# 2017 Tuskegee University and Auburn University and Alabama A&M University Combined Research and Extension Plan of Work

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## I. Plan Overview

### 1. Brief Summary about Plan Of Work

Alabama is unique as the only state with three land -grant institutions with United States Department of Agriculture (USDA) Research and Cooperative Extension responsibilities. Alabama Agricultural and Mechanical University (AAMU) Auburn University (AU), and Tuskegee University (TU) each provide Research and Cooperative Extension programs to meet the needs of the citizens of Alabama and the nation.

The Universities...

AAMU is an 1890 land-grant institution with a comprehensive university Carnegie classification, functioning in the areas of teaching, research, and Extension including public service. AAMU is a doctoral degree granting institution with strong graduate programs in the science, technology, engineering, and mathematics (STEM) disciplines. Through dynamic and contemporary research and outreach programs, the institution maintains a strong commitment to academic excellence and community engagement to meet the needs of its students and the community and nation at-large.

AU is an 1862 land-grant institution with high research activity; comprehensive doctoral with medical/veterinary Carnegie classification. AU's mission is defined by its land-grant traditions of service and access AU serves the citizens of Alabama through its instructional, research and outreach programs and prepares Alabamians to respond successfully to the challenges of a global economy.

The TU mission, historically and today, together with specific acts of the United States Congress and the state of Alabama defines Tuskegee as an 1890 land-grant university with a Master's Colleges and Universities Carnegie classification. Through integrative teaching/learning, research/discovery, and Extension/engagement programs TU addresses contemporary societal problems as opportunities to advance individuals, families, and communities.

Research and Cooperative Extension....

Research at each Alabama land-grant institution (LGU) has distinct programs based on clientele needs. Each component of the Alabama Agricultural Research Program works closely and cooperatively to enhance partnerships among the universities in all areas of Research and Extension; with other universities in the region, nationally, and internationally; and with state and federal laboratories and agencies. Alabama's three land-grant universities have played key roles in the development of agricultural enterprises in Alabama. The agricultural research programs of these universities have formed a partnership, the Alabama Agricultural Land-Grant Alliance (AALGA), to better address critical issues in food, agriculture, rural sustainability, environment, bioenergy, and natural resources in the state, region, and nation through multidisciplinary, multi-institutional, science-based teams that focus on the opportunities and the challenges facing farmers, consumers, and agribusinesses. AALGA also seeks to provide quality education that prepares professionals for career opportunities in food, agriculture, environment, and natural resources. Research programs at each of our institutions are closely linked

to Extension programs, which seek the largest possible positive social, economic, and environmental impact.
AAMU and AU provide Extension educational outreach as a unified Alabama Cooperative Extension System (ACES). The AAMU-funded portion of the System focuses its resources on serving urban and nontraditional clientele; the AU-funded portion of the System focuses its resources on serving rural and traditional clientele. However, given that the boundaries between rural and urban, and between nontraditional and traditional, are vague. The ACES employs a highly collaborative program development and delivery process that allows for the integrative and collaborative application of the resources from both AAMU and AU to serve and meet the needs of all Alabamians in all 67 counties within the state. Agents from the two institutions are jointly located in county Extension offices and function as a county Extension teams.

Tuskegee University Cooperative Extension Program (TUCEP) in partnership with the Evans Allen Research Program, Carver Integrative Sustainability Center (USDA 1890 Center of Excellence) and other research, teaching and outreach units, carries out a comprehensive Extension Plan of Work (POW). TUCE continues to focus its major efforts in Alabama Black Belt and adjacent counties, but has programs in other counties, such as in Marshall County with the Cherokee Tribe of North East Alabama (CTNEAL) and other targeted Native and Hispanic populations. Many TUCEP agents share the same facility as ACES agents assigned to that county and cooperate on Extension programs of mutual interest.

The world is facing major challenges with food, energy, environmental sustainability, natural resources, climate change, and economic development in all sectors, as well as, human health and well-being and related issues. In order to address issues related to these major local, national and international challenges, integrative and collaborative Research and Extension programs have been designed to address most of these challenges. The Alabama Land-Grant Institutions are cognizant of the necessity to continue to address the five National Institute of Food and Agriculture (NIFA) Priorities. Indeed, those programs are priorities for Alabama residents as well. The FY2015 Combined Alabama A&M University, Auburn University, and Tuskegee University Research and Extension POW is founded on the following planned programs:

Global Food Security and Hunger
Food System and Food Safety
Natural Resources Conservation and Management, Environmental Sustainability and Climate Change
Human Nutrition, Well-being, Health and Obesity
Community Development
Family, Home and 4-H and Youth Development
Sustainable Energy

Alabama, through numerous avenues conducts extensive needs assessment through a grasstops and grassroots process. Statewide stakeholder leaders are engaged by all institutions across the disciplines along with county and community public policy makers to identify contemporary and emerging Research/Extension issues. This process is complemented with grassroots stakeholder meetings held annually in each county and at each Research-Extension Center to determine local and regional issues and opportunities.
The three land-grant institutions fully integrate these statewide issues into the coordinated initiatives outlined in this POW. Statewide initiatives are interwoven with national USDA priorities in the document. Almost all Research and Extension programming in Alabama involves more than one land-grant institution. Extension programming is an integral component of Alabama's Research planning in that most of the research conducted by the three Agricultural Experiment Stations have a predetermined use and planned Extension delivery phase.

Additionally, the land-grant universities of Alabama engage partner organizations and 1862/1890

universities in neighboring states to capitalize upon combined strengths and optimize impacts. Examples of multi-state cooperation are evident in most of the listed priorities and program initiatives in the 2015 POW.

**Estimated Number of Professional FTEs/SYs total in the State.**

| Year | Extension | | Research | |
|---|---|---|---|---|
| | 1862 | 1890 | 1862 | 1890 |
| 2017 | 364.0 | 56.5 | 326.0 | 44.3 |
| 2018 | 364.0 | 56.5 | 326.0 | 44.3 |
| 2019 | 364.0 | 56.5 | 326.0 | 44.3 |
| 2020 | 364.0 | 56.5 | 326.0 | 44.3 |
| 2021 | 364.0 | 56.5 | 326.0 | 44.3 |

## II. Merit Review Process

### 1. The Merit Review Process that will be Employed during the 5-Year POW Cycle

- Combined External and Internal University Panel

### 2. Brief Explanation

The Plan of Work Merit Review is an inclusive multi-phase process with Extension and Research at all three land-grant universities in Alabama. **Phase I** includes Extension and Research teams identifying program and research needs shared by county stakeholders and advisory groups. Annual discussions, surveys and focus groups are held to solicit and gather critical program and research needs from adults and youth in communities. This information sets the stage for Extension and Research program priorities. It is a requirement for all extension programs and research projects to have clear measurable outcomes and the support of federal, state, county and extramural funds. **Phase II** includes members from each university forming teams representing program areas in the plan. Each plan includes specific objectives that are examined for relevance, usefulness, and potential program impact. This feedback is used to refine program and research plans. Subject matter teams also review the plan for full integration and representation of Extension and Research. A scientific review is conducted to ensure all objectives and goals are measurable and include sound outcome indicators. Scientific review of research programs are based on established protocols by the National Standards for Peer Review. **Phase III** involves statewide stakeholder groups, including advisory groups, commodity organizations, volunteers, research partners, and state and local funding agencies. These groups are asked to provide feedback regarding objectives, potential impacts, and ways in which the plan will meet their specific needs. **Phase IV** is both within and outside the university community. Copies of the plan are submitted to university administrators and related agency personnel who function as both present and future partners. These individuals are invited to comment on the objectives identified, areas of collaboration, and potential impacts. University administrators will also provide comment on ways to work across colleges and schools to increase Extension and Research outreach. This multiphase peer review process

allows input on several levels to strengthen state plans and encourage collaboration across the state. Feedback is reviewed at all phases of the process. Plans are adjusted as needed based on feedback provided.

## III. Evaluation of Multis & Joint Activities

**1. How will the planned programs address the critical issues of strategic importance, including those identified by the stakeholders?**
The Research and Extension educational programs conducted by the LGUs in Alabama were not created in a vacuum. Through listening sessions conducted for Extension and Research, faculty meetings, AALGA joint discussions and planning meetings, focus groups, conferences, field days and selected advisory boards, our programs are planned to address the critical issues of strategic importance to agriculture in Alabama, the nation, and the world. Traditionally, Extension programs in Alabama have had a very comprehensive stakeholder input process. The foundation of this process has been the statewide network of county and state-level program advisory committees. Special outreach efforts are extended to state and county advisory committees in limited-resource and low-asset communities in South-central or Black-Belt Alabama and urban centers.

Alabama's Extension and Research seek to address selected questions that lead to identification of critical issues of strategic importance. These issues include, but are not limited to: (1) enhancing the sustainability, competitiveness, and profitability of U. S. food and agricultural systems; (2) adapting to and mitigating the impacts of climate change on food, feed, fiber, and fuel systems in the U.S.; (3) supporting energy security and the development of the bio-economy from renewable natural resources in the U.S.; (4) playing a global leadership role to ensure a safe, secure and abundant food supply for the U.S. and the world; (5) improving human health, nutrition, and wellbeing of the US population; (6) heightening environmental stewardship through the development of sustainable management practices; and (7) strengthening individual, family, and community development and resilience.

Our programs are planned to be aligned with NIFA's Research and Extension priority areas and with Alabama's agricultural needs as identified by stakeholders. As a result of the alignment, the focus will be on the following programs: (1) Human Nutrition, Well Being, Health and Obesity, (2) Natural Resource Conservation and Management, Environmental Sustainability and Climate Change, (3) Food Systems and Food Safety, (4) Global Food Security and Hunger, (5) Sustainable Energy, (6) Community Development, and (7) 4-H and Youth Development.

Full-time equivalents (FTEs) are planned in each of the seven programmatic areas. The seven programmatic areas will be used as a guide for distributing funds administered through budget allocation and competitive mechanisms based on merit and evidence of projected impacts. Additional administrative balance will be sought among the seven program areas.

**2. How will the planned programs address the needs of under-served and under-represented populations of the State(s)?**
All planned programs contained in the Alabama integrated Extension and Research FY2017-2021 Plan of Work are developed within the context of research and community engagement of relevance to all residents of Alabama who may benefit from the local knowledge base or service. This commitment is without regard to any personal characteristics, to include age,

ethnic origin, gender, religion, sexual orientation, or geographic location. Alabama populations are included, as appropriate, in the program development process. As a part of the program development process, each program that was identified and developed for grassroots program delivery, details the intended audience(s) to be served. As a part of the review process, before approval of a given program, project or activity, the respective Assistant/Associate Directors and Administrators are charged with ensuring that the intended audience(s) for each project includes the spectrum of potential recipients of the Alabama population. For example, in recognition of the rapidly increasing Hispanic populations in Alabama, many of the System publications are now available in Spanish while other programs specifically target the Spanish speaking residents. Other System programs target 'at-risk' youth, low- income urban residents, small and minority farm producers, and the elderly.

Another example is the Alabama Agricultural Land-Grant Alliance (AALGA), an organizational framework created to provide coordinated efforts to address major agricultural issues in Alabama. In particular, AALGA was put in place to facilitate cooperation and collaboration and to minimize duplication of research and to address the needs of underserved and underrepresented populations such as the minority farmers, producers, processors, and small-scale producers. In addition, the Extension and Research administrators as well as faculty and staff have significant participation in the Association of Southern Region Extension Directors (ASRED), the Association of Research Directors (ARD), the Association of Extension Administrators (AEA), and other regional and national groups that provide platforms for multi-state programming and source of information for all interested stakeholders. The 1890 Land-Grant Institution's Strategic Plan in particular continues to provide a framework to facilitate increased collaboration in the various states. One goal of the Association of Extension Administrators (AEA) and the Association of Research Directors (ARD) is to develop and to maintain open lines of communications between AEA and ARD that foster integrative and collaborative relationships to aid in the growth of the 1890 Land-Grant System on behalf of underrepresented communities.

**3. How will the planned programs describe the expected outcomes and impacts?**

The real impacts and outcomes of the Alabama Land Grant System programming are derived from the performance of the System's program menu offerings. The System utilizes Strategic Program Planning, Extension Team Projects, Integrated Research and Extension Team Projects, Specially Funded Programs and Priority Program Areas as the primary program implementation tools for the System. All such programs are Logic Model based and include clearly defined expectations regarding program outcomes and impacts. The necessity for, and inclusion of, outcome and impact statements for every funded Research and Extension program offering is paramount in the program planning and development process. As such, all programs are inherently capable of producing quantifiable measures of research, education and outreach productivity.

Similar emphasis is placed on many 'specially funded programs, many of which come with their unique measurement tools. These programs include special NIFA funded programs such as McIntire-Stennis Research Program, NEP, EFNEP, IPM, and RREA as well as programs funded partially or in whole by grants, contracts, or other extramural sources of funds.

The ability to answer the question 'So What?' is a driving force in the program planning/planning development process. All levels of Research and Extension administration continually issue the challenge to first, insure that expected outcomes and impacts are clearly evident in program design, and second, that if not realized, the programs will undergo such modifications as needed to increase the potential for achievement of desired outcomes and

impacts. As such, ALL Planned Programs in the FY2017-2021 Plan of Work are expected to produce outcomes and impacts.

Below are some examples:
Global Food Security and Hunger: methods developed for best agricultural practices; number of farmers/producers informed of the best practices; improved varieties, animal stocks produced, extended, and adopted; agricultural productivity, efficiency, sustainability, and profitability; reduction in minority land loss; reduction of population in hunger in the state, in the nation, and in the world as a result of the research/extension/and educational programs.

Food, Nutrition, Health and Well-being, and Childhood Obesity: Nutrition standards and practices development; extension and outreach to the general population on nutritional information; informed decision of food choices and physical activities; overall reduction of obesity, particularly childhood obesity.

Food Safety and Agricultural Biosecurity: Detection methods and technologies developed for biological contaminations; analytic methods and technologies for abiotic contaminants; training and education of various groups including the general public; decrease in severity and incidence of food-related illness; education on safer food production practices; reduction of economic losses due to contamination; increased national competitiveness because of implementation of food safety standards.

Natural Resources, and Climate Change: Methods and best practices development for agriculture that are related to climate change; maintenance or improvement of water quantity and quality; ecosystem health sustainability; reduction in carbon footprint; development of technologies leading to reduced impact on climate; carbon sequestration; enhanced capacity in climate buffering, etc.

Bioenergy and Bio-based Economy: development and evaluation of feed stock crops; development and assessment of the best practices for bioenergy crops; development and genetic improvement of bioenergy crops; development of conversion technology; increased bioenergy supply; increased bioeconomy output; reduced dependence on foreign oil.

**4. How will the planned programs result in improved program effectiveness and/or**
Heavy reliance on the logic model helps to organize and systemize program planning, management, and evaluation functions. These functions include: program design and planning, program implementation, program evaluation and strategic reporting. Since the most basic program logic model is a picture of how the program works -- the theory and assumptions underlying the program -- the planned program herein provides structure and directions that help streamline program effectiveness and efficiency in program implementation and outcomes. Also, this model provides accountability by relating inputs, outputs, and outcomes. The use of logic model has helped in focusing better on fewer program areas, and integrated initiatives, with clear examples of outputs that will lead to expected outcomes. This model provides both effectiveness and efficiency, and a more constructive use of time and resources.

Through the planned programs, knowledge gaps and areas in which critical Research or Extension service is needed will be identified, emerging technologies and educational delivery mechanisms will be identified, and new approaches and technologies will be developed.

Relative to all activities, programs will be communicated in varying ways to stakeholders so that improvements can be adopted as appropriate.

Competition is a valid way to enhance programmatic effectiveness and efficiency. Hatch, Evans-Allen, and Extension funds will be distributed through competitive mechanisms such as the submission of grant proposals that deal with the issues addressed in programmatic areas. Assessment in output and outcome will be evaluated in the short and long term, respectively. Faculty members and Extension personnel that obtain Research and/or Extension funds will be required to seek additional resources such that the impact of these funds will be leveraged. Obtaining extramural competitive funds is another indicator of the merits of the Hatch, Evans-Allen, and Extension funds supported projects.

## IV. Stakeholder Input

### 1. Actions taken to seek stakeholder input that encourages their participation

- Use of media to announce public meetings and listening sessions
- Targeted invitation to traditional stakeholder groups
- Targeted invitation to non-traditional stakeholder groups
- Targeted invitation to traditional stakeholder individuals
- Targeted invitation to non-traditional stakeholder individuals
- Targeted invitation to selected individuals from general public
- Survey of traditional stakeholder groups
- Survey of traditional stakeholder individuals

**Brief explanation.**

EXTENSION:
The Alabama Cooperative Extension System and the Tuskegee University Cooperative Extension Program (ACES/TUCEP) utilize a comprehensive grasstops and grassroots needs assessment process. State-level constituent or consensus building groups, non- governmental agencies, community-based organizations, and governmental agencies are encouraged to participate in grasstops needs assessment activities by inviting both traditional and non- traditional stakeholder groups. Individuals representing diverse socio-economic and racial groups, new client groups, networks, youth groups, and potential community partners are encouraged to participate in grassroots needs assessment activities by inviting both traditional and nontraditional stakeholder individuals. Media is used to announce and encourage individuals to participate in various activities.

RESEARCH:
College level research advisory committees and advisory boards have been established for all three universities within The Alabama Agricultural Land Grant Alliance (AALGA) to actively seek stakeholders' input, and provide advice to Deans and Research Directors of the three colleges of agriculture. Through our Research and Extension faculty, we continue to carry out routine work with various commodity groups and clientele. Semi-annual meetings are organized by the Alabama Farmers Federation (ALFA) where faculty and administrators participate regularly. In addition, there are committees for each of the 17 commodity groups with regular meetings and forums for the relevant groups, and faculty members and administrators regularly participate to learn about the issues, comments, and concerns. In addition to the ALFA groups, the college and experiment station leadership, the department heads, and faculty are working closely with several major

commodity organizations outside of ALFA: Alabama Cattlemen Association, Alabama Poultry and Egg Association, Alabama Green Industry leadership, and the Black Belt Small Farmers Cooperative.
AALGA and its partners continue to host "listening sessions" at key locations across the state. These sessions are advertised in varying ways to reach as broad an audience as possible and are open to the general public. Participants identified several strategic areas which are in need of additional resources and effort (i.e., Research and Extension). These areas are noted in this plan of work. Regular input is also received from stakeholders through commodity group leaders, from advisory boards, formal and informal surveys, focus groups, field days, conferences and through discussions and feedback from state leaders on agricultural boards. Most Extension faculty have Research appointments, and they work closely with the commodity groups and the public in general to bring back their concerns and feedback.

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

**1. Method to identify individuals and groups**

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

**Brief explanation.**

EXTENSION:
ACES/TUCEP program leaders lead respective program teams, consisting of Extension Specialists, Agents, Resource Specialists, and Farm Management Specialists to identify state-level constituent or consensus building groups, non-governmental agencies, community-based organizations, and governmental agencies. Methods for identifying these groups included existing advisory committees and interagency directories.

Grassroots stakeholders are identified by Extension coordinators, agents, and resource specialists who lead community conversations in the state's 67 counties. Methods included existing advisory committees, 4-H youth councils, contacts with other agency partners, and staff knowledge of individuals representing diverse socioeconomic and racial groups, new client groups, networks, youth groups, and potential community partners. A grassroots web-based survey is marketed in all 67 counties through the media and directly via ACES/TUCEP Web pages. Citizens are offered the opportunity to participate in the survey via public access computers at County Extension Offices. For the hard-to-reach communities in the Black Belt and with new immigrant populations, special county and state advisory councils have been established for engagement to secure a diversity of stakeholder input. County 4-H Youth Councils are asked for direct input and feedback to solicit input and feedback from other peer youth groups.

RESEARCH:
Several groups such as advisory committees that encompass growers and consumer groups have been established. Surveys are conducted through various Agricultural Experiment Station (AES) newsletters. Other means of seeking input from the general public are employed. Commodity groups are well organized through participation in the Alabama

Farmers Federation and other such groups. Needs assessments are conducted through strategic planning, Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis, based on input from the agricultural industries and assessments from the faculty, their department heads, and college and experiment station leaderships.

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

**1. Methods for collecting Stakeholder Input**

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

**Brief explanation.**

EXTENSION:
A comprehensive approach to needs identification is utilized given the complexity and scope of issues facing the citizens of Alabama. For ACES/TUCEP, the comprehensive needs assessment begins with the engagement of key external 'grasstops' stakeholders to determine priority needs affecting Alabamians.
Program leaders and their respective program teams conduct the grasstops needs assessment by engaging groups through direct telephone contacts, focus groups, advisory committees, networking, or short surveys. Each stakeholder group is asked 1) what priority initiatives are included in their strategic plan or plan-of-work, 2) what issues do they envisioned affecting the economic and physical wellbeing of Alabamians across the state, 3) what priority needs of their clientele connect with ACES/TUCEP's educational programming expertise, and 4) what linkages do they envision that would strengthen the working relationship with ACES/TUCEP's educational programming. Results gleaned from the grass-tops needs assessment activities are summarized to determine what major themes emerge.

The second major component of the comprehensive needs assessment involves engagement of 'grassroots' stakeholders. Extension coordinators, agents, and resource specialists organize grassroots community conversations to confirm, prioritize, or regionalize the grasstops needs assessment results. Objectives are to engage a cross section of citizens, including youth, to 1) discuss and understand the facts regarding significant issues facing the state and the opportunities for positive change and 2) dialogue about significant issues and the potential for local programs that acknowledge and address the current changes in the way citizens think, live, and function in their daily lives, families, communities and businesses. A companion grassroots survey is administered via the ACES/TUCEP homepage.

For limited-resource and low-asset communities, their representation on the special county and state advisory councils in the Black Belt and adjacent service areas are invited and given the opportunity to use regularly scheduled conferences in order to collect input and feedback. The conferences include: The Annual Farmers Conference, the Booker T. Washington

Economic Summit, the Youth Empowerment Summit, and the Professional Agricultural Workers Conference.

RESEARCH:
A number of stakeholder groups have previously been identified, and input is collected through regular meetings with discussions and feedback. For example, at Auburn, several commodity groups have committees to evaluate ongoing research and new research proposals. Direct feedback to researchers and administration is through the projects that get funding and through discussion about new and emerging issues. At TU, input is also sought from workshops and special sessions during the Professional Agricultural Workers Conference and Farmers Conference that are organized annually. At AAMU, input is sought through workshops, 1890 Association of Research Directors, various departments, conferences, and new research proposals. Influential industry leaders are consulted for their input and feedback.

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

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

**Brief explanation.**

EXTENSION:
Strategic program initiatives are identified from the comprehensive grasstops and grassroots needs assessment activities. Program leaders collaborate on the development of a logic model for each strategic program initiative focusing on specific objectives, outputs, and outcomes that allow for application across various program areas. Each logic model includes an evaluation plan.
Program leaders assist their respective program teams, consisting of Extension specialists, agents, resource specialists, and farm management specialists, prepare a POW plan-of-work. Steps include: 1) to determine which strategic program initiatives fit with the team's capabilities and resources and to develop a programmatic response consistent with the objectives, outputs, and outcomes of the respective strategic program initiative logic model and 2) to complete the program team plan-of-work to include ongoing programs or special funded projects. A quarterly staff conference is used to process stakeholder input from the special and state advisory councils as a special effort on behalf of limited-resource and low-asset communities in the Black Belt.

Team POWs plans-of-work are shared with Extension coordinators, agents, and resource specialists to align program alternatives and to make mutual decisions regarding programs, staff involved, dates, and locations for implementation purposes.

RESEARCH:
Input from stakeholders is used to set program priorities and for identifying emerging issues relevant to agricultural activities. Their inputs are considered in the long term plan for hiring faculty members and staff members. Input concerning urgent and serious issues will be used to redirect research funds and used in the budget processes as well. Research priorities identified from stakeholders' input are used as

guides for solicitation of research grant applications. Annual Hatch and Evans Allen-funded internal grants are selected competitively (awards are made based on merit and relevance to the priority areas). Because of the small size of the funding, such research funding has to be considered as seed grants. Leveraging of additional funding is essential to carry the research priorities forward.

# V. Planned Program Table of Content

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

**Program # 1**

### 1. Name of the Planned Program

Global Food Security and Hunger

### 2. Brief summary about Planned Program

There are state entities who have committed to support Research or Research/Extension integrated activities that will boost Alabama agricultural production, lower production costs, contribute to global capacity to meet the growing food demand, and foster innovation in fighting hunger by addressing food security for vulnerable populations. The goal of this program is to enhance competitiveness and sustainability of rural community and farm economies of Alabama in the global market through development and/or application of technologies, farming approaches, or organizational strategies that ensure the sustainability of rural communities and agricultural and forestry production systems. Specific areas of research include, but are not limited to: value-added food; improved cropping systems; improved poultry and animal systems; genomic studies; genetic studies of agriculturally important traits and processes; basic agricultural research for the discovery of new and improved food and forest products, or alternatives to pesticides and antibiotics to control disease outbreaks; development of genetically enhanced plant varieties or animal stocks, including aquaculture species; alternative specialty crops; fisheries and aquaculture; forest products and sustainable systems; market analysis and economics; rural communities, agricultural economics, and rural finance; needs of producers with limited resources; analysis of institutional and infrastructural constraints; integrated pest management; alternative and innovative products and new production methods; and organic agriculture, local food systems, and sustainable agriculture. Of particular interest are projects that present innovative synergies of disciplines and perspectives, while advancing sustainability objectives. This priority is aligned with the USDA Research priority area of Global Food Security and Hunger and with Enhancing the Competitiveness of Alabama Agriculture in the Global Economy.

Global food production will fall short of population growth over the next 25 years according to Dr. Norman Borlaug, Nobel Peace Prize winner and father of the Green Revolution. Current prediction by some scientists is that more food will have to be produced in the next 40 years than has been produced in the past 10,000 years. The challenge for the nation's producers to continue feeding the world and sustaining the environment will be solved in part by improvements in technology, unbiased university-based research and training, and the adaption of production cultures for a changing environment.

Almost 80% of forest land in Alabama or approximately 23 million acres belongs to non-industrial private owners. The need to meet the nation's requirement for both traditional forest products and associated amenities such as clean water, recreation, wildlife habitat, and fuel, will continue to increase. Research-based education is needed to help these landowners and land-users actively manage their forest land for potential benefits. Agroforestry, which combines agriculture and timber production on the same acreage, also has a role to play. Landowners can benefit from agroforestry systems at all stages in their forest land management, while increasing productivity and improving environmental conditions.

Additionally, this program includes commercial production of food animals (beef, dairy, swine, poultry, sheep, goats, rabbits, etc.) and non-commercial management of companion animals (horses, dogs, etc.). Furthermore, it includes row crop production, fruits and vegetables, and turf and ornamentals. Global food security and small-scale farming addresses the challenges facing small-scale producers, their families, and their communities. The issues of declining numbers of small-scale producers, land loss by small-scale producers, lack of resources, lack of marketing opportunities, low profitability, dying communities and globalization are critical to small-scale agriculture. This Program emphasizes appropriate technologies in

the following initiatives: (a) Small farmers, Landownership, and Agribusiness Cooperatives, (b) Horticulture and Community Gardens, and (c) Livestock Production and Marketing.

Initiatives and components of the activities include: Sustainable Agriculture Practices and Community Gardening, Beginning Farmer and Rancher Development, Small Ruminants and Livestock Production, Small Farm Outreach, Training, and Technical Assistance, Cooperative Marketing, Forest Landowners Education, youth livestock shows, sustainable fruit and vegetable production, sustainable goat and beef production, and specialized training.

**3. Program existence :** Mature (More then five years)

**4. Program duration :** Long-Term (More than five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** Yes

## V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

| KA Code | Knowledge Area | %1862 Extension | %1890 Extension | %1862 Research | %1890 Research |
|---|---|---|---|---|---|
| 101 | Appraisal of Soil Resources | 0% | 0% | 2% | 5% |
| 102 | Soil, Plant, Water, Nutrient Relationships | 4% | 4% | 2% | 13% |
| 111 | Conservation and Efficient Use of Water | 10% | 10% | 10% | 5% |
| 123 | Management and Sustainability of Forest Resources | 10% | 10% | 2% | 5% |
| 125 | Agroforestry | 5% | 5% | 2% | 9% |
| 132 | Weather and Climate | 5% | 5% | 4% | 3% |
| 201 | Plant Genome, Genetics, and Genetic Mechanisms | 0% | 0% | 6% | 4% |
| 202 | Plant Genetic Resources | 0% | 0% | 4% | 8% |
| 203 | Plant Biological Efficiency and Abiotic Stresses Affecting Plants | 0% | 0% | 6% | 2% |
| 205 | Plant Management Systems | 10% | 10% | 18% | 2% |
| 206 | Basic Plant Biology | 2% | 2% | 4% | 2% |
| 211 | Insects, Mites, and Other Arthropods Affecting Plants | 5% | 5% | 4% | 2% |
| 212 | Diseases and Nematodes Affecting Plants | 0% | 0% | 4% | 3% |
| 213 | Weeds Affecting Plants | 2% | 2% | 2% | 1% |
| 216 | Integrated Pest Management Systems | 10% | 10% | 6% | 6% |
| 302 | Nutrient Utilization in Animals | 5% | 5% | 6% | 8% |
| 311 | Animal Diseases | 10% | 10% | 8% | 2% |
| 402 | Engineering Systems and Equipment | 2% | 2% | 2% | 0% |
| 502 | New and Improved Food Products | 5% | 5% | 4% | 10% |
| 601 | Economics of Agricultural Production and Farm Management | 15% | 15% | 4% | 10% |
| | **Total** | 100% | 100% | 100% | 100% |

## V(C). Planned Program (Situation and Scope)

### 1. Situation and priorities

In the global economy, food security is a global issue. As the population of the world continues to grow, global food security is a great concern. This concern is magnified when the world is facing decreasing available land and a highly variable climate that is changing rapidly with more frequent extreme weather conditions. This is also coupled with the challenge of energy demands that may reduce food availability by

either using food resources for energy directly or using agricultural land for production of energy crops. In recent decades, the world population increased by one billion every 12-15 years, and it just passed seven billion, a growth from three billion in 1960, taking just 50 years. Such population growth put much pressure on demand for food. In the 1960s-1970s, food production was drastically increased, during the so-called "green revolution" with relatively simple measures such as use of hybrid crop varieties, use of fertilizers, and irrigation. While increasing acreage can still account for a small percentage of the increased demands, there is limited arable land to grow the needed food. Similarly, the water resources are now limited for irrigation, and fertilizer use is no longer sufficient to meet the challenge. The solution thus lies in the development of new technologies and applications.

It is clear that technologies need to be developed to fully understand and exploit the genome capacity of plants and animals, and best practices need to be developed to fully exploit the genetic capacity of animals and plants; methods and best practices have to be developed to adapt to the changing climate; technologies need to be developed to minimize environmental impact of agriculture, value-added foods need to be developed; improved cropping systems and improved poultry and animal systems need to be developed; alternatives to pesticides and antibiotics to control disease outbreaks need to be discovered and invented; genetically enhanced plant varieties or animal stocks including aquaculture species need to be developed; potential of alternative specialty crops need to be explored and utilized; fisheries and aquaculture, forest products and sustainable systems need to be developed; market analysis, and economic analysis need to be conducted.

With 45% of Alabama's population residing in rural areas, there is a substantial (though frequently indirect) dependency on net returns from agricultural production. Alabama's producers range in size from small-scale, limited-resource and/or family farms to corporately owned entities. All farmers and agricultural producers face declining returns from traditional crops and practices and from increasing fuel, energy, and animal feed costs. Priorities are to develop and evaluate the production of new and improved high value, energy, and alternative/specialty crops, adaptation of the best and most efficient crop and animal management systems, and to transfer knowledge of these crops and systems to Extension personnel, growers and other interested state citizens.

The mission of this planned program is to assist private citizens, landowners, resource managers and producers in applying research-generated information. The management practices and decisions made by these groups have a significant impact not only on local economies, but equally important, on the environmental and water quality of much of rural Alabama.

This program area addresses the challenges facing small-scale producers, their families, and their communities: lack of access to capital, lack of markets, opportunity to do business with major food retailers, and lack of viable farmer networks. Impacts from this program will result in small-scale producers and/or their communities making informed and research-based decisions; understanding the nature of change in agricultural production, as well as being able to use tools, strategies, and techniques that are applicable to them in increasing profitability and sustainability. Also, attention is given to a growing concern relative to the use of chemicals, preservation methods, and food safety.

**2. Scope of the Program**

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension

- Integrated Research and Extension
- Multistate Integrated Research and Extension

## V(D). Planned Program (Assumptions and Goals)

### 1. Assumptions made for the Program

- The upward trend of world population.
- Limited land for food production and decreasing land availability with increased levels of Urbanization.
- Genomes of animal and plants harbor the potential for a larger capacity.
- Understanding genomes and genetics will help in utilization of genetic resources.
- Large potential to improve agricultural production based on best agricultural practices from planting to harvest, and any steps in between, as well as post-harvest processing, value added processes, and marketing; understanding plant and animal biology, physiology, agronomy, soils, plant protection, disease and pest control and management are crucial elements of the best practices.
- Sustainability is possible with the use of best agricultural practices.
- Climate change will not be too dramatic and rapid.
- Research and Extension community can form teams to effectively address problems of global food security.
- Funding will be available throughout the course of the program.
- Producers will be informed and motivated to change.
- External funds can serve as catalysts for change;
- Staff can be hired and maintained with necessary skills and abilities.
- The largest agricultural industries in Alabama are forestry, poultry, cattle, greenhouse, and nursery crop production, and this trend will continue.
- Agriculture will remain an important component of the economy of the state of Alabama, and support from the state will be relatively stable.
- Greater production efficiency is possible.
- Producers will adopt new management strategies or technologies that are shown to increase production, increase production efficiency, enhance quality, reduce environmental impact, increase sustainability, or improve profit margins.
- Resources including facilities and funds will remain sufficient to continue these planned program efforts.
- Sustainable agricultural and forestry systems will continue to be an important component of Alabama's economy, and an important area within future US Farm Bill legislation.
- There will continue to be new research-based information in the area of sustainable agriculture and forestry that will be beneficial to individual producers and to society as a whole, if it is implemented.
- There will continue to be adequate federal and state matching funds to support work in this priority program area, and will continue to fund state and regional specialist positions and regional Extension agents who work exclusively in this priority area.
- Farmers, landowners, and their families will accept the information provided partners and agencies will cooperate with project personnel.
- Funding will be available to execute project financial crises will abate; and
- Personnel will adhere to government regulations.

### 2. Ultimate goal(s) of this Program

- Increased agricultural output such as yields

- Enhanced production efficiency
- Reduced environmental impact
- Sustainability of production
- Value-added products
- Increased economic return
- Improved quality of life as a result of sufficient, safe and nutritious food

The ultimate goal of this program area is to teach private citizens, land owners, resource managers and producers in applying research-generated information to adopt practices that are environmentally safe and promote commonly accepted animal welfare standards.
The ultimate goal of this program is to increase production, profitability and sustainability for small- scale producers, and thus participate in the enhancement of global food security and improve the quality of life in farm and rural families.

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

### 1. Estimated Number of professional FTE/SYs to be budgeted for this Program

| Year | Extension | | Research | |
|---|---|---|---|---|
| | 1862 | 1890 | 1862 | 1890 |
| 2017 | 60.0 | 13.5 | 174.0 | 15.1 |
| 2018 | 60.0 | 13.5 | 174.0 | 15.1 |
| 2019 | 60.0 | 13.5 | 174.0 | 15.1 |
| 2020 | 60.0 | 13.5 | 174.0 | 15.1 |
| 2021 | 60.0 | 13.5 | 174.0 | 15.1 |

## V(F). Planned Program (Activity)

### 1. Activity for the Program

Research will be conducted to understand the biology of plants and animals, understand their genome capacity and plasticity, understand genes controlling production and performance traits, and use such knowledge to develop new cultivars in plant production systems and improved animal and fish stocks.
Research will be conducted to develop improved production methods such as improved crop production systems; improved poultry, sustainable aquaculture and animal production systems, develop nutritional strategies in sustainable aquaculture and animal production systems.
Research will be conducted to develop the best agricultural practices for growing crops and animals with minimal impact to the environment and adaptable to climate change, lowest possibility of input, and the maximum amount of output. Some of the examples include planting schemes, rotation, irrigation, harvest, and post-harvest technologies, pest and disease control and management, nutrition re-definition, management, feeding schemes, and other agricultural practices.
Research will be conducted to develop value-added food, alternatives to pesticides and antibiotics to control disease outbreaks, develop integrated pest and disease management systems for plants and animals, and conduct economic analyses to increase profit margins.
Research will be conducted on the comparative genomics of nematodes and other plant pathogens and pests and to understand their interaction with plants.
Research results will be shared with Extension personnel for further dissemination, particularly to county

agents and producers. Additional dissemination of results are through direct contacts with farmers and producers (such as at field days and demonstrations, and commodity meetings), through publications (experiment station bulletins, online reports, press releases, as well as scientific journal articles), and may include nontraditional efforts, such as working through community and the use of the Internet such as websites, including YouTube, iTunes, Skype, and other social media.

The primary activities in this area are 3 statewide Strategic Program Initiatives and 3 Special Funded Projects. These are:

SPI 403 - Safe and Secure Food Supply
SPI 405 - Sustainable Agricultural and Forestry Systems
SPI 406 - Environmental Stewardship
SFP 206 - BEEF U SFP 207 - DAIRY U
SFP 214 - UANNP - Small Ruminant Management Education Program

Each initiative and project includes a variety of educational programs and subject matters. These are:

- Livestock and Forage Economics Alabama Heifer Development Program
- Forage-Focus Program: Growing Pastures, Growing Profits Opportunities for Value-added Livestock Marketing
- Broiler Litter Management
- Production and Marketing of Broiler Litter Management
- Production and Marketing of Horticultural Crops Alabama Ethnic Food Security Network
- Improving Soil Quality
- Best Management Practices for Nutrient Management Improved Pecan Cultivars
- Row Crop Insect and Disease Management IPM Strategies and Tactics
- Herbicide Resistance Management Alabama Farm Analysis Program Retirement Planning
- Farm Succession and Sustainability
- Education for New and Nontraditional Landowners Precision Agriculture
- Geospatial Technologies
- Climate Information to Reduce Agricultural Risk Rapid Agronomic Response Program
- Community Forestry
- Invasive Plant Ecology and Control Recreational Fishpond Management Catfish Pond-to-Plate
- Development of Alternate Species and Systems for Aquaculture K-12 Aquaculture/Aquascience Education
- Oyster Mariculture in Alabama Promotion and Awareness eXtension

Each initiative and project includes a variety of educational activities. The primary program activities will consist of general educational sessions, workshops, group discussions, conferences and field demonstrations such as the sustainable agriculture field day, annual farmers' conference, master goat certification program, pasture and forage management workshop, and integrated pest management sessions.
Additionally, the potential benefits for application of remote sensing in small agriculture production will also be explored. These activities will be given in the areas of fruits and vegetables, animal production, and underserved non-industrial forest land ownership management.

**2. Type(s) of methods to be used to reach direct and indirect contacts**

**Extension**

| Direct Methods | Indirect Methods |
|---|---|

| | |
|---|---|
| ● Education Class<br>● Workshop<br>● Group Discussion<br>● One-on-One Intervention<br>● Demonstrations<br>● Other 1 (Web conferencing) | ● Public Service Announcement<br>● Newsletters<br>● TV Media Programs<br>● eXtension web sites<br>● Web sites other than eXtension |

**3. Description of targeted audience**

Researchers, Extension specialists, county agents, farmers and producers in the state, processors, students (both K-12 and at our institutions), all state citizens. It is estimated that > 48,000 people are directly involved in farming.

The target audiences include private citizens, landowners, resource managers and producers. The targeted audience will consist of small-scale producers and landowners in the 12 Black Belt and surrounding counties in Alabama.

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

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☐ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

## V(H). State Defined Outputs

### 1. Output Measure

- Number of peer reviewed publications
- Number of patents and disclosures
- Number of plant varieties developed and improved.
- Number of animal breeds developed and improved
- Number of vaccines developed and/or tested
- Number of graduate students completed
- Number of technologies developed/evaluated
- Number of technical and poster presentations
- Number of training events
- Number of demonstrations
- Number of exhibitions and tradeshows
- Number of participants
- Number of educational publications developed or improved
- Number of social media information interactions
- Number of in-service training sessions for Extension and Research personnel
- Number of training curricula or modules developed

☐ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

## V(I). State Defined Outcome

| O. No | Outcome Name |
|---|---|
| 1 | The number of new variety of crops developed |
| 2 | The number of technologies developed for control and management of diseases |
| 3 | The number of best management practices adopted that ensure the sustainability of agricultural systems |
| 4 | The number of broiler producers with increased knowledge of of methods to reduce waste management issues on farms |
| 5 | The number of participants with increased knowledge of horticultural production methods and marketing |
| 6 | The number of participants who adopted row crop production practices that are sustainable |
| 7 | The number of participants who adopted integrated pest management recommendations |
| 8 | The number of pond owners with increased knowledge of pond function and management |
| 9 | The number of participants who adopt water conservation best practices |
| 10 | The number of livestock and equine farmers who adopt forage best management practices |
| 11 | The number of livestock owners with increased producer knowledge on sustainability of production |
| 12 | The number of participant with increased knowledge of Integrated Pest Management |
| 13 | The number of best management practices adopted that ensure the sustainability of forestry production systems. |
| 14 | The number of poultry producer who adopt litter management techniques |
| 15 | The number of poultry industry personnel with increased knowledge in poultry house technology and management |
| 16 | The number of catfish producers who adopt more efficient practices |
| 17 | The number of catfish producers who use hybrid catfish production |
| 18 | The number of livestock owners with increased knowledge on proper animal care |
| 19 | The number of participant with increased knowledge of Plasticulture |
| 20 | The number of participant with increased knowledge of Organic Farming |
| 21 | The number of participant with increased knowledge of Forest Management |
| 22 | The number of participant with increased knowledge of Animal Management |
| 23 | The number of pond owners who adopt pond management best practices |
| 24 | The number of participants who increased knowledge in angler education |
| 25 | The number of participants with increased knowledge of fisheries management |

**Outcome #** 1

**1. Outcome Target**

The number of new variety of crops developed

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 502 - New and Improved Food Products
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 205 - Plant Management Systems
- 302 - Nutrient Utilization in Animals
- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 216 - Integrated Pest Management Systems
- 311 - Animal Diseases
- 213 - Weeds Affecting Plants
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 202 - Plant Genetic Resources
- 601 - Economics of Agricultural Production and Farm Management
- 402 - Engineering Systems and Equipment
- 212 - Diseases and Nematodes Affecting Plants

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 2

**1. Outcome Target**

The number of technologies developed for control and management of diseases

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 216 - Integrated Pest Management Systems
- 202 - Plant Genetic Resources

- 205 - Plant Management Systems
- 311 - Animal Diseases
- 212 - Diseases and Nematodes Affecting Plants
- 206 - Basic Plant Biology

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 3

**1. Outcome Target**

The number of best management practices adopted that ensure the sustainability of agricultural systems

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 202 - Plant Genetic Resources
- 125 - Agroforestry
- 101 - Appraisal of Soil Resources
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 502 - New and Improved Food Products
- 311 - Animal Diseases
- 402 - Engineering Systems and Equipment
- 213 - Weeds Affecting Plants
- 302 - Nutrient Utilization in Animals
- 601 - Economics of Agricultural Production and Farm Management
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 132 - Weather and Climate
- 102 - Soil, Plant, Water, Nutrient Relationships
- 212 - Diseases and Nematodes Affecting Plants
- 123 - Management and Sustainability of Forest Resources
- 111 - Conservation and Efficient Use of Water
- 216 - Integrated Pest Management Systems
- 205 - Plant Management Systems

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 4

**1. Outcome Target**

The number of broiler producers with increased knowledge of of methods to reduce waste management issues on farms

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 311 - Animal Diseases
- 302 - Nutrient Utilization in Animals

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 5

**1. Outcome Target**

The number of participants with increased knowledge of horticultural production methods and marketing

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 216 - Integrated Pest Management Systems
- 111 - Conservation and Efficient Use of Water
- 205 - Plant Management Systems
- 601 - Economics of Agricultural Production and Farm Management

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 6

**1. Outcome Target**

The number of participants who adopted row crop production practices that are sustainable

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 205 - Plant Management Systems
- 216 - Integrated Pest Management Systems
- 111 - Conservation and Efficient Use of Water
- 601 - Economics of Agricultural Production and Farm Management

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 7

**1. Outcome Target**

The number of participants who adopted integrated pest management recommendations

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 216 - Integrated Pest Management Systems
- 205 - Plant Management Systems
- 111 - Conservation and Efficient Use of Water

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 8

**1. Outcome Target**

The number of pond owners with increased knowledge of pond function and management

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 111 - Conservation and Efficient Use of Water
- 402 - Engineering Systems and Equipment
- 102 - Soil, Plant, Water, Nutrient Relationships
- 132 - Weather and Climate

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 9

**1. Outcome Target**

The number of participants who adopt water conservation best practices

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 132 - Weather and Climate
- 111 - Conservation and Efficient Use of Water
- 402 - Engineering Systems and Equipment
- 102 - Soil, Plant, Water, Nutrient Relationships

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 10

**1. Outcome Target**

The number of livestock and equine farmers who adopt forage best management practices

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 216 - Integrated Pest Management Systems
- 111 - Conservation and Efficient Use of Water
- 601 - Economics of Agricultural Production and Farm Management
- 205 - Plant Management Systems

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 11

**1. Outcome Target**

The number of livestock owners with increased producer knowledge on sustainability of production

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 601 - Economics of Agricultural Production and Farm Management
- 311 - Animal Diseases
- 302 - Nutrient Utilization in Animals

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 12

**1. Outcome Target**

The number of participant with increased knowledge of Integrated Pest Management

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 601 - Economics of Agricultural Production and Farm Management
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 102 - Soil, Plant, Water, Nutrient Relationships
- 111 - Conservation and Efficient Use of Water
- 123 - Management and Sustainability of Forest Resources

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 13

**1. Outcome Target**

The number of best management practices adopted that ensure the sustainability of forestry production systems.

