 2021. MSDH regulations require child care providers to recertify every five years.

Briefly describe how your target audience benefited from your project's activities.

TummySafe has an 80% pass rate, which meets the requirement of 80% or better on the exam for certification. Certification was obtained, which allowed the centers to stay open or to open. Employees that prepare food for children increased their knowledge of safe behaviors for food. Mississippi has approximately 1,600 child care centers. With child care ratios at regulation levels and assuming an average distribution of teachers, a conservative minimum estimate of 7,300 children are protected from foodborne illness. Child care providers speak highly of the practical and relatable concepts presented in TummySafe as well as the value and convenience of the program.

Briefly describe how the broader public benefited from your project's activities.

The families who used these centers had fewer sick days due to poorly prepared foods.



Your Money, Your Goals

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

The U.S. Financial Capability Study consistently finds that Mississippi ranks worst in having unpaid medical bills, lack of rainy day savings, and facing financial instability (46% of individuals with credit cards paid only the minimum during some months in the last year, 49% had no rainy day savings fund, and 22% reported that their household spent more than they earned in the past year) (<http://www.usfinancialcapability.org/>). Further, 19.6% of the population and 30% of children lived in poverty, and 7.4% of the eligible population were unemployed. Impacts of low financial readiness have significant ripple effects on families and communities.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

To respond to Mississippians' extensive challenges related to financial capability, MSU Extension agents deliver lessons from the Consumer Financial Protection Bureau's *Your Money, Your Goals (YMYG)* curriculum. *Your Money, Your Goals* is a set of financial empowerment materials for organizations that help people meet their financial goals by increasing their knowledge, skills, and resources. Lessons can be tailored to the client's most pressing needs, and clients leave understanding what steps to take next to improve their situation.

Briefly describe how your target audience benefited from your project's activities.

In 2021, 49 individuals participated in YMYG programming. The MSU Extension Family Resource Management state specialist led participants who signed up through the Wellness Center at the University of Mississippi Medical Center in a program to improve financial capability. Forty-nine participants attended sessions aimed at improving targeted attitude and beliefs, skills and abilities, and behaviors and knowledge around financial management. In seven sessions, 100% of the evaluation respondents replied the workshop improved their knowledge, and 87% planned to make changes in behavior. When

describing how their life had changed because of the class, replies included: “Coming up with plans before spending money,” “Borrowing plan to buy a house and car soon,” “Setting up a better debt management plan to get me out of debt soon. I have rearranged my finances to help me save,” “Not doing idle shopping, asking myself if this item is really needed.” One participant commented, “The series should become part of the orientation package for new employees.”

Briefly describe how the broader public benefited from your project's activities.

Research has well established that household financial wellness is a key bridge to a better life, relationships, workplace, community, and economy. It has also been established that financial literacy programs through employers are effective for increasing productivity, reducing stress and turnover.



Youth Mental Health First Aid

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

The United States is amidst a mental health (MH) crisis, especially among children, adolescents, and young adults. The COVID-19 pandemic has exacerbated the youth MH crisis, with significant increases in youth suicide deaths. Suicide is one of the leading causes of death among adolescents. Nearly 35,000 children and youth in MS have severe and persistent mental health needs. When MH needs are not addressed, every aspect of a youth’s life can be impacted. In addition, Mississippi is also experiencing a severe shortage of MH professionals.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

MSU Extension's Health Sciences Team partnered with the MSU Department of Psychology to provide MH gatekeeper trainings across Mississippi. Mental Health First Aid (MHFA) is an international, evidence-, research-, skills-based training that teaches adults who work with youth how to understand better, identify, and respond to signs of MH disorders and crises. The Alliance Project (AP) trains laypersons to take the critical first step of ensuring individuals who are deemed to be high risk are immediately referred to trained MH professionals. Both MHFA and AP have been proven effective.

Briefly describe how your target audience benefited from your project's activities.

Nearly 450 Mississippi childcare workers, K-12 educators, parents, and K-12 administrators were trained as Youth Mental Health First Aiders in 2021. Over 4,200 Mississippi K-12 educators, K-12 administrators, and high school students were trained in the Alliance Project. Nearly 96% of Youth Mental Health First Aiders (n=212) who completed the evaluation survey (n=221) reported the course as helpful and informative. Additionally, 86% of Youth Mental Health First Aider evaluation respondents reported that the training had adequate opportunity to practice the skills learned. The Alliance Project participants were provided a retrospective evaluation survey (n=1071). Evidence suggests that Alliance Project participants experienced a statistically significant increase in comfort after the training compared to before (p < .001).

