2011 University of Arkansas at Pine Bluff Combined Research and Extension Plan of Work

Status: Accepted

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I. Plan Overview

1. Brief Summary about Plan Of Work

The School of Agriculture, Fisheries and Human Sciences at the University of Arkansas at Pine Bluff (UAPB) is composed of three academic departments, the 1890 research and Extension programs, the Aquaculture/Fisheries Center of Excellence and the Regulatory Science Center of Excellence. Research faculty members are integrated into the academic units in agriculture and human sciences, while Extension personnel are under the direct supervision of associate Extension administrators. The Department of Aquaculture/Fisheries and the Aquaculture/Fisheries Center of Excellence are administered by a department head who is also the center director. Under this structure, academic, research and/or extension responsibilities are integrated. The primary clientele served by the University of Arkansas at Pine Bluff are limited resource farmers and rural families as well as the Aquaculture industry, individuals and agencies with an interest in natural fisheries and fish habitats. Eastern Arkansas is the geographic beneficiary of these programs. Program areas have been further sharpened this year and largely coincide with NIFA priority areas. The priority areas which are included are Global Food Security and Hunger, Climate Change, Childhood Obesity, Food Safety, Food Safety in Aquaculture, and Families Youth and Communities. The Aquaculture/ Fisheries Center of Excellence is the only one at an 1890 institution and the research and Extension components of the program work closely with the aquaculture and fisheries leadership in the state. The Aquaculture/Fisheries Center of Excellence has been combined with the Agriculture and Human Sciences Departments and is reporting under the Climate Change and Global Food Security and Hunger priority areas. The Center has an additional reporting area entitled Food Safety in Aquaculture.

The Agriculture and Human Sciences Departments are reporting under the Global Food Security and Hunger, Food Safety, Climate Change and Childhood Obesity priority areas. The Human Sciences Department has an additional reporting area entitled Families Youth and Communities. Many of research scientists in the Agriculture Department have a 5% extension assignment to facilitate the dissemination of information in eastern Arkansas and southwest Arkansas. Extension appointments are intended to assist small and limited-resource farmers with risk management, record keeping and developing the needed knowledge base for completing loan applications and participation in conservation programs. The Horticulture Program works with many of the same clientele, introducing on-farm research and demonstrations with horticultural crops. The Water Management Center located at Lonoke is also utilized in these outreach activities.

Arkansas is the second leading catfish-producing state in the U. S. The U.S. catfish industry has struggled through several years of low prices and severe cash flow problems. Priority areas include developing improved recommendations for stocking, grading, and harvesting catfish. Rigorous comparison of performance of hybrids with channel catfish, and pond evaluation of feeding strategies are also priorities. Off flavor has plagued the catfish industry for the past 30 years. At any time in the summer months over 80% of ponds are considered off flavor and unable to be marketed. To compound the problem, only two products are legally approved for use to control off flavor. The catfish production work addresses these challenges for producers. Arkansas leads the nation in baitfish production, one of the top five segments of U.S. aquaculture. Programs are designed to improve profitability through improving management and production efficiencies for the baitfish industry, improve disease control and developing hatchery management techniques.

Six programs are submitted for your review from the University of Arkansas at Pine Bluff. These programs are in line with NIFA National priority areas. Plan of work programs in agriculture, while diverse in disciplines, are all aimed at increasing profitability of small farm enterprises in order to help rural farm families maintain economic vitality and be able to remain on the farm. Horticulture activities (Global Food Security and Hunger priority area) will examine new fruit and vegetable crops especially suited for small farm operations and production practices that will enhance yield. Food Animal Production and Management activities (Global Food Security and Hunger priority area) will work with low cost feed alternatives for goats and swine commonly raised by small scale farmers. Breeding and Biotechnology activities (Global Food Security and Hunger priority area) are working to develop improved cowpea cultivars that resist biotic and abiotic stresses. Through biotechnology, transgenic cowpeas containing insect resistant genes will be developed for the benefit of small-and limited-resource farmers in the southeastern United States. The Alternative Crop Production activities (Global Food Security and Hunger priority area) will examine new fruit and vegetable crops especially suited for small farm operations and production practices. The Value Added Products activities (Food Safety priority area) will explore new and safe methods of processing vegetables and fruits that support new marketing avenues to further enhance the income of the small farm operator.

Agriculture Extension emphasizes livestock management, cropping systems and farm management. Small Farm initiatives are a combination of two Small Farm Outreach Training and Technical Assistance (2501), and the 1890 Cooperative Extension activities with emphasis on Agronomy. The program is operated in 18 counties in eastern and southwestern Arkansas.

Extension activities will address youth in a Young Scholars program designed to increase STEM proficiency in students through an after school program that will enhance teen decision making. Also, the need for increased financial literacy among low income African American youth and their parents is being addressed with SAFHS Extension. Agriculture Extension activities emphasize livestock management and cropping systems. The Agriculture Awareness program is designed to increase the awareness of agriculture among urban youth with workshops, camps and tours of the Small Farm Outreach and Demonstration Farm.

Catfish farming is the largest segment of U.S. aquaculture with 2004 U.S. production exceeding 600,000 pounds. In 2005, over 30 million surface water acres are devoted to catfish production in Arkansas. The leading catfish producing states include Alabama, Arkansas, Mississippi, and Louisiana, which together account for more than 90 percent of total catfish production in the U.S. The Aquaculture/Fisheries Center supports both the state's aquaculture industry and aquatic resource management, an avenue for enhancing tourism as an economic engine for the state. Additional activities are planned in youth fishing, recreational fishing and working directly with aquaculture producers to validate the research in a commercial setting through research verification.

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

Year	Extension		Research	
	1862	1890	1862	1890
2011	0.0	23.5	0.0	21.3
2012	0.0	23.5	0.0	21.3
2013	0.0	23.5	0.0	21.3
2014	0.0	23.5	0.0	21.3
2015	0.0	23.5	0.0	21.3

II. Merit Review Process

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

- Internal University Panel
- External University Panel
- Expert Peer Review

2. Brief Explanation

Our research and Extension programs are monitored annually through a performance appraisal system that assures adherence to goals planned. Each department in the School of Agriculture, Fisheries and Human Sciences has an internal peer review system that evaluates research proposals prior to their implementation.

Merit review is central to the institutional goal of implementing quality programs. A request for a CSREES review was made in 2004. That review did not materialize and a second request for a CSREES review was made in 2005. This review was conducted April 30, through May 4, 2006. The review included all Extension and research programs in the school. The final report was received in July 2006 and several recommendations of the review are being implemented.Recommendations basically addressed administrative structure and not program issues.

The Merit Review Process in the Aquaculture/Fisheries Center resulted in review of 27 manuscripts that were subsequently submitted for consideration in refereed journals and 18 proposals submitted to competitive programs.

An external expert peer review of the Aquaculture/Fisheries Center was conducted in April 2008, in conjunction with a review of the proposal for a Ph.D. program in Aquaculture/Fisheries. Experts from MississippiState University, PurdueUniversity and IowaStateUniversity spent three days reviewing the Center. The review team concluded that, "the Department of Aquaculture and Fisheries has proposed, and is ready to add, what should become a nationally respected and competitive Ph.D. degree in Aquaculture and Fisheries." The team particularly noted the research productivity, fish health, fish nutrition and economics and marketing programs. The review team also noted that, "in the last 10 years, the UAPB Aquaculture and Fisheries program has become one of the three or four most productive aquaculture research programs in the United States.

The 1890 Family and Youth development program conducted an external review in FY 2000. The review team was comprised of a CSREES National Program Leader, University faculty, local physician and additional stakeholders. The review was positive and provided important feedback for the program.

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 University of Arkansas at Pine Bluff administration and faculty are actively involved in professional meetings nationally and internationally that identify critical issues facing the state and nation. There is continuous contact between all partners in addition to formal advisory meetings to identify critical issues. Members of advisory committees often partner with the University in implementing critical programs.

2. How will the planned programs address the needs of under-served and under-represented populations of the

Because of the 1890 mission to serve the under-served and under-represented populations, these clientele are a priority for most of our programs. Advisory committees, task forces and other planning groups include clientele representing the under-served and under-represented population to ensure that programs are planned for effective delivery and targeted in the areas of most critical need.

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

We produce a report document bi-annually for distribution to all stakeholders. The University of Arkansas at Pine Bluff submits program impacts to the CSREES National Database and produces multiple publications on the research and programmatic outcomes. Outcomes and impacts are always communicated in a manner that clarifies the value of programs to current and future stakeholders.

4. How will the planned programs result in improved program effectiveness and/or efficiency?

The University of Arkansas at Pine Bluff utilizes the unique continuum for identifying research needs based on local problems, providing the research needed and then applying the solutions to those identified problems through

an Extension program. Today's issues are complex and require multi-disciplinary and multi-institutional approaches. This allows each partner to build on their individual strengths and rely on the expertise and talent of other partners to work as a team for overall effectiveness in programming. Evaluation is planned as a part of the overall program and is used to document progress toward outcomes.

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 traditional stakeholder individuals
- Targeted invitation to selected individuals from general public
- Survey of traditional stakeholder individuals

Brief explanation.

Advisory committees are essential to the stakeholder input process developed by SAFHS and approved by CSREES. Stakeholder input is a core component of all 1890 Research and Extension programs. Means for acquiring input varies depending upon the nature of the Research or Extension program and the diversity of relevant stakeholders. These may include local and state agencies, community groups, producers and other targeted audiences, as well as business and industry groups. Producer meetings, advisory groups, conferences, and focus group discussions are major means for gaining input. Our FY 2000- 2004 POW described a stakeholder input process that, in light of structural differences in the departments and differences in audiences served, varied across departments and programs. This approach was taken because the clientele needs for Research and Extension - programs other than aquaculture are broad in scope, local in nature and geographically limited.

Input and interaction from stakeholders and the UAPB Aquaculture/Fisheries Center (AFC) occurs on an almost daily basis. Individual farmers, representatives of trade associations, and board members interact frequently with Center Researchers and Extension Specialists. The interaction often is initiated with a request for some specific discussions as the state of knowledge in particular areas through with additional research needs become readily apparent.

For the natural fisheries Research and Extension areas, the primary stakeholder defined for the UAPB Aquaculture/Fisheries Center is the Arkansas Game and Fish Commission (AGFC). The increased interaction with the Arkansas Game and Fish Commission in recent years has facilitated greater communications. Formal input is obtained through the representation of the Arkansas Game and Fish Commission on UAPB's National Aquaulture/Fisheries Advisory Council. Additional opportunities for interaction and input are available at the statewide meeting of the Arkansas Chapter of the American Fisheries Society (AFS). Many AGFC managers and biologists attend these meetings. Also, the increasing involvement of Center scientists on committees of the Southern Division of the AFS and at the national level provide opportunities for additional input because a number of AGFC personnel continue to be active in those settings.

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
- Open Listening Sessions
- Use Surveys

Brief explanation.

The Agriculture Research and Extension Advisory Council (AREAC)

The AREAC was originally organized in 2003 to add structure to the stakeholder input process for Research and Extension programs in agriculture. The Council formally meets once a year, but members are in continuous contact with Research and Extension faculty and administrators on a less formal basis. The AREAC was re-organized in 2010 with only slight changes in the membership structure that would allow the Council to be more responsive to the research and outreach needs of the School of Agriculture, Fisheries and Human Sciences. Members will serve on the Counsel on a three year rotating basis. Membership includes seven (7) producers engaged in a variety of agricultural enterprises (i.e. alternative crops, row crops, livestock, etc.) two (2) current and retired Extension professionals (one from 1890 and one from 1862) two (2) federal agency (NRCS, FSA) representatives, four state agency (Arkansas Department of Environmental Quality, Rural Development, Arkansas Land and Farm Development, and Arkansas Natural Resources Commission) representatives and two (2) industry (Monsanto, Delta Yams) representatives. The broad based representation of Council membership provides a broadened perspective of challenges facing producers and promotes the creation of partnerships to address the challenges. The re-organization of the Agriculture Research and Extension Advisory Council (AREAC) is currently underway. Recruiting new membership, organizing a rotation of terms for members and evaluation of their participation will strengthen this group as an integral stakeholder input group.

The Aquaculture-FisheriesCenter of Excellence Advisory Committee.