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 102 - Soil, Plant, Water, Nutrient Relationships
- 205 - Plant Management Systems
- 216 - Integrated Pest Management Systems
- 123 - Management and Sustainability of Forest Resources

- 601 - Economics of Agricultural Production and Farm Management

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 14

**1. Outcome Target**

The number of poultry producer who adopt litter management techniques

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 311 - Animal Diseases
- 302 - Nutrient Utilization in Animals

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 15

**1. Outcome Target**

The number of poultry industry personnel with increased knowledge in poultry house technology and management

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 302 - Nutrient Utilization in Animals
- 311 - Animal Diseases

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research

- 1890 Extension
- 1890 Research

**Outcome #** 16

**1. Outcome Target**

The number of catfish producers who adopt more efficient practices

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 302 - Nutrient Utilization in Animals
- 311 - Animal Diseases

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 17

**1. Outcome Target**

The number of catfish producers who use hybrid catfish  production

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 302 - Nutrient Utilization in Animals
- 311 - Animal Diseases

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 18

**1. Outcome Target**

The number of livestock owners with increased knowledge on proper animal care

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 302 - Nutrient Utilization in Animals
- 311 - Animal Diseases
- 601 - Economics of Agricultural Production and Farm Management

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 19

**1. Outcome Target**

The number of participant with increased knowledge of Plasticulture

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 101 - Appraisal of Soil Resources
- 123 - Management and Sustainability of Forest Resources
- 102 - Soil, Plant, Water, Nutrient Relationships
- 205 - Plant Management Systems
- 601 - Economics of Agricultural Production and Farm Management
- 111 - Conservation and Efficient Use of Water

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 20

**1. Outcome Target**

The number of participant with increased knowledge of Organic Farming

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 111 - Conservation and Efficient Use of Water
- 102 - Soil, Plant, Water, Nutrient Relationships
- 205 - Plant Management Systems
- 101 - Appraisal of Soil Resources
- 601 - Economics of Agricultural Production and Farm Management

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 21

**1. Outcome Target**

The number of participant with increased knowledge of Forest Management

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 601 - Economics of Agricultural Production and Farm Management
- 102 - Soil, Plant, Water, Nutrient Relationships
- 125 - Agroforestry
- 123 - Management and Sustainability of Forest Resources
- 101 - Appraisal of Soil Resources
- 205 - Plant Management Systems
- 111 - Conservation and Efficient Use of Water

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research

- 1890 Extension
- 1890 Research

**Outcome #** 22

**1. Outcome Target**

The number of participant with increased knowledge of Animal Management

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 601 - Economics of Agricultural Production and Farm Management
- 311 - Animal Diseases

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 23

**1. Outcome Target**

The number of pond owners who adopt pond management best practices

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 102 - Soil, Plant, Water, Nutrient Relationships
- 111 - Conservation and Efficient Use of Water
- 132 - Weather and Climate
- 402 - Engineering Systems and Equipment

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 24

**1. Outcome Target**

The number of participants who increased knowledge in angler education

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 402 - Engineering Systems and Equipment
- 111 - Conservation and Efficient Use of Water
- 102 - Soil, Plant, Water, Nutrient Relationships
- 132 - Weather and Climate

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 25

**1. Outcome Target**

The number of participants with increased knowledge of fisheries management

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 402 - Engineering Systems and Equipment
- 132 - Weather and Climate
- 102 - Soil, Plant, Water, Nutrient Relationships
- 111 - Conservation and Efficient Use of Water

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

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

### 1. External Factors which may affect Outcomes

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

**Description**

Agricultural systems are complex and easily affected by each of the external factors that are indicated. Under the current economic situation, a stable work force and funding will be crucial for the success of the program.

Programs in sustainable agriculture are largely affected by the Farm Bill, economy, public preference, weather and natural disasters. Weather and climatic conditions, government, pest and diseases, economy, cultural factors and immigration, and public policy changes can also affect the outcomes.

## V(K). Planned Program - Planned Evaluation Studies

**Description of Planned Evaluation Studies**

123 - Management and Sustainability of Forest Resources

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

**Program # 2**

### 1. Name of the Planned Program

Natural resource conservation and management, environmental sustainability, and climate change

### 2. Brief summary about Planned Program

Alabama has rich natural resources such as water, fisheries, forestry, wildlife, and agritourism. This program covers a broad range of integrated research/Extension activities including conservation and management of natural resources, ecology, ecosystem health, environmental studies dealing with anthropic impact and the evolving climate, especially carbon sequestration and water quality and quantity. This program plan for Research will generate knowledge to manage agricultural and natural systems to be resilient in the face of climate changes, and to facilitate sustainability of natural resources and the environment. This will help producers, landowners, and well owners plan and make decisions in adapting to changing environments, sustaining economic vitality, and taking advantage of emerging opportunities offered by natural resource technologies. Specific areas of integrated Research/Extension activities include but are not limited to: develop sustainable agricultural systems emphasizing energy conservation and utilization of renewable energy resources; improve the understanding of the land-water interface; contribute to solutions to the consequences of global climate change; provide a framework for addressing the issues of water quality and quantity, water reuse; an integrative approach to carbon sequestration, forest stand management, wildlife management; restore natural systems and establish best management practices; seek economically viable practices for improved sustainability of large scale, urban, and limited resource agriculture and forestry; surface and ground water resource conservation and enhancement; management of organic waste residue generated from animal, poultry, and crop systems; management of chemical and electronic waste in urban and rural settings; sustainable agricultural systems to enhance soil productivity and improve water infiltration and the plant-root environment; develop sustainable eco- and agri-tourism; improve soil conservation and quality, using bioindicators; rural-urban interface and accompanying environmental issues; remote sensing and precision agriculture; and science-based policy development.

A primary goal for Extension for this program priority area is to educate Alabama citizens about how to apply research-generated information and knowledge to sustain crops and livestock production as well as forest and water resources, using best management adaptation practices that can contribute towards environmental sustainability. The underlying principle of this program is to ensure that Alabama stakeholders: (1) integrate climate variability and climate change into resource use and management decisions, (2) understand how climate variability and climate change might affect their systems, (3) what they should be doing and planning in response to anticipated changes in climate, and(4) ensuring that critical educational needs in the areas of water quality and sustainable energy with emphasis on (a) Master Rural Well Owner, and (b) home energy management, energy audits, and septic systems management education. In addition this program is intended to increase capacity/ ability/ capability of Extension staff enabling integrating climate and weather information into agricultural production and natural resource management and water quality. Subject matter expertise areas in this program include but are not limited to climatology, agro meteorology, hydrology, soils and fertility, land preparation, land use, tillage systems, irrigation systems, water conservation, variety or hybrid selection, livestock management and nutrition, pest and diseases management (to include insects, pathogens, and weeds, as well as integrated pest management). Team members may also be involved in educational programs in the areas of weather and climate, soil carbon sequestration, fertilizer sources and management, and youth development as the need arises. Team members will have academic training and/or practical experience and knowledge in agronomy, plant science, plant pathology, entomology, ecology, forestry, horticulture, livestock production, or some other closely aligned field of expertise.

Additional emphasis will also be placed on natural resource management education for youth and young adults in the Black-Belt region of Alabama. Immediate to moderate measurable outcomes associated with program activities will include the number of home/farm environmental assessments conducted, the number of management plans written, and plans/practices adopted.

**3. Program existence :** Mature (More then five years)

**4. Program duration :** Long-Term (More than five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** Yes

## V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

| KA Code | Knowledge Area | %1862 Extension | %1890 Extension | %1862 Research | %1890 Research |
|---|---|---|---|---|---|
| 102 | Soil, Plant, Water, Nutrient Relationships | 0% | 0% | 5% | 8% |
| 111 | Conservation and Efficient Use of Water | 0% | 25% | 5% | 5% |
| 112 | Watershed Protection and Management | 5% | 0% | 5% | 5% |
| 122 | Management and Control of Forest and Range Fires | 5% | 0% | 5% | 3% |
| 123 | Management and Sustainability of Forest Resources | 5% | 0% | 5% | 5% |
| 125 | Agroforestry | 5% | 25% | 5% | 10% |
| 131 | Alternative Uses of Land | 5% | 0% | 5% | 3% |
| 132 | Weather and Climate | 5% | 25% | 5% | 7% |
| 133 | Pollution Prevention and Mitigation | 5% | 0% | 5% | 5% |
| 134 | Outdoor Recreation | 5% | 0% | 5% | 5% |
| 135 | Aquatic and Terrestrial Wildlife | 5% | 0% | 5% | 5% |
| 136 | Conservation of Biological Diversity | 5% | 0% | 5% | 2% |
| 201 | Plant Genome, Genetics, and Genetic Mechanisms | 5% | 0% | 5% | 5% |
| 203 | Plant Biological Efficiency and Abiotic Stresses Affecting Plants | 5% | 0% | 5% | 5% |
| 304 | Animal Genome | 5% | 0% | 5% | 2% |
| 402 | Engineering Systems and Equipment | 5% | 0% | 5% | 5% |
| 403 | Waste Disposal, Recycling, and Reuse | 10% | 0% | 5% | 3% |
| 601 | Economics of Agricultural Production and Farm Management | 5% | 10% | 5% | 7% |
| 610 | Domestic Policy Analysis | 10% | 0% | 5% | 5% |
| 903 | Communication, Education, and Information Delivery | 5% | 15% | 5% | 5% |
| | **Total** | 100% | 100% | 100% | 100% |

## V(C). Planned Program (Situation and Scope)

### 1. Situation and priorities

Natural resources and environmental education and justice are neither racial or gender specific, yet they address the lives of Alabamians across economic and rural/urban boundaries. Changing behavior is an outcome of gaining information. The impact of uniformed decisions is critical to understanding the need for

change and the value of collective action by community residents especially those in the Black Belt counties in setting the "agenda" for environmental safety, preservation, and sustainability.

Alabama has some of the most diverse landscapes in the US and has 1.3 million acres of surface water. These landscapes and water resources provide habitat for the nation's highest number of species and among the highest number of land species. Land cover consists of 72% forest and 17% pasture and cropland. Forest and agricultural products; outdoor tourism and recreation; and access to ample, clean water drive a significant sector of the state's economy. For the future, Alabama has the potential to become a leader in growing biomass and biofuels and other bio renewables.

Risk factors to environmental stewardship include rapid land development, new industry growth, growth in military bases, population growth, drought, aquifer depletion, fossil fuel depletion, high electricity consumption, introduction of invasive species, climate change, and competition for water (tri-states water war). Education and citizen involvement are critical to environmental stewardship. Better decision-making depends upon understanding why local actions are important to achieving goals such as habitat protection; improving fishing, hunting, timber production; economic growth; and long-term quality of life. Heightened environmental awareness will lead to better planning, better project implementation, and increased energy security.

Global food production will fall short of population growth over the next 25 years, according to the late Dr. Norman Borlaug, Nobel Peace Prize winner and father of the Green Revolution. Current prediction by some scientists is that more food will have to be produced in the next 40 years than has been produced in the past 10,000 years. The challenge for the nation's producers to continue feeding the world and sustaining the environment will be solved in part by improvements in technology, unbiased university-based research and training, and the adaption of production cultures for a changing environment.

Almost 80% of forest land in Alabama, or approximately 23 million acres, belongs to nonindustrial private owners. The need to meet the nation's requirement for both traditional forest products and associated amenities such as clean water, recreation, wildlife habitat, and fuel, will continue to increase. Research-based education is needed to help these landowners and land-users actively manage their forestland for potential benefits. Agroforestry, which combines agriculture and timber production on the same acreage, also has a role to play. Landowners can benefit from agroforestry systems at all stages in their forest land management while increasing productivity and improving environmental conditions. Additionally, this program includes commercial production of food animals (beef, dairy, swine, poultry, sheep, goats, rabbits, etc.) and non-commercial management of companion animals (horses, dogs, etc.). Furthermore, it includes row crop production, fruits and vegetables, turf and ornamentals.

With the drastic increase of human population and its associated human activities, the pressure on environment and natural resources is huge. Human activities, along with other known and unknown factors, have had a major impact on climate change. Such change is characterized by accumulation of carbon dioxide around the atmosphere of the globe that may account for global warming and related or unrelated global climate change. The impact of human activities is predicted to increase with the increasing human population, and increased industrialization and urbanization. Although the trend of global climate change is not certain, it is relatively clear that the global climate is changing with more frequent extreme weather conditions. This poses long-term challenges to the very existence of humans this planet. Along with the increased human activity and climate change, the environmental sustainability is of paramount significance. This includes environments that affect agricultural production, air quality, water quantity and quality, waste management, carbon footprint and sequestration. With the deterioration of the environment, the threats to natural resource sustainability are real and the world could face serious shortages of natural resources including water, forestry, fisheries, and many other natural resources. The mission of this program area is to assist private citizens, land owners, resource managers and producers in applying research-generated information. The management practices and decisions made by

these groups have a significant impact not only on local economies, but equally important, on the environmental and water quality of much of urban and rural Alabama.

The croplands, pastures, and forests are progressively being impacted from increased climatic variability and, in the longer run, to climate change. The US Southeast region is subject to seasonal droughts, seasonal extreme temperatures, hurricane activity, and flooding rainfall events having implications which are not completely understood. Between the bio-physical climate change implications that could be mentioned are physiological effects on crops, pasture, forests and livestock (quantity, quality), changes in land, soil and water resources (quantity, quality), and increased weed, insects and pathogens dynamics. Some of the socioeconomic implications could be a decline in yields and production and fluctuations in world market prices. Therefore, a better understanding of one's influence on climate and climate's influence on society, the magnitude of these changes and potential impacts, as well as the development and implementation of adaptation and mitigation strategies are key to reduce production risks.

In the US, climate variability in most cases has been linked to the phase of El Niño and Southern Oscillation (ENSO). El Niño, ENSO warm phase, is characterized by lower winter temperatures, high winter-spring rain fall Gulf Coast states and dry summers along the Atlantic Coast and from North Texas to North Alabama. El Niño has been related to winter yield reductions of tomato and bell pepper (18%), corn (10%), and cotton in the Southeast. In Alabama, corn yield has been historically low under El Niño conditions. Different from El Niño, La Niña (ENSO cold phase) tends to be warmer and drier.

**2. Scope of the Program**

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

## V(D). Planned Program (Assumptions and Goals)

### 1. Assumptions made for the Program

- Human activities have an impact on climate change.
- Human activities have had a major adverse impact on environment.
- The worsening environment will threaten the sustainability of natural resources;
- Research will lead to better agricultural technologies that will help reduce the adverse impact of agriculture and human activities on environment.
- Carbon footprint is a major cause of global warming and related and unrelated climate change.
- Carbon footprint can be controlled or reduced upon adoption of best agricultural practices.
- Carbon can be sequestered by adoption of certain agricultural practices.
- Best agricultural practices will help improve environment.
- Natural resources cannot be sustained if environmental quality continues to worsen.
- Citizens are responsive to actions to reduce carbon footprint.
- Agricultural, forestry, and related systems will continue to be an important component of Alabama's economy, and an important area within future US Farm Bills

- There will continue to be new research-based information in the area of agriculture and forestry that will be beneficial to individual producers and to society as a whole if it is implemented. Cooperative Extension will continue to receive adequate Federal and state matching funds to support work in this priority program area, and will continue to fund state and regional specialist positions and regional Extension agents who work exclusively in this priority area

• There is a research-based body of knowledge for environmental stewardship that has been established by LGUs and other universities that is beneficial to individuals and to society if relevant educational programs are implemented.

• New research-based knowledge will be created in environmental stewardship and will be beneficial to individuals and to society if it is included in our environmental stewardship programs.

• Environmental stewardship programs fill an important educational need for both Alabama youth and adults.

• Both staff and volunteers can effectively deliver environmental stewardship programs.

• Agronomic crops, forages, and forest which could be potentially impacted by climate change will continue to be an integral component of Alabama's agricultural economy as a source of revenue and support for local, rural communities and as an important domestic source of food and fiber for its citizens statewide

• Sustainability of agricultural production will continue to be primary program area addressed in the future US Farm Bills;

• Land-grant universities in the Southeast will continue to provide research-based information to the citizens and industry including producers, consumers, and associated private enterprises;

• Responsible environmental stewardship is essential to sustainable community development and resource conservation.
• Entire populations and communities need to effectively receive environmental education. The delivery of this educational information is said to be most effective in youth and young adult populations.
• Concerted efforts aimed toward responsible environmental conservation need to occur on every level (private well owners/elected officials.
The overall environmental health of any community ultimately depends upon the entire realm of physical-physiological indicators, including climate change and sustainable energy.

**2. Ultimate goal(s) of this Program**

Develop sustainable agricultural systems that maintain high productivity in light of climate change and reduce greenhouse gas emissions. This will help producers plan and make decisions in adapting to changing environments, sustaining economic vitality, and taking advantage of emerging economic opportunities offered by climate change mitigation technologies. The goal of this program is to understand interactions between agricultural and natural systems and to promote the long-term sustainability of both.

Sustain the environment that is suitable for humanity; and conserve and manage natural resources for social and economic utilization.

Institutionalize profitable and successful production and management practices that result in optimal environmental conditions and conserve natural resources.

Provide research-based information through multiple delivery modes to both youth and adults in an effective educational manner that equips Alabama citizens to make better decisions concerning environmental stewardship, and ensure that future generations have the same opportunities to enjoy Alabama's diverse environment as past generations.

The ultimate goal of the Climate Change Program Priority Team is to provide research-based decision support tools (e.g., education, information) to ensure that Alabama agriculture systems maintains productivity and profitability under climate variability and change scenarios. This is expected to support state and local communities and consumers decisions toward the development and implementation of adaptation and mitigation strategies, the latter providing even economic and environmental advantages.

The objectives are to address a variety of critical educational needs in the areas of natural resources and environmental management in general, and water quality and efficient energy use in particular.

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

**1. Estimated Number of professional FTE/SYs to be budgeted for this Program**

| Year | Extension | | Research | |
|---|---|---|---|---|
| | 1862 | 1890 | 1862 | 1890 |
| 2017 | 37.5 | 8.3 | 81.0 | 7.3 |
| 2018 | 37.5 | 8.3 | 81.0 | 7.3 |
| 2019 | 37.5 | 8.3 | 81.0 | 7.3 |
| 2020 | 37.5 | 8.3 | 81.0 | 7.3 |

| | | | | |
|---|---|---|---|---|
| 2021 | 37.5 | 8.3 | 81.0 | 7.3 |

## V(F). Planned Program (Activity)

### 1. Activity for the Program

Research will be conducted to conserve and manage our natural resources including water, fisheries, forestry, wildlife, agri-tourism. Research will be conducted to develop technologies to facilitate the reduction of environmental impact.

Research will be conducted to develop sustainable agricultural systems emphasizing energy and resource conservation; improve understanding of the land-water interface and the urban-agriculture interface; contribute to solutions to the consequences of global climate change; provide a framework for understanding and addressing issues of water quality and quantity, water reuse, carbon sequestration, air quality, and seek economically viable practices for improved sustainability in large- and small-scale agriculture; management of agricultural waste and residues generated through the animal and poultry and crop production systems; sustainable agriculture systems to enhance soil productivity and improve water infiltration and the plant-root environment; ecotourism; urban growth; invasive species; soil conservation, soil morphology; quality; soil biogeochemical processes, and bio-indicators of soil health and sustainability; rural-urban interface and environmental issues; wildlife management; restoration and best management practices; remote sensing and precision agriculture; and science-based policy development. This priority is aligned with the USDA Research priority area of Climate Change with Alabama's long-term goal of best practices of conserving and utilizing natural resources while sustaining the environment.