Briefly describe how the broader public benefited from your project's activities.

This program contributes to social change by reducing stigma around mental health issues and equipping more community members with the ability to intervene if a young person is experiencing a mental health problem or crisis.

Critical Issue

Sustaining Mississippi’s natural resources and environment and promoting sustainable energy

Sustaining Mississippi’s natural resources and environment and promoting sustainable energy

Project Director

Donna Peterson

Organization

Mississippi State University

Accession Number



Advancing Adoption of Soil Moisture Sensors Through On-Farm Training and Demonstration

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

The Mississippi River Valley Alluvial Aquifer declines at 350,000 acre-feet a year due to primarily agricultural withdrawals. Producers in the Mississippi Delta are not utilizing irrigation water management practices to reduce withdrawals from the aquifer. Soil moisture sensors are not widely adopted due to barriers regarding knowledge of use and worry of hurting crop yield.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

MSU Extension developed the Row-Crop Irrigation Science Extension & Research program (RISER) to address declining aquifer levels in the Mississippi Delta. The primary objective of RISER is to promote the adoption of proven irrigation water management practices. This program aims to help farmers by providing and installing soil moisture sensors, offering season-long training, and using sensor data for decision making.

Briefly describe how your target audience benefited from your project's activities.

Of those who participated in the training, 100% plan to adopt soil moisture sensors. Additionally, there was a 100% increase in knowledge on how to read the soil moisture sensors, confidence in soil moisture sensors to reflect accurate soil moisture readings, how soil moisture sensors can help in making better irrigation scheduling decisions, and understanding of soil moisture sensor telemetry options on the market.

Briefly describe how the broader public benefited from your project's activities.

When asked how many irrigations the sensors saved them in year one, the average was over two irrigations saved, resulting in about \$20/acre. Over 50,000 acres were represented in the program, which results in a \$1,000,000 saving per year for the reduction in irrigations. A two irrigation reduction would result in over 4 million gallons saved just for the 25 participants in the program.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

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Coastal Conservation and Restoration Program

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

The coastal region is one of the most populated and economically important areas of Mississippi. However, many of these habitats are being lost due to coastal development, natural processes, and poor environmental stewardship. One of the underlying causes of these issues is limited knowledge of the interaction between our actions and the natural environment. Protecting natural resources and understanding the connection between the environment and economy is necessary to maintaining resilient coastal communities.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

The MSU Extension Coastal Conservation and Restoration Program helps inform coastal stakeholders about maintaining healthy coastal ecosystems through a variety of publications, workshops, trainings, and research projects.

Briefly describe how your target audience benefited from your project's activities.

In 2021, the Coastal Conservation and Restoration Program informed decision-making by producing 34 publications and conducting 60 presentations (conferences, workshops, seminars, lectures, etc.). Research and Extension efforts informed decision-making on the protection, restoration, or enhancement of more than 7.7 linear miles of shoreline in Mississippi and Alabama by providing science-based information to environmental managers and property owners.

Briefly describe how the broader public benefited from your project's activities.

Efforts from this program led to the protection of 115 acres of estuarine habitat that produced an annual ecosystem service valuation approaching \$7.8 million.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

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In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Bed bugs are blood-feeding pests of people and animals worldwide, and infestations of human habitations continue to increase. Bed bug infestations are troublesome in healthcare facilities due to sick, infirmed, and immunocompromised patients housed there as well as the risk of harm from pesticides used to control the pests. Thus, bed bug control in healthcare facilities is a complicated, risk-benefit endeavor, in which Integrated Pest Management (IPM) must be utilized.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

MSU Extension coordinated all bed bug management efforts with the Infection Control Specialist at a regional hospital with a reoccurring bed bug infestation (more than four times per year). A detailed plan was devised and implemented to prevent new infestations and control the existing one(s). Public health IPM provided the overarching framework for these bed bug control efforts and included (infested) patient isolation, bagging of patient clothing and personal belongings when infested, and room “closure” protocols until clearance was provided by pest control.

Briefly describe how your target audience benefited from your project's activities.

To the relief of doctors, nurses, and patients at this regional hospital, the current bed bug infestation was eliminated at the healthcare facility within two weeks. No additional bed bug infestations were reported six months after plan implementation. The development of this IPM-based bed bug mitigation plan was an important step forward in bed bug prevention and control at this major medical facility.

Briefly describe how the broader public benefited from your project's activities.

Healthcare facilities such as hospitals, clinics, nursing homes, and personal care homes face similar bed bug infestations nationwide. The development of this type of IPM-based bed bug mitigation plan could be an important, far-reaching advancement in public health policy throughout the country.



In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Nonindustrial private forests (NIPF) cover about 360 million acres in the U.S. Most are family-owned and cover less than 100 acres. According to the National Woodland Owners Survey, these family-owned forests pass from generation to generation, so timber taxes are routinely a top issue for NIPF landowners. Mississippi forest landowners look to MSU Extension Forestry to provide information on how to properly file taxes and report income along with basis, sales and management costs, and reforestation. Costly filing mistakes are common. We have a great opportunity to help forest clientele file their timber taxes properly.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

The MSU Extension Department of Forestry offered four timber tax programs at County Forestry Associations in 2021 and two statewide programs that were attended virtually. A total of 118 landowners, foresters, loggers, and tax practitioners attended these programs. Additionally, two MSU Extension publications were heavily revised to incorporate relevant changes in the tax code.

Briefly describe how your target audience benefited from your project's activities.

Based on quantitative results from evaluations collected, clientele estimated an income tax reduction of approximately \$6,000 each using what they learned. The potential tax savings to our 2021 participants total over \$708,000. However, several of the programs either did not have evaluations or were video recordings (so evaluations could not be collected). Additional tax savings may be recognized in upcoming years as participants continue to implement tax strategies moving forward.

Briefly describe how the broader public benefited from your project's activities.

Knowledge of advantageous taxation opportunities allows forest landowners to more easily remain or become financially sustainable with the forested property. Forestland provides a myriad of public benefits in the form of watershed quality, floral and fauna biodiversity, and carbon sequestration.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

Tanger, S., Dicke, S., & Henderson, J. (2021). *Timber tax overview* [Publication 2307]. Mississippi State University Extension Service. <http://extension.msstate.edu/publications/timber-tax-overview>

Tanger, S., Dicke, S., Henderson, J., & Gaddis, D. (2020). *Paying for a new forest without cost-share funding* [Publication 2420]. Mississippi State University Extension Service. <http://extension.msstate.edu/publications/paying-for-new-forest-without-cost-share-funding>



Marine Fisheries Management in the Northern Gulf of Mexico

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Healthy fisheries are fundamental to the cultural and economic well-being of northern Gulf of Mexico residents. Overfishing, habitat loss, and changing environmental conditions threaten the sustainability of these resources. Although stakeholders are interested in learning more about these topics, locating trusted sources of information can prove difficult. Therefore, there is a need for MSU Extension specialists to communicate accurate and up-to-date information about Gulf of Mexico fish and fisheries clearly and concisely.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

The Marine Fisheries Ecology program engaged with recreational and commercial stakeholders through formal and informal events and digital platforms such as Facebook, Instagram, and the Gulf Coast Fisherman newsletter. The Marine Fisheries Ecology program engaged more than 1,000 people at formal and informal events, published 89 social media posts with a reach exceeding 408,000, and distributed four issues of our Gulf Coast Fisherman Newsletter to an audience of more than 500 subscribers.

Briefly describe how your target audience benefited from your project's activities.

Based on evaluation cards from our events, 100% of attendees reported an increase in fish or shark knowledge, 92% reported an increase in fisheries or fisheries science knowledge, and 71% of attendees identifying as fishermen reported that they would change their future fishing practices. Based on surveys of our social media followers and newsletter subscribers, 100% of followers/subscribers reported an increase in fish or shark knowledge, 98% reported an increase in fisheries or fisheries science knowledge, and 65% of followers/subscribers identifying as fishermen reported that they would change their future fishing practices. These results indicate that our communication strategies are not only extensive but also effective and impactful.

Briefly describe how the broader public benefited from your project's activities.

The general public is better informed about Gulf of Mexico fish and fisheries and better equipped to ensure the sustainability of these resources.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.



Mississippi Master Naturalist Program

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Lack of environmental knowledge often promotes poor stewardship of natural resources. Many environmentally conscious individuals are eager to help out through volunteer service, but these opportunities are often difficult to find.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

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

Briefly describe how your target audience benefited from your project's activities.

In 2021, the MMNP held a basic training course for the Coastal and Central chapters, which led to the certification of 17 new Master Naturalists. These participants environmental knowledge improved an average of 10%. Program participants documented 2,289 volunteer service hours, valued at \$65,786.

Briefly describe how the broader public benefited from your project's activities.