The primary advisory committee that provides feedback and input into the UAPB Aquaculture/Fisheries Program is the National Aquaculture/Fisheries Advisory Council. It includes representation from catfish, baitfish, and sport fish farms, feed mills, Arkansas Game and Fish Commission, U. S. Fish and Wildlife Service, and other university programs. Some committee members also serve as representatives for other state and national aquaculture industry organizations, so that these individuals contribute a much broader perspective to advisory committee meetings than their formal capacity might otherwise suggest. At the most recent meeting on February 25, recommendations included continued work on new feed formulation, marketing structures, cash flow and financial management, diseases, new chemicals approved for non-food fish, new hatchery techniques for public stocking programs and more training for AGFC biologists.

In addition to the National Fisheries Advisory Council, there are a number of advisory subcommittees that specialize in specific areas and meet regularly to contribute towards the Aquaculture/Fisheries Center's program planning and development. These include the UAPB Facilities Subcommittee, the Catfish Subcommittee, and the Lonoke Aquaculture Subcommittee. Members of the Facilities Subcommittee meet on a regular basis to plan UAPB Aquaculture/Fisheries Center facility expansion and develop resources for new facilities.

The Catfish Subcommittee meets twice a year in Lake Village, Arkansas to plan the mid-year and annual educational meetings that are hosted by UAPB for the Catfish Farmers of Arkansas. The Chicot County Extension programs also derive their input from this committee's advice.

The Lonoke Aquaculture Subcommittee meets once a year to plan the annual UAPB Lonoke Aquaculture workshop, which is primarily focused on bait and ornamental fish aquaculture. The Extension programs operating in LonokeCounty gain stakeholder input into the program development from these meetings. The Lonoke County Agricultural Office, that operates as a part of the 1862 Extension Service also hosts an annual advisory committee meeting to acquire aquaculture industry input and feedback for their extension program. UAPB Aquaculture/Fisheries Center staff are invited to participate in these meetings to facilitate information transfer between the 1890 Cooperative Extension Program, the 1862 Extension Service and industry members.

The Young Scholars Advisory Committee Structure

A Young Scholars Task Force, including some of the children and parents enrolled in the program, oversees the planning, implementation and evaluation of the program in both counties. One of the children serves as chair of the task force while another child serves as secretary. In addition to program parents and children, membership includes representatives of partnering agencies, governmental officials and state legislators. The Task Force was created at the inception of the program in 1996 and continues to be an integral component of the management and operation of the program.

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

Brief explanation.

Means for acquiring input varies depending upon the nature of the research or Extension program and the diversity of relevant stakeholders.These may include local and state agencies, community groups, producers and other targeted audiences, as well as business and industry groups.Producer meetings, advisory groups, conferences, and focus group discussions are major means for gaining input. Our initial stakeholder input plan required each program to develop its own input mechanism depending upon the nature of the program and the targeted clients. An annual process is established to garner stakeholder input into the continued implementation of all ongoing research and Extension programs. This second stakeholder input requirement speaks to the importance of the advisory committee structure in the SAFHS.

Some formal mechanism is required to garner stakeholder input into the planning and implementation of any new research or Extension program.

3. A statement of how the input will be considered

- In the Budget Process
- To Identify Emerging Issues
- In the Action Plans
- To Set Priorities

Brief explanation.

Informal input from stakeholders will be presented and discussed at formal meetings with research faculty and staff. Strategies will be developed to address identified concerns as appropriate.

Faculty are represented on all structured committees for purposes of participating in the discussion and gathering the input from stakeholders that will later be presented back to faculty and staff. One example of input from a structured committee currently being implemented is the Foundation Seed program for sweet potatoes. The February 2006 meeting of the Agriculture, Research and Extension Advisory Committee raised the issue of support for the sweet potato industry emerging in Eastern Arkansas. The input from the session was incorporated into outreach efforts (more extensive efforts with Sweet Potatoes, enhanced technical support for value-added processing, and expansion of the role and geographic scope of the Small-Farm Program).Each issue was addressed through program initiatives as allowed by available funding. The federal and state governments and some private funding was combined to build a sweet potato processing and storage facility in the Delta where soil conditions are ideal for growing sweet potatoes. UAPB has been involved for years in the development of production information for the crop.

We met several times with various groups and individuals to determine the scope of the additional work required and determined that improving the genetics and quality of the planting material was the most feasible approach.Lacking resources to implement the program, we are exploring funding opportunities via state appropriations and private funding.Several opportunities appear promising and we anticipate program start-up as

soon as funds become available.

The Agriculture Research and Extension Advisory Committee meet annually in February and will be kept apprised of our progress.

V. Planned Program Table of Content

S. No.	PROGRAM NAME
1	Families, Youth, and Communities
2	Food Safety
3	Climate Change
4	Global Food Security and Hunger
5	Childhood Obesity
6	Food Safety in Aquaculture

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Families, Youth, and Communities

2. Brief summary about Planned Program

Public officials, educators and the public in general continue to express concerns about the well-being of children and their families. Children need families. There is no other substitute. No matter how effective institutions, programs and policies are they cannot replace families. Although most children in this country grow-up in homes with loving families who provide for their physical and emotional needs, many do not. Research indicates that major shifts in the U.S. society have contributed to many changes that not only have impacted the economic security of families, but family structure, how children are being raised, and the routine of daily life in families. It has long been recognized that the well-being of children is linked to the well-being of the communities in which they live. In Arkansas nearly 7.6 percent of children live in communities that have been labeled *severely distressed.* These are places that have high levels of: poverty, female-headed households, high school drop outs, unemployment, and reliance on public assistance. Children growing up in these environments are faced with some tough odds to overcome. Educators acknowledge that much progress has been made in increasing the academic rigor of educational standards in secondary schools, yet America's children still remain behind other nations in terms of academic achievement and preparation to succeed.

Four programs and one research project are integrated into the Families, Youth and Communities Program. These include the research project, ***Predictors of Quality in Early Childhood Programs,*** *the* ***1890 Family and Child Development Program*** *that includes the* ***Young Scholars Program,*** *and the newsletter series,* ***Teens on the Go.*** *The* ***Young Scholars Program*** *is a*n *after school program* for low-income children and their parents, with a focus on math and science skills for the children, **Teens on the Go** is a newsletter (6 issues are provided each year) in its 30th year that emphasizes decision-making skills for students in grades 7-12, **Arkansas AG Adventure Program** is an *agriculture awareness program* that helps elementary and high school students to become aware of careers in agriculture, food, natural resources and the environment, and the ***Family Resource Management Program*** that helps low-income families, youth and small land/property owners establish a secure financial future for themselves**.**

All of these programs build strong families and supportive communities. They add value to society.

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 : No

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
801	Individual and Family Resource Management		20%		0%
802	Human Development and Family Well-Being		30%		100%
806	Youth Development		50%		0%
	Total		100%		100%

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

1. Situation and priorities

Arkansas is a diverse state that depends on a strong agriculture industry. Agriculture is Arkansas' largest industry, providing over $5 billion a year in farm income. Roughly one-half of the state's land is devoted to agriculture. The climate and topography make it well suited for the production of a broad spectrum of commodities. For instance Arkansas ranks first in the production of rice and second in the production of broilers. Arkansas also ranks high in the production of catfish, turkey, cotton, and soybeans.

Although Arkansas depends on Agriculture, it is seldom taught in elementary schools. Along with the fact that most children are two to three generations away from the farm, there is an increasing need of making youth aware of the careers in agriculture. This program uses hands-on lessons and reaches students in both rural and urban schools as well as home-schooled students.

Forty-seven percent of Arkansas' minority children live in single parent homes. They are more likely to be poor and are being raised without the support of a father in the home. The frequent practice of sound money management skills is a critical aspect of family well-being, particularly in a rapidly changing and uncertain economy. This is especially true of limited resource families and small land/property owners. These audiences need financial planning information to help them better secure their future.

The research project, Predictors of Quality in Licensed Early Childhood Education Programs, is designed to survey a number of stakeholders that include directors, lead teachers and parents in early childhood education programs, day care and family homes to gain their perceptions of a quality early childhood education program for young children. The results of this research project will enable practitioners to develop more effective programs for families and young children.

The family and child development, family resource management and AG awareness programs, and the research project are all addressing the issues cited above and offering solutions to make life better for family members. They are engaging communities to be supportive of the families who live there.

2. Scope of the Program

- In-State Extension
- In-State Research

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

1. Assumptions made for the Program

Children and youth today are the decision-makers of tomorrow. As such they need to learn about the world that exists around them. They also need to learn about basic issues that will impact their food supply and environmental issues. Receiving vibrant, challenging, hands-on instruction about agriculture and its importance (in the AG Adventure Program) is a relevant learning experience for these future decision makers, especially those in urban areas. Limited-resource families, youth and small land/property owners participating in the family resource management program are expected to gain knowledge and skills in saving and reducing debt, and selecting financial services including credit cards and mortgage loans. In the 1890 family and child

development program, parents enrolled in the Young Scholars Program are expected to develop skills to help their children achieve their full potential and become contributing members of society. Children enrolled in the program are expected to increase school performance and avoid dropping out of school. Teenagers receiving the newsletter series, Teens on the Go, are expected to develop decision-making skills for dealing with critical issues they face. The results of the research project, Predictors of Quality in Early Childhood Education Programs, are expected to define quality and serve as a tool for parents in their selection of care for their children. Early childhood staff will be motivated to meet the standards and accreditation as set forth by the new Arkansas Better Beginnings Program and NAEYCE.

2. Ultimate goal(s) of this Program

1). To increase an understanding of agriculture and ultimately encourage more youth to seek careers in the fields of agriculture, science, food, math, engineering, and technology; 2) to help teenagers make better decisions regarding critical issues they face; 3) To develop the capacity of low-income minority parents to create an environment that will enhance the development of their children; 4) To identify predictors of quality in early childhood education programs in Southeast Arkansas; 5) to identify quality practices currently used in early childhood education programs in Southeast Arkansas; 6) to help low-income minority children increase school performance and avoid dropping out of school; and 7) to help limited-resource families, youth and small land/property owners make informed consumer decisions regarding their finances and change or improve behavior/habits that help them manage their finances and build wealth.

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
2011	0.0	1.2	0.0	0.4
2012	0.0	1.2	0.0	0.4
2013	0.0	1.2	0.0	0.4
2014	0.0	1.2	0.0	0.4
2015	0.0	1.2	0.0	0.4

V(F). Planned Program (Activity)

1. Activity for the Program

Activities for ***the AG Adventures and Awareness Program*** will include field days at the University of Arkansas at Pine Bluff Small Farm Outreach and Water Management Center, camps at the Arkansas 4-H Center, exhibits and displays at educational fairs and conferences, and community and classroom workshops in multiple locations throughout the state. ***The 1890 Family Resource Management*** Program will be conducted through workshops and seminars in a select number of counties in the Delta Region of the state, indirect contacts will be made through newsletters that target limited-resource families, youth and small land/ property owners. News articles will be published in local papers in the Delta Region of the state. Two focused areas will be addressed in the 1890 Family and Child Development Program. These include ***Teens on the Go and the Young Scholars Program***. ***Teens on the Go*** is a newsletter that will be developed for students in grades 7-12. Students will receive 6 issues of the newsletter during the school year. The ***Young Scholars Program*** will be implemented in a housing project in Brinkley. The children, referred to as ***Young Scholars***, will meet 5 days a week in an after school program that emphasizes math and science skills. Parents enrolled in the ***Young Scholars Program*** will meet in small groups weekly and focus on parenting education, stress management, coping and job related skills, family relationships, and economic-and self-sufficiency skills. Data from the research project will be analyzed and an observation will be conducted in those centers indicating an interest in national accreditation.

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

Extension

Direct Methods	Indirect Methods
● Education Class ● Workshop ● Group Discussion ● Demonstrations ● Other 1 (Direct mail)	● Public Service Announcement ● Newsletters ● TV Media Programs ● Web sites

3. Description of targeted audience

The target audiences will include students in grades 4-12; low-income children and their families who live in a housing project; family home, Head Start and daycare directors, their staff, enrolled children, and parents in Southeast Arkansas; and limited resource families, youth and small land/property owners in select counties in the Delta.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2011	619	645	955	10800
2012	619	645	955	10800
2013	619	645	955	10800
2014	619	645	955	10800
2015	619	645	955	10800

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

2011:0 **2012:**0 **2013:**0 **2014:**0 **2015:**0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2011	1	5	6
2012	1	5	6
2013	1	5	6
2014	1	5	6

Year	Research Target	Extension Target	Total
2015	1	5	6

V(H). State Defined Outputs

1. Output Target

- The number of participants in these programs will include direct and indirect contacts with youth and adults.

2011:13019 **2012:**13019 **2013:**13019 **2014:**13019 **2015:**13019

V(I). State Defined Outcome

O. No.	Outcome Name
1	To increase the understanding of agriculture, math, science, engineering,food, and environment among elementary and secondary school students;increase performance in school, help students develop decision-making skills, avoid becoming dropouts,help participants gain knowledge in resource management/financial planning; help families gain economic security and improve quality in early childood education programs, and gain skills for helping their children achieve their full potential.

Outcome # 1

1. Outcome Target

To increase the understanding of agriculture, math, science, engineering,food, and environment among elementary and secondary school students;increase performance in school, help students develop decision-making skills, avoid becoming dropouts,help participants gain knowledge in resource management/financial planning; help families gain economic security and improve quality in early childood education programs, and gain skills for helping their children achieve their full potential.

2. Outcome Type : Change in Knowledge Outcome Measure

2011:1097	**2012:**1097	**2013:**1097	**2014:**1097	**2015:**1097

3. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 806 - Youth Development

4. Associated Institute Type(s)

- 1890 Extension
- 1890 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Description

Educational framworks, school policies, natural disasters, changing economy and loss of jobs can affect the outcome of the planned program.

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- During (during program)

Description

Planned evaluation studies will include before and after program assessments.

2. Data Collection Methods

- Sampling
- Structured

- Observation
- Other (pre and post test)

Description

Many of the programs in this area include these data collection methods: pre and post test, self-reporting, and structured interviews.

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Food Safety

2. Brief summary about Planned Program

Fresh-cut produce has been successful in the marketplace because of the value added to the product through its preparation and the increased consumer demand for fresh and convenient food. Since fresh-cut produce deteriotate faster than intact produce, microbial safety and quality need to be optimized. Therefore, this project will focus on each postharvest technology to determine microbiological and sensory quality of fresh-cut produce and then, combinations of preservation technology to get hurdle effect to improve total quality of fresh-cut produce.

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

4. Program duration : Medium Term (One to five years)

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

6. Expending other than formula funds or state-matching funds : No

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
501	New and Improved Food Processing Technologies		25%		25%
502	New and Improved Food Products		25%		25%
503	Quality Maintenance in Storing and Marketing Food Products		25%		25%
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins		25%		25%
	Total		100%		100%

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

1. Situation and priorities

Fresh-cut produce is any fresh fruit or vegetable that has been physically altered its original form by minimal processing steps such as cleaning, peeling, cutting, trimming, coring, slicing, or shredding.Fresh-cut fruit and vegetables products retain unprocessed and fresh-like sensory qualities.Fresh-cut produce is one of the fast growing value-added products in U.S.There are various types of fresh-cut produce currently available in the market including over-wrapped fresh-cut fruit, refrigerated jarred cut fruit, packaged fresh-cut fruit or vegetable or pre-cut salads.Fresh-cut processing may cause severe tissue damage on fresh-cut produce, leading to rapid quality deterioration and provide greater opportunity for contamination by pathogenic microorganisms.It is also important during the shelf life to keep minimally processed products fresh without losing its nutritional and sensory quality.Factors controlling the shelf life of minimally processed fruit and vegetable products are a result of a complex process of physico-chemical and biochemical modifications that can affect flavor, color, and texture.Fresh-cut produce is generally consumed raw without additional cooking.It is essential to assure that fresh-cut produce is free of pathogens.Therefore, this project will try to identify value-added processing procedures that can provide fresh-cut produce better quality and safety.Optimum processing procedures will be selected from data obtained from research experiments. Farmers who are interested in fresh-cut produce as value-added products can adopt the processing

procedures for their product development.Currently, farmers in Arkansas produce a variety of vegetables including peas, beans, okra, leafy vegetables, cucumber, pepper, sweet potatoes, etc.However, fresh-cut produce in this project may focus on packaged pre-cut produce.

2. Scope of the Program

- In-State Research

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

1. Assumptions made for the Program

Fresh-cut products produced by selected procedures developed through this project may be more safe and wholesome than regular products.These products may offer produce growers and farmers an opportunity to increase sales by adding value to raw agricultural commodities and may be beneficial to farmers' niche markets in Arkansas, offering consumers ready-to-eat produce that is safe, high quality, convenient, nutritious and good tasting.

2. Ultimate goal(s) of this Program

Optimized microbiological and sensory quality of fresh-cut produce will provide increased marketing opportunities for small farm producers.Improved packaging, storage and value added methods of blackberries will increase profitability of the crop for small farm producers.

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
2011	0.0	0.3	0.0	0.7
2012	0.0	0.3	0.0	0.7
2013	0.0	0.3	0.0	0.7
2014	0.0	0.3	0.0	0.7
2015	0.0	0.0	0.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Conduct experiments that will

1) Determine effect of antibrowning agents on quality of fresh-cut produce, based on the methodology without modified atmosphere packaging;

2) Determine sanitizers, antimicrobials, packaging on quality and shelf-life of fresh-cut produce under MAP;

3) Determine effect of edible coatings containing antibrowning and/or antimicrobials on quality and shelf-life of fresh-cut produce;

4) Determine the combination effect of post-harvest treatments and packaging on the survival and growth of surrogates strains of Listeria monocytogenes and Escherichia coli O157:H7 on fresh-cut produce;

5) Evaluate ten blackberry cultivars for various packaging, storage, and value-added methods.

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

Extension

Direct Methods	Indirect Methods
• Workshop • One-on-One Intervention	• Newsletters

3. Description of targeted audience

Local farmers and limited resource farmers

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2011	20	30	0	0
2012	20	30	0	0
2013	20	30	0	0
2014	20	30	0	0
2015	30	40	0	0

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

2011:0 **2012:**0 **2013:**0 **2014:**0 **2015:**0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2011	1	0	1
2012	0	1	1
2013	1	0	1
2014	0	1	1
2015	1	0	1

V(H). State Defined Outputs

1. Output Target

- Three abstracts and three presentations at the scientific annual meetings.
  Three peer reviewed publications.
  Three presentations and/or workshops to farmers.

2011:3 **2012:**3 **2013:**3 **2014:**3 **2015:**3

V(I). State Defined Outcome

O. No.	Outcome Name
1	Increase number of small farmers and producers who adopt UAPB's Fresh-Cut Processing Technology and utilize it for their fresh-cut process. The target of 40 was to high. 10 is a better target.

Outcome # 1

1. Outcome Target

Increase number of small farmers and producers who adopt UAPB's Fresh-Cut Processing Technology and utilize it for their fresh-cut process. The target of 40 was to high. 10 is a better target.

2. Outcome Type : Change in Knowledge Outcome Measure

2011:10	**2012:**10	**2013:**10	**2014:**10	**2015:**10

3. Associated Knowledge Area(s)

- 501 - New and Improved Food Processing Technologies
- 502 - New and Improved Food Products
- 503 - Quality Maintenance in Storing and Marketing Food Products
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

4. Associated Institute Type(s)

- 1890 Extension
- 1890 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought, weather extremes, etc.)

Description

Weather conditions may affect crop production needed for the research.

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Comparisons between program participants (individuals, group, organizations) and non-participants

Description

Determine if fresh-cut processing procedures developed produce products with better quality and safety using analytical and organoleptic analysis.

Determine if small farmers who adopted UAPB's Fresh-Cut Process Procedure are satisfied with the procedure by survey.

Determine if UAPB's Fresh-Cut Process increases sales of their products by survey.

2. Data Collection Methods

- Mail
- Telephone
- On-Site

Description

Initially a survey conducted with farmers and Extension specialists to identify and prioritized what fruits and vegetables are applicable to this project.Research experiments will proceed.Based on research data, optimum processing procedures will be selected. Processing procedure will be provided to farmers. After processing procedures are implemented, a number of newly developed fresh-cut fruit and vegetable products will be selected from farmers who adopt the processing procedures.

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Climate Change

2. Brief summary about Planned Program

Hog production in the United States generates an estimated 120 million to 200 million tons of solid waste per year. The total number of traditional family-size hog farms (farms raising 1-100 hogs) in Arkansas has held relatively steady from 2005 to 2007 (630, 600, 610), factory farms have proliferated. Although fewer farmers raise hogs today than in prior years, the total number of hogs produced in Arkansas has skyrocketed because the number of factory farms has risen by over 200 percent since 1992. More than half of the state's hog farms have been cited by the state for environmental violations. The majority involve major pollution problems like animal waste leaks, spills and overfull manure lagoons. The appropriate treatment of swine waste and associated surface water quality is a key concern. This multidisciplinary research examines the effectiveness of a swine waste treatment system and a near-by constructed wetland system for reducing total nitrogen and total phosphorus in swine facility waste water.

Failure to properly manage manure and wastewater at concentrated animal production sites can negatively impact the environment and public health. Manure and wastewater have the potential to contribute pollutants such as nitrogen and phosphorus, organic matter, sediment, pathogens, heavy metals, hormones, and ammonia into the nation's ground and surface waters. In light of this, many farmers are becoming aware of the importance of an effective and efficient animal waste treatment system. Anaerobic swine wastewater treatment lagoons are often used where large numbers of swine are held. Constructed wetlands have received considerable attention as a possible wastewater treatment system component. However, questions exist about the long-term efficiency of constructed wetlands for swine wastewater treatment. The primary questions include nitrogen loading rates, oxidative/reductive conditions, de-nitrification potential, phosphorus removal rates, and ammonia toxicity to wetland plants.

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 : No

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
111	Conservation and Efficient Use of Water		20%		20%
112	Watershed Protection and Management		20%		15%
133	Pollution Prevention and Mitigation		15%		20%
134	Outdoor Recreation		10%		10%
204	Plant Product Quality and Utility (Preharvest)		20%		15%
403	Waste Disposal, Recycling, and Reuse		15%		20%
	Total		100%		100%

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

1. Situation and priorities

The protection and conservation of water quality, quantity and the environment are vitally important to the health and development of thriving rural communities. The first line of defense (protection and conservation) rests with small, limited resource landowners/operators, underrepresented communities and families. Protection and conservation of the farm environment and water resources rely on research that addresses community based issues and the education of communities along with the assistance of water quality professionals. In Arkansas and much of the southern U.S. the pollution of surface and groundwater is strictly prohibited. No sewage, food, garbage, drainage from swine operations may be discharged or disposed of by means or manner that jeopardizes ground water quality, or waters of the state. More specifically, this research seeks to address water and air quality issues associated with small swine farms and opportunities for small farm income through cut flower markets associated with wetland plants.

Hundreds of commercial aquaculture producers in Arkansas experience proliferation of unwanted aquatic vegetation on a yearly basis. Similar problems also affect thousands of acres of livestock watering ponds, row-crop irrigation reservoirs and ditches, and noncommercial and recreational water impoundments in Arkansas. This results in thousands of requests for assistance each year from County Agriculture Extension Agents and offices of the Arkansas Game and Fish Commission. Commercial producers usually want to elminate certain aquatic plants and not others, based on both practical and aesthetic motives. Misinformation and confusion leads to wasted money7 and effort, poor results in aquatic plant management, and dissatisfied pond owners.

Priority: To provide authoritative identification of aquatic plants, and research-based information and advice regarding methods and materials for timely aquatic plant management.

In recent years, the AGFC has been fielding concerns from recreational and tournament bass anglers that the quality of the largemouth bass fishery has declined significantly in the lower Arkansas River over the last decade. This concern has arisen again in the light of the abnormally high water levels the Arkansas River has experienced during the past 3 years, which may have affected the largemouth bass fishery. However, AGFC has little fisheries data collected from the river, especially downstream of Lake Dardanelle. AGFC desired a comprehensive stock assessment of largemouth bass in the different pools of the lower Arkansas River. AGFC also is in need of creel data to assess angler catch, harvest and effort. AGFC is always working to improve largemouth bass fisheries in the Arkansas River. We have the expertise and resources to assist AGFC with their assessment, to suggest methods for improvement of the largemouth bass population, and to monitor the effects of management decisions.

2. Scope of the Program

- In-State Research
- Integrated Research and Extension

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

1. Assumptions made for the Program

Assumptions: -Using septic tanks to collect solid swine waste will reduce the odor associated with swine production.
-An anaerobic swine waste treatment lagoon which predominantly contains liquid waste (excluding solid waste) will exhibit tolerable odor.
- An anaerobic swine waste treatment lagoon which predominantly contains liquid waste (excluding solid waste) will reduce nitrogen levels with sufficient retention time.
-A constructed wetland system will reduce nutrient level associated with swine effluent from an anaerobic waste treatment lagoon.
-A constructed wetland system is capable of producing cut plant production for resale.

The regulatory environment will remain fairly stable - grass carp marketing will continue, chemicals currently legal may remain so.