-Sweepnet monitoring for fall armyworms Alabama fire ant management program
-Estrus synchronization and fixed time artificial insemination Pesticide safety education
-Youth livestock and equine programs
-Beef U
-Dairy U
-Dairy goat U
-Developing online aquaculture curricula Angler education
-Harmful algal blooms in the southeastern U.S. Community resiliency
-Alabama working waterfront
-Implementation of resiliency index for communities Sustainable horticultural crop production
-Integrated pest management systems Organic horticulture initiatives
-Protocol for evaluating farming as a business vs. hobby Budgeting planning and evaluating cost of agriculture production Integrated cogongrass program
-Master Gardener volunteer training
-Game bird industry support programs Animal welfare training
-Backyard poultry flock seminars
-National poultry technology center educational programs Sustainable energy
-Soybean and corn rust monitoring program Sustainable row crop production
-Urban Environmental Science Education Program AAMU/ACES E-waste Institute
-Urban Gardens and Sustainable Landscapes
-Interactive 3-D Game-Based Mobile Water Conservation Learning Lab
-Alabama Radon Program
-Healthy Homes
-Watershed Management
-The Mobile Bay Oyster Gardening Program

-Aquatic Nuisance Species
-Climate Information to Reduce Agricultural Risk
-Improving Athletic Field Safety and Playability
-GPS 101
-Wildlife Management
-Alabama Master Naturalist Program
-Alabama Backyard Wildlife Habitat Program
-Nutrient Management Planning for Poultry Growers
-Urban Home-A-Syst Program -Urban Natural Resources & Home Grounds Unit
-Skins-N-Skulls
-Classroom in the Forest
-Coosa River Science School
-Alabama Smart Yards

Planned program activities in this area will be multi-faceted to meet the needs of this diverse program area. Continuous interactions with stakeholders will provide information about their needs and concerns as related to climate change. This information will be used to develop and target specific areas of relevance and interest to a particular community, in this case agricultural and environmental communities around climate change aspects. Regional Extension agents, county Extension agents, and specialists are required to devote at least 50% of their Extension appointment directly to specific program projects. Each participant is also required to file an annual report on their activities with those projects for which they are participants.

**2. Type(s) of methods to be used to reach direct and indirect contacts**

**Extension**

| Direct Methods | Indirect Methods |
|---|---|
| ● Education Class<br>● Workshop<br>● Group Discussion<br>● One-on-One Intervention<br>● Demonstrations | ● Public Service Announcement<br>● Newsletters<br>● TV Media Programs<br>● eXtension web sites<br>● Web sites other than eXtension<br>● Other 1 (Proclamations)<br>● Other 2 (Newspaper) |

**3. Description of targeted audience**

Farmers, producers, land owners, industry leaders, policy-makers, citizens, and related federal agency personnel.

The target audiences include private citizens, landowners, resource managers and producers. Alabama citizens ages 5 - 8 (4-H Cloverbuds), ages 9 - 18 (4-H & Youth Development), and citizens who manage residential landscapes.

The activities of the Climate Change Program Priority Team will target the following groups of stakeholders: 1) row crop and fruit-vegetable producers and their representatives groups that include, but are not limited to, the Alabama Cotton Commission, Alabama Peanut Commission, Alabama Soybean Producers, Alabama Wheat and Feed Grains Committee, and the Alabama Fruit and Vegetable Producers; row crop and fruit-vegetable advisors including agents and specialists, public and private

crops advisors; 3) governmental agency personnel including USDA, NRCS, federal crop insurance and risk managers, and State of Alabama Soil and Water Conservation Committee; 4) public policy makers requesting information that impact Alabama's agricultural and water resources communities, and 5) private citizens impacted by policies and practices used for the production of food, fuel, and fiber. All educational programming efforts will target audiences without exclusion or discrimination.

The target audience consist of youths and adults, rural and urban agriculture clientele with needs in the areas of water quality, energy audits, and other and environmental management issues or opportunities.

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

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

## V(H). State Defined Outputs

### 1. Output Measure

- The number of peer-reviewed papers
- The number of dissertations and thesis
- The number of graduate students trained
- The number of curricula developed
- The number of graded facilities and computing cluster at the Geospatial and Climate Change Center
- The number of workshops on climate change variability
- The number of Rural well owners and homeowners who participate in water well quality programs
- The number of Underserved Black Belt students who participate in natural resource management programs
- The number of natural resources management workshops

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

## V(I). State Defined Outcome

| O. No | Outcome Name |
|---|---|
| 1 | The number of participants who adopted improved agricultural practices to reduce carbon footprint |
| 2 | The number of participants who adopt improved agricultural practices designed to increase carbon sequestration |
| 3 | The number of crop varieties identified that adapt to a changing environment |
| 4 | The number of participants who adopt organic grown fruit and vegetable production practices |
| 5 | The number of poultry farmer who increased knowledge of new housing and equipment changes and techniques |
| 6 | The number of farmers with increased knowledge of farm succession methods |
| 7 | The number of participants with increased knowledge of forages in animal production systems |
| 8 | The number of participants who adopt rainwater collection best practices |
| 9 | The number of participants who increase skills related to water conservation |
| 10 | Increase number of acres of rainwater irrigated fruits and vegetables |
| 11 | The number of urban participants who adopt electronic waste management best practices |
| 12 | The number of urban participants who increased knowledge of urban environmental management best practices |
| 13 | The number of participants who adopt IPM recommendations |
| 14 | The number of urban residents with increased knowledge on the impact of household hazards on the environment |
| 15 | The number of row crops and vegetables producers who adopt agronomic management best practices |
| 16 | The number of youth who increased knowledge of well head protection |
| 17 | The number of animal stocks identified that can adapt to a changing environment |
| 18 | The number of youth with increased knowledge of environmental stewardship best practices |
| 19 | The number of adults who adopt environmental stewardship best practices |

**Outcome #** 1

**1. Outcome Target**

The number of participants who adopted improved agricultural practices to reduce carbon footprint

**2. Outcome Type :** Change in Condition Outcome Measure

**3. Associated Knowledge Area(s)**

- 610 - Domestic Policy Analysis
- 132 - Weather and Climate
- 125 - Agroforestry
- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 403 - Waste Disposal, Recycling, and Reuse
- 123 - Management and Sustainability of Forest Resources
- 102 - Soil, Plant, Water, Nutrient Relationships
- 304 - Animal Genome
- 112 - Watershed Protection and Management
- 903 - Communication, Education, and Information Delivery
- 133 - Pollution Prevention and Mitigation
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 111 - Conservation and Efficient Use of Water
- 135 - Aquatic and Terrestrial Wildlife
- 131 - Alternative Uses of Land

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 2

**1. Outcome Target**

The number of participants who adopt improved agricultural practices designed to increase carbon sequestration

**2. Outcome Type :** Change in Condition Outcome Measure

**3. Associated Knowledge Area(s)**

- 903 - Communication, Education, and Information Delivery
- 131 - Alternative Uses of Land

- 132 - Weather and Climate
- 403 - Waste Disposal, Recycling, and Reuse
- 112 - Watershed Protection and Management
- 123 - Management and Sustainability of Forest Resources
- 610 - Domestic Policy Analysis
- 125 - Agroforestry
- 133 - Pollution Prevention and Mitigation
- 111 - Conservation and Efficient Use of Water
- 102 - Soil, Plant, Water, Nutrient Relationships

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 3

**1. Outcome Target**

The number of crop varieties identified that adapt to a changing environment

**2. Outcome Type :** Change in Condition Outcome Measure

**3. Associated Knowledge Area(s)**

- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 403 - Waste Disposal, Recycling, and Reuse
- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 112 - Watershed Protection and Management
- 133 - Pollution Prevention and Mitigation
- 903 - Communication, Education, and Information Delivery
- 304 - Animal Genome

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 4

**1. Outcome Target**

The number of participants who adopt organic grown fruit and vegetable production practices

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 601 - Economics of Agricultural Production and Farm Management

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 5

**1. Outcome Target**

The number of poultry farmer who increased knowledge of new housing and equipment changes and techniques

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 601 - Economics of Agricultural Production and Farm Management

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 6

**1. Outcome Target**

The number of farmers with increased knowledge of farm succession methods

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 601 - Economics of Agricultural Production and Farm Management

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 7

**1. Outcome Target**

The number of participants with increased knowledge of forages in animal production systems

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 601 - Economics of Agricultural Production and Farm Management
- 102 - Soil, Plant, Water, Nutrient Relationships
- 122 - Management and Control of Forest and Range Fires

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 8

**1. Outcome Target**

The number of participants who adopt rainwater collection best practices

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 9

**1. Outcome Target**

The number of participants who increase skills related to water conservation

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 111 - Conservation and Efficient Use of Water

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 10

**1. Outcome Target**

Increase number of acres of rainwater irrigated fruits and vegetables

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 111 - Conservation and Efficient Use of Water
- 601 - Economics of Agricultural Production and Farm Management

**4. Associated Institute Type(s)**

- 1890 Extension

**Outcome #** 11

**1. Outcome Target**

The number of urban participants who adopt electronic waste management best practices

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 133 - Pollution Prevention and Mitigation
- 112 - Watershed Protection and Management

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 12

**1. Outcome Target**

The number of urban participants who increased knowledge of urban environmental management best practices

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 136 - Conservation of Biological Diversity
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 135 - Aquatic and Terrestrial Wildlife
- 134 - Outdoor Recreation
- 133 - Pollution Prevention and Mitigation
- 123 - Management and Sustainability of Forest Resources

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 13

**1. Outcome Target**

The number of participants who adopt IPM recommendations

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 111 - Conservation and Efficient Use of Water
- 102 - Soil, Plant, Water, Nutrient Relationships
- 112 - Watershed Protection and Management

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 14

**1. Outcome Target**

The number of urban residents with increased knowledge on the impact of household hazards on the environment

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 112 - Watershed Protection and Management
- 111 - Conservation and Efficient Use of Water
- 102 - Soil, Plant, Water, Nutrient Relationships
- 133 - Pollution Prevention and Mitigation

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 15

**1. Outcome Target**

The number of row crops and vegetables producers who adopt agronomic management best practices

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 131 - Alternative Uses of Land
- 132 - Weather and Climate
- 102 - Soil, Plant, Water, Nutrient Relationships

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 16

**1. Outcome Target**

The number of youth who increased knowledge of well head protection

**2. Outcome Type :** Change in Condition Outcome Measure

**3. Associated Knowledge Area(s)**

- 131 - Alternative Uses of Land
- 112 - Watershed Protection and Management
- 133 - Pollution Prevention and Mitigation
- 111 - Conservation and Efficient Use of Water
- 132 - Weather and Climate

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 17

**1. Outcome Target**

The number of animal stocks identified that can adapt to a changing environment

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 304 - Animal Genome

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 18

**1. Outcome Target**

The number of youth with increased knowledge of environmental stewardship best practices

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 132 - Weather and Climate
- 112 - Watershed Protection and Management
- 131 - Alternative Uses of Land
- 133 - Pollution Prevention and Mitigation
- 111 - Conservation and Efficient Use of Water

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 19

**1. Outcome Target**

The number of adults who adopt environmental stewardship best practices

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 131 - Alternative Uses of Land
- 132 - Weather and Climate
- 112 - Watershed Protection and Management
- 133 - Pollution Prevention and Mitigation
- 111 - Conservation and Efficient Use of Water

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

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

**1. External Factors which may affect Outcomes**

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

**Description**

Agriculture and the natural environment are complex, interrelated systems, each of which are easily affected by the external factors that are indicated. Climate change is a largely unknown field of research, and any natural changes can override human efforts.

Programs in sustainable agriculture are largely affected by the Farm Bill, weather, public preference, natural disasters and the economy. Willingness of participants to adopt practices will affect outcome of the program. Natural disasters always have an impact on environmental stewardship. Economy issues have implications for environmental stewardship programs as does any change in \appropriations, up or down, and public policy changes and government regulations. There will always be competing programmatic challenges, both internal and external and finally, increasing urbanization has tremendous environmental implications.

The external factors include but are not limited to: natural environmental disasters, input costs, commodity prices, Farm Bill regulations, the economic environment across the world, technology

introduction and adoption rates, associated costs of production, and many others that are unforeseen.

Failure of climate change predictions and impacts could affect education programs as well as suggested adaptation and mitigation strategies. Resilience of farmers to climate variability and climate change might reduce the success and impacts of the program. Unpredictable weather conditions (hurricanes, tropical storms, droughts, etc.) can affect erosion, runoff, and movement of water-borne sediments within the environment. The overall impact can result in its affecting water quality, crop planting, growth and development during the season, and ultimately may reduce crop yields and revenue.

There are no other public entities that promote responsible management of private wells and landowners' resources, including all aspects of landowner liabilities. No existing agency primarily targets environmental education in the Black Belt population of Alabama, especially the underserved portions of this population. Thus the inclusion of the art's teaching model for indoor air quality and other environmental factors will be an important activity for this program area

## V(K). Planned Program - Planned Evaluation Studies

### Description of Planned Evaluation Studies

Specific projects that comprise the Planned Program are evaluated annually by department heads, chairs, and program coordinators. Overview of programs is by institution leaders. Every other year, competitively awarded projects will be evaluated by a review panel to determine the productivity, leverage of funding, and continued potential of high quality research.

Many different activities and projects are included in this program. Each of these has its own specific evaluation methods. The evaluation methods for Special Funded Projects, Ongoing Projects within this area are explained in detail within the data-collection and evaluation sections of these description.

Short-term evaluation will be predominately pre-then-post-tests but mid-term and long-term evaluation will also use follow-up surveys and may include interviews for qualitative evaluation. Aggregation of local/county evaluations will be facilitated by the agents and evaluation aggregation will be facilitated by the appropriate coordinators and statewide evaluation aggregation will be facilitated by the program team providing reports for local/county level, regional, and state level.

The evaluation methods to assess the impacts of the Climate Change project will be:

Number of agents and other Extension personnel who incorporate weather and climate information and climate decision support tools into their own programming efforts. Number and type of climate change adaptation strategies implemented by the farmers. Acreage change by management practice (e.g., conservation tillage) used as adaptation/mitigation climate change strategy will be documented. Documentation of direct positive impact on a producer or local production area as a result of agents' interaction with stakeholders. This will include acreage and financial information as supporting evidence. In addition, an attempt will be made to measure the number of Extension clientele who benefit from the training provided to Extension personnel. The benefit may come in the form of the adoption of information or in the assistance of its use.

Evaluations will be based on data concerning short term effects of the project activities, including assessments relative to increased awareness and knowledge of the content matter of this project, expressed intentions to follow recommended changes, and observations. The project activities will be evaluated by review advisory committees, quality and relevance of data resulting from historical data, climate extreme indices, and data sets for future scenarios generated by hydraulic and crop modeling; workshops, presentations, reports and other documentation.

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

**Program # 3**

**1. Name of the Planned Program**

Food Systems and Food Safety

**2. Brief summary about Planned Program**

Food quality and quantity can be increased through a systems approach involving the entire processes of food, from production, harvesting, processing, marketing, distribution, storage, retailing, preparation, and consumption.

The state of Alabama supports research and Research/Extension integrated activities that enhance efficiency and productivity of food systems, food safety and agricultural biosecurity. The systems approach is taken to enhance both quantity and quality of food through the entire food systems rather than looking at each stage in isolation. The goal of this program area is to develop technology and methods to protect the safety of agriculture and food, to enhance food safety, reduce epidemics of food-borne illness, and to develop the knowledge and a methodologies base for rapid detection of threat agents, including existing and emerging diseases of plants and animals, risk assessment, and facility and personnel security. Further, this program area will focus on approached and methodologies that educate businesses/industry, government and consumers regarding food safety and security.

Specific areas of Research and Extension activities will include, but are not limited to: reducing the incidence of food-borne illness and providing a safer food supply; eliminating causes of microbial contamination and antimicrobial resistance; educating consumers and food safety professionals; developing food processing technologies/methodologies to improve food safety; developing technologies and methods for tracing the sources of food production; developing technologies for rapid analysis and identification of food safety including seafood; development of technologies for rapid detection of biological and chemical contamination such as antibiotics, pesticides, and other contaminants; educating the general public on how to avoid food-borne diseases; safe food handling at home and in commercial enterprises as well as, safe home food preservation; and educating food handlers and processors on how to apply research- generated information and knowledge to ensure safe food products all along the food chain.

For historically limited resource and low asset communities, this program will focus on new and ongoing challenges facing small-scale farmers, producers, and local growers to include lack of resources, and lack of access to solution to improve farm management. The program will emphasize sustainable farm management, sustainable animal and food production.

This priority is aligned with the USDA Research priority area of Food Safety and with the needs of Alabama to ensure the safety and well-being of its citizens, and with the economic interest of Alabama in the global economy.

**3. Program existence :** New (One year or less)

**4. Program duration :** Long-Term (More than five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** Yes

## V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

| KA Code | Knowledge Area | %1862 Extension | %1890 Extension | %1862 Research | %1890 Research |
|---|---|---|---|---|---|
| 102 | Soil, Plant, Water, Nutrient Relationships | 13% | 0% | 0% | 0% |
| 205 | Plant Management Systems | 20% | 0% | 0% | 0% |
| 216 | Integrated Pest Management Systems | 12% | 0% | 0% | 0% |
| 304 | Animal Genome | 0% | 0% | 5% | 7% |
| 305 | Animal Physiological Processes | 0% | 0% | 5% | 5% |
| 307 | Animal Management Systems | 0% | 0% | 10% | 13% |
| 308 | Improved Animal Products (Before Harvest) | 0% | 0% | 5% | 7% |
| 311 | Animal Diseases | 0% | 0% | 5% | 5% |
| 314 | Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals | 0% | 0% | 10% | 10% |
| 501 | New and Improved Food Processing Technologies | 5% | 10% | 10% | 10% |
| 503 | Quality Maintenance in Storing and Marketing Food Products | 5% | 10% | 10% | 3% |
| 504 | Home and Commercial Food Service | 10% | 10% | 5% | 0% |
| 607 | Consumer Economics | 0% | 0% | 5% | 5% |
| 711 | Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources | 20% | 35% | 10% | 15% |
| 712 | Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins | 0% | 0% | 10% | 10% |
| 721 | Insects and Other Pests Affecting Humans | 15% | 35% | 5% | 0% |
| 723 | Hazards to Human Health and Safety | 0% | 0% | 5% | 10% |
| | **Total** | 100% | 100% | 100% | 100% |

## V(C). Planned Program (Situation and Scope)

### 1. Situation and priorities

Food safety is a major concern of consumers and the general public. Each year, an estimated 76 million people get sick, 325,000 people get severely sick, and 5,000 people die because of food safety related reasons in the United States alone. The numbers of incidents, serious illness, and death caused by food safety related reasons in the world is even much larger, as food safety is a greater concern in developing

countries than in developed countries. Of the food safety related concerns, biological contamination of pathogenic bacteria and viruses are very serious. However, issues concerning non-biological contaminants have not been seriously addressed.

Toxins produced by various fungal species are carcinogens, and many chemical contaminations can have serious physiological and health consequences for humans.

The most recent account of the incidence of laboratory-confirmed infections in 2010 compared with the average annual incidence in 1996-1998, a main-effects, model was used. The model accounts for site-to-site variation and changes over time in the size of the population under surveillance in FoodNet. Therefore, in the comparison with the 1996-1998 period, rates of infection in 2010 were lower for Shigella (57% decrease), Yersinia (52% decrease), STEC O157 (44% decrease), Listeria (38% decrease), and Campylobacter (27% decrease); slightly higher for Salmonella (though not significantly different); and significantly higher for Vibrio (115% increase). The most severe cases tend to occur in the very old, the very young, those who have an illness already that reduces their immune system function, and in healthy people exposed to a very high dose of an organism. A former Food and Drug Administration economist estimates the total economic impact of food-borne illness across the nation to be a combined $152 billion annually. In Alabama that total cost of food-borne illness is $2.321 billion. In Alabama, food-borne pathogens cause illness and deaths each year. About 1,500 cases from pathogenic microorganisms are reported yearly to the Department of Public Health in the state of Alabama. It is also estimated that approximately 60 percent of the food-borne illness occurs as a result of eating in retail foodservice operations. In 2000, the Food and Drug Administration conducted a study to determine the frequency of unsafe food handling practices in retail food service operations. Practices that contributed to the incidences of food-borne illnesses were: potentially hazardous foods held at temperatures above 41 degrees F and below 140 degrees F, commercially processed potentially hazardous ready to eat foods not properly dated and marked when stored, surfaces and utensils not properly cleaned and sanitized, and improper and inadequate hand washing. Proper food preservation and NEP preparation can also contribute to deaths from improperly canned or processed food products.

### 2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

## V(D). Planned Program (Assumptions and Goals)

### 1. Assumptions made for the Program

- Best agricultural practices can improve the quality and thereby the safety of food;
- Methodologies/Technologies can be developed for the rapid detection of food-borne pathogens;
- Methodologies/Technologies can be developed for detection of abiotic contaminants;
- Application of methodologies/technologies can lead to safer food;

- Education and Extension programs can increase the awareness of food processing industries and consumers leading to reduced food poisoning and food-related incidents;
- Food Safety will continue to be a national priority;
- There will continue to be new research-based information in the area of Food Safety, From LGUs that will be beneficial to individuals and to society as a whole when it is implemented. Additionally, there will continue to be adequate Federal and state matching funds to support work in this priority program area, and will continue to fund state and regional specialist positions and regional Extension agents who work exclusively in this priority area.