Through these volunteer hours, participants reached or educated more than 1,957 people and directly or indirectly improved 662 acres through stewardship activities.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

Cunningham, S. R., Sparks, E. L., & Rohnke, A. T. (2021). Evaluating the structure, demographics, and effectiveness of the Mississippi Master Naturalist Program. *Journal of Extension*, 59(3), Article 13. <https://doi.org/10.34068/joe.59.03.13>



Mississippi Water Stewards

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Degradation of freshwater and marine resources is a primary concern of state and federal stakeholders; therefore, restoration and protection of surface water resources are critical to ensure the sustainability of our local ecosystems, communities, human health, and economies. Mississippi has ecosystems that reside in three Gulf of Mexico watersheds, where land uses have been documented to contribute non-point source pollutants. Non-point source pollution is a primary water quality threat to aquatic ecosystems and can have detrimental impacts on aquatic organisms, human health and safety, and local economies.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

With funding support from the U.S. Environmental Protection Agency (\$199,951), the MSU Extension Mississippi Water Stewards (MSWS) program provides the infrastructure necessary for the state’s first statewide citizen-based water monitoring and education program. In 2021, MSWS program staff developed two online courses with more than 20 educational modules,

two monitoring manuals, and hosted three training workshops around the state. The program infrastructure includes a suite of educational information, a citizen science data collection framework, a volunteer management framework, and a data management and quality assurance framework.

Briefly describe how your target audience benefited from your project's activities.

We provided direct education and training to 50 citizen scientists, many of whom elected to become certified in multiple monitoring certifications. MSWS awarded Bacteriological Monitoring Certifications to 39 individuals in three major river basins in Mississippi and awarded Chemistry Monitoring Certifications to 22 citizens in two major river basins in Mississippi. Trained citizens went on to conduct 265 EPA-approved water quality observations at 19 locations spread across 15 water bodies in Mississippi. Citizen monitors logged approximately 530 volunteer hours collecting water quality data, which has an estimated economic value of \$15,126 based on the current estimated value. At one monitoring site, data collected by citizens identified a bacteriological concern in waters used for recreation, which was relayed to the Mississippi Department of Environmental Quality (MDEQ). MDEQ responded by initiating additional monitoring to verify the pollutant concern and remediate the issue.

Briefly describe how the broader public benefited from your project's activities.

The initial year of implementation has allowed for the development of program infrastructure and a volunteer base that we expect to grow and enhance the transparency and public participation of sustainable water management, identification and remediation of local water quality concerns, and overall improved water resource security in Mississippi.



Mosquito Management and Integrated Pest Management Training for Mississippi Mosquito Control Personnel

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Public mosquito control in Mississippi is primarily conducted by municipalities or (sometimes) by counties. Since these municipal mosquito control programs utilize public employees and non-restricted pesticides, there is little or no regulatory oversight. In fact, these employees are not even required to be certified pesticide applicators. This is a public safety concern for citizens.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

MSU Extension has made efforts to address these concerns through Integrated Pest Management (IPM) educational events. In coordination with other university personnel, MSU Extension provided a statewide General Pest Control Webinar that included a session entitled "Using IPM Principles in Mosquito Control." Detailed information was presented regarding the various mosquito species occurring in the state, their breeding habitats, and ways to control them, including chemical and non-chemical methods. Public health IPM provided the overarching framework for the entire session, emphasizing mosquito management balanced by regard for human safety and protection of the environment.

Briefly describe how your target audience benefited from your project's activities.

There were 44 registered participants in the webinar. In a post-event evaluation, attendees rated "relevance of this training to their individual needs" as 4.78 (max=5.0) and "increase in pest knowledge" as 4.67 (max=5.0). Attendees rated "learning of new skills" as 4.56. Implementation of this IPM-based mosquito control plan was an important step forward in training municipal mosquito control personnel in safe yet efficient pest control for these public health pests.

Briefly describe how the broader public benefited from your project's activities.

Other states and U.S. territories may face similar pesticide use issues nationwide (i.e., where certain control practices seem to fall through regulatory policies). The development of this type of IPM-based mosquito control training is an important step forward in mosquito prevention and control practice, as well as pesticide use safety.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

Goddard, J., Moraru, G., Edwards, K., McInnis, S., Deerman, H., Nations, T., & Varnado, W. (2021). Seasonality of *aedes albopictus* in north and central Mississippi. *Journal of the American Mosquito Control Association*, 37(1), 34-37. <https://doi.org/10.2987/20-6942.1>



Natural Resource Enterprises

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

A majority of imperiled lands and natural resources in Mississippi, including wetlands, coastal marshes, and river basins are in private ownership. Research conducted by MSU Extension has shown that private landowners, forest landowners, and agricultural producers diversify incomes and increase conservation on their lands by developing fee-access outdoor recreational enterprises (i.e., hunting, angling, wildlife watching, and other nature-based businesses).