Use of shallow earthen ponds for commercial aquaculture will remain the common method of production in Arkansas

Chemicals identified for cheaper, more effective control of Naiad and Pithophora species will be approved for use.

Support of this work will continue by act of Congress through the annual Farm Bill, and through appropriations to Extension work by the Arkansas state legislature.

It is not a foregone conclusion tha the Arkansas River largemouth bass population needs management as the "decline" was not universally accepted by all AGFC scientists and anglers.

In the absence of any supporting data, a comprehensive assessment in warranted that encompasses the biological and user aspects of the fishery.

Any mangement recommendations from this research are subject to intra-agency approval and adoption by AGFC. AGFC might consider harvest regulation changes if warranted by research.

2. Ultimate goal(s) of this Program

Goal: Enhance water quality/quantity and environmental conservation efforts of small, limited resource landowners, underrepresented communities, and families through research and Extension programs that emphasize and encourage the adoption of sustainable consumer and production practices.

Clients will increase their knowledge and experience regarding options for managing aquatic plants. Clients will learn to read chemical labels in order to maintain awareness of essential legal and technical details such as where, when and how any given chemical may be used.

To provide a quantitative fishery assessment of largemouth bass fisheries throughout the lower Arkansas River

To provide estimates of angler catch, harvest, and effort for representative tools

To provide baseline research to support future management of largemouth bass in the lower Arkansas River should it be warranted

Enhance the angling experience of recreational anglers in the Arkansas Delta, thus, contributing to the economy of the region by attracting tourists that enjoy fishing

Provide guideline for fisheries management decision makers in the region

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
2011	0.0	0.5	0.0	0.5
2012	0.0	0.5	0.0	0.5
2013	0.0	0.5	0.0	0.5
2014	0.0	0.5	0.0	0.5
2015	0.0	0.5	0.0	0.5

V(F). Planned Program (Activity)

1. Activity for the Program

Compile beginning and ending water quality measurements associated with swine waste treatment lagoon.
Compile beginning and ending water quality measurements associated with constructed wetland cells and varied aquatic plants.
Compile water quality measurements associated with the UAPB Demonstration Farm pond.
Develop hill-slope runoff model output for the farm watershed using the APEX model (similar to EPIC).
Conduct at least one Swine Waste Treatment System Outreach/Demonstration Meeting each year.
Conduct at least one Farm Water Quality Improvement Outreach/Demonstration Meeting each year.
Complete one peer reviewed research article every two years. Complete one fact sheet every year
. Document the number of small, local and limited resource farmers that have been assisted with swine waste treatment, odor and/or water quality issues each year.

Disseminate up-to-date research-based information to individuals and through the mass media regarding appropriate management practices for aquatic plant management.

Correctly identify, and manage unwanted aquatic plants, and train clientele to do so independently.

Support AGFC aquatic biologists, CES County Agents, commercial aquaculture producers and the general public by responding to requests for assistance, by providing timely information and technical assistance through field and office visits.

Creel surveys during 2009-2010 in two pools (6 and 7) of the lower Arkansas River

Use of computer simulation modeling to predict the influence of different management scenarios on fishery yield, harvest, and size structure. Scenarios will include the existing 15-inch minimum lenghth limit and no minimum length limit yield.

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

Extension

Direct Methods	Indirect Methods
● Workshop ● Demonstrations	● TV Media Programs ● Web sites ● Other 1 (Fact Sheets)

3. Description of targeted audience

The target audience includes but is not limited to small, limited resource landowners, underrepresented communities, and families.

Fisheries managers of Arkansas: Arkansas Game and Fish Commission, AGFC fisheries biologists and managers, Tournament largemouth bass anglers, Recreational anglers of Arkansas

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2011	887	3607	57	57
2012	888	3608	58	58
2013	889	3609	59	59
2014	890	3610	60	60
2015	891	3611	61	61

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

2011:0 **2012:**0 **2013:**0 **2014:**0 **2015:**0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2011	2	0	1
2012	0	1	1
2013	1	0	1
2014	0	1	1
2015	1	0	1

V(H). State Defined Outputs

1. Output Target

- Complete one peer reviewed research article every two years.

2011:1 **2012:**0 **2013:**1 **2014:**0 **2015:**0

- Document the number of small, local and limited resource farmers that have been assisted with swine waste treatment, odor and/or water quality issues each year.

2011:5 **2012:**5 **2013:**5 **2014:**5 **2015:**0

- Complete one fact sheet regarding water quality, swine waste management or environmental stewardship each year.

2011:1 **2012:**1 **2013:**1 **2014:**1 **2015:**0

- Number of project annual and final reports

2011:71 **2012:**71 **2013:**71 **2014:**71 **2015:**71

- Number of presenations and scientific meetings

2011:14 **2012:**12 **2013:**12 **2014:**12 **2015:**12

- Number of abstracts published

2011:8 **2012:**6 **2013:**6 **2014:**6 **2015:**6

- Number of refereed journal articles

2011:2 **2012:**1 **2013:**1 **2014:**1 **2015:**1

- Number of research reports submitted to stakeholders

2011:2 **2012:**1 **2013:**1 **2014:**1 **2015:**1

- Number of non-peer reviewed pubications

2011:1 **2012:**0 **2013:**0 **2014:**0 **2015:**0

V(I). State Defined Outcome

O. No.	Outcome Name
1	The number of conservation practices utilized by swine farmers as a result of this project is an outcome measure.
2	Increase awareness of environmental issues and policies that pertain to operating small swine farms.
3	Number of research recommendations transferred to AGFC staff
4	Increase in ponds that are designed, stocked, and managed correctly
5	Reduced number of pond problems
6	The percent of AGFC fisheries biologists and managers that are informed about use of retenone samples for scientific research topics through scientific meetings and conferences
7	Percent of AGFC fisheries biologists and managers who use the study results to solve management issues
8	Number of tournament largemouth bass anglers that learned what we know
9	Number of recreational anglers that learned what we know
10	Number of non-agency fisheries biologists that use what we know
11	Percent reduction in complaints to the AGFC regarding largemouth bass in the Arkansas River
12	Percent increase in largemouth bass tournaments on the Arkansas River
13	Number of AGFC personnel that learned what we know
14	Number of non-agency fisheries biologists that learned what we know
15	Number of AGFC personnel that use what we know

Outcome # 1

1. Outcome Target

The number of conservation practices utilized by swine farmers as a result of this project is an outcome measure.

2. Outcome Type : Change in Action Outcome Measure

2011:2	**2012:**2	**2013:**2	**2014:**2	**2015:**0

3. Associated Knowledge Area(s)

- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 133 - Pollution Prevention and Mitigation
- 204 - Plant Product Quality and Utility (Preharvest)
- 403 - Waste Disposal, Recycling, and Reuse

4. Associated Institute Type(s)

- 1890 Extension
- 1890 Research

Outcome # 2

1. Outcome Target

Increase awareness of environmental issues and policies that pertain to operating small swine farms.

2. Outcome Type : Change in Knowledge Outcome Measure

2011:2	**2012:**2	**2013:**2	**2014:**2	**2015:**0

3. Associated Knowledge Area(s)

- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 133 - Pollution Prevention and Mitigation
- 204 - Plant Product Quality and Utility (Preharvest)
- 403 - Waste Disposal, Recycling, and Reuse

4. Associated Institute Type(s)

- 1890 Extension
- 1890 Research

Outcome # 3

1. Outcome Target

Number of research recommendations transferred to AGFC staff

2. Outcome Type : Change in Action Outcome Measure

2011:	**2012:**	**2013:**	**2014:**	**2015:**
2	2	2	2	2

3. Associated Knowledge Area(s)

- 134 - Outdoor Recreation

4. Associated Institute Type(s)

- 1890 Research

Outcome # 4

1. Outcome Target

Increase in ponds that are designed, stocked, and managed correctly

2. Outcome Type : Change in Knowledge Outcome Measure

2011:	**2012:**	**2013:**	**2014:**	**2015:**
160	160	160	160	160

3. Associated Knowledge Area(s)

- 134 - Outdoor Recreation

4. Associated Institute Type(s)

- 1890 Research

Outcome # 5

1. Outcome Target

Reduced number of pond problems

2. Outcome Type : Change in Knowledge Outcome Measure

2011:	**2012:**	**2013:**	**2014:**	**2015:**
171	171	171	171	171

3. Associated Knowledge Area(s)

- 134 - Outdoor Recreation

4. Associated Institute Type(s)

- 1890 Research

Outcome # 6

1. Outcome Target

The percent of AGFC fisheries biologists and managers that are informed about use of retenone samples for scientific research topics through scientific meetings and conferences

2. Outcome Type : Change in Knowledge Outcome Measure

2011:	**2012:**	**2013:**	**2014:**	**2015:**
110	110	110	110	110

3. Associated Knowledge Area(s)

- 134 - Outdoor Recreation

4. Associated Institute Type(s)

- 1890 Research

Outcome # 7

1. Outcome Target

Percent of AGFC fisheries biologists and managers who use the study results to solve management issues

2. Outcome Type : Change in Action Outcome Measure

2011:	**2012:**	**2013:**	**2014:**	**2015:**
60	60	60	60	60

3. Associated Knowledge Area(s)

- 134 - Outdoor Recreation

4. Associated Institute Type(s)

- 1890 Research

Outcome # 8

1. Outcome Target

Number of tournament largemouth bass anglers that learned what we know

2. Outcome Type : Change in Knowledge Outcome Measure

2011:	**2012:**	**2013:**	**2014:**	**2015:**
35	35	35	35	35

3. Associated Knowledge Area(s)

- 134 - Outdoor Recreation

4. Associated Institute Type(s)

- 1890 Research

Outcome # 9

1. Outcome Target

Number of recreational anglers that learned what we know

2. Outcome Type : Change in Knowledge Outcome Measure

2011:50	**2012:**50	**2013:**60	**2014:**60	**2015:**60

3. Associated Knowledge Area(s)

- 134 - Outdoor Recreation

4. Associated Institute Type(s)

- 1890 Research

Outcome # 10

1. Outcome Target

Number of non-agency fisheries biologists that use what we know

2. Outcome Type : Change in Action Outcome Measure

2011:16	**2012:**16	**2013:**16	**2014:**16	**2015:**16

3. Associated Knowledge Area(s)

- 134 - Outdoor Recreation

4. Associated Institute Type(s)

- 1890 Research

Outcome # 11

1. Outcome Target

Percent reduction in complaints to the AGFC regarding largemouth bass in the Arkansas River

2. Outcome Type : Change in Condition Outcome Measure

2011:12	**2012:**12	**2013:**12	**2014:**12	**2015:**12

3. Associated Knowledge Area(s)

- 134 - Outdoor Recreation

4. Associated Institute Type(s)

- 1890 Research

Outcome # 12

1. Outcome Target

Percent increase in largemouth bass tournaments on the Arkansas River

2. Outcome Type : Change in Action Outcome Measure

2011:7	**2012:**7	**2013:**7	**2014:**7	**2015:**7

3. Associated Knowledge Area(s)

- 134 - Outdoor Recreation

4. Associated Institute Type(s)

- 1890 Research

Outcome # 13

1. Outcome Target

Number of AGFC personnel that learned what we know

2. Outcome Type : Change in Knowledge Outcome Measure

2011:150	**2012:**150	**2013:**150	**2014:**150	**2015:**150

3. Associated Knowledge Area(s)

- 134 - Outdoor Recreation

4. Associated Institute Type(s)

- 1890 Research

Outcome # 14

1. Outcome Target

Number of non-agency fisheries biologists that learned what we know

2. Outcome Type : Change in Knowledge Outcome Measure

2011:50	**2012:**50	**2013:**50	**2014:**50	**2015:**50

3. Associated Knowledge Area(s)

- 134 - Outdoor Recreation

4. Associated Institute Type(s)

- 1890 Research

Outcome # 15

1. Outcome Target

Number of AGFC personnel that use what we know

2. Outcome Type : Change in Knowledge Outcome Measure

2011:18	**2012:**18	**2013:**18	**2014:**18	**2015:**18

3. Associated Knowledge Area(s)

- 134 - Outdoor Recreation

4. Associated Institute Type(s)

- 1890 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Public Policy changes

Description

This project may be affected by extreme weather events. Rainwater runoff is factored into the environmental requirements for the swine waste treatment lagoon and constructed wetland cells. The lack of suitable rain events may have an adverse effect on the project's outcome. Changes in both state and federal water policy will also need to be addressed if they occur.

Political, public relations, and economic factors are involved in almost any management adopted by AGFC (our primary stakeholder)

If AGFC research priorities change in the next few years, medium-term and long-term outcomes listed above could change also.