**2. Ultimate goal(s) of this Program**

The goal of this program is to develop technology and methods to increase the quality and quantity of food using a systems approach, to protect the safety of agriculture and food, to enhance food safety, reduce disease epidemiology, and develop the knowledge and technology base for rapid detection of threat agents, including existing and emerging diseases of plants and animals, risk assessment, and facility and personnel security.

The ultimate goal of this program is to ensure a safe and high quality food supply, to educate the general public on how to avoid food-borne diseases, and to educate food handlers, processors and producers on how to apply research-generated information and knowledge to ensure safe food products.

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

**1. Estimated Number of professional FTE/SYs to be budgeted for this Program**

| Year | Extension | | Research | |
|---|---|---|---|---|
| | 1862 | 1890 | 1862 | 1890 |
| 2017 | 17.8 | 2.0 | 28.0 | 7.9 |
| 2018 | 17.8 | 2.0 | 28.0 | 7.9 |
| 2019 | 17.8 | 2.0 | 28.0 | 7.9 |
| 2020 | 17.8 | 2.0 | 28.0 | 7.9 |
| 2021 | 17.8 | 2.0 | 28.0 | 7.9 |

## V(F). Planned Program (Activity)

**1. Activity for the Program**

Specific areas of Research and Extension include, but are not limited to: reducing the incidence of food-borne illness and providing a safer food supply; eliminating causes of microbial contamination and antimicrobial resistance; educating consumers and food safety professionals; developing food processing technologies to improve food safety; development of technologies for tracing the sources of food production; development of technologies for rapid analysis and identification of food including seafood; development of technologies for rapid detection of biological and chemical contamination such as antibiotics, pesticides and other contaminants; toxicological risks and safety of herbal medicinal plants; enzymatic biosynthesis of anti-nutritional food factors and; implementing approaches and methodologies that educate businesses/industry, government and consumers regarding food safety and security (i.e.,

ServSafe and Cook4Safety, Better Process Control School, Seafood HACCP certification through AFDO, Good Agricultural Practices/Good Handling Practices Certification, Cottage Food Law). Specific activities for historically disadvantaged and limited-resource communities will include; sustainable farm management, sustainable fresh produce production, and sustainable animal production.

**2. Type(s) of methods to be used to reach direct and indirect contacts**

**Extension**

| Direct Methods | Indirect Methods |
|---|---|
| ● Education Class<br>● Workshop<br>● Group Discussion<br>● One-on-One Intervention<br>● Demonstrations<br>● Other 1 (Web Conferencing) | ● Public Service Announcement<br>● Newsletters<br>● TV Media Programs<br>● eXtension web sites<br>● Web sites other than eXtension |

**3. Description of targeted audience**

- Researchers
- Educators
- Producers
- Food processors
- Super markets
- Consumers
- General public
- Food service workers
- Home gardeners

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

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☐ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

## V(H). State Defined Outputs

### 1. Output Measure

- Number of publications
- Number of abstracts
- Number of presentations given at scientific meetings
- Number of Extension publications
- Number of training programs
- Number of farm demonstrations
- Number of graduate students
- Number of thesis
- Number of dissertations

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

## V(I). State Defined Outcome

| O. No | Outcome Name |
|---|---|
| 1 | Number of food service workers receiving certification in food safety training |
| 2 | Number of participants with increased knowledge of alternate pest management strategies in home food gardens |
| 3 | Number of participants who adopt IPM principles |
| 4 | Number of people who start or enhance their own food gardens at home |
| 5 | Number of participants who adopt Good Agricultural Practices (GAP) for commercial food producers |
| 6 | Number of participants who adopt Good Handling Practices (GHP) for commercial food producers |
| 7 | Number of participants who increase knowledge of safe food systems practices |
| 8 | Number of participants who adopt safe food systems practices |

**Outcome #** 1

**1. Outcome Target**

Number of food service workers receiving certification in food safety training

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 504 - Home and Commercial Food Service
- 501 - New and Improved Food Processing Technologies
- 503 - Quality Maintenance in Storing and Marketing Food Products
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 2

**1. Outcome Target**

Number of participants with increased knowledge of alternate pest management strategies in home food gardens

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 102 - Soil, Plant, Water, Nutrient Relationships
- 216 - Integrated Pest Management Systems
- 205 - Plant Management Systems

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 3

**1. Outcome Target**

Number of participants who adopt IPM principles

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 216 - Integrated Pest Management Systems
- 102 - Soil, Plant, Water, Nutrient Relationships
- 205 - Plant Management Systems

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 4

**1. Outcome Target**

Number of people who start or enhance their own food gardens at home

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 102 - Soil, Plant, Water, Nutrient Relationships
- 216 - Integrated Pest Management Systems
- 205 - Plant Management Systems

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 5

**1. Outcome Target**

Number of participants who adopt Good Agricultural Practices (GAP) for commercial food producers

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
- 216 - Integrated Pest Management Systems
- 205 - Plant Management Systems
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
- 503 - Quality Maintenance in Storing and Marketing Food Products

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 6

**1. Outcome Target**

Number of participants who adopt Good Handling Practices (GHP) for commercial food producers

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 216 - Integrated Pest Management Systems
- 205 - Plant Management Systems
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
- 503 - Quality Maintenance in Storing and Marketing Food Products
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 7

**1. Outcome Target**

Number of participants who increase knowledge of safe food systems practices

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 503 - Quality Maintenance in Storing and Marketing Food Products
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
- 205 - Plant Management Systems
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
- 501 - New and Improved Food Processing Technologies

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 8

**1. Outcome Target**

Number of participants who adopt safe food systems practices

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 504 - Home and Commercial Food Service
- 501 - New and Improved Food Processing Technologies
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
- 723 - Hazards to Human Health and Safety
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
- 503 - Quality Maintenance in Storing and Marketing Food Products

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

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

**1. External Factors which may affect Outcomes**

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

**Description**

Food safety issues are very complex involving both spacial and temporal variations, the cause of which is sometimes difficult to determine. While reducing foodborne pathogens are possible, the key is public education and training related to the safety of food.

Programs in Food Safety, Preparation, and Preservation as well as Home Grown are largely affected by all of the areas checked above. Less face to face meetings are being conducted due to financial constraints. However, the use of technology has allowed for workshops and trainings to continue to take place.

## V(K). Planned Program - Planned Evaluation Studies

**Description of Planned Evaluation Studies**

Specific projects that comprise the Planned Program are evaluated annually by department heads, chairs, and program coordinators. Overview of program is by institution leaders.

Every other year, funded projects will be evaluated for research productivity and quality, leverage of extramural funding, and the potential for continued success.

Food safety, preparation, and preservation and home grown include many different activities and projects. Each of these has its own specific evaluation methods. The evaluation methods for the Food Safety, Preparation, and Preservation and Home Grown Teams are explained in detail within the data-collection and evaluation sections of the Extension Team Project description sections on the ACES program planning, evaluation, and reporting section of our Intranet.

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

**Program # 4**

### 1. Name of the Planned Program

Human nutrition, well-being, health and obesity

### 2. Brief summary about Planned Program

Human health issues used to be a concern of medical schools. In recent years, however, attention has been given to food, nutrition, well-being and happiness of humans in relation to health. In particular, almost three quarters of medical issues are directly related with the food we consume. Diseases such as obesity, diabetes, high blood pressure, and vascular issues are mostly caused by the imbalance of nutrients, the lack of exercise, poor life style choices, and stress of the involved individuals. Therefore, human health, in particular child obesity, is not only becoming an agricultural issue, but also can be addressed more effectively by land-grant systems.

Human health issues used to be a concern of medical schools. In recent years, however, attention has been given to food, nutrition, well-being and happiness of humans in relation to health. In particular, almost three quarters of medical issues are directly related with the food we consume. Diseases such as obesity, diabetes, high blood pressure, and vascular issues are mostly caused by the imbalance of nutrients, the lack of exercise, poor life style choices, and stress of the involved individuals. Therefore, human health, in particular child obesity, is not only becoming an agricultural issue, but also can be addressed more effectively by land-grant systems.

The state of Alabama has chosen to support Research and Research/extension integrated activities to identify effective measures that guide individuals and families to make informed, science-based decisions that will reduce child obesity and improve health. The goal is to improve nutrition and health; to ensure that nutritious foods are affordable and available, and to provide guidance so that individuals and families are able to make informed, science-based decisions about their health and well-being. Nutrition, obesity prevention, and strong families, youth, and communities are of paramount importance to Alabama agriculture. Specific areas of research include, but are not limited to: issues that affect quality of life and economic well-being of families and children; bioactive food components for optimal health; human nutrition and obesity; improvement in food quality and value. Research conducted will address issues of food choices, as well as life style choices, as they relate to community sustainability. Research will also address means of delivering or producing healthier food products. The long-term goal is to achieve P4 foods, i.e., personalized, preventive, predictive, and participatory food in order to have a healthy population.

As a result of the growing health concerns for Alabama citizens, there has been a combined effort to educate and motivate citizens throughout the state to make better health decisions. Health disparities/inequities are influenced by the level of knowledge, access to healthcare, and the ability to self-manage.Chronic diseases, health disparities/inequities, and healthcare access are major concerns.

The objectives are to:

- Improve the health of Alabamians, targeting limited-resource families, through chronic disease awareness.
- Improve the health of Alabamians through physical activity, nutrition education, and health literacy.

- Empower families to improve health and well-being of families and individuals.
- Increase access to and consumption of fresh fruits and vegetables, especially to limited-resource families.

The overall focus of this program area is to teach families and individuals how to apply research-generated information on nutrition and health (including physical activity) to ensure healthy lifestyles. Through family and individual actions/activities programming supports the reversal of childhood obesity.

Program objectives include: 1) Improvement of Alabamians' health, with special emphasis on combating obesity; 2) Improvement of Alabamians' health through physical activity, nutrition education, and health literacy; 3) Empowerment of families to improve health and well-being of children, youth, and adults and 4) Increase access of fresh fruits and vegetables to increase consumption. There must also be focus on food intake and dietary patterns of limited-resource families.

Families with limited resources are at nutritional risk. Over 80% of people with Type 2 diabetes are obese or overweight. African Americans and women are chiefly affected. Children associated with these groups are at even greater risk. This program area will focus on using curriculum and other experiential learning settings to provide education about nutrition, nutrition and behavior, and lifestyles conducive to obesity prevention in children, young adults, and other members of the families. Key programs will include: (a) Healthy Lifestyles for Families, and (b) Year-Round Healthy Youth Academies. Grants, Integrated Research, extension and outreach contributing to the two foci include Expanded Food and Nutrition Education Program (EFNEP), Family First: Nutrition Education and Wellness, Parenting for Families at Risk, Fitness program, the Media- Smart Eat, Think, and Be Active: A Workshop Curriculum for youth ages 11-13 will be used.

This priority is aligned with the USDA Research priority area of Childhood Obesity, and with the strategic goal of a healthy economy and healthy people in Alabama.

**3. Program existence :** Mature (More then five years)

**4. Program duration :** Long-Term (More than five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** Yes

## V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

| KA Code | Knowledge Area | %1862 Extension | %1890 Extension | %1862 Research | %1890 Research |
|---|---|---|---|---|---|
| 701 | Nutrient Composition of Food | 40% | 20% | 15% | 15% |
| 702 | Requirements and Function of Nutrients and Other Food Components | 0% | 0% | 10% | 15% |
| 703 | Nutrition Education and Behavior | 50% | 40% | 15% | 13% |
| 711 | Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources | 0% | 0% | 5% | 5% |
| 724 | Healthy Lifestyle | 5% | 30% | 20% | 15% |
| 802 | Human Development and Family Well-Being | 0% | 0% | 5% | 7% |
| 805 | Community Institutions and Social Services | 0% | 0% | 10% | 5% |
| 806 | Youth Development | 0% | 0% | 10% | 20% |
| 903 | Communication, Education, and Information Delivery | 5% | 10% | 10% | 5% |
| | **Total** | 100% | 100% | 100% | 100% |

## V(C). Planned Program (Situation and Scope)

### 1. Situation and priorities

In the US Alabama ranks second for obesity, hypertension, and related health problems, especially in minority groups. However, all citizens are vulnerable to these problems. Also related to this is an insufficient level of physical activity (sedentary lifestyle) by state citizens. Research priorities are to elucidate factors that contribute to unhealthy diet and lifestyle choices. Efforts are also being made to produce healthier plant- and animal-based foods (e.g., lower fat, higher vitamin content).

-Activities to meet the objectives of Human Nutrition, Diet and Health include:
-Workshops and Conferences, Seminars and Health Fairs, Radio Announcements
-Newsletters, Health Fairs, Internet Research, Social Media, eXtension

Five of the 10 leading causes of death are associated with diet; coronary heart disease, some types of cancer, stroke, diabetes mellitus, and atherosclerosis. Half of Alabamians will die of heart and blood vessel diseases; one-third will die of cancer. In addition, one out of four has high blood pressure and diabetes that is sharply on the rise. Although obesity is a risk factor for many leading causes of death in Alabama, high blood cholesterol and high blood pressure are also risk factors. Poor diet and physical inactivity are the two primary reasons why the percentage of people who are physically inactive is almost twice the national average of obesity. Proper nutrition is important during all phases of the lifecycle-from the very young to the senior citizen. Nutritional adequacy is imperative to the 18% of Alabamians living below the federally defined poverty level. This major program area will encompass issues of nutrition and chronic disease, changing lifestyle behaviors such as physical activity, weight management, and nutrition throughout the lifecycle with special interest targeting limited-resource audiences. In keeping with the mission and goals

of the National Healthy People Healthy Communities Initiative, Alabama's major health program area has three broad goals: to educate and empower individuals and families to adopt healthy behaviors and lifestyles, to educate consumers so they can make informed healthcare decisions, and build community capacity to improve health. As partnerships within the state and local government agencies, professional and civic organizations, businesses, and health care and public health professionals and institutions continue to work together, there will be a unique educational and community development organizing contributions involving urban and rural, moderate and limited-resource individuals, families, and communities. This program area will encompass issues of chronic disease prevention and control; community based health promotion; county health council/coalition formation, maintenance and expansion; health care access; economics of health care infrastructures; health literacy, mental health, environmental health; agricultural health, maternal and child health; family health; and youth health.

As we look at food intake and dietary patterns of Alabamians, it is clear that limited-resource families are at nutritional risk and prone to obesity, due to the existence of factors which hinder healthful food choices of this group. Children in particular are at more sustained risks of obesity and related health challenges, if proper education does not start early and does not involve whole families. Priority in this program area will be in preventing obesity in children in their pre-K, and other elementary level settings in a way that includes parents, teachers and advisors. Awareness and better health style education and intervention will continue for adults of all ages.

**2. Scope of the Program**

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

## V(D). Planned Program (Assumptions and Goals)

**1. Assumptions made for the Program**

State obesity problem is mainly caused by lifestyles.

- Major factors affecting childhood obesity is the choice of food and lack of exercise.
- A list of nutritious and healthy food does exist.
- Best practices in choice of food and lifestyle can be developed.
- Individuals can change their behaviors in choices of foods and exercise.
- Information on healthy food and healthy lifestyle can be effectively disseminated.
- Adoption of healthy food and healthy lifestyle will result in reduced incidence of obesity, and improved wellness and happiness, reduced stress and improved quality of life.
- Human Nutrition, Diet, and Health will continue to be an important sub-component of the Family and Consumer Sciences area within NIFA.

- There will continue to be new research-based information in the area of Human Nutrition, Diet.
- Health from collaborative efforts through the land-grant universities that will be beneficial to individuals and to society as a whole, if it is implemented.
- There will continue to be Federal and state matching funds to support work in this priority program area, and will continue to fund state specialist positions and regional extension agents who works exclusively in this priority area.

The assumption is that limited-resource families want to learn nutritional education and family well- being to prevent health disparities and live longer healthy lives; that the curriculum used will keep participants motivated and involved throughout its duration; that organizations with similar goals will partner with this program; that participants will be receptive to information provided by the program; that through the three components on nutritional education, physical activity, and behavior modification, program participants will improve overall health and maintain a better quality of life.

**2. Ultimate goal(s) of this Program**

- Improve health status of the state's citizens.
- Reduce obesity problems in the state.
- Reduce health care costs related to obesity.
- Increase adoption of healthy food choices and healthy life styles.
- Increase awareness of the relations between choice of food and lifestyle with the indicators of physical condition such as obesity.

The ultimate goal of this program is to teach people how to apply research-generated information and knowledge to ensure healthy lifestyles based on sound nutritional information and adequate exercise.

The objective is to increase awareness among racial and ethnic minority groups in Alabama about the risk factors of obesity and subsequent diseases, such as heart diseases, high blood pressure and diabetes. Participants will gain knowledge from health and fitness programs offered to prevent obesity. Information in the curriculum is based on results of scientific and educational research, observation, and clinical trials.

-Reduce obesity problems in the state.
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-Increase awareness of the relations between choice of food and lifestyle with the indicators of physical condition such as obesity.

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

### 1. Estimated Number of professional FTE/SYs to be budgeted for this Program

| Year | Extension | | Research | |
|---|---|---|---|---|
| | 1862 | 1890 | 1862 | 1890 |
| 2017 | 70.3 | 11.9 | 25.0 | 7.0 |
| 2018 | 70.3 | 11.9 | 25.0 | 7.0 |
| 2019 | 70.3 | 11.9 | 25.0 | 7.0 |
| 2020 | 70.3 | 11.9 | 25.0 | 7.0 |
| 2021 | 70.3 | 11.9 | 25.0 | 7.0 |

## V(F). Planned Program (Activity)

### 1. Activity for the Program

Research will include studies of molecular and cellular mechanisms of obesity, mapping of obesity- related traits in the genomes using animal models, surveys on lifestyle habits (food choice, exercise) of citizens, evaluation of underlying reasons for these habits, program development for improvement, interdisciplinary intervention that include nutritional biochemistry/nutrigenomics, food product development and community nutrition, enhance childcare providers and parents understanding of childhood obesity via health creativeness programs and measuring adoption of improved diets and activity levels. Research will also be conducted on, for example, animal production such that meat products are healthier. In addition, Research activities will explore nontraditional means of delivery of nutritive components. Research results are shared with extension personnel for further dissemination, particularly to county agents, consumers, and community leaders. Additional dissemination of results are through direct contact (such as survey participants and community gatherings), through publications (experiment station bulletins, online reports, press releases, as well as scientific journal articles), and may include nontraditional efforts, such as working through community and faith-based groups.
The primary activities in this area are:

- Environmental Health (Lead, asthma, and sun safety)
- General health and physical activity
- Arthritis and Osteoporosis Prevention
- Control Cancer Prevention and Control Education
- Cardiovascular Health Awareness
- Diabetes and Obesity Prevention
- Health, Nutrition and Wellness

- Healthy Families, Healthy Communities
- 4-H BodyQuest
- 4-H Just Move Alabama!
- 4-H Food and Nutrition from the Garden (JMG)
- Families United through Nutrition (FUN)

Educational activities that will be held include workshops, year-round or extended summer programs, one-on-one interventions, in-school and after-school demonstrations and lectures and in-service training meetings for Extension agents and paraprofessionals, who will participate in this program. Key program activities will include, summer youth college program, summer health and fitness academy, and EFNEP educational sessions. Also with food demonstrations, participants will have food recording database; bi-weekly exercise class; weekly weigh-ins; support group/counseling

**2. Type(s) of methods to be used to reach direct and indirect contacts**

**Extension**

| Direct Methods | Indirect Methods |
|---|---|
| ● Education Class<br>● Workshop<br>● Group Discussion<br>● One-on-One Intervention<br>● Demonstrations<br>● Other 1 (Web Conferencing) | ● Public Service Announcement<br>● Newsletters<br>● TV Media Programs<br>● Web sites other than eXtension |

**3. Description of targeted audience**

All state citizens, particularly targeted groups of children and high-risk citizens, such as students (K through 12; college groups), and food producers and marketers. The primary targeted audience is the general public, targeting limited-resources families. The target audience will consist of underserved and underrepresented youth and adult populations in the12 Black-Belt counties of Alabama.

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

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

## V(H). State Defined Outputs

### 1. Output Measure

- Number of basic nutrition classes/workshops conducted
- Number of people participating in nutrition classes
- Number of food resource management classes conducted
- Number of people participating in the food resource management classes
- Number of food safety classes conducted
- Number of people participating in food safety classes
- Number of meal planning classes conducted
- Number of  people participating in meal planning classes
- Number of food preparation classes conducted
- Number of people participating in food preparation classes
- Number of food demonstrations conducted
- Number of people participating in food demonstrations
- Number of students participating in Body Quest: Food of the Warrior.
- Number of in-service trainings
- Number of adult participants
- Number of youth participants
- Number of chronic disease lessons.
- Number of physical activity lessons
- Number of participants weighed-in
- Number of people participating in physical activity
- Number of places that provide healthy food options.
- Number of places that provide opportunities for physical activity.

- Number of people who receive diabetes self-management training.
- Number of facts sheets, newsletters, etc.
- Number of adaptive teaching and training curriculum modules
- Number of new food products
- Number of food coupons distributed

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

## V(I). State Defined Outcome

| O. No | Outcome Name |
|---|---|
| 1 | The number of participants who increased knowledge of basic nutrition concepts |
| 2 | The number of participants that follow MyPlate/Dietary Guidelines recommendations |
| 3 | The number of participants who increased physical activity |
| 4 | The number of participants who adopted food safety tips |
| 5 | The number of participants who read food labels when purchasing food |
| 6 | The number of participants who utilize a personal budget |
| 7 | The number of participants who plan meals based on what is on hand, on sale, and in season |
| 8 | The number of participants who prepare shopping list before shopping |
| 9 | The number of participants who modify recipes to make them healthier |
| 10 | The number of participants who use comparison shopping techniques |
| 11 | Number/% of treatment group participants who increase fruit and vegetable consumption from pre- to post-assessment and as compared to control group |
| 12 | Number/% of treatment group participants who increase physical activity from pre- to post-assessment and as compared to control group |
| 13 | Number/% of treatment group families of participants who increase physical activity from pre- to post-assessment and as compared to control group |
| 14 | Number/% of treatment group participants who increase eating breakfast from pre- to post-assessment and as compared to control group |
| 15 | Number of adults increased physical activity to 30 minutes or more |
| 16 | Number of youth increased physical activity to 60 minutes or more |
| 17 | The percent change of adult participants weight loss |
| 18 | Means comparison of youth and adults nutritional, physical activity, and chronic disease knowledge retained three (3) months post education |
| 19 | Percentage of youth and adults improved eating habits and physical activity time three (3) months post education |
| 20 | The number of participants with increase knowledge on healthy behaviors associated with eating. |
| 21 | The number of participants with increased knowledge of diabetes. |
| 22 | The number of participant who did not run out of food before the month end |

| | |
|---|---|
| 23 | The number of participants who consumer healthier foods (fruit and vegetable) |

**Outcome #** 1

**1. Outcome Target**

The number of participants who increased knowledge of basic nutrition concepts

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 724 - Healthy Lifestyle
- 703 - Nutrition Education and Behavior
- 702 - Requirements and Function of Nutrients and Other Food Components
- 701 - Nutrient Composition of Food

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 2

**1. Outcome Target**

The number of participants that follow MyPlate/Dietary Guidelines recommendations

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 806 - Youth Development
- 805 - Community Institutions and Social Services
- 903 - Communication, Education, and Information Delivery
- 724 - Healthy Lifestyle
- 703 - Nutrition Education and Behavior
- 802 - Human Development and Family Well-Being
- 701 - Nutrient Composition of Food

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 3

**1. Outcome Target**

The number of participants who increased  physical activity

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 805 - Community Institutions and Social Services
- 806 - Youth Development
- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle
- 903 - Communication, Education, and Information Delivery
- 802 - Human Development and Family Well-Being

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 4

**1. Outcome Target**

The number of participants who adopted food safety tips

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 724 - Healthy Lifestyle
- 701 - Nutrient Composition of Food
- 805 - Community Institutions and Social Services

- 806 - Youth Development
- 802 - Human Development and Family Well-Being
- 903 - Communication, Education, and Information Delivery
- 703 - Nutrition Education and Behavior
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 5

**1. Outcome Target**

The number of participants who read food labels when purchasing food

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 903 - Communication, Education, and Information Delivery
- 805 - Community Institutions and Social Services
- 724 - Healthy Lifestyle
- 806 - Youth Development
- 802 - Human Development and Family Well-Being
- 701 - Nutrient Composition of Food
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
- 703 - Nutrition Education and Behavior

**4. Associated Institute Type(s)**

- 1862 Research
- 1890 Extension

**Outcome #** 6

**1. Outcome Target**

The number of participants who utilize a personal budget

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 703 - Nutrition Education and Behavior
- 802 - Human Development and Family Well-Being
- 903 - Communication, Education, and Information Delivery
- 805 - Community Institutions and Social Services
- 806 - Youth Development
- 724 - Healthy Lifestyle

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 7

**1. Outcome Target**

The number of participants who plan meals based on what is on hand, on sale, and in season

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 703 - Nutrition Education and Behavior
- 805 - Community Institutions and Social Services
- 903 - Communication, Education, and Information Delivery
- 701 - Nutrient Composition of Food
- 806 - Youth Development
- 802 - Human Development and Family Well-Being
- 724 - Healthy Lifestyle
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension

- 1890 Research

**Outcome #** 8

**1. Outcome Target**

The number of participants who prepare shopping list before shopping

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 903 - Communication, Education, and Information Delivery
- 703 - Nutrition Education and Behavior
- 806 - Youth Development
- 724 - Healthy Lifestyle
- 802 - Human Development and Family Well-Being
- 805 - Community Institutions and Social Services

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 9

**1. Outcome Target**

The number of participants who modify recipes to make them healthier

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 805 - Community Institutions and Social Services
- 703 - Nutrition Education and Behavior
- 701 - Nutrient Composition of Food
- 802 - Human Development and Family Well-Being
- 724 - Healthy Lifestyle
- 903 - Communication, Education, and Information Delivery
- 806 - Youth Development

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 10

**1. Outcome Target**

The number of participants who use comparison shopping techniques

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 806 - Youth Development
- 724 - Healthy Lifestyle
- 903 - Communication, Education, and Information Delivery
- 802 - Human Development and Family Well-Being
- 703 - Nutrition Education and Behavior
- 805 - Community Institutions and Social Services

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 11

**1. Outcome Target**

Number/% of treatment group participants who increase fruit and vegetable consumption from pre- to post-assessment and as compared to control group

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
- 806 - Youth Development

- 903 - Communication, Education, and Information Delivery
- 802 - Human Development and Family Well-Being
- 724 - Healthy Lifestyle
- 701 - Nutrient Composition of Food
- 805 - Community Institutions and Social Services
- 703 - Nutrition Education and Behavior

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 12

**1. Outcome Target**

Number/% of treatment group participants who increase physical activity from pre- to post-assessment and as compared to control group

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 802 - Human Development and Family Well-Being
- 806 - Youth Development
- 703 - Nutrition Education and Behavior
- 903 - Communication, Education, and Information Delivery
- 805 - Community Institutions and Social Services
- 724 - Healthy Lifestyle

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 13

**1. Outcome Target**

Number/% of treatment group families of participants who increase physical activity from pre- to post-assessment and as compared to control group

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 703 - Nutrition Education and Behavior
- 806 - Youth Development
- 802 - Human Development and Family Well-Being
- 903 - Communication, Education, and Information Delivery
- 805 - Community Institutions and Social Services
- 724 - Healthy Lifestyle

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 14

**1. Outcome Target**

Number/% of treatment group participants who increase eating breakfast from pre- to post-assessment and as compared to control group

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 806 - Youth Development
- 724 - Healthy Lifestyle
- 701 - Nutrient Composition of Food
- 802 - Human Development and Family Well-Being
- 903 - Communication, Education, and Information Delivery
- 805 - Community Institutions and Social Services
- 703 - Nutrition Education and Behavior

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension

- 1890 Research

**Outcome #** 15

**1. Outcome Target**

Number of adults increased physical activity to 30 minutes or more

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 903 - Communication, Education, and Information Delivery
- 805 - Community Institutions and Social Services
- 806 - Youth Development
- 802 - Human Development and Family Well-Being
- 724 - Healthy Lifestyle
- 703 - Nutrition Education and Behavior

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 16

**1. Outcome Target**

Number of youth increased physical activity to 60 minutes or more

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 903 - Communication, Education, and Information Delivery
- 703 - Nutrition Education and Behavior
- 802 - Human Development and Family Well-Being
- 724 - Healthy Lifestyle
- 806 - Youth Development
- 805 - Community Institutions and Social Services

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 17

**1. Outcome Target**

The percent change of adult participants weight loss

**2. Outcome Type :** Change in Condition Outcome Measure

**3. Associated Knowledge Area(s)**

- 806 - Youth Development
- 703 - Nutrition Education and Behavior
- 903 - Communication, Education, and Information Delivery
- 724 - Healthy Lifestyle
- 701 - Nutrient Composition of Food
- 805 - Community Institutions and Social Services
- 802 - Human Development and Family Well-Being

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 18

**1. Outcome Target**

Means comparison of youth and adults nutritional, physical activity, and chronic disease knowledge retained three (3) months post education

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 903 - Communication, Education, and Information Delivery
- 805 - Community Institutions and Social Services

- 802 - Human Development and Family Well-Being
- 806 - Youth Development
- 724 - Healthy Lifestyle
- 703 - Nutrition Education and Behavior
- 701 - Nutrient Composition of Food

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 19

**1. Outcome Target**

Percentage of youth and adults improved eating habits and physical activity time three (3) months post education

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 903 - Communication, Education, and Information Delivery
- 802 - Human Development and Family Well-Being
- 805 - Community Institutions and Social Services
- 806 - Youth Development
- 724 - Healthy Lifestyle
- 703 - Nutrition Education and Behavior

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 20

**1. Outcome Target**

The number of participants with increase knowledge on healthy behaviors associated with eating.

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 805 - Community Institutions and Social Services
- 703 - Nutrition Education and Behavior
- 903 - Communication, Education, and Information Delivery
- 806 - Youth Development
- 802 - Human Development and Family Well-Being
- 724 - Healthy Lifestyle
- 701 - Nutrient Composition of Food

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 21

**1. Outcome Target**

The number of participants with increased knowledge of diabetes.

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 701 - Nutrient Composition of Food
- 802 - Human Development and Family Well-Being
- 724 - Healthy Lifestyle
- 903 - Communication, Education, and Information Delivery
- 805 - Community Institutions and Social Services
- 703 - Nutrition Education and Behavior

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 22

**1. Outcome Target**

The number of participant who did not run out of food before the month end

**2. Outcome Type :** Change in Condition Outcome Measure

**3. Associated Knowledge Area(s)**

- 903 - Communication, Education, and Information Delivery
- 703 - Nutrition Education and Behavior
- 701 - Nutrient Composition of Food
- 802 - Human Development and Family Well-Being
- 724 - Healthy Lifestyle
- 805 - Community Institutions and Social Services

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 23

**1. Outcome Target**

The number of participants who consumer healthier foods (fruit and vegetable)

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 701 - Nutrient Composition of Food
- 903 - Communication, Education, and Information Delivery
- 724 - Healthy Lifestyle
- 802 - Human Development and Family Well-Being
- 703 - Nutrition Education and Behavior
- 805 - Community Institutions and Social Services

### 4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

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

### 1. External Factors which may affect Outcomes

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

**Description**

The economic status may have a major impact on choice of food and behavior. Stress is a major contributor to obesity, and economic stress and other stressful situations may complicate the efforts. Programs in human nutrition, diet, and health are largely affected by all the areas checked above.

Factors which may affect the outcomes are lack of funding sources, a captive audience, program location, lack of continued support of the community and local health agencies/organizations and sponsors.

## V(K). Planned Program - Planned Evaluation Studies

**Description of Planned Evaluation Studies**

Specific projects that comprise the Planned Program are evaluated annually by department heads, and program coordinators. Overview of programs is by institution leaders. Human Nutrition, Diet, and Health include many different activities and projects. Each of these has its own specific evaluation methods. The evaluation method within Human Nutrition, Diet and Health is explained in detail within the data-collection and evaluation sections.

There will be formative or an ongoing evaluation on each lesson taught. Impact of nutrition, healthy life style education and childhood obesity focus will be done through statistical analysis, observations, and testimonials.

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

**Program # 5**

**1. Name of the Planned Program**

Sustainable Energy

**2. Brief summary about Planned Program**

The agricultural research in Alabama will contribute to the national goal of energy independence by supporting science to develop biomass used for biofuels, design optimum forest products and crops for bioenergy production, and produce value-added bio-based industrial products. The goal is to develop technology and increase knowledge and skills related to the efficient production of biomass for feedstock and conversion of feedstock to bioenergy and bio products, bioprocessing systems, biomass production, and conversion of byproducts into value-added products and to enhance understanding of the long-term sustainability of feedstock production and bioconversion systems including economics, social issues, land use policies, and energy security and the environment. Specific areas of research include, but are not limited to: alternative crops for efficient production of bioenergy feedstock, biotechnology of bioenergy crops to enhance production or to enhance its utilization as an energy source, and technology development for bioenergy conversion. This priority is aligned with the USDA priority area of Sustainable Energy and with the huge domestic energy demands.

Utilizing the researched-based knowledge and skills, Cooperative Extension will focus its primary efforts toward educating farmers, home owners, municipalities, entrepreneurs (business), fleet managers and forest workers in energy conservation, utilization and production. Emphasis will also be placed on (a) Master Rural Well Owner, and (b) home energy management, energy audits, and septic systems management education. Additional emphasis will also be placed on natural resource management education for youth and young adults in the Black-Belt region of Alabama. These goals were set after contacts with farmers, home owners, businessmen starting up energy related businesses, fleet managers, city officials, loggers and forest owners and utilization of result demonstrations, experimentation station and laboratory research trials by research colleagues across the world.

The underlying principle of this planned program is to reduce imported oil usage in a manner that is environmentally friendly and economically sustainable. Subject matter expertise areas in this program area include but are not limited to bio systems engineering, forestry, agronomy, biotechnology, agriculture economics, forestry economics, fleet management, mechanical engineering, chemical engineering, aquaculture and best management and regulatory practices for energy conservation and production. Team members will have academic training and/or practical experience and knowledge in bio systems engineering, agricultural education, agronomy, agriculture economics or some closely aligned field of expertise.

**3. Program existence :** Intermediate (One to five years)

**4. Program duration :** Long-Term (More than five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** Yes

## V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

| KA Code | Knowledge Area | %1862 Extension | %1890 Extension | %1862 Research | %1890 Research |
|---|---|---|---|---|---|
| 101 | Appraisal of Soil Resources | 10% | 0% | 0% | 0% |
| 102 | Soil, Plant, Water, Nutrient Relationships | 20% | 0% | 5% | 5% |
| 125 | Agroforestry | 0% | 0% | 5% | 10% |
| 201 | Plant Genome, Genetics, and Genetic Mechanisms | 0% | 0% | 5% | 10% |
| 202 | Plant Genetic Resources | 0% | 0% | 5% | 10% |
| 203 | Plant Biological Efficiency and Abiotic Stresses Affecting Plants | 0% | 0% | 5% | 5% |
| 205 | Plant Management Systems | 0% | 0% | 15% | 10% |
| 211 | Insects, Mites, and Other Arthropods Affecting Plants | 0% | 0% | 5% | 5% |
| 212 | Diseases and Nematodes Affecting Plants | 0% | 0% | 5% | 5% |
| 216 | Integrated Pest Management Systems | 20% | 0% | 10% | 10% |
| 402 | Engineering Systems and Equipment | 20% | 0% | 5% | 0% |
| 403 | Waste Disposal, Recycling, and Reuse | 20% | 0% | 0% | 0% |
| 405 | Drainage and Irrigation Systems and Facilities | 0% | 0% | 5% | 0% |
| 601 | Economics of Agricultural Production and Farm Management | 0% | 50% | 10% | 10% |
| 603 | Market Economics | 10% | 0% | 5% | 5% |
| 605 | Natural Resource and Environmental Economics | 0% | 0% | 10% | 10% |
| 607 | Consumer Economics | 0% | 50% | 5% | 5% |
| | **Total** | 100% | 100% | 100% | 100% |

## V(C). Planned Program (Situation and Scope)

### 1. Situation and priorities

Alabama is rich in natural resources such as forestry and other sources suitable for consideration as bioenergy feedstock. Alabama's climate is also highly adaptable to growth of highly productive energy crops such as switch grass, canola, pearl millet, sugarcane, and sweet potatoes. It has a lot of conventional and unconventional natural gas reserves, huge deposits of coal and several rivers capable of hydroelectric generation. Alabama generates a lot of the country's nuclear energy. Alabama is fifth among states in nuclear power production. Alabama is one of the highest producers of hydroelectric power and produces 1% of the U.S. natural gas. The state does have one demonstration scale cellulosic ethanol facility that is capable of producing other types of liquid fuels. According to the US Energy Information

Administration, in 2010, Alabama consumed over 45 million gallons of ethanol or 1.7% of the state's volume of gasoline sold. The state has 175 million gallons of annual biodiesel production capacity >99% of this capacity is not being utilized due to feedstock and biodiesel prices.

Development of methodologies and technologies for the utilization of such natural resources for the purpose of energy is an important priority for our country's energy-based economy.
Natural resources and environmental education and justice are neither racial or gender specific, yet they address the lives of Alabamians across economic and rural/urban boundaries. Changing behavior is an outcome of gaining information. The impact of uniformed decisions is critical to understanding the need for change and the value of collective action by community residents especially those in the Black Belt counties in setting the "agenda" for environmental safety, preservation and sustainability. Watershed and wellhead data collection will be coordinated to complement current research needs and future expectations. A focus in this program area will be to help rural and families to improve their well sources of water, and gain control of energy use in their homes, businesses, and on the farms.

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**2. Scope of the Program**

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

## V(D). Planned Program (Assumptions and Goals)

**1. Assumptions made for the Program**

• Development of renewable energy will reduce the pressure of high gasoline prices, and in the long-term, should contribute to reduction of energy dependence on foreign sources.
• Production of bioenergy crops will not seriously affect agricultural production for food and feed crops.
• Bioenergy is economically viable.
• Government will have a sustainable energy policy.
• Alabama and the US will continue to need energy. Alabama farmers, foresters and energy entrepreneurs will continue to have opportunities for profit in sustainable energy. Sustainable energy will be a primary program area in the future US Farm Bills.
• LGUs will continue to provide research-based information to producers, consumers

and energy entrepreneurs.
The Research and Extension will continue to receive adequate federal and state funds to support work in this program area.

• Responsible environmental stewardship is essential to sustainable community development and resource conservation.

- Entire populations and communities need to effectively receive environmental education. The delivery of this educational information is said to be most effective in youth and young adult populations.
- Concerted efforts aimed toward responsible environmental conservation need to occur on every level (private well owners - elected officials.
- The overall environmental health of any community ultimately depends upon the Entire realm of physical- physiological indicators, including climate change and sustainable energy.

**2. Ultimate goal(s) of this Program**

The goal of this program is to develop technology and increase our knowledge of efficient production of biomass for feedstock and conversion of feedstock to bioenergy and bio products, bioprocessing systems, and conversion of byproducts into value-added products and to enhance understanding of the long-term sustainability of feedstock production and bioconversion systems including economics, social issues, land use policies, and energy security and the environment.

- To provide research-based production management tools to enable Alabama Feedstock to be produced economically and environmentally sustainable.
- To provide municipalities and other public groups with the information they need to produce biodiesel from used cooking oil.
- To assist energy entrepreneurs with their start up and production process.
- To provide Alabama citizens with research-based information about sustainable energy options and energy conservation.

The objectives are to address a variety of critical educational needs in the areas of natural resources and environmental management in general, and water quality and efficient energy use in particular.

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

**1. Estimated Number of professional FTE/SYs to be budgeted for this Program**

| Year | Extension | | Research | |
|---|---|---|---|---|
| | 1862 | 1890 | 1862 | 1890 |
| 2017 | 1.9 | 1.3 | 18.0 | 6.0 |
| 2018 | 1.9 | 1.3 | 18.0 | 6.0 |
| 2019 | 1.9 | 1.3 | 18.0 | 6.0 |
| 2020 | 1.9 | 1.3 | 18.0 | 6.0 |
| 2021 | 1.9 | 1.3 | 18.0 | 6.0 |

## V(F). Planned Program (Activity)

### 1. Activity for the Program

This program area will address issues related to renewable energy using bio-based feedstock that ultimately contribute to the relief of energy dependence on foreign sources. The goal of this program is to increase our knowledge of bioconversion of feedstock to bioenergy and bio products, bioprocessing systems, biomass production, and conversion of byproducts into value-added products and to enhance understanding of the long-term sustainability of feedstock production and bioconversion systems including economics, social issues, land use policies, and energy security and the environment. Specific areas of Research include, but are not limited to: alternative crops for efficient production of bioenergy feedstock, biotechnology of bioenergy crops to enhance production or to enhance its utilization as an energy source, development of agricultural practices for newly identified bioenergy crops, and technology development for bioenergy conversion. This priority is aligned with new initiatives on Bioenergy and Bio products Research in DOE, USDA, and several other federal agencies, and with the huge energy demands in the state and the nation.

The project will consist of programs and demonstrations that 1) increase production of energy feedstock (corn, soybeans, rapseed, cottonseed, peanuts, wheat, and biomass); 2) work with municipalities, counties and other public organizations to produce biodiesel from used cooking oil; 3) work with entrepreneurs to develop renewable energy manufacturing plants; 4) work with petroleum distributors, farmers and the general public to increase usage of renewable fuels; 5) work on renewable energy opportunities including gasification of woody feedstock and switch grass; and 6) increase crop production fuel efficiency (7) educating farmers, home owners, municipalities, entrepreneurs (business), fleet managers, and forest workers in energy conservation, utilization and production; (8) home energy management, energy audits, and septic systems management education and (9) additional emphasis will also be placed on natural resource management education for youth and young adults in the Black Belt region of Alabama.

The Integrated Natural Resources and Environmental Education program activities include private well testing/wellhead protection, and home air quality assessments and energy audits. The activities will also be part of youth programs such as the Annual Forestry Camps, Kids-N-Creek camps, Kids Day on the Farm camps and County Annual Water Festivals.

**2. Type(s) of methods to be used to reach direct and indirect contacts**

**Extension**

| Direct Methods | Indirect Methods |
|---|---|
| ● Education Class | ● Public Service Announcement |
| ● Workshop | ● Newsletters |
| ● Group Discussion | ● TV Media Programs |
| ● One-on-One Intervention | ● eXtension web sites |
| ● Demonstrations | ● Web sites other than eXtension |

**3. Description of targeted audience**

Researchers, educators, extension personnel, community leaders, educators, 4H, youth centers, energy consumers, general public.

The activities of the sustainable Energy Program will target the following groups of stakeholders 1) feedstock producers and their representative groups that include, but are not limited to, the Alabama Soybean Producers, the Alabama Wheat and Feed Grains Producers, the Alabama Soybean and Corn Association and the Alabama Forestry Association; 2) fleet managers; 3) energy entrepreneurs; 4) municipalities, county governments and other public organizations; 5) feedstock production advisors including ACES agents and specialist, public and private agronomy advisors; 6) public policy makers requesting energy information; 7) governmental agency personnel including ADECA, DOE, USDA and NRCS; and 8) homeowners and others interested in energy conservation.

The target audience consist of youths and adults, rural and urban agriculture clientele with needs in the areas water quality, energy audits, and other and environmental management issues or opportunities.

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

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

## V(H). State Defined Outputs

**1. Output Measure**

- Number of publications
- Number of rural well owners trained to improve the quality of their private wells
- Number of homeowners trained to improve the use of energy in their homes
- Number of homeowners trained to improve the use of energy in their farms
- Number of homeowners trained to improve the use of energy in their businesses
- Number of children in the Black Belt educated on natural resource management
- Number of parents trained in responsible environmental stewardship
- Number of volunteers trained in responsible environmental stewardship
- Number of community leaders trained in responsible environmental stewardship

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

## V(I). State Defined Outcome

| O. No | Outcome Name |
|---|---|
| 1 | The amount of bioenergy increased |
| 2 | Development and demonstration of logistics for bioenergy production |
| 3 | The number of participants who adopt sustainable energy recommendations |
| 4 | The amount of energy saved |
| 5 | The number of participants with increased knowledge of sustainable energy |
| 6 | The amount of energy produced |

**Outcome #** 1

**1. Outcome Target**

The amount of bioenergy increased

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 603 - Market Economics
- 601 - Economics of Agricultural Production and Farm Management
- 607 - Consumer Economics
- 605 - Natural Resource and Environmental Economics
- 402 - Engineering Systems and Equipment

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 2

**1. Outcome Target**

Development and demonstration of logistics for bioenergy production

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 402 - Engineering Systems and Equipment
- 205 - Plant Management Systems
- 603 - Market Economics
- 212 - Diseases and Nematodes Affecting Plants
- 125 - Agroforestry
- 607 - Consumer Economics
- 405 - Drainage and Irrigation Systems and Facilities
- 601 - Economics of Agricultural Production and Farm Management
- 605 - Natural Resource and Environmental Economics
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 3

**1. Outcome Target**

The number of participants who adopt sustainable energy recommendations

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 102 - Soil, Plant, Water, Nutrient Relationships
- 101 - Appraisal of Soil Resources
- 603 - Market Economics
- 403 - Waste Disposal, Recycling, and Reuse
- 216 - Integrated Pest Management Systems
- 402 - Engineering Systems and Equipment

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 4

**1. Outcome Target**

The amount of energy saved

**2. Outcome Type :** Change in Condition Outcome Measure

**3. Associated Knowledge Area(s)**

- 402 - Engineering Systems and Equipment
- 216 - Integrated Pest Management Systems
- 403 - Waste Disposal, Recycling, and Reuse
- 101 - Appraisal of Soil Resources

- 603 - Market Economics
- 102 - Soil, Plant, Water, Nutrient Relationships

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 5

**1. Outcome Target**

The number of participants with increased knowledge of sustainable energy

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 601 - Economics of Agricultural Production and Farm Management
- 402 - Engineering Systems and Equipment
- 125 - Agroforestry
- 605 - Natural Resource and Environmental Economics
- 403 - Waste Disposal, Recycling, and Reuse

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

**Outcome #** 6

**1. Outcome Target**

The amount of energy produced

**2. Outcome Type :** Change in Condition Outcome Measure

**3. Associated Knowledge Area(s)**

- 605 - Natural Resource and Environmental Economics
- 403 - Waste Disposal, Recycling, and Reuse
- 601 - Economics of Agricultural Production and Farm Management

- 125 - Agroforestry
- 402 - Engineering Systems and Equipment

**4. Associated Institute Type(s)**

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

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

**1. External Factors which may affect Outcomes**

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

**Description**

Steady progress for the development of bioenergy or other types of renewable energy can be easily derailed by each of the external factors that are indicated. Inconsistent government policies can have serious consequences relative to the investment made to the bioenergy field.

This program is built around the knowledge that external factors are always changing for producers and consumers and that it is our charge to help them adapt to those changes. The external factors include but are not limited to: natural environment disasters, input costs, energy and feedstock prices, Farm Bill regulations, the economic environment across the world, technology introduction and adoption rates, associated costs of production and many others that are unforeseen. Inclement weather conditions (hurricanes, tropical storms, droughts, ice storms, etc.) can affect energy usage and feedstock production. Government actions, both domestic and foreign, will have a dramatic effect on energy production and usage.

There are no other public entities that promote responsible management of private wells and landowners' resources, including all aspects of landowner liabilities. No existing agency primarily targets environmental education in the Black-Belt population of Alabama, especially the underserved portions of this population.

## V(K). Planned Program - Planned Evaluation Studies

### Description of Planned Evaluation Studies

Specific projects that comprise the Planned Program are evaluated annually by department heads, program leaders and deans. Overview of programs is by institution leaders.

The merits of projects will be evaluated every other year in terms of research output quantity and quality, leverage of extramural funding, and the potential for continued research success. Written feedback will be collected from sustainable energy program participants.

Evaluations will be based on data concerning short term effects of the ETP, including assessments relative to increased awareness and knowledge of the content matter of this ETP, expressed intentions to follow recommended changes, and observations.

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

**Program # 6**

### 1. Name of the Planned Program

Community Development

### 2. Brief summary about Planned Program

The mission of this Community Development (CD) planned program area is to improve the long-term well-being of all communities throughout Alabama by promoting economic prosperity and improved quality of life. This will be accomplished by a four-pronged approach: education and training, research communication, connections and partnerships, and consultation and engagement. Education and training: improve the practice of CD in the state through targeted educational programs. Consultation & Engagement: help build and strengthen economic and community capacity in communities through leadership development, civic engagement, strategic planning, and economic development. Research Communication: conducting and disseminate research findings on issues related to CD. Connections and Partnership: facilitate communication, coordination, and partnerships among the state's economic development community entities in business, industry, government and education.

The focus of this (national planned program area) is to assist in preparing an Alabama workforce comprised of motivated individuals who can successfully navigate employment transitions throughout their lifespan. The contributions to workforce preparation are to connect local, state, and federal agencies, schools, community groups, labor, employers, and others, to further the workforce development of youth and adults. A particular focus is to provide training in the use of broadband communication technologies, both to bolster needed workforce capacity and to support entrepreneurial enterprises, as well as to create new community connections to foster a shared vision for workforce and economic development. This strategic initiative strives to improve workforce awareness, knowledge, and skills throughout Alabama, with particular emphasis on with particular emphasis on entrepreneurship, broadband adoption, science, technology, engineering, and mathematics (STEM), career education and planning, and technology applications that support workforce development.

This national planned program area is part of the national Family Development and Resource Management base program area and the Financial Security in Later Life national Extension initiative. The state of the economy is a direct indicator of the financial state of individuals, families and communities. Recent shifts in our nation's economy have caused Alabamians to take a closer look at financial resources and information to improve their knowledge, understanding and response to financial challenges and opportunities.

The overall unemployment rate for the state has been consistently high. Natural and manmade disasters have escalated financial situations for families in a number of Alabama regions. And, economic well-being was severely impacted when the mortgage foreclosure crisis hit. Financial well-being is a continuous concern across the lifespan. It is becoming increasingly important as we look at a growing aging population and a future generation of your adults facing unprecedented health challenges and associated costs. No doubt financial literacy is a high priority. Families and individuals are compelled to build financial skills to better prepare to manage spending, credit, investments, saving and to transfer assets to meet short- and long-term goals. This integrative priority program area addresses systemic problems families face in their economic and financial lives. Team members will provide programs designed to teach youth, adults, and seniors how to manage financial resources wisely and make wise consumer decisions regarding purchases, budgeting, managing money, credit and debt management, saving, investing, retirement planning, estate management, career development and entrepreneurship.

This program will focus on community resources and leadership development, business and entrepreneurial development, individual and family financial management, and home ownership and asset development and education. Program initiatives include small business and entrepreneurship development. Volunteer income tax assistance and personal finance education, housing and asset development and education, and community revitalization, etc.

**3. Program existence :** Mature (More then five years)

**4. Program duration :** Long-Term (More than five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** Yes

## V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

| KA Code | Knowledge Area | %1862 Extension | %1890 Extension | %1862 Research | %1890 Research |
|---|---|---|---|---|---|
| 601 | Economics of Agricultural Production and Farm Management | 0% | 20% | 0% | 0% |
| 605 | Natural Resource and Environmental Economics | 15% | 10% | 0% | 0% |
| 608 | Community Resource Planning and Development | 70% | 50% | 0% | 0% |
| 803 | Sociological and Technological Change Affecting Individuals, Families, and Communities | 10% | 10% | 0% | 0% |
| 805 | Community Institutions and Social Services | 5% | 10% | 0% | 0% |
| | **Total** | 100% | 100% | 0% | 0% |

## V(C). Planned Program (Situation and Scope)

**1. Situation and priorities**

Despite the current state and national recessions, Alabama as part of the growing Southern regional economy has the potential to be among the nation's economic leaders in the twenty-first century. Successful efforts that promote sustainability and revitalization, are dependent upon having skilled community leaders. The long-range economic stability of a community correlates positively with the quality of its organized CD. Before economic development can take place, community development must precede it. Various studies and reports from the state department indicate that before significant progress can be achieved in community and economic development, a broad-based infrastructure must be in place. Economic and community growth and development are educational processes, which support new and emerging leaders and alert citizens to the importance of promoting viable communities. Having a prepared cadre of leaders available for impacting constructive change in ensuring skilled and educated workforce to meet the challenges being brought by technology is essential. Community development is at the central core of developing a state system capable of producing the energy needed to sustain and improve the state. Approaching CD from a state view means pulling from the diversity of the entire system - people from different community segments, race, gender, age and thought. We accomplish this in part through: (a) community development; (b) economic development education; (c) entrepreneurship training; and (d) small business development.

Diversity within communities allows citizens to capitalize on the unique skills and expertise that their neighbors have to share. Effective CD also promotes communities and organizations working together on issues through organized collaborations and partnerships. Presently, a shift is occurring in the level of responsibility for public decision-making. Local government leaders are assuming more financial and management responsibilities for programs and services that were once provided by the state or federal government. This means that stronger, more competent public officials are required at the local levels. When leaders emerge and concerned citizens take a stand to make a difference, communities can mobilize to effect positive changes that will benefit the social, emotional, financial and physical needs of citizens. In today's world of constant change, communities need to be aware of networking procedures to acquire resources and build powerful linkages between individuals, groups, and organizations. Through organized efforts in a support atmosphere, organizations can systematically solve existing and emerging problems that could not be solved by a single group. Solving problems collaboratively means changing policies, laws and regulations to fit the needs of the people. Collaboration also encourages a goal to promote the development, management, and use of Alabama's natural resources consistent with sound environmental principles and ethics, awakening of the community spirit, an emerging trend.

Alabama business leaders identify workforce development as the state's number one economic development issue. As technological advances and global competition increase the pace of change for today's businesses, a knowledgeable, skilled, and adaptable workforce has never been a more valuable asset, or a greater necessity for economic survival. Today's work environment requires that workers receive continuous training and embrace lifelong learning to survive. In this new era, workers can no longer rely on the same skills or knowledge throughout their working lifetime. The best preparation for many workers is the development of a good work ethic, a value for lifelong learning, and transferable skills like flexibility, teamwork, timeliness, self-reliance, communication, and the ability to use information and technology. Indeed, maintaining communications technology skills is now a requisite for most jobs in the New Economy.

Objectives are:
Education and Training: Improve workforce awareness, knowledge, and skills throughout Alabama, with particular emphasis on Entrepreneurship, Broadband Adoption, career education and planning, and technology applications that support workforce development.
Stakeholder Connections: Build connections among workforce development stakeholders; create networks

(education, business, and government) to ensure that existing resources are fully utilized and that stakeholder groups are informed, engaged, and working together.
Citizen Engagement: Foster active engagement of all citizens for issues related to education, workforce development, and entrepreneurship.
Career Countdown: Conduct employment simulations, career awareness, skills assessment, and career planning programs throughout Alabama.

As a nation, we entered the twenty-first century with the highest national debt level in history, a staggering consumer debt load, and runaway health care costs--three major problems affecting all Americans. Also of great concern are low per capita incomes, overextended credit, limited savings and financial plans for retirement, limited life skills, inadequate job skills, high unemployment and underemployment, and public policy issues for urban and rural families including minorities, individuals, youth, elderly, farmers, and displaced farmers. Americans today are setting financial records. Savings as a percent of disposable income are at a record low. The percentage of disposable income allocated to pay mortgage and consumer debt has reached a record high. Personal bankruptcy filings have also hit a new record with approximately one million cases. Recent studies indicate a growing need for families to become more sophisticated in their financial decision making skills. The management of personal finance has become very complex with intricate tax laws, fluctuating interest rates, and increase in the use of electronic technology by the financial industry and a proliferation of insurance products. With a proliferation of and technology in the marketplace and in the home limited-resource families, individuals, homemakers and youth lack consumer education and life-long skills such as a decision-making, financial management, time management and care and maintenance of textile items, equipment and other resources. Public Issues Education Programs are more important than ever if Alabama citizens are to make informed decisions or have an impact on the public decision-making process. Extension's "public issues education" programs that impact the common good of a community such as environment, education, and health care. By the year 2025 the 65 and older age group will comprise 20% of the Alabama's population. Increased life expectancy is resulting in record numbers of people age 65 and older. One out of every six Alabamians is aged 60 or older. Of that number 24% live below the poverty level, and women constitute 71% of the elderly poor. The issues concerning older Alabamians today include outliving retirement benefits, threats to social security, asset transfer and estate management, elder care cost, affordable health insurance, and elder abuse.

**2. Scope of the Program**

- In-State Extension
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

## V(D). Planned Program (Assumptions and Goals)

**1. Assumptions made for the Program**

• Community development (CD) will continue to be an important sub-component of the Rural Development area within NIFA. There will continue to be new research-based information in the area of community development that will be beneficial to individuals and to society as a whole if it is implemented.
• Alabama will continue to receive adequate federal and state matching funds to support work in this priority program area, and will continue to fund specialist positions and other extension personnel who work exclusively in this priority area.
• All county Extension coordinators (CEC) will have a CD assignment as part of their overall responsibilities.
• The use of technology to deliver CD programing will grow in importance in reaching our target audience.
• Well prepared workforce is critical to the future prosperity of the state of Alabama and its communities.
• Broadband education, and career education and planning can have a positive impact on workforce readiness in Alabama and its communities.
• CDI professional staff time and the staff time of Extension educators throughout Alabama will be required.
• Consumer science and personal financial management will continue to be an important subcomponent of the family and consumer sciences area within NIFA.

Start-up businesses and existing business owners will accept the information provided. Partners and agencies will cooperate with project personnel. Policies at the state level will be enacted to reduce predatory practices from the business community. Funding will be available to execute special outreach efforts. Appropriate personnel will be hired to implement projects.

**2. Ultimate goal(s) of this Program**

The ultimate goal is to achieve economic prosperity and improved quality of life for communities throughout Alabama. The primary objectives for achieving this overall goal are:

Improve the practice of CD in Alabama through targeted educational programs.
Conduct research and disseminate findings on issues related to CD in Alabama.
Facilitate communication, coordination, and partnerships among Alabama's CD communities. Help build and strengthen economic and community capacity in Alabama communities through a) leadership development, b) civic engagement, c) strategic planning, and d) economic development. As a result of this initiative, Alabama will have a more knowledgeable, skilled, and adaptable workforce that meets the needs

of twenty-first century employers.

The ultimate goal of this program is to strengthen the capacity of families to obtain economic stability and financial security. Economic stability refers to the acquisition and effective use of material resources to manage a household and provide for the daily (short-term) needs of the family. Financial security refers to the ability to meet future needs (long-term) through income generation and appropriate money management practices. Economic stability depends on achieving financial security and financial security cannot be experienced fully without economic stability. CD will include workforce development, entrepreneurship, family financial management, and consumer education. This priority program area is integrative in order to address systemic problems families face in their economic and financial lives.

This program and related activities will assist low-income families and start-up business owners with business planning as well as help with other tools for sound decision-making, especially financial and long-term planning. The Individual Leadership focus will enhance the leadership capacity of individuals, organizations, community residents and leaders with requisite skills in leadership

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

### 1. Estimated Number of professional FTE/SYs to be budgeted for this Program

| Year | Extension | | Research | |
|---|---|---|---|---|
| | 1862 | 1890 | 1862 | 1890 |
| 2017 | 30.2 | 6.6 | 0.0 | 1.0 |
| 2018 | 30.2 | 6.6 | 0.0 | 1.0 |
| 2019 | 30.2 | 6.6 | 0.0 | 1.0 |
| 2020 | 30.2 | 6.6 | 0.0 | 1.0 |
| 2021 | 30.2 | 6.6 | 0.0 | 1.0 |

## V(F). Planned Program (Activity)

### 1. Activity for the Program

The primary activities in this area are individualized community, county and regional CD programs. The planned program activities and projects for these include:

**Connections and Partnership**

- Interact with the 18-member ECDI Board of Advisors that includes leaders from all major economic development organizations in Alabama
- Administer the Alabama Community Leadership Network
- Provide leadership and support for Alabama Communities of Excellence
- Conduct meetings of numerous agencies that have some role in CD to implement a strategic partnership plan

**Education and Training**

- Conduct two-week Intensive Economic Development Training Course and Prosperity Forums, a series of courses that explores strategies that lead to economic prosperity
- Manage Impact Alabama, an executive economic development training program for Alabama's top economic developers
- Conduct Alabama-Mississippi Rural Tourism Conference
- Conduct statewide County Extension Coordinator Trainings
- Administer AU Graduate Minor in Economic Development
- Conduct online entrepreneurship and business development training
- Conduct online community development and leadership training
- Conduct social media entrepreneurship and business development support activities

**Research and Communications**

- Publish and disseminate research on topics relevant to state CD policies and practices
- Develop economic impact/forecast models for local communities using software from EMSI (Economic Modeling Specialists)
- Develop online tracking and evaluation techniques utilizing social media and social network theory
- Publish quarterly Extension ACTION newsletter

**Consulting, Community Support & Engagement**

- Continue support for development of a commercial kitchen to serve central Alabama
- Administer the Extension funded Rural Alabama Initiative grant program
- Explore development of the Small Town Institute to focus on entrepreneurship, leadership and tourism
- Participate in the "Stronger Economies Together" Project in association with USDA Rural
- Development and the Southern Rural Development Center
- Facilitate deliberative forums, roundtables and town meetings
- Participate on CD advisory boards throughout the state
- Facilitate community and regional strategic planning, assessment and asset mapping efforts throughout the state
- Support local and regional efforts to promote tourism and retiree attraction

**Education and Training**

Broadband training through presentation of modules will continue to be conducted - these modules include: Introduction to Broadband 101, eCommerce, ePublic Safety, eHome, eWorkforce, eCommunity, eLearning, eHealth, eGovernment, eGlobal, and Website Basics: A Primer for Hispanic Small Businesses. The target audience is current and potential workers and entrepreneurs, especially within rural areas and vulnerable populations. Promoting Readiness for Employment Possibilities, Virtual Entrepreneurship Development and Consumers Score with Credit in Check will be included.

**Stakeholder Connections**

Development of a regional "Classroom to Careers" pilot project that provides workforce training and experiences for high school students, and connects business and education stakeholders (Workforce Region 8: Lee, Chambers, Macon, Bullock, and Russell counties).
Extension participation in Regional Workforce Development Boards. The target audience includes CECs and regional agents.

Connected Communities Forums that establish connections among representatives from: government, public safety services, citizens, health providers, youth groups, education, businesses, parents, nonprofits,

economic developers, telephone and cable companies, electrical utilities, and Internet service providers (ISPs).

**Citizen Engagement**

1. Study circles, roundtable discussions, and/or deliberative forums focusing on education and workforce development. Target audience is county parents, students, workers, and other citizens and stakeholders.

**2. Type(s) of methods to be used to reach direct and indirect contacts**

**Extension**

| Direct Methods | Indirect Methods |
|---|---|
| ● Education Class<br>● Workshop<br>● Group Discussion<br>● One-on-One Intervention<br>● Demonstrations<br>● Other 1 (Web Conferencing)<br>● Other 2 (Economic Modeling) | ● Public Service Announcement<br>● Newsletters<br>● TV Media Programs<br>● Web sites other than eXtension<br>● Other 1 (Direct Marketing)<br>● Other 2 (Mass media) |

**3. Description of targeted audience**

The primary target audiences are current and future small business owners, community leaders, and local governmental officials in all communities across the state.

Elementary school aged youth through all adult age groups throughout Alabama.

The primary target audience is the general public. The target audiences will be start-up entrepreneurs, existing business owners, unemployed from low- income communities, leadership from civic and social

community organizations and leadership from faith-based organizations.

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

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☐ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

## V(H). State Defined Outputs

### 1. Output Measure

- Number of individuals enrolled in economic development certification program
- Number of career exploration and education planning workshops conducted
- Number of employment simulations conducted
- Number of partnerships created
- Number of individuals trained in leadership skills development
- Number of individuals trained in business management
- Number of sessions conducted on managing credit
- Number of individuals enrolled in entrepreneurship training programs
- Number of Entrepreneurship workshops conducted
- Number of Entrepreneurship training modules developed
- Number of Extension e-bulletins and fact sheets
- Number of refereed publications
- Number of Requests for Technical Assistance
- Number of workshops on estate planning
- Number of workshops on  leadership
- Number of workshops on  volunteerism

☐ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

## V(I). State Defined Outcome

| O. No | Outcome Name |
|---|---|
| 1 | Percentage / number of program participants who demonstrate an increased knowledge in the strategies of community economic development |
| 2 | Percentage / number of program participants who demonstrate an increased knowledge on resources for small business creation and development |
| 3 | Percentage/ number of program participants who demonstrate and increased knowledge financial management practices |
| 4 | The number of individuals with improved study habits |
| 5 | Percentage / number of program participants who seek post-secondary education |
| 6 | Number of people completing financial management education programs who decrease consumer credit debt |
| 7 | Number of program participants that demonstrated and increase knowledge on debit reduction |
| 8 | Number of people adopt retirement plan recommendations |
| 9 | Number of program participants who start and or expand a business |
| 10 | Number of program participants who develop a business plan |
| 11 | Number of program participants who develop new jobs skills |
| 12 | Number of program participants who obtain personal and or business loans to start or expand their business |
| 13 | Number of program participants that demonstrate an increased knowledge of estate planning |
| 14 | Number of program participants that demonstrate and increased knowledge on volunteerism |
| 15 | Number of program participants that demonstrate an increase in community and organization volunteering |
| 16 | The number of participants who secure employment |
| 17 | Number of people completing financial management education programs who increase assets |

**Outcome #** 1

**1. Outcome Target**

Percentage / number of program participants who demonstrate an increased knowledge in the strategies of community economic development

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 605 - Natural Resource and Environmental Economics
- 805 - Community Institutions and Social Services
- 608 - Community Resource Planning and Development
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities

**4. Associated Institute Type(s)**

- 1862 Extension
- 1890 Extension

**Outcome #** 2

**1. Outcome Target**

Percentage / number of program participants who demonstrate an increased knowledge on resources for small business creation and development

**2. Outcome Type :** Change in Condition Outcome Measure

**3. Associated Knowledge Area(s)**

- 605 - Natural Resource and Environmental Economics
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities
- 608 - Community Resource Planning and Development
- 805 - Community Institutions and Social Services

**4. Associated Institute Type(s)**

- 1862 Extension
- 1890 Extension

**Outcome #** 3

**1. Outcome Target**

Percentage/ number of program participants who demonstrate and increased knowledge financial management practices

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1890 Extension

**Outcome #** 4

**1. Outcome Target**

The number of individuals with improved study habits

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1890 Extension

**Outcome #** 5

**1. Outcome Target**

Percentage / number of program participants who seek post-secondary education

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1890 Extension

**Outcome #** 6

**1. Outcome Target**

Number of people completing financial management education programs who decrease consumer credit debt

**2. Outcome Type :** Change in Condition Outcome Measure

**3. Associated Knowledge Area(s)**

- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities

**4. Associated Institute Type(s)**

- 1862 Extension
- 1890 Extension

**Outcome #** 7

**1. Outcome Target**

Number of program participants that demonstrated and increase knowledge on debit reduction

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities

**4. Associated Institute Type(s)**

- 1890 Extension

**Outcome #** 8

**1. Outcome Target**

Number of people adopt retirement plan recommendations

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 805 - Community Institutions and Social Services
- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1862 Extension
- 1890 Extension

**Outcome #** 9

**1. Outcome Target**

Number of program participants who start and or expand a business

**2. Outcome Type :** Change in Condition Outcome Measure

**3. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1890 Extension

**Outcome #** 10

**1. Outcome Target**

Number of program participants who develop a business plan

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 805 - Community Institutions and Social Services
- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1862 Extension
- 1890 Extension

**Outcome #** 11

**1. Outcome Target**

Number of program participants who develop new jobs skills

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 805 - Community Institutions and Social Services
- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1862 Extension
- 1890 Extension

**Outcome #** 12

**1. Outcome Target**

Number of program participants who obtain personal and or business loans to start or expand their business

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 805 - Community Institutions and Social Services
- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1862 Extension
- 1890 Extension

**Outcome #** 13

**1. Outcome Target**

Number of program participants that demonstrate an increased knowledge of estate planning

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1890 Extension

**Outcome #** 14

**1. Outcome Target**

Number of program participants that demonstrate and increased knowledge on volunteerism

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1890 Extension

**Outcome #** 15

**1. Outcome Target**

Number of program participants that demonstrate an increase in community and organization volunteering

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development

**4. Associated Institute Type(s)**

- 1890 Extension

**Outcome #** 16

**1. Outcome Target**

The number of participants who secure employment

**2. Outcome Type :** Change in Condition Outcome Measure

**3. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities

**4. Associated Institute Type(s)**

- 1862 Extension
- 1890 Extension
- 1890 Research

**Outcome #** 17

**1. Outcome Target**

Number of people completing financial management education programs who increase assets

**2. Outcome Type :** Change in Condition Outcome Measure

**3. Associated Knowledge Area(s)**

- 608 - Community Resource Planning and Development
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities

**4. Associated Institute Type(s)**

- 1862 Extension
- 1890 Extension
- 1890 Research

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

**1. External Factors which may affect Outcomes**

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

**Description**

Programs in CD are largely affected by all of the areas checked above. However, for the next several years the largest single factor is mostly likely to be the nation's and the state's struggling economies.

Natural disasters that occur would impact priorities of all state organizations. The economy and appropriation changes could impact funding and workforce availability. Continued immigration issues and related legislation are likely to impact workforce availability.

Government policies, economy, cultural factors, lack of access to information technology infrastructure, and private business loans tend to remain more of a challenge in the small rural communities and are likely to affect the outcomes of the program.

## V(K). Planned Program - Planned Evaluation Studies

### Description of Planned Evaluation Studies

Community Development includes many different activities and projects. Each of these has its own specific evaluation methods. The evaluation methods for Extension projects within CD is explained in detail within the data-collection and evaluation sections of the Extension Team Project description sections on the program planning, evaluation and reporting section of our intranet.

Connections and Partnership evaluation will include:

- Certification status of communities within ACES (CD) program
- After 3-5 years survey Alliance participants to determine impact of Alliance on achieving regional goals

Education and Training evaluation will include:

- Conference evaluations of participants
- Later follow-up survey of participants using Survey Monkey to assess impact of courses on knowledge and behavior
- Bi-annual evaluations by Impact Alabama participants
- Pre, intermediate, and post testing of online entrepreneurship and leadership participants Research and Communications evaluation will include:
- Peer review of Research publications
- Survey community leaders to determine effectiveness of economic impact/forecast models Consulting,

Community Support & Engagement evaluation will include:

- Observation and survey of central Alabama commercial kitchen clients
- Development of success story for each RAI grant project that highlights impact of the grant project regionalization project Survey of Extension educators to assess the success in establishing effective deliberative forums, roundtables, and town meeting
- Evaluation results will be shared to Extension audiences through reports, newsletters, news releases, direct electronic communication, and CD team meeting presentations. Results of surveys will be shared directly with all survey participants.
- CD programming evaluation will include:-Use Survey Monkey to survey of Extension educators to assess success in establishing Workforce Alliances and deliberative practices; after 3-5 years, survey county Alliance members to determine impact of Alliance on county workforce issues and relationships.

- Follow-up survey of Broadband training course participants using Survey Monkey to assess impact

of courses on knowledge and behavior.
- Survey of students and teachers involved in youth workforce/entrepreneurship programs.
- Number of Region 8 meetings between education and business stakeholders.
- Overall review of programs and activities by a 16-member Board of Advisors representing key community development stakeholder groups throughout Alabama. They will provide guidance, feedback, and evaluation to ensure that CD programs are relevant to Alabama's CD needs.
- Evaluation results will be shared with Extension audiences through reports, news releases, direct electronic communication, and CD team meeting presentations. Results of surveys will be shared directly with all survey participants.

**Career Countdown evaluation will include:**
-Pre-, intermediate and post-testing
-Review of skills assessment, career plans, and education plans

CD (Financial Literacy Across the Lifespan) includes many different activities and program focuses. Each has its own specific evaluation methods. The evaluation methods for CD (Strategic Program Initiatives (SPI) within Financial Literacy Across the Lifespan) is explained in detail within the data-collection and evaluation sections of the CD (Strategic Program) Initiatives description sections on the program planning, evaluation and reporting section of our intranet.

Participants will be given pre and post test to determine their knowledge of business and leadership development skills. Records will be kept to determine the effectiveness of program intervention, the number of jobs acquired, small businesses started and the number of loans secured.

Community Development includes many different activities and projects. Each of these has its own specific evaluation methods. The evaluation methods for Extension projects within CD is explained in detail within the data-collection and evaluation sections of the Extension Team Project description sections on the program planning, evaluation and reporting section of our intranet.

Connections and Partnership evaluation will include:

- Certification status of communities within ACES (CD) program
- After 3-5 years survey Alliance participants to determine impact of Alliance on achieving regional goals.

Education and Training evaluation will include:

- Conference evaluations of participants
- Later follow-up survey of participants using Survey Monkey to assess impact of courses on knowledge and behavior.

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

**Program # 7**

**1. Name of the Planned Program**

Family, Home, 4-H and Youth Development

**2. Brief summary about Planned Program**

Family, Home, 4-H and Youth Development planned program area focuses on strengthening families by teaching all family members, but especially parents, how to apply research-generated information and knowledge to improve the quality of their lives and family relationships. Family, Home, 4-H and Youth Development team members will also be involved educational programs in the areas of early childhood and provider training, and several other related areas.

Family, Home, 4-H and Youth Development team members will provide programs designed to teach adults how to manage financial resources wisely and make wise consumer decisions regarding purchases, budgeting, managing money, credit and debt management, saving, investing, retirement planning, and estate management. Additionally, consumer education programs will focus on identity theft, fraud, and scams.

Family, Home, 4-H and Youth Development creates supportive environments in which culturally diverse youth reach their fullest potential and develop into productive contributing members of society. Activities and programs include recruitment, training, and management of volunteers and program emphasis includes extending knowledge, teaching life skills, and providing opportunities for belonging, independence, mastery, and generosity.

Family, Home, 4-H and Youth Development offers positive life changing and skill broadening programs with the primary focus placed on programs that are considered new and nontraditional with greater emphasis on reaching urban audiences.

This planned program area focuses on providing youth and young adults with opportunities to increase knowledge and skills by engaging participants in experiential hands-on learning, and improve leadership and job skills through the development of entrepreneurship in the agribusiness and food nutrition sectors. This program area emphasizes the following areas: (a) Citizen and Leadership Development, (b) Science, Technology, Engineering, and Math (STEM) Education, and (c) Youth Gardens, Livestock Shows, (d) nutrition and health, (e) career development and resource management, and (f) conflict resolution. Capacity grants, integrated Research, Extension and outreach, as well as other resources, including 4-H Programs, Youth Extension Paraprofessionals, Summer Camps, Tech Academies, and on-going, year-round county programs in the after-school settings will be a part of this activity.

**3. Program existence :** Mature (More then five years)

**4. Program duration :** Long-Term (More than five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** Yes

## V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

| KA Code | Knowledge Area | %1862 Extension | %1890 Extension | %1862 Research | %1890 Research |
|---|---|---|---|---|---|
| 602 | Business Management, Finance, and Taxation | 10% | 10% | 0% | 0% |
| 607 | Consumer Economics | 10% | 10% | 0% | 0% |
| 801 | Individual and Family Resource Management | 20% | 20% | 0% | 0% |
| 802 | Human Development and Family Well-Being | 20% | 20% | 0% | 0% |
| 806 | Youth Development | 40% | 40% | 0% | 0% |
| | **Total** | 100% | 100% | 0% | 0% |

## V(C). Planned Program (Situation and Scope)

### 1. Situation and priorities

In the state of Alabama and across the nation, the general well-being of today's children and families are diverse. Alabama has a growing aging population needing financial, health, and legal education. Home caregivers also need training. Grandparents and relatives are taking on parenting roles within extended and nontraditional households. The 2015 program cycle will include parenting, child development and family strengthening approaches designed to impact urban, new, and nontraditional families, as well as traditional families in underserved communities.

Studies indicate a growing need for families to become more sophisticated in financial decision-making: personal finance; intricate tax laws; fluctuating interest rates; and the use of electronic technology by the financial industry. Training on the proliferation of insurance products is needed. With the growth of technology in the marketplace and in home limited-resource families, individuals, homemakers and youth lack consumer education and life-long skills such as decision-making, financial management, time management, and caring for personal resources.

In recent years Alabama has ranked 48th for indicators related to health, education, safety, and security. (Alabama Kids County data). We have ranked 46th in dropout rate, 39th in teen birth rate, 45th in percent children in poverty, and 46th in percent single-parent families. Environmental challenges facing Alabama families and youth require improved life skills with relation to goal setting, critical thinking, communication, career development, healthy living, and self-efficacy.

Alabama youth face many challenges and opportunities. With approximately 885,000 school age youth in the state the audience is large. 4-H will strive to engage 20% of this audience or 177,000 youth over the next five years. STEM learning, workplace prep, healthy living, citizenship and leadership development are critical areas of opportunity. Socio-economic data also indicates a need to accommodate underserved audiences.  The future workforce needs of Alabama's Black-Belt counties will depend on providing youth with experiential learning opportunities in science, technology and leadership. The prevalence of agriculture in these rural areas calls for related activities. The need to develop and nurture youth leadership, entrepreneurship, and science in the Black Belt and low asset communities will be addressed.

### 2. Scope of the Program

- In-State Extension
- Multistate Extension
- Multistate Integrated Research and Extension

## V(D). Planned Program (Assumptions and Goals)

### 1. Assumptions made for the Program

• There is a research-based body of knowledge in the areas of Family, Home, 4-H and Youth Development that has been established by Land-Grant Universities (LGUs) and other universities that is beneficial to individuals and society - both urban and rural audiences.
• New research-based knowledge will be created in Family, Home, 4-H and Youth Development Family, Home, 4-H and Youth Development programs are a valued component of NIFA and will remain important in future Farm Bills.

• Family, Home, and Youth Development programs fill an important need with regard to society and help prepare youth and adults to be better citizens, leaders, and employees.
• ACES will continue to receive federal and state matching funds to support work in the Family, Home, and 4-H and Youth Development programs and will continue to work in these program areas.
• 4-H and Youth Development programs and will continue to fund state and regional positions who work in these program areas/
• The Family, Home, 4-H and Youth Development programming unit will continue to expand and offer programs that are designed to attract and engage urban and rural audiences as a program priority with specific emphasis on life skill enhancement, volunteerism, and youth development.
• Our Tech academics will come to fruition and find homes and support in communities targeted for after-school opportunities.
• Parents, teachers, advisors, and other adult volunteers will be involved on a sustained basis.
• The Family, Home, 4-H and Youth Development fit well together and complement each other by giving better learning opportunities to targeted youth.
• Information exists on best practices in assessing free software programs and in using social media for youth.
• People will be motivated to learn/change.
• External funds and agents can serve as catalysts for change.

### 2. Ultimate goal(s) of this Program

• Strengthen traditional and non-traditional families including childcare providers, grandparents raising grand-children, aging populations, and family caregivers by teaching all family members how to apply research-generated information and knowledge to improve the quality of their lives and family relationships.
• Strengthen the capacity of families to obtain economic stability and financial security.
The Family, Home, 4-H and Youth Development provides personal development, leadership, volunteerism, service-learning and healthy living programs that will empower youth to reach their fullest potential as positive and contributing members of an economically and socially diverse society.

• Create supportive environments in which culturally diverse youth can reach their fullest potential and develop into productive and contributing members of society.
• The ultimate goal for this program is to provide settings and experiential learning opportunities that help targeted youth to be better prepared, and make decisions that enhance their leadership, understanding and application of science, technology, engineering, and math in a way that leads to personal growth, and participation and contribution to the local, national and global society.

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

### 1. Estimated Number of professional FTE/SYs to be budgeted for this Program

| Year | Extension | | Research | |
|---|---|---|---|---|
| | 1862 | 1890 | 1862 | 1890 |
| 2017 | 146.3 | 12.9 | 0.0 | 0.0 |
| 2018 | 146.3 | 12.9 | 0.0 | 0.0 |
| 2019 | 146.3 | 12.9 | 0.0 | 0.0 |
| 2020 | 146.3 | 12.9 | 0.0 | 0.0 |
| 2021 | 146.3 | 12.9 | 0.0 | 0.0 |

## V(F). Planned Program (Activity)

### 1. Activity for the Program

-Grandparents and Relatives as Parents Program (Grand RAPP)
-Successful Aging Initiative
-Youth Learning About Money Management (YLAMMS)
-High School Financial Management Program (NEFE)
-Estate Planning
-eCommerce Training for Small Businesses
-Consumer Score with Credit In Check
-Alabama Home Caregiver
-Strengthening Relationships and Marriages
-Relationship Smarts
-Parenting
-Childcare Provider Education
-Teens Making Impact (TMI)
-Health Rocks!®
-Volunteer in Urban Programs (VIP)/Service Learning Network
-4-HPositive Youth Development Utilizing Volunteers
-For Youth For Life (FYFL)
-4-H Base Programming
-Operation Military Kids (OMK)/4-H Military Partnerships
-Living Interactive Family Education (LIFE)
-Ready? Get SET to Explore Forensics

-Family Advocacy Through Caring Engagement Strategies
- BE SAFE
-ELEVATE
-Together We Can
-PROSPER/CYFAR
-PREP Making Money Count

After-school Tech Academies (GIS, Social Media Education, Entrepreneurship, etc.)

**2. Type(s) of methods to be used to reach direct and indirect contacts**

**Extension**

| Direct Methods | Indirect Methods |
|---|---|
| ● Education Class | ● Public Service Announcement |
| ● Workshop | ● Billboards |
| ● Group Discussion | ● Newsletters |
| ● One-on-One Intervention | ● TV Media Programs |
| ● Demonstrations | ● eXtension web sites |
| ● Other 1 (Web Conferencing) | ● Web sites other than eXtension |
| ● Other 2 (Social Media) | ● Other 1 (Newspaper) |
| | ● Other 2 (Camps) |

**3. Description of targeted audience**

General population
Pre-K Students, Teachers and Parents Mid Schoolers
High Schoolers Collegiate Students
4-H ages 9 through 18

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

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
  - Direct Adult Contacts
  - Indirect Adult Contacts
  - Direct Youth Contacts
  - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

## V(H). State Defined Outputs

### 1. Output Measure

- Number of partnerships
- Number of publications
- Number of newsletters
- Number of articles
- Number of business plans
- Number of volunteers
- Number of success stories
- Number of testimonies
- Number of grants and contracts submitted and/or awarded.
- Number of support groups.
- Number of technology- based resources.
- Number of times research-based professional expertise engaged.
- Number of curriculum utilized.
- Number of participants in Citizenship Education Tours
- Number of participants in 4-H Clubs
- Number of participants in 4-H After-school
- Number of participants in Tech Academies Social Media Education
- Number of participants in Entrepreneurship
- Number of participants in Youth Gardens
- Number of participants in Youth Animal
- Number of participants in Group discussions

- Number of participants in Summer Camps
- Number of participants in Enrichment Programs
- Number of military clubs
- Number of participants in Activities
- Number of participants in Special Events
- Number of participants in 4-H Special Interest Clubs
- Number of participants in 4-H In-school clubs

☑ Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

## V(I). State Defined Outcome

| O. No | Outcome Name |
|---|---|
| 1 | Number of participants who increased knowledge of life-skills |
| 2 | Number of participants who gain knowledge about leadership |
| 3 | Number of participants who increased knowledge about starting a business. |
| 4 | Number of participants who adopt personal financial management best practices |
| 5 | Number of dollars saved as a result of estate planning. |
| 6 | Number of participants who improved application of life skills |

**Outcome #** 1

**1. Outcome Target**

Number of participants who increased knowledge of life-skills

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 806 - Youth Development
- 802 - Human Development and Family Well-Being

**4. Associated Institute Type(s)**

- 1862 Extension
- 1890 Extension

**Outcome #** 2

**1. Outcome Target**

Number of participants who gain knowledge about leadership

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 806 - Youth Development
- 802 - Human Development and Family Well-Being

**4. Associated Institute Type(s)**

- 1862 Extension
- 1890 Extension

**Outcome #** 3

**1. Outcome Target**

Number of participants who increased knowledge about starting a business.

**2. Outcome Type :** Change in Knowledge Outcome Measure

**3. Associated Knowledge Area(s)**

- 602 - Business Management, Finance, and Taxation

**4. Associated Institute Type(s)**

- 1862 Extension
- 1890 Extension

**Outcome #** 4

**1. Outcome Target**

Number of participants who adopt personal financial management best practices

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 801 - Individual and Family Resource Management

**4. Associated Institute Type(s)**

- 1862 Extension
- 1890 Extension

**Outcome #** 5

**1. Outcome Target**

Number of dollars saved as a result of estate planning.

**2. Outcome Type :** Change in Condition Outcome Measure

**3. Associated Knowledge Area(s)**

- 607 - Consumer Economics
- 802 - Human Development and Family Well-Being

**4. Associated Institute Type(s)**

- 1862 Extension
- 1890 Extension

**Outcome #** 6

**1. Outcome Target**

Number of participants who improved application of life skills

**2. Outcome Type :** Change in Action Outcome Measure

**3. Associated Knowledge Area(s)**

- 806 - Youth Development

**4. Associated Institute Type(s)**

- 1862 Extension
- 1890 Extension

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

**1. External Factors which may affect Outcomes**

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

**Description**

Family, Home, 4-H and Youth Development programming efforts have been flexible as a result of adjustments related to natural disasters tornados and hurricanes. Economic issues like the recent downturn and other external factors such as the BP Oil spill also result in programmatic adjustments. Appropriations, policy changes and changes in local, regional and state demographics will always impact programmatic focus.

Decrease in appropriation from state budgets continues to be a threat to the sustainability of the program. How local school systems take in immigrant youth populations also affect the outcomes.

## V(K). Planned Program - Planned Evaluation Studies

### Description of Planned Evaluation Studies

- Family, Home, 4-H and Youth Development includes many different activities and projects. Each of these has its own specific evaluation methods. Evaluation methods include pre- and post-test evaluations, in some cases, delayed post-test, tracking of volunteer numbers and time devoted to Family, Home, 4-H and Youth Development programs, qualitative assessments, grant-required evaluations per funder specs.

All participants will be tested to determine their prior knowledge of knowledge and preparedness they possess in science, technology, and math-related concepts, as well as knowledge and skills acquired throughout workshops and other experiential learning activities. Participation in public speaking, livestock shows, youth gardens, and other regional or national Family, Home, 4-H and Youth Development activities will also serve as input to an evaluation study. Student participants will be compared to cohorts that did not receive training in terms of increased awareness, knowledge, skills, decision making, and ultimately, change in behavior and conditions.