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

In 2021, MSU Extension delivered 10 natural resource enterprises (NRE) webinars and one in-person landowner workshop. Total attendance for all events was 715 and included landowners, NRCS employees, and MSU Extension agents. Respondents reported by completing day-of evaluations that attending the event was worth their time at 4.8 out of 5.0 and would recommend the training to others at 4.8/5.0. Eleven new NRE how-to videos were posted on YouTube and the NRE Homepage (www.naturalresources.msstate.edu), including topics about hunting leases, legal considerations, social media marketing, and farm bill programs.

Briefly describe how your target audience benefited from your project's activities.

Landowners benefitted from NRE program participation with income diversification on their lands, natural resource conservation, and enhanced biodiversity on properties. Seventy-five new NREs (25% of respondents) were established on private lands generating \$1 million in new incomes to landowners and local communities. Respondents conducted conservation practices on 73,800 acres due to workshop participation and operated new NREs on nearly 20,000 acres. Total landownership reported from NRE 2021 landowner participants was 110,000 acres across 11 U.S. states (Alaska, Alabama, Arkansas, Florida, Louisiana, Mississippi, New York, North Carolina, Oklahoma, Tennessee, and Texas).

Briefly describe how the broader public benefited from your project's activities.

The NRE Program grows economies in local Mississippi communities and the state as a whole. These enterprises diversify income generation on private lands in the state. Landowners who have been trained in NRE strategies do a better job at conserving important natural resources on their lands, thereby benefitting themselves, Mississippi citizens, and protecting a healthy environment in the state.



REACH: Research and Education to Advance Conservation and Habitat

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Intensification of conventional agriculture has led to increased degradation of soil and water resources. Significant investments in land management improvements by federal and state governments and producers through conservation programs warranted the need for documentation of conservation effectiveness and continued MSU Extension efforts to increase awareness and adoption of conservation practices. Moreover, in addition to benefits to water quality and quantity, it is critical to document the many benefits (agronomic, environmental, and economic) accrued by these conservation efforts of Mississippi farmers.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

MSU Extension's Research and Education to Advance Conservation and Habitat (REACH) program worked with partners to secure \$298,312 to support program-related efforts, published one popular article, one Extension publication, and two peer-reviewed scientific articles in areas of soil and water conservation. We also co-hosted a 4-part Virtual Shop Talk series for farmer-to-farmer learning for producers to learn more about their conservation practices utilized on working farms across the Mississippi River Basin. We also delivered research-based education through 15 programs (in-person presentations, webinars, field days) to stakeholders throughout Mississippi.

Briefly describe how your target audience benefited from your project's activities.

Education and outreach information delivered via social media posts and newsletters reached over 2,855 stakeholders. We directly provided conservation education to 437 people through technical assistance and statewide programming, and directly educated 467 people, of which 62 were youth. Eleven producers were directly engaged in on-farm research, implementing over 1,200 acres of cover crops that served as conservation demonstration sites. In standardized program evaluations, attendees of educational trainings consistently reported improved knowledge and relevancy of the content. On average, attendees agreed/strongly agreed that educational content was relevant to them or their clients, agreed/strongly agreed that their knowledge was increased, agreed/strongly agreed that they learned new skills, and reported an estimated economic value of \$250 or more per event.

Briefly describe how the broader public benefited from your project's activities.

The increased knowledge of our stakeholders, the potential conservation delivery and adoption, and farmer-to-farmer demonstrations alongside applied research are critical components to facilitating incremental shifts to more sustainable and resilient agroecosystems for our communities, the environment, and our farmers.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

Badon, T. B., Prince Czarnecki, J. M., Krutz, L. J., Shockley, J. M., & Baker, B. H. (2021). Cover crop and minimum-tillage effects on yield, irrigation water use, and net returns. *Agrosystems, Geosciences & Environment*, 4(2), e20158. <https://doi.org/10.1002/agg2.20158>

Omer, A. R., Aldridge, C., & Baker, B. H. (2021). Outflow hydrology of tailwater recovery systems with comparisons to a control catchment. *Irrigation and Drainage*, 70(4), 786-796. <https://doi.org/10.1002/ird.2551>

Type

Projects / Programs

Projects / Programs without a Critical Issue

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Not Provided