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- During (during program)

Description

The outcome indicators listed below will serve as the basis for evaluating the project.
1. Improve water quality in the UAPB Farm Pond with the use of the Constructed Wetland
2. Treat swine waste from the UAPB Farm in accordance with State Regulation Five of the Pollution Control and Ecology Department
3. Increase the number of small and limited resource farmers that use swine waste treatment practices (odor, water quality, solid and liquid waste treatment) as a result in our demonstration and training.
4. Increase the number of conservation practices utilized by swine farmers as a result of outreach and assistance provided by the project. Annual reports will record the progress of the project in meeting the project goals. Progress from year to year will provide a quantitative assessment of the projects effectiveness.

2. Data Collection Methods

- Sampling
- Observation

Description

1) Evaluate the long-term effectiveness of a swine waste treatment lagoon for treating swine waste from a confined swine holding area. The long-term effectiveness of a swine waste treatment lagoon will be assessed by monitoring the water quality of the treatment lagoon on a weekly basis during the spring and summer months (April-July). Fecal coli form in the samples will be analyzed with the mFC agar method .

2) Evaluate the effectiveness of a constructed wetland for treatment of hill-slope runoff from a small farm watershed. The effectiveness of various wetland plants within the constructed wetland will be evaluated for nutrient removal potential. Water sampling will be conducted during the spring and summer months (April-July). Samples from the UAPB farm pond, the water entry point of the created wetland (CWL), and the discharge of the CWL will be collected. Hach test-in-tube total nitrogen and total phosphorus tests will be used to analyze nitrogen and phosphorus water samples. The constructed wetland vegetation will be rotated on a three year basis with vegetation harvest after the third year. Constructed wetland vegetation may include Juncus usitatus (Common Rush), Typha spp. (Cumbungi) and Polygonum amphibium (water smartweed) and Cannas spp. (Canna Lillies). The vegetation will be analyzed for nitrogen and phosphorus after the three-year rotation.

3) Evaluate the odor associated with a swine waste treatment lagoon. The olfactometry method will be used to measure odor concentration in lagoon air both before and after establishment of odor mitigating vegetation. 4) Model hill-runoff from a small farm watershed using the Agricultural Policy Extender (APEX) model.

The hydrologic and biological processes involved in row crop agriculture and confined livestock may be simulated with the APEX distributed parameter model. Extension Methods by Objective:

1) Utilize the Swine Waste Treatment System and Constructed Wetland System as public outreach/demonstration examples for local farmers. The annual UAPB Farm Field Day and planned site visits are mechanisms by which demonstrations of the two systems will be exhibited.

2) Develop print and video resources to instruct small swine producers of the engineering and design criteria for constructing and utilizing a swine waste treatment system and constructed wetland for farm watershed water quality improvement. Small swine producers will be assisted with technical information regarding the engineering and design criteria for constructing and utilizing a swine waste treatment systems that meets their farm need. Print and video resources will be developed to assist small swine producers and disadvantaged farmers with federal, state and local policies regarding the treatment and disposal of swine waste and the design and implementation of a swine waste treatment system.

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Global Food Security and Hunger

2. Brief summary about Planned Program

The University of Arkansas at Pine Bluff (UAPB) serves primarily Small and Socially Disadvantaged Farmers (SSDF) in Southeastern and Southwestern Arkansas. These farmers have traditionally been underserved and they have lost more than 1.3 million acres (1,457,904 -155,441 = 1.302463) of land since 1950. We chose to take a holistic approach to the sustainability of SSDF because we believe that all segments of the population in this country must be active contributors in the fight to gain global food security and prevent hunger. The planned program will address issues such as U. S. Agriculture Policy (surveys of farmers, economic modeling and analysis will be done to determine the factors that affect SSDF participation in USDA programs); small farm management (Extension Associates will provide direct one-on-one assistance and group training on record keeping and financial planning to SSDF); assistance offered to farmers through USDA and other organizations (personnel will apprise farmers about programs offered through the Natural Resources Conservation Service (NRCS), Farm Service Agency, Risk Management Agency and Heifer International); animal production and management (alternative low cost feed sources will be used to formulate rations for swine, goats and beef cattle); alternative crop production (vegetables crop rotations,other crop production practices, screening of alternative insecticides and ornamental plant production will be the main foci), horticulture production (on-farm trials of fruit and vegetable crops will be conducted to determine their suitability for production by SSDF's), plant breeding and biotechnology (cowpea cultivars that resist biotic and abiotic stresses will be developed through transgenic and conventional breeding methods), and best management practices for crop production (conservation tillage verses conventional tillage, zero grade verses 0.1ft./100 ft. grade soybean production and round-up ready verses conventional soybeans will be the primary foci). This program covers most of the areas where our clientele are experiencing difficulty in being competitive in today's agricultural system.

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
201	Plant Genome, Genetics, and Genetic Mechanisms		5%		13%
202	Plant Genetic Resources		5%		13%
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants		14%		10%
205	Plant Management Systems		15%		7%
211	Insects, Mites, and Other Arthropods Affecting Plants		6%		0%
213	Weeds Affecting Plants		10%		0%
301	Reproductive Performance of Animals		5%		5%
302	Nutrient Utilization in Animals		6%		5%
307	Animal Management Systems		0%		10%
311	Animal Diseases		12%		7%
601	Economics of Agricultural Production and Farm Management		5%		13%
602	Business Management, Finance, and Taxation		12%		0%
603	Market Economics		0%		10%
610	Domestic Policy Analysis		5%		7%
	Total		100%		100%

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

1. Situation and priorities

There are over 5,000 small farms in Southeast and Southwest Arkansas. Most of these farms are owned by minority and limited-resource farmers. Additionally, over 87% of the farmers in the region are small-scale (with less than $250,000 in farm sales per year).These farmers have benefited form USDA programs (direct payments, counter cyclical payments, market loan gains, conservation payments etc.) at a lower rate than other farmers. They face a great challenge in producing row crops because of the small profit margins in these crops (wheat, soybeans, rice etc.) meaning that farmers must have substantial acreage (1000 acres) in order to be competitive. Poor record keeping has plagued these farmers; their payments from USDA programs have suffered because they do not have adequate proof of yields; and must rely on county averages for payments which are based on acreage and yield. The calculation for Direct and Counter-cyclical Payments is "base acres*0.833*yield history* payment rate". These facts are further exacerbated by the fact the SSDF's usually do not produce yields on par with larger farmers; and they are not comfortable with and/or do not trust USDA, or the Cooperative Extension Service (CES) or other agencies. They do trust UAPB's Extension Associates who have worked with them on an individual basis and in group settings since 1987. During this period, UAPB has helped more than 100 farmers stay in business. The Extension Associates explain the various USDA programs to SSDF's and help them to see how they can benefit from them. Good recordkeeping, financial analysis and following recommended crop production practices will be stressed when farmers are helped with loan applications by Extension Associates. Meat goats, small scale swine and beef production will be looked at as alternative enterprises because they have low capital investment in the start-up phase and the animals can utilize the abundant crop by-products available in southeast Arkansas. Horticultural crops (fruits &ndash muscadine grapes, blackberries, blueberries etc., vegetables &ndash sweet potatoes, green beans, cowpeas, squash, etc., and ornamentals - Gladiolus, hybrid roses, etc) will be used to help farmers diversify their operation and increase profits. Cowpea is an important alternative crop for SSDF esp. in the Arkansas Delta. It is susceptible to insects and diseases that can devastate the crop. Genetic engineering techniques

will be used to produce transgenic cultivars that resist pod borers and weevil infestation while conventional breeding will improve market acceptability of cowpeas. Wheat, soybeans and rice are important cash crops for SSDF in Arkansas in spite of the fact the yield of these crops are less than that of larger farms. One reason for this is that SSDF's are usually slow to adopt best management practices such as land leveling, installing irrigation wells, liming, and adopting new technology such as transgenic varieties. Demonstrations at the UAPB farm site near Lonoke Arkansas will demonstrate BMPs that can be used by SSDFs. The proposed program will help farmers to take a holistic approach to enterprise development and farm management.

2. Scope of the Program

- In-State Extension
- In-State Research

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

1. Assumptions made for the Program

A holistic look at farm production will increase the likelihood that farmers will become better managers. Forays into the policy arena will help them to see that governmental policy has a profound impact on their ability to be profitable. SSDFs will learn what resources are available for them to improve their enterprise and be able to access those resources. They will learn that: 1. crop by-products can be an economical source of animal feed; 2. crops will improve family and farm income while increasing food security of the area; 3. crop rotations and sequencing of vegetables during the growing season can increase yield while reducing insect and disease pressures associated with crop monocultures; 4. ornamentals, fruits and vegetables can be sold for a profit with health benefits being derived from consumers since consumption of fruits and vegetables have been shown to reduce the incidence of obesity and ornamental have been shown to add aesthetic beauty to the environment; 5. adopting improved cultivars and BMPs can increase profit margin and reduce inputs; and, 6. BMPs can increase yield, improve soil tilth, reduce soil erosion, and improve water quality in an area.

2. Ultimate goal(s) of this Program

The ultimate goal of this program is to provide research based information that has been transmitted through Extension and outreach channels. This will enable SSDFs to improve their efficiency and become a viable part of USDA's effort to achieve global food security.

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
2011	0.0	5.0	0.0	6.5
2012	0.0	5.0	0.0	6.5
2013	0.0	5.0	0.0	6.5
2014	0.0	5.0	0.0	6.5
2015	0.0	5.0	0.0	6.5

V(F). Planned Program (Activity)

1. Activity for the Program

The activity for the policy part of the program will consist of surveying 250-300 farmers that are served by the UAPB 2501Small Farm Project; economic modeling of the collected data, and disseminating the results to farmers via workshops, publications pamphlets, newsletters, fact sheets, newspaper columns, and farmer meetings. Small farm management assistance will be provided by Extension Associates through direct one-on-one assistance, group training on record keeping and financial planning. Personnel will apprise farmers about programs offered through the Natural Resources Conservation Service, Farm Service Agency, Risk Management Agency and Heifer International. Training will be provided to county extension staff, master gardeners, small-scale and limited-resource farmers, and youth. Research will be done on alternative low cost feed sources that will be used to formulate rations for swine, goats and beef cattle. Research on vegetables crop rotations that are suitable for the Arkansas Delta and Southwestern Arkansas, screening of alternative insecticides and ornamental plant trials will be conducted. On-farm trials of fruit and vegetable crops will be conducted to determine their suitability for production by SSDF's. Plant breeding and biotechnology research studies will be conducted on cowpea cultivars to improve their resistance to biotic and abiotic stresses. Best Management Practices for crop production (conservation tillage verses conventional tillage, zero grade verses 0.1ft./100 ft.

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

Extension

Direct Methods	Indirect Methods
● Education Class ● Workshop ● Group Discussion ● One-on-One Intervention ● Demonstrations	● Newsletters ● TV Media Programs ● Web sites

3. Description of targeted audience

The primary audience for this program consists of Small and Socially Disadvantaged Farmers (SSDFs). Small Farms as defined by the National Commission on Small Farms are those farms with $250,000 in gross sales or less while Socially Disadvantaged Farmers are those who have been subjected to racial or ethnic prejudices because of their identity as a member of a group without regard to their individual qualities. Identified groups include: African Americans, Hispanics, Asians, American Indians or Alaska Natives, and Native Hawaiians or other Pacific Islanders. However, UAPB does not discriminate against any individual and services are provided to all who request it.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2011	11282	17965	1075	510
2012	11302	18000	1075	510
2013	11324	18000	1080	510
2014	11329	18000	1080	510
2015	11329	18000	1080	510

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

2011:0 **2012:**0 **2013:**0 **2014:**0 **2015:**0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2011	0	3	3
2012	1	3	4
2013	2	3	5
2014	2	3	5
2015	3	3	6

V(H). State Defined Outputs

1. Output Target

- The number of research studies and demonstrations conducted

2011:5	**2012:**5	**2013:**5	**2014:**5	**2015:**5

- The number of farmers provided assistance in applying for USDA programs

2011:100	**2012:**100	**2013:**100	**2014:**100	**2015:**100

- The number of newsletters, fact sheets, etc. distributed

2011:2000	**2012:**2000	**2013:**2000	**2014:**2000	**2015:**2000

- The number of newspaper articles published

2011:20	**2012:**20	**2013:**20	**2014:**20	**2015:**20

- The number of field days held

2011:1	**2012:**1	**2013:**1	**2014:**1	**2015:**1

- Number of presentations made

2011:10	**2012:**10	**2013:**10	**2014:**10	**2015:**10

- The number of workshops and training sessions conducted

2011:5	**2012:**5	**2013:**5	**2014:**5	**2015:**5

- Number of refereed journal articles

2011:13	**2012:**12	**2013:**11	**2014:**10	**2015:**10

- Number of abstracts

2011:29	**2012:**31	**2013:**27	**2014:**27	**2015:**27

- Number of presentations

2011:56	**2012:**61	**2013:**57	**2014:**58	**2015:**60

- Number of trade magazine articles

2011:9 **2012:**9 **2013:**8 **2014:**8 **2015:**9

- Number of factsheets and newsletters

2011:2 **2012:**2 **2013:**2 **2014:**2 **2015:**3

- Number of peer reviewed journal articles

2011:4 **2012:**6 **2013:**4 **2014:**6 **2015:**4

- Number of publications

2011:6 **2012:**10 **2013:**9 **2014:**9 **2015:**9

V(I). State Defined Outcome

O. No.	Outcome Name
1	Increase the economic opportunity and quality of life for SSDF by improving their farm diversity and profitability.
2	An increase in the number of SSDF that adopt one or more Best Management Practices for crop and/or livestock production
3	Increase the number of farmers that develop an estate plan and/or a reduction in land loss by Socially Disadvantaged Farmers
4	Number of stores adopting recommendations
5	Number of Arkansans gaining access to catfish management information
6	Number of producers responding to research results
7	Number of producers willing to test successful ingredients of feeding strategies on a commercial scale
8	Number of fingerling producers that learned what we know
9	Number of scientists that learned what we know
10	Number of fingerling producers that use what we know
11	Number of Arkansans gaining access to hybrid catfish information
12	Number of Arkansans adopting hybrid catfish production
13	Number of producers who learn project results
14	Number of researchers that will cite results
15	Number of producers that will modify feeding and management
16	Percent decrease in cool weather mortalities and decrease in off-flavor
17	Percent cool weather plankton-related problems that will decrease

O. No.	Outcome Name
18	Percent warm weather plankton-related problems that will decrease
19	Percent of diets with new ingredients that are commercially available, or number of new feeding strategies implemented by industry

Outcome # 1

1. Outcome Target

Increase the economic opportunity and quality of life for SSDF by improving their farm diversity and profitability.

2. Outcome Type : Change in Condition Outcome Measure

2011:50	**2012:**100	**2013:**100	**2014:**100	**2015:**100

3. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation

4. Associated Institute Type(s)

- 1890 Extension
- 1890 Research

Outcome # 2

1. Outcome Target

An increase in the number of SSDF that adopt one or more Best Management Practices for crop and/or livestock production

2. Outcome Type : Change in Knowledge Outcome Measure

2011:10	**2012:**20	**2013:**50	**2014:**50	**2015:**50

3. Associated Knowledge Area(s)

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 205 - Plant Management Systems
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 213 - Weeds Affecting Plants
- 302 - Nutrient Utilization in Animals

4. Associated Institute Type(s)

- 1890 Extension
- 1890 Research

Outcome # 3

1. Outcome Target

Increase the number of farmers that develop an estate plan and/or a reduction in land loss by Socially Disadvantaged Farmers

2. Outcome Type : Change in Knowledge Outcome Measure

2011:50	**2012:**50	**2013:**50	**2014:**50	**2015:**50

3. Associated Knowledge Area(s)

- 602 - Business Management, Finance, and Taxation
- 610 - Domestic Policy Analysis

4. Associated Institute Type(s)

- 1890 Extension
- 1890 Research

Outcome # 4

1. Outcome Target

Number of stores adopting recommendations

2. Outcome Type : Change in Action Outcome Measure

2011:25	**2012:**25	**2013:**25	**2014:**25	**2015:**25

3. Associated Knowledge Area(s)

- 603 - Market Economics

4. Associated Institute Type(s)

- 1890 Research

Outcome # 5

1. Outcome Target

Number of Arkansans gaining access to catfish management information

2. Outcome Type : Change in Knowledge Outcome Measure

2011:0	**2012:**0	**2013:**0	**2014:**0	**2015:**0

3. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management

4. Associated Institute Type(s)

- 1890 Research

Outcome # 6

1. Outcome Target

Number of producers responding to research results

2. Outcome Type : Change in Knowledge Outcome Measure

2011:	**2012:**	**2013:**	**2014:**	**2015:**
105	105	105	105	105

3. Associated Knowledge Area(s)

- 307 - Animal Management Systems

4. Associated Institute Type(s)

- 1890 Extension
- 1890 Research

Outcome # 7

1. Outcome Target

Number of producers willing to test successful ingredients of feeding strategies on a commercial scale

2. Outcome Type : Change in Action Outcome Measure

2011:	**2012:**	**2013:**	**2014:**	**2015:**
185	185	186	185	184

3. Associated Knowledge Area(s)

- 302 - Nutrient Utilization in Animals

4. Associated Institute Type(s)

- 1890 Research

Outcome # 8

1. Outcome Target

Number of fingerling producers that learned what we know

2. Outcome Type : Change in Knowledge Outcome Measure

2011:	**2012:**	**2013:**	**2014:**	**2015:**
18	18	18	18	18

3. Associated Knowledge Area(s)

- 301 - Reproductive Performance of Animals

4. Associated Institute Type(s)

- 1890 Extension
- 1890 Research

Outcome # 9

1. Outcome Target

Number of scientists that learned what we know

2. Outcome Type : Change in Knowledge Outcome Measure

2011:0	**2012:**0	**2013:**0	**2014:**0	**2015:**0

3. Associated Knowledge Area(s)

- 307 - Animal Management Systems

4. Associated Institute Type(s)

- 1890 Extension
- 1890 Research

Outcome # 10

1. Outcome Target

Number of fingerling producers that use what we know

2. Outcome Type : Change in Action Outcome Measure

2011:10	**2012:**11	**2013:**11	**2014:**11	**2015:**11

3. Associated Knowledge Area(s)

- 307 - Animal Management Systems

4. Associated Institute Type(s)

- 1890 Extension
- 1890 Research

Outcome # 11

1. Outcome Target

Number of Arkansans gaining access to hybrid catfish information

2. Outcome Type : Change in Knowledge Outcome Measure

2011:60	**2012:**60	**2013:**60	**2014:**60	**2015:**60

3. Associated Knowledge Area(s)

- 307 - Animal Management Systems

4. Associated Institute Type(s)

- 1890 Research

Outcome # 12

1. Outcome Target

Number of Arkansans adopting hybrid catfish production

2. Outcome Type : Change in Action Outcome Measure

2011:	**2012:**	**2013:**	**2014:**	**2015:**
3	4	4	4	4

3. Associated Knowledge Area(s)

- 307 - Animal Management Systems

4. Associated Institute Type(s)

- 1890 Research

Outcome # 13

1. Outcome Target

Number of producers who learn project results

2. Outcome Type : Change in Knowledge Outcome Measure

2011:	**2012:**	**2013:**	**2014:**	**2015:**
55	55	55	55	55

3. Associated Knowledge Area(s)

- 307 - Animal Management Systems

4. Associated Institute Type(s)

- 1890 Extension
- 1890 Research

Outcome # 14

1. Outcome Target

Number of researchers that will cite results

2. Outcome Type : Change in Action Outcome Measure

2011:	**2012:**	**2013:**	**2014:**	**2015:**
16	15	15	17	16

3. Associated Knowledge Area(s)

- 307 - Animal Management Systems

4. Associated Institute Type(s)

- 1890 Research

Outcome # 15

1. Outcome Target

Number of producers that will modify feeding and management

2. Outcome Type : Change in Action Outcome Measure

2011:88	**2012:**88	**2013:**88	**2014:**88	**2015:**88

3. Associated Knowledge Area(s)

- 302 - Nutrient Utilization in Animals

4. Associated Institute Type(s)

- 1890 Research

Outcome # 16

1. Outcome Target

Percent decrease in cool weather mortalities and decrease in off-flavor

2. Outcome Type : Change in Condition Outcome Measure

2011:30	**2012:**31	**2013:**31	**2014:**30	**2015:**31

3. Associated Knowledge Area(s)

- 307 - Animal Management Systems

4. Associated Institute Type(s)

- 1890 Research

Outcome # 17

1. Outcome Target

Percent cool weather plankton-related problems that will decrease

2. Outcome Type : Change in Condition Outcome Measure

2011:68	**2012:**70	**2013:**68	**2014:**68	**2015:**68

3. Associated Knowledge Area(s)

- 307 - Animal Management Systems

4. Associated Institute Type(s)

- 1890 Research

Outcome # 18

1. Outcome Target

Percent warm weather plankton-related problems that will decrease

2. Outcome Type : Change in Condition Outcome Measure

2011:43	**2012:**38	**2013:**38	**2014:**43	**2015:**38

3. Associated Knowledge Area(s)

- 307 - Animal Management Systems

4. Associated Institute Type(s)

- 1890 Research

Outcome # 19

1. Outcome Target

Percent of diets with new ingredients that are commercially available, or number of new feeding strategies implemented by industry

2. Outcome Type : Change in Condition Outcome Measure

2011:8	**2012:**8	**2013:**8	**2014:**8	**2015:**8

3. Associated Knowledge Area(s)

- 302 - Nutrient Utilization in Animals

4. Associated Institute Type(s)

- 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

{NO DATA ENTERED}

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- During (during program)

Description

{NO DATA ENTERED}

2. Data Collection Methods

Description

{NO DATA ENTERED}

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Childhood Obesity

2. Brief summary about Planned Program

a) Nutritional intervention through alternative food sources (vegetables and herbs):

Studies have been conducted to develop new varieties of specialty herbs and vegetables, especially bitter melons, bottle gourds, green pumpkins, and hot peppers for their special nutritional qualities. Further studies will be conducted to develop, demonstrate and release new varieties. The total phenolic contents and antioxidant & anti-mutagenic activities of the new food sources are some of the most important parameters to be determined. Recipe development and taste-testing for the new herbs and vegetables are in progress for consumer acceptance. Selected bitter melon and bottle gourd varieties will be tested further to refine their recipes for soups, salads, and relishes. Low-fat chickpea- or lentil- soups with gourds and pumpkins garnished with cilantro, celery, fenugreek, etc., will be tested for processed/canned foods. The already proven beef-stew and gourd-salad recipes will be refined further for large scale evaluation before being recommended.

The present plan of work will include field testing of 12 new hot pepper varieties for yield potential and other phenotypic characteristics along with their phytochemical analyses for nutritional values. About 40 promising 6^{th} generation lines selected in 2009 from 70 progeny lines of the Scotch-bonnet/Habanera cross will be field-tested for further selection in 2010. Further selection will be based on yield potential and functional qualities such as flavor, capsaicin, vitamins, carotinoids, and flavanoides. A few hot pepper varieties possessing aesthetic qualities may be demonstrated in 2010 for variety release. Nutritional qualities of value-added food products and their quality measures along with profitability and marketing studies will be the final stage of this research program.

b) Health Benefits of Yogurt containing Probiotics in reducing Lactose Intolerance and reducing Weight Gain in African American Adults

Probiotics have been linked to health benefits to include improvement of lactose digestion, enhancing the immune system, synthesizing and enhancing the bioavailability of nutrients, and reducing risk of certain cancers. Approximately 60-80% of African Americans are affected by lactose intolerance (Sizer and Whitney, 2008). Lactose intolerance is the clinical condition caused by the inability to digest lactose in milk and dairy products due to hypolactasia (Peuhkuri, 2000). Increased intake of calcium has been linked to the reduction of weight gain in humans through randomized clinical trials and epidemiological studies (Zemel, 2005).

There is evidence that bacteria used as starter cultures (*Streptococcus thermophilus* and *Lactobacillus delbrueckii* subsp *bulgaricus*) and other lactobacilli used in yogurt and fermented milk products have enough lactase to break down lactose in these products to alleviate symptoms of lactose intolerance (Kolars et al., 1984; Kilara and Shahani 1975; Martini et al.,1991).

The presence of probiotics in dairy products does not guarantee its effectiveness. Effective probiotics should: (i) exert a beneficial effect on the host; (ii) survive in a food at high cell counts, and remain viable throughout the shelf-life of the product; (iii) withstand transit through the GI tract; (iv) adhere to the intestinal epithelium cell lining and colonize the lumen of the tract; (v) produce antimicrobial substances towards pathogens; and (vi) stabilize the intestinal microflora and be associated with health benefits (Parvez et al., 2006).

The goal of this study is to increase consumption of yogurt containing effective probiotics in reducing lactose intolerance symptoms, increasing calcium intake and reducing weight gain in lactose-intolerant African-Americans. A serving of plain yogurt provides about 12 g of lactose and most lactose maldigesters tolerate up to 12 g of lactose if consumed with a meal (Suarez et al., 1995, Vesa et al. 1996). Yogurt containing probiotics can increase the consumption of dairy products in lactose intolerant individuals. Increasing consumption of yogurt to 2 servings/day (provides 50-60% of daily calcium) will be beneficial in reducing lactose intolerance and weight gain.

Thus, the project will have 4 objectives: 1/Select yogurt containing effective probiotics to reduce lactose intolerance symptoms during 2009-2010; 2/ Show in a feeding study that consumption of yogurt containing effective probiotics reduces lactose intolerance symptoms, increase calcium intake, and reduce weight gain in lactose intolerant African American Adults during 2010-2012; 3/Increase the awareness and the knowledge of the health benefits of yogurts containing probiotics in adults 2012-2013; 4/ Conduct an acceptability study of nutrient-dense dairy products among African American Adults 2013-2014; 5/ Increase the consumption of nutrient-dense dairy products to include yogurts containing probiotics ot 2-3 servings/day in African American Adults in 2014-2015.

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

4. Program duration : Medium Term (One to five years)

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

6. Expending other than formula funds or state-matching funds : No

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
202	Plant Genetic Resources		0%		30%
502	New and Improved Food Products		0%		10%
701	Nutrient Composition of Food		0%		20%
702	Requirements and Function of Nutrients and Other Food Components		0%		32%
703	Nutrition Education and Behavior		0%		8%
	Total		0%		100%

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

1. Situation and priorities

Physiological and nutrition-related health problems such as hypertension, cancer, diabetes, and obesity need to be addressed through improvement in dietary habits and food qualities. Especially minority elders in the Lower Mississippi Delta are vulnerable to these physiological disorders. Food consumption habits, dietary intakes, and meal preparation methods are believed to contribute to these problems. Many different plant products and produce including herbs and spices are currently in use as nontraditional food items based on their perceived nutritional or medicinal qualities. Vegetables and fruits possessing higher functional food values are known to have major impacts on disease prevention and general health. Nutritional intervention through alternative food sources and food products possessing special nutritional and functional qualities may make new health-foods available and affordable. Our past research on specialty herbs and vegetables generated interests among the stakeholders, plant scientists, nutritionists, and collaborating partners at other universities. We plan to conduct in-depth studies on productivity and nutritional qualities of selected herbs, spices, and vegetables. Major emphasis will be given on special food values, production potentials, and consumer acceptances.

Approximately 60-80% of African Americans are affected by lactose intolerance (Sizer and Whitney, 2008). Lactose intolerance is the clinical condition caused by the inability to digest lactose in milk and dairy products due to hypolactasia (Peuhkuri, 2000). Hypolactasia or lactase nonpersitence results from the fact that there is low lactase activity in comparison to the amount of lactose ingested. Thus, lactose cannot be digested into monosaccharides resulting in maldigestion. Persons affected by lactose intolerance show symptoms of abdominal bloating, pain, diarrhea, and flatulence (Council for Agricultural Science and Technology, 2007). These individuals reduce their intake of milk and dairy products which results in reduced intake of calcium. Buchowski et al. (2002), in their study of 57 African-Americans lactose intolerant women, found that 46% of their intake for calcium was from mixed foods and only 12% was from milk and dairy products. Increased intake of calcium has been proven to help in reducing weight gain in humans through randomized clinical trials and epidemiological studies (Zemel, 2005).

2. Scope of the Program

- In-State Extension
- In-State Research

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

1. Assumptions made for the Program

The high impact of better food habits using food ingredients of high functional values are well recognized by the plant- and food scientists. Nontraditional food sources will improve dietary intake and thus have a significant impact on disease prevention and healthy life styles. Cooking methods and food processing may affect food values for the new food sources. Our present knowledge of the functional values of bitter melons, pumpkins, hot peppers, basal, cilantro, fenugreek, etc., are indicative of a great promise for new health-food development. Motivational publicity and demonstration will popularize nontraditional foods, and consumers will adopt new herbs and vegetables in their diets. The existing resources are adequate to run the project; however, phytochemical analyses and food preparation experiments are costly and thus will need additional funds for manpower, equipment and supplies. Outside collaboration will be needed for the project and will greatly enhance outputs and the dissemination of information.

1/ The consumption of yogurt containing effective probiotics will reduce symptoms of lactose intolerance in African American Adults aged 18-30 years old; 2/ The increased consumption of yogurt containing probiotics will increase the intake of calcium in African American Adults 18-30 years old; 3/ The increased consumption of yogurt containing probiotics will control weight gain in African American Adults 18-30 years old; 4/ Education of African American Adults using acceptable nutrient-dense dairy products containing probiotics will increase consumption of dairy products in this population.

2. Ultimate goal(s) of this Program

Provide alternative food-sources for better health and nutrition for the targeted populations. This will help in preventing the commonly occurred physiological disorders related health problems, particularly in the Lower Mississippi Delta region. This program will generate new knowledge in specialty vegetables, which will enrich food science and encourage further research towards plant-sources (crops) intervention for preventing childhood obesity and better human health and nutrition.

Increase consumption of nutrient-dense dairy products containing probiotics in African-Americans Adults.

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
2011	0.0	0.0	0.0	1.7
2012	0.0	0.0	0.0	1.7
2013	0.0	0.0	0.0	1.7
2014	0.0	0.0	0.0	1.7
2015	0.0	0.0	0.0	1.7

V(F). Planned Program (Activity)

1. Activity for the Program

Field experiments will be conducted on promising varieties and lines of specialty herbs, spices, and vegetables. New and improved crop lines/varieties will be developed, demonstrated, and released for wider use. Phytochemical evaluation of hot peppers, bitter melons, and other exotic vegetables such as gourds and pumpkins, for vitamins, minerals, and functional compounds will be performed. Research will be continued for the development of new recipes and food processing methods using new vegetables, herbs, and spices.

Microbiological testing &ndash selection of yogurt containing effective probiotics to reduce lactose intolerance; Recruitment of participants to the feeding study; Survey on self-reporting symptoms of lactose intolerance; Testing urine galactose; feeding study; Reporting of lactose symptoms during the feeding study; workshops on efficacy of yogurts containing probiotics to reduce lactose intolerance and control weight gain; Acceptability study (sensory evaluation sessions); Development of nutrition education program (nutrition lessons, nutrition messages, program identifiers); Workshops on nutrient-dense dairy products and health benefits of yogurts containing probiotics in adults (Media announcements, Sampling of yogurts, Shopping education).

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

Extension

Direct Methods	Indirect Methods
● Workshop	● Newsletters
● Group Discussion	● Other 1 (Annual reports)
● Demonstrations	● Other 2 (Public awareness)
● Other 1 (Field Day)	
● Other 2 (Sensory Evaluation)	

3. Description of targeted audience

Our targeted audience will be leaders of the agricultural, academic and social communities including small-scale farmers, home gardeners, and other producers and consumers. Plant breeders & geneticists, food scientists, nutritionists, and health activists will also be connected and addressed.

UAPB students (18-30 years old) made up of 50% males and 50% females who have not reached their menopause. Participants will be recruited through advertisement on campus using bulletin boards, internet and announcements on UAPB radio and television.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2011	45	210	0	0
2012	255	215	0	0
2013	260	515	0	0
2014	50	130	0	0
2015	270	550	0	0

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

2011:0 **2012:**0 **2013:**0 **2014:**0 **2015:**0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2011	2	1	3
2012	1	1	2
2013	3	1	4
2014	2	1	3
2015	3	1	4

V(H). State Defined Outputs

1. Output Target

- # of research publications

  2011:1 **2012:**2 **2013:**2 **2014:**2 **2015:**2

- # of promising crop lines identified

  2011:2 **2012:**2 **2013:**2 **2014:**3 **2015:**3

- # of successful food recipes

  2011:2 **2012:**2 **2013:**3 **2014:**3 **2015:**4

- 1. number of yogurts to be microbiologically tested

  2011:10 **2012:**0 **2013:**0 **2014:**0 **2015:**0

- 2. number of participants to be recruited for the feeding study

  2011:50 **2012:**0 **2013:**0 **2014:**0 **2015:**0

- 3. number of participants in the feeding study

  2011:40 **2012:**0 **2013:**0 **2014:**0 **2015:**0

- 4. number of participants in workshop on yogurt containing probiotics

  2011:0 **2012:**0 **2013:**250 **2014:**0 **2015:**0

- 5. number of panelists for the acceptability study

  2011:0 **2012:**0 **2013:**0 **2014:**40 **2015:**0

- 6. number of participants in workshop on increased consumption of dairy products

  2011:0 **2012:**0 **2013:**0 **2014:**0 **2015:**250

V(I). State Defined Outcome

O. No.	Outcome Name
1	1. Increased consumption of yogurt containing effective probiotics by at least one serving among participants
2	2.Reduced symptoms of lactose intolerance among participants
3	3.Increased calcium intake among participants
4	4.Reduced weight gain among participants
5	5.Increased awareness of health benefits of yogurts and dairy products containing probiotics to the public
6	6.Increased consumption of at least one serving of a nutrient-dense dairy product by the public
7	# of people accept/like the new crop varieties
8	# of people have knowledge about the new crop varieties
9	# of people use and benefit from the new crop varieties and new food sources & recipes

Outcome # 1

1. Outcome Target

1. Increased consumption of yogurt containing effective probiotics by at least one serving among participants

2. Outcome Type : Change in Action Outcome Measure

2011:40	**2012:**0	**2013:**0	**2014:**0	**2015:**0

3. Associated Knowledge Area(s)

- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior

4. Associated Institute Type(s)

- 1890 Research

Outcome # 2

1. Outcome Target

2.Reduced symptoms of lactose intolerance among participants

2. Outcome Type : Change in Action Outcome Measure

2011:40	**2012:**0	**2013:**0	**2014:**0	**2015:**0

3. Associated Knowledge Area(s)

- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior

4. Associated Institute Type(s)

- 1890 Research

Outcome # 3

1. Outcome Target

3.Increased calcium intake among participants

2. Outcome Type : Change in Action Outcome Measure

2011:4	**2012:**0	**2013:**0	**2014:**0	**2015:**0

3. Associated Knowledge Area(s)

- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior

4. Associated Institute Type(s)

- 1890 Research

Outcome # 4

1. Outcome Target

4.Reduced weight gain among participants

2. Outcome Type : Change in Action Outcome Measure

2011:40	**2012:**0	**2013:**0	**2014:**0	**2015:**0

3. Associated Knowledge Area(s)

- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior

4. Associated Institute Type(s)

- 1890 Research

Outcome # 5

1. Outcome Target

5.Increased awareness of health benefits of yogurts and dairy products containing probiotics to the public

2. Outcome Type : Change in Knowledge Outcome Measure

2011:0	**2012:**0	**2013:**250	**2014:**0	**2015:**0

3. Associated Knowledge Area(s)

- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior

4. Associated Institute Type(s)

- 1890 Research

Outcome # 6

1. Outcome Target

6.Increased consumption of at least one serving of a nutrient-dense dairy product by the public

2. Outcome Type : Change in Knowledge Outcome Measure

2011:0	**2012:**0	**2013:**0	**2014:**0	**2015:**250

3. Associated Knowledge Area(s)

- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior

4. Associated Institute Type(s)

- 1890 Research

Outcome # 7

1. Outcome Target

# of people accept/like the new crop varieties

2. Outcome Type : Change in Action Outcome Measure

2011:3	**2012:**5	**2013:**5	**2014:**10	**2015:**10

3. Associated Knowledge Area(s)

- 202 - Plant Genetic Resources

4. Associated Institute Type(s)

- 1890 Extension
- 1890 Research

Outcome # 8

1. Outcome Target

# of people have knowledge about the new crop varieties

2. Outcome Type : Change in Knowledge Outcome Measure

2011:10	**2012:**20	**2013:**25	**2014:**50	**2015:**100

3. Associated Knowledge Area(s)

- 202 - Plant Genetic Resources
- 502 - New and Improved Food Products
- 701 - Nutrient Composition of Food

4. Associated Institute Type(s)

- 1890 Extension
- 1890 Research

Outcome # 9

1. Outcome Target

# of people use and benefit from the new crop varieties and new food sources & recipes

2. Outcome Type : Change in Condition Outcome Measure

2011:3	**2012:**5	**2013:**5	**2014:**50	**2015:**50

3. Associated Knowledge Area(s)

- 202 - Plant Genetic Resources
- 502 - New and Improved Food Products
- 701 - Nutrient Composition of Food
- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior

4. Associated Institute Type(s)

- 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 (limitations; students dropout)

Description

Unpredictable extremes of conditions such as drought, flood, disease or insect problems may cause damage to the field trials resulting in loss of valuable plant materials and data availability. Funding limitations and changed policies may affect the program and its outcomes, and thus program implementation/completion may not be possible. Moreover, if the participants are not skilled and wholehearted, then desired success of the program may not be achieved.

New knowledge on probiotics can change the direction of our project. Also, we will depend on supply of yogurts from the local grocery stores during the feeding study. Natural disasters can disrupt the supply and affect the course of the study. In addition, appropriations changes can affect the amount of money allocated to the project and, thus, its implementation. Another factor to consider is the economy as the increased price of yogurts can affect the budget for purchase of yogurts to be used during the feeding study. Finally, students will be recruited to be participants in the feeding study. Any student who will drop from school will have to move out of campus and will be out of reach for the study.

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Retrospective (post program)
- Before-After (before and after program)
- During (during program)

- Comparisons between program participants (individuals, group, organizations) and non-participants
- Other (Stakeholders' meetings)

Description

We will use output achievements as criteria in the evaluation process each year. An annual evaluation report will be reviewed at the subsequent evaluation meetings. in the midway of the program, the number of experiments completed will indicate progress. The number of crop varieties possessing special nutritional qualities and ready for public demonstration will measure achievements. Results of recipe demonstration and taste-testing will be another indicator of program accomplishments. Finally, the number of research publications and newsletter articles, number of crop varieties released, and the number of successful recipes demonstrated will assess the potential outcomes.

24-hour recall surveys will be conducted to evaluate pre-and post-consumption of yogurts among participants of the feeding study. Surveys will be conducted to evaluate the knowledge and attitudes of African American adults about the nutritional qualities and the health benefits of yogurts containing probiotics. Post-surveys will be administered to participants of workshops on nutritional and health benefits of yogurts containing probiotics. In addition, surveys will be used to find out the changes in diet among participants. Hedonic scales will determine the acceptability of dairy products by African American Adults and 24-hour recalls will evaluate pre-and post-consumption of nutrient-dense dairy products among the participants.

2. Data Collection Methods

- Sampling
- Mail
- Telephone
- On-Site
- Observation
- Tests
- Other (Seminar/Symposium)

Description

The present year, normal data collection from the field trials will be performed. In the later years, efforts will be made to conduct limited surveys on the Field Days and group meeting participants in their knowledge, change of perceptions and attitudes, and comments/opinions on the new products

Microbiological Testing:

1. Determine which of these probiotics have the ability to survive in high numbers in yogurt by conducting shelf-life study of the yogurts containing the probiotics of interest (*Streptococcus thermophilus* and *Lactobacillus delbrueckii* subsp *bulgaricus* and other lactobacilli which will be identified through literature review) (Fall 2008 and Spring 2009): Yogurts will be stored at the same temperature as in the grocery store (4°C), and aliquot samples will be taken for sampling and enumeration of total counts of probiotics. Incubation will be under anaerobic conditions. Microbiological analysis of yogurts will be conducted at one-week intervals up to three weeks prior to and past their expiration date. Samples (5-g) of yogurt will be aseptically removed from each container. Samples will be diluted 1:10 in 0.1% peptone (Difco, Detroit, MI), and serial dilutions of the yogurt slurry in 0.1% peptone will be made. Additional samples will be collected for pH measurements. Samples will be plated on media of MRS (deMan Rogosa Sharpe) agar media and plates will be incubated anaerobically at 37 ºC. Bacterial colonies will be counted at 72 h of incubation. Populations of lactic acid bacteria will be determined. All plating will be performed in duplicate.
2. Test the ability of probiotics to survive in the stomach (Summer 2009):

Probiotic cells grown overnight on MRS broth will be harvested by centrifugation (10,000 x g, 10 min, 4 ºC), washed once in 0.85% (w/v) NaCl (saline) and suspended in fresh saline. The washed cell suspensions will be used to inoculate simulated gastric juice (pH 3.0 and 2.0). The inoculated gastric juice will be held at 37 ºC and viability of probiotics cells will be determined via plate counts onto media of MRS agar. All inoculated agar plates will be incubated anaerobically at 37 ºC and bacterial colonies will be counted at 72 h.

3. Test the ability of probiotics to survive in the small intestine (Summer 2010):

Test of bile salts survival will be done by detection of bile salt hydrolase (BSH) enzyme activity (Dashkevicz and Feighner, 1989). Washed cell from cells grown overnight in MRS broth will be streaked onto MRS (Difco) agar or MRS agar

supplemented with 0.5% (wt/vol) taurodeoxycholic acid and incubated anaerobically for 48 h. The white precipitates around colonies and the clearing of the medium will be indicative of BSH activity.

Feeding Study:

A. Selection of subjects:

Students volunteers who think that they are lactose intolerant will be used. Participants will be selected for their lactose intolerance using a combination of 3 tests and a questionnaire-survey. Subjects will be asked to fast overnight for 10-12 hours and will be given a 50 g of lactose in 300 ml of water to be ingested in 5 minutes in the next morning. Lactose intolerance will be defined by increased in exhaled hydrogen, unaltered concentration of glucose over time, and increased excretion of urinary galactose.

1. Breath hydrogen measurement: A portable hydrogen analyzer will be used. With the assistance of mouthpieces, subjects will be blowing en-alveolar air and the analyzer will be recorded the amount of hydrogen exhaled for 3 hours. Measurements will be taken every 30 minutes after the ingestion of lactose. An increase of higher or equal 20 ppm will be considered as a positive test for lactose intolerance.
2. Blood glucose: A glucometer will be used in this effect. Blood samples from the finger tip will be taken every 20 minutes until 3 hours after the lactose ingestion. An increase in blood glucose concentration of 1.1 mmol/l or more will be indicative of lactose intolerance.
3. Urine galactose measurements: Urine samples will be taken up to three hours and analyzed for galactose. A commercial enzyme kit will be used for analysis in the spectrophotometer. Positive test requires urinary galactose concentration to be less than 20 mg.

Participants with at least 2 positive will be considered lactose maldigesters and will be subjected to a lactose intolerance questionnaire-survey to confirm their lactose intolerance. This survey will be self-administered. Subjects will evaluate the severity of symptoms to include flatulence, abdominal pain, abdominal bloating, nausea, headache, and the hardness of stools at the baseline before the intervention, and every hour from the ingestion of lactose, and 6h, 9h, and thereafter. A numerical scale will be used.

B. Feeding Study:

At least 30 students (18-30 years old) enrolled at the University of Arkansas at Pine Bluff will be enrolled. Women and men will be equally represented. The participants will be screened for disease and conditions that can affect intestinal metabolism. Those taking any medications that could interfere with colonic fermentation (ie, antibiotics) will be excluded. Only non-smokers will be participating. Informed consent will be sought and the approval for the protocol for the study by the Committee on Human Research Subjects at UAPB. Two or more brands of yogurt will be considered. The brand with the highest acceptability will be used in the study. Participants will be fed 2 servings (24 OZ) of yogurt per day containing selected probiotics. The duration of the study will be 3 weeks. Throughout the study, participants will be recorded frequency of symptoms of lactose intolerance. 24hour recall surveys will be conducted to evaluate pre-and post-consumption of yogurts among participants. Pre-and post calcium intake, BMI will be measured.

C. Workshops on yogurts containing probiotics:

Through UAPB extension service, workshops will be conducted at UAPB and different forums in Pine Bluff and Jefferson County to inform the public about the results on effective yogurts that reduce lactose intolerance.

D. Acceptability Study of nutrient-dense dairy products:

Sensory evaluation tests using hedonic scales will conducted.

E. Workshops to increase consumption of dairy products among African American Adults

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Food Safety in Aquaculture

2. Brief summary about Planned Program

The 2008 Farm Bill provides for inspection of U.S. catfish to be moved from FDA to USDA-FSIS. FSIS has no experience with seafood and requested technical assistance in the development of the Catfish Inspection Program. When implemented, catfish farmers and processors will need assistance to gear up for the new program requirements.

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 : No

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
702	Requirements and Function of Nutrients and Other Food Components		100%		0%
	Total		100%		0%

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

1. Situation and priorities

The 2008 Farm Bill provides for inspection of U.S. catfish to be moved from FDA to USDA-FSIS. FSIS has no experience with seafood and requested technical assistance in the developoment of the catfish inspection program. When implemented, catfish farmers and processors will need assistance to gear up for the new program requirements.

2. Scope of the Program

- Multistate Extension

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

1. Assumptions made for the Program

Political opposition will not further delay the initiation of this program.

2. Ultimate goal(s) of this Program

To have a supply of catifish in markets that is inspected regularly and guaranteed to be a safe and quality product for U.S. consumers.

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
2011	0.0	0.2	0.0	0.0
2012	0.0	0.2	0.0	0.0
2013	0.0	0.2	0.0	0.0
2014	0.0	0.2	0.0	0.0
2015	0.0	0.2	0.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Work with the vulnerability panel and focus groups to help develop guidelines for the inspection process.
Provide technical assistance to USDA-FSIS.
Provide written documents and powerpoint presentations.
Two separate briefings to inform how the catish industry is structured and how it operates.
Numerous phone calls, conference calls and emails about the U.S., Vietnam, and China's catfish industry
Assist with the role assessment process
Conference calls, emails, and meetings in Washington, D.C.
Preliminary meetings with processors and farmers in Little Rock, AR about food defense plans
Active extension program with processors and farmers throughout the industry
Monitoring inspection and food defense

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

Extension

Direct Methods	Indirect Methods
● Workshop	● Newsletters
● One-on-One Intervention	● Web sites
● Other 1 (regional and statewide meetings)	● Other 1 (email to industry)
	● Other 2 (trade magazine articles)

3. Description of targeted audience

There are three target audiences for this program: 1) USDA-FSIS personnel who need assistance in understanding catfish farming adn processing; 2) catfish farmers who will need to adopt new monitoring and record-keeping practices; and 3) catfish processors who will need to adopt new monitoring and record-keeping practices.

V(G). Planned Program (Outputs)

1. Standard output measures

Target for the number of persons(contacts) to be reached through direct and indirect contact methods

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2011	65	0	0	0
2012	65	0	0	0
2013	65	0	0	0
2014	65	0	0	0
2015	65	0	0	0

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

2011:0 **2012:**0 **2013:**0 **2014:**0 **2015:**0

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2011	0	0	0
2012	0	0	0
2013	0	0	0
2014	0	0	0
2015	0	0	0

V(H). State Defined Outputs

1. Output Target

- Briefings to catfish farmers and catfish processors

2011:2 **2012:**2 **2013:**2 **2014:**2 **2015:**2

- Number of presentations to catfish farmers and processors

2011:2 **2012:**2 **2013:**2 **2014:**2 **2015:**2

- Number of emails, phone calls, and conference calls to catfish farmers and processors

2011:10 **2012:**10 **2013:**10 **2014:**10 **2015:**10

V(I). State Defined Outcome

O. No.	Outcome Name
1	We will provide technical assistance to USDA-FSIS by continuing to serve on panels and focus groups with FSIS
2	Number of contacts with catfish farmers and processors related to the new catfish inspection program

Outcome # 1

1. Outcome Target

We will provide technical assistance to USDA-FSIS by continuing to serve on panels and focus groups with FSIS

2. Outcome Type : Change in Knowledge Outcome Measure

2011:25	**2012:**25	**2013:**25	**2014:**25	**2015:**25

3. Associated Knowledge Area(s)

- 702 - Requirements and Function of Nutrients and Other Food Components

4. Associated Institute Type(s)

- 1890 Extension

Outcome # 2

1. Outcome Target

Number of contacts with catfish farmers and processors related to the new catfish inspection program

2. Outcome Type : Change in Knowledge Outcome Measure

2011:2	**2012:**2	**2013:**2	**2014:**2	**2015:**2

3. Associated Knowledge Area(s)

- 702 - Requirements and Function of Nutrients and Other Food Components

4. Associated Institute Type(s)

- 1890 Extension

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Other (Political)

Description

Political opposition to the program from importers has slowed the process down

V(K). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Other (Planning)

Description

USDA-FSIS does plan to do an evaluation of the program several years after implementation

2. Data Collection Methods

- Sampling
- Observation

Description

{NO DATA ENTERED}