

# 2010 University of Arkansas at Pine Bluff Combined Research and Extension Plan of Work

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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, and the Aquaculture/Fisheries Center of Excellence and the Regulatory Science Center of Excellence. Research faculties 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 and/or extension responsibilities are integrated.

Primary audiences for Research and Extension programs at the University of Arkansas at Pine Bluff are limited resource farmers and families as well as the Aquaculture industry and individuals and agencies with an interest in natural fisheries and fish habitats. Eastern Arkansas is the geographic beneficiary of these programs. Program areas include family and youth development, livestock management, value added products, horticulture, and aquaculture/fisheries. 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.

**Twenty seven** programs are submitted for your review from the University of Arkansas at Pine Bluff School of Agriculture, Fisheries and Human Sciences. Seven of the programs are submitted from the Aquaculture/Fisheries Center of Excellence. Several of these programs have been combined as identified here: The Aquaculture Alternatives in Arkansas also includes the previous planned program Aquaculture Education. The Farm Pond and Community Fishing Pond Management has included the previous program Aquatic Plan Management in Arkansas Ponds. Four programs were combined to make the Improving Disease Status for Baitfish and Catfish Production Marketing. These were: Aquaculture Equipment and Information Development Program, Controlling Predators of Larval Fish, Reduce Losses Due to Catfish Diseases and the Research Verification programs. The Youth Fishing program was folded into the Improving Largemouth Bass Fishing in the Arkansas River.

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. The Horticulture program 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 will work with low cost feed alternatives for goats and swine commonly raised by small scale farmers. The Alternative Crop Production program will examine new fruit and vegetable crops especially suited for small farm operations and production practices. The Value Added Products project will explore new methods of processing for vegetables and fruits that support new marketing avenues to further enhance the income of the small farm operator. The Breeding and Biotechnology program is 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 Arkansas and elsewhere. The majority of research scientists in Agriculture have a 5% extension assignment to facilitate the dissemination of information.

Agriculture Extension programs emphasize livestock management, cropping systems and farm management. The Small Farm Program is a combination of two Small Farm Outreach Training and Technical Assistance Programs (2501), and the 1890 Cooperative Extension Program with emphasis on Agronomy. The program is operated in 18 counties in Eastern Arkansas and Southwest Arkansas and is designed 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 conversation programs. The Horticulture Program works with many of the same clientele, introducing on-farm research and demonstrations with horticultural crops.

Extension programs will address youth in a Young Scholars program designed to increase math and science proficiency in students through an after school program that will enhance teen decision making. The family resource management program will address the need for increased financial literacy among low income African American youth and their parents. Agriculture Extension programs 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 WaterManagementCenter located at Lonoke.

Catfish is the leading segment of U.S. aquaculture, contributing over 46% of the value of aquaculture production in the United States. 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.

Additional programs are planned in youth fishing, recreational fishing and working directly with aquaculture producers to validate the research in a commercial setting through research verification.

The Aquaculture/Fisheries program supports both the state's aquaculture industry and aquatic resource management, an avenue for enhancing tourism as an economic engine for the state.

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

Year	Extension		Research	
	1862	1890	1862	1890
2010	0.0	23.5	0.0	21.3
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	0.0	0.0	0.0

## 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 Mississippi State University, Purdue University and Iowa State University 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 and fish nutrition 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 southern 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 State(s)?**

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**

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

**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 Aquaculture/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
- Use Surveys
- Open Listening Sessions

**Brief explanation.**

The Agriculture Research and Extension Advisory Council (AREA)

The AREAC was 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. Membership includes 12 producers engaged in a variety of agricultural enterprises (i.e. alternative crops, row crops, livestock, etc.) four (4) current and retired Extension professionals (two from 1890 and two from 1862) one federal agency (NRCS) representative, one state agency (Arkansas Department of Environmental Quality) representative and one industry (Monsanto) representative. 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 (AREA) 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-FisheriesCenterof 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 Lonoke County 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 individuals
- Survey of traditional Stakeholder groups
- Survey of traditional Stakeholder individuals
- Meeting with traditional Stakeholder groups

#### **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.

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

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

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

**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	Human Nutrition
2	Horticulture Production
3	Families, Youth, and Communities
4	Food Animal Production and Management
5	Improved Management Options to Improve Catfish Production Efficiencies and Lower Costs
6	Alternative Crop Production
7	Herbs, Spices, and Medicinal Crops
8	Small Farm Program
9	Extension Livestock Management Program
10	Value Added Products
11	Agricultural Policy
12	Breeding and Biotechnology
13	Improving Hatchery Production Efficiency
14	Improving Disease Status for Baitfish and Catfish Production and Marketing
15	Improving Management Techniques for Baitfish
16	Aquaculture Alternatives in Arkansas
17	Improving Largemouth Bass Fishing in the Arkansas River
18	Water and Environmental Quality
19	Cropping Systems
20	Farm Pond and Community Fishing Pond Management
21	1890 Family and Child Development Program
22	1890 Arkansas Ag Adventures - Agricultural Awareness
23	Family Resource Management

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

**Program #1**

**1. Name of the Planned Program**

Human Nutrition

**2. Brief summary about Planned Program**

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 proven to help in reducing 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, this project will have 3 objectives: 1/ the selection of yogurts containing effective probiotics to reduce symptoms of lactose intolerance through quantitative and qualitative microbiological tests during the year 2008-2009; 2/ Feeding study of selected group of African Americans adults (18-20 years old) to examine the health benefits of selecting yogurts in reducing lactose intolerance symptoms, increasing calcium intake, and reducing weight gain from year 2009 to 2011; and 3/ Education of African American adults on the health benefits of yogurts containing probiotics during 2011-2013.

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

**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
702	Requirements and Function of Nutrients and Other Food Components		0%		80%
703	Nutrition Education and Behavior		0%		20%
	<b>Total</b>		0%		100%



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

**1. Situation and priorities**

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 American 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**

1. The consumption of yogurt containing effective probiotics will reduce symptoms of lactose intolerance in African American Adults aged 18 to 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 18-30years old.

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

- 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 in 2012-2013
- 4/ Increase the consumption of yogurts containing probiotics to 2-3 servings/day in African American adults in 2013-2014.

**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
2010	0.0	0.0	0.0	0.4
2011	0.0	0.0	0.0	0.4
2012	0.0	0.0	0.0	0.4
2013	0.0	0.0	0.0	0.4
2014	0.0	0.0	0.0	0.4

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

**1. Activity for the Program**

Microbiological testing - selection of yogurt containing effective probiotics to reduce lactose intolerance; Recruitement 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 ; Development of nutrition education program (nutrition lessons, nutrition messages, program identifiers); Workshops on 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
<ul style="list-style-type: none"> <li>● Other 1 (Development of Educational Mater)</li> <li>● Workshop</li> <li>● Demonstrations</li> </ul>	<ul style="list-style-type: none"> <li>● Other 1 (Public Awareness)</li> </ul>

**3. Description of targeted audience**

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 Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	40	200	0	0
2011	40	200	0	0
2012	250	1000	0	0
2013	250	1000	0	0
2014	250	1000	0	0

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

**Expected Patent Applications**

2010 :0                      2011 :0                      2012 :0                      2013 :0                      2014 :0

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2010	0	0	0
2011	1	0	1
2012	1	0	1
2013	0	0	1
2014	1	0	0

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

**1. Output Target**

- Microbiological testing of yogurts for effective probiotics against lactose intolerance

	2010	2011	2012	2013	2014
● Recruitment of participants for the feeding study	10	0	0	0	0
● Feeding study	50	50	0	0	0
● Workshops on yogurts containing probiotics	40	40	0	0	0
	0	0	250	250	250

**V(I). State Defined Outcome**

<b>O. No</b>	<b>Outcome Name</b>
1	Increased consumption of yogurt and dairy products containing effective probiotics by at least one serving among participants.
2	Reduced symptoms of lactose intolerance among participants
3	Increased calcium intake among participants
4	Reduced weight gain among participants
5	Increased awareness of health benefits of yogurt and dairy products containing probiotics to the public

**Outcome #1****1. Outcome Target**

Increased consumption of yogurt and dairy products containing effective probiotics by at least one serving among participants.

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

2010 :0                      2011 : 40                      2012 : 0                      2013 : 0                      2014 : 0

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

•1890 Research

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

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

**Outcome #2****1. Outcome Target**

Reduced symptoms of lactose intolerance among participants

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

2010 :0                      2011 : 40                      2012 : 0                      2013 : 0                      2014 : 0

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

•1890 Research

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

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

**Outcome #3****1. Outcome Target**

Increased calcium intake among participants

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

2010 :0                      2011 : 40                      2012 : 0                      2013 : 0                      2014 : 0

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

•1890 Research

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

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

**Outcome #4****1. Outcome Target**

Reduced weight gain among participants

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

2010 :0                      2011 : 40                      2012 : 0                      2013 : 0                      2014 : 0

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

•1890 Research

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

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

**Outcome #5****1. Outcome Target**

Increased awareness of health benefits of yogurt and dairy products containing probiotics to the public

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

<b>2010</b> 0	<b>2011</b> : 0	<b>2012</b> : 250	<b>2013</b> 250	<b>2014</b> :250
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**3. Associated Institute Type(s)**

- 1890 Research

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

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

**V(J). Planned Program (External Factors)****1. External Factors which may affect Outcomes**

- Natural Disasters (drought,weather extremes,etc.)
- Appropriations changes
- Other (students dropout from UAPB)
- Economy
- Government Regulations
- Public Policy changes

**Description**

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**

- During (during program)
- Before-After (before and after program)
- Comparisons between program participants (individuals,group,organizations) and non-participants

**Description**

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.

**2. Data Collection Methods**

- Sampling
- On-Site
- Mail

## Description

### 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): 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 °C. 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:

Probiotic cells grown overnight on MRS broth will be harvested by centrifugation (10,000 x g, 10 min, 4 °C), 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 °C 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 °C and bacterial colonies will be counted at 72 h.

3. Test the ability of probiotics to survive in the small intestine:

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 intolerants 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 tolerance 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 end-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 12 h thereafter. A numerical rating scale will be used.

B. Feeding study:

24-hour recall surveys will be conducted to evaluate pre-and post-consumption of yogurts among participants. Pre-and post calcium intake, BMI will be measured.

**V(A). Planned Program (Summary)****Program #2****1. Name of the Planned Program**

Horticulture Production

**2. Brief summary about Planned Program**

The Cooperative Extension Horticulture program provides Arkansas farmers with quality educational out-reach services including production information, coordination, and management of fruits and vegetable enterprises. The program conducts on-farm research trials to determine the adaptation of new production methodologies and fruit and vegetable varieties ideal for small-scale and limited-resource farmers. The program also sets up on-farm demonstration plots to address the production constraints, under various production zones, and promotes the use of environmentally friendly cultural practices that lower production cost and increase returns on investment. Production of fruits and vegetable crops offer economic alternatives for the small-scale and limited resource farmers. Today's markets and consumer preferences continue to demand increasingly diverse types of fruits and vegetables. Information on some of these crops may be lacking or not accessible to limited-resource farmers. The horticulture program plans to pursue the following goals;

- 1). Increase horticultural crop production by small-scale and limited resource farmers,
- 2). Increase economic opportunity for limited-resource farmers by improving their farm production and profitability.

**3. Program existence :** Mature (More than 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
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants		100%		100%
	<b>Total</b>		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 farms face a great challenge in producing row crops. Use of horticultural crops to diversify their farm enterprise and increase production profits is necessary. Southeast Arkansas, especially Jefferson county, has a growing number of retired and retiring professionals, many of whom are turning into small plot vegetable gardening. There is also a growing number of Master Gardeners in each State. They are working with County Extension agents and establishing and supporting community gardens. The horticulture program needs to continue to support these efforts. Community gardens play a key role in inspiring low income families to grow horticultural crops and improve the nutritional level of families and expand family and producer income. The program will also continue to provide technical support to the emerging small-scale and limited resource farmers interested in or transitioning to sustainable vegetable and fruit production.

**2. Scope of the Program**

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



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

**1. Assumptions made for the Program**

Horticulture is a viable means of improving income and sustainability of small farms. Production of horticultural crops will improve the family and producer income.

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

The ultimate goals for horticulture program are:

- 1). To increase horticultural crop production by small-scale and limited-resource farmers.
- 2). To increase economic opportunity for limited-resource farmers by improving their farm production and profitability.

**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
2010	0.0	1.7	0.0	0.1
2011	0.0	1.7	0.0	0.1
2012	0.0	1.7	0.0	0.1
2013	0.0	1.7	0.0	0.1
2014	0.0	1.7	0.0	0.1

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

**1. Activity for the Program**

- 1). Conduct training for county extension staff, master gardeners, small-scale and limited-resource farmers, and the youth.
- 2). Write news columns/articles on various production issues on small fruits and vegetables and develop and review horticultural crops publications and fact sheets.
- 3). Conduct farm visits.
- 4). Conduct research on selected horticultural crops to determine the best adapted cultivars for small-scale and limited-resource farmers.

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

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Demonstrations</li> <li>● Workshop</li> <li>● Group Discussion</li> <li>● One-on-One Intervention</li> <li>● Education Class</li> </ul>	<ul style="list-style-type: none"> <li>● Web sites</li> <li>● Newsletters</li> </ul>

**3. Description of targeted audience**

The target audience is the small-scale and limited-resource farmers. Many of these individuals lack adequate economic, technical or social resources to maintain viable operations on row-crops. Horticultural crop production will assist these farmers increase farm profitability and economic status.

**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 Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	200	200	25	40
2011	225	200	30	50
2012	250	200	35	50
2013	300	200	40	50
2014	300	200	40	50

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

**Expected Patent Applications**

2010 :0                      2011 :0                      2012 :0                      2013 :0                      2014 :0

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2010	1	1	2
2011	0	0	0
2012	0	0	0
2013	1	1	2
2014	0	1	1

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

**1. Output Target**

- Increase diversity (number of types of crops grown)of horticultural crops produced by limited-resource and small-scale farmers in Eastern and Southern Arkansas.

2010 :4                      2011 :4                      2012 :4                      2013 :4                      2014 :4

- Increase the number of limited-resource and small-scale farmers participating in local markets (farmers' markets, pick your own operations, road side stands etc.).

2010 :15                      2011 :20                      2012 :20                      2013 :25                      2014 :30

- Increase the quantity of marketable horticultural crops products produced by each limited-resource or small-scale farmer by 50 lbs each year.

2010 :50                      2011 :50                      2012 :50                      2013 :50                      2014 :50

**V(I). State Defined Outcome**

<b>O. No</b>	<b>Outcome Name</b>
1	Increase horticultural crop production by recruiting 3 small-scale and/or limited resource farmers each year.
2	Increase economic opportunity by increasing a total of 50 pounds each year of marketable horticultural crops products produced by small-scale and limited-resource farmers.
3	Publish results of on-going blackberry cultivar evaluation trial by 2010 and snap beans cultivar evaluation trial by 2012.

**Outcome #1**

**1. Outcome Target**

Increase horticultural crop production by recruiting 3 small-scale and/or limited resource farmers each year.

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

**2010 :** 3                      **2011 :** 3                      **2012 :** 3                      **2013 :** 3                      **2014 :** 3

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

•1890 Extension

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

- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants

**Outcome #2**

**1. Outcome Target**

Increase economic opportunity by increasing a total of 50 pounds each year of marketable horticultural crops products produced by small-scale and limited-resource farmers.

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

**2010 :** 50                      **2011 :** 50                      **2012 :** 50                      **2013 :** 50                      **2014 :** 50

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

•1890 Extension

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

- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants

**Outcome #3**

**1. Outcome Target**

Publish results of on-going blackberry cultivar evaluation trial by 2010 and snap beans cultivar evaluation trial by 2012.

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

**2010 :** 1                      **2011 :** 0                      **2012 :** 1                      **2013 :** 0                      **2014 :** 0

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

•1890 Research

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

- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants

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

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

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

**Description**

Outcomes will be dependent on the support and cooperation from: 1) the University of Arkansas Cooperative Extension Service, 2) County Extension Offices, 3) the University of Arkansas at Pine Bluff research and extension faculty and staff, and farm maintenance crew, 4) Arkansas school systems, and 5) 4-H and other youth organizations.

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

### **1. Evaluation Studies Planned**

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

#### **Description**

The horticulture program will be reviewed annually and results used to adjust or modify the following year's activities. The review will include, but not limited to, participation of small-scale and limited resource farmers, and the number of small farms that use horticultural crops to diversify their farm enterprise and family income status. Parameters to determine program success will include increased participation in small farm horticultural crops production, increase in households involved in home gardening, and increase in number of families participating in farmers' markets selling home-grown produce.

### **2. Data Collection Methods**

- Observation
- Portfolio Reviews
- Mail
- Unstructured
- On-Site

#### **Description**

Informational data will be collected from the stakeholders through surveys, informal interviews and field visits.

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

**Program #3**

**1. Name of the Planned Program**

Families, Youth, and Communities

**2. Brief summary about Planned Program**

This planned program will examine predictors of quality in licensed early childhood programs including Head Start Centers and family day care homes in Southeast Arkansas (approximately 269 centers & family homes). A survey will be given to directors, lead teachers and parents in early childhood programs and day care family homes to gain their perceptions of what is a quality program. Respondents will assign an overall rating of their center using a one- to seven-point scale, with one indicating poor quality and seven indicating excellent quality. This survey will also collect demographic data on salaries (teachers and directors), level of education (teachers, parents and directors), and education and training (teachers and directors). The survey will also include a question in the comment section (What do you feel the center needs to become a quality center and what training is needed?). Comparison will be made of the education, training, and salaries for correlative purposes.

During Summer 2007, directors from infant and toddler, preschool childhood, and family day care homes directors participated in the pilot study. Participants were invited to attend a luncheon and workshop to learn more about the study on July 13, 2007. Mrs. Onika Luster, a licensure specialist, from the JeffersonCounty’s DHHS was the guest speaker. She presented relevant information on grants and licensure.

During the Summer and Fall Semesters 2007, three (3) codebooks were developed and designed for three (3) pilot survey instruments: A Survey Evaluating Quality in Early Childhood Programs (Infant and Toddler); A Survey Evaluating Quality in Early Childhood Programs (Preschool); and A Survey Evaluating Quality in Family Home Programs. The completed pilot surveys received were then coded with a code number for data entry.

Data from the pilot study were entered and analyzed during the Fall 2007 semester, using SPSS 12.0 software program. Seven participants completed a preschool survey, four completed an infant/toddler survey, and two completed a family home survey. The pilot surveys were noted for suggestions, concerns with the instrument, and comments by the participants. Their responses will be taken into consideration and changes/corrections will be incorporated into the actual survey. The improved actual survey will then be sent to prospective directors, teachers, and parents in Southeast Arkansas’ infant/toddler, preschool, and family home daycare centers to obtain their responses.

Currently, the completed pilot surveys will undergo analyses for validity and reliability. Measures are being taken to contact all pilot participants. Reliability analyses were run and established for three pilot surveys (Infant and Toddler; Preschool; and FamilyHomeDaycareCenters) using SPSS 12.0 Software.

A cover letter with instructions and directions for completing and returning a survey (Infant and Toddler, Preschool, and FamilyHomeDaycare) will be mailed out to directors, staff, and parents during the Spring 2009 semester.

**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
802	Human Development and Family Well-Being		0%		100%
	<b>Total</b>		0%		100%

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

**1. Situation and priorities**

There are approximately 269 childcare centers, including Head Start centers and family day care homes, in Southeast Arkansas. Of these, 110 centers are located in Jefferson County. Students in the University of Arkansas at Pine Bluff's Administration and Supervision of Childcare Centers class visited a total of twenty centers and family homes during the Fall of 2003, and assessed center quality using the rating scales. This informal observation by the students reported scores of one, indicating poor quality, to an average score of four on a likert-type seven-point scale for the family homes and center-based programs. A score of one indicates poor or inadequate quality, a score of three, minimal or mediocre quality, a score of five, indicates good quality and a score of seven suggests excellent quality. No published research has been found that assesses predictors of quality programs in Arkansas, Jefferson County or Southeast Arkansas. This research project will assess the quality practices in childcare centers and family day care homes in Jefferson County and Southeast Arkansas and increase the awareness of what research suggests that quality programs look like. Currently, there are no centers or family day care homes in Jefferson County that are accredited by the National Association for the Education of Young Children (NAEYC) and only four were found in Southeast Arkansas. Accreditation status is another indicator of a quality center or family day care home (Accreditation Criteria and Procedures of the National Association for the Education of Young Children, 1998).

**2. Scope of the Program**

- In-State Research

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

**1. Assumptions made for the Program**

Early childhood staff will be motivated to change to meet the standards and accreditation as set forth by NAEYC. Early childhood and family home daycare directors, teachers, parents, researchers, and stakeholders will form coalitions to address problems. Early childhood and family home daycare centers' staff will be hired with necessary skills and abilities.

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

The ultimate goal(s) of this program will be as follows: to identify predictors of quality in early childhood programs in Southeast Arkansas; to assess the quality of the 269 early childhood programs in Southeast Arkansas; to identify quality practices present in early childhood programs in Southeast Arkansas; to enhance the quality of early childhood programs by disseminating study findings to early childhood programs and agencies in Southeast Arkansas and at professional meetings; and to determine the feasibility of obtaining accreditation and quality approval for early childhood programs and day care family homes in Southeast Arkansas by the National Accrediting body of The National Association for the Education of Young Children (NAEYC) and the Arkansas Quality Approval System. The Arkansas Child Care Approval System has a quality approval rating for early childhood programs. Presently, there are 23 centers that have Quality Approval Rating in Southeast Arkansas and one center in Jefferson County where approximately 110 centers are located. Therefore, it is also the desire of this program to increase the number of centers and family homes that have the Quality Approval status. Childcare centers, which can verify accreditation through the National Academy of Early Childhood Programs, a division of NAEYC, will be considered approved for the purposes of these regulations.

**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
2010	0.0	0.0	0.0	0.4
2011	0.0	0.0	0.0	0.4
2012	0.0	0.0	0.0	0.4
2013	0.0	0.0	0.0	0.4
2014	0.0	0.0	0.0	0.4

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

**1. Activity for the Program**

Once data is collected from licensed early childhood program directors on their perception of quality, an on-site two-hour observation visit will be conducted for those respondents who indicated an interest in national accreditation. It is expected that at least 50% of the childcare facilities will participate in the full study. The surveys will be used to measure quality in childcare centers and are based on a one-to seven-point scale, on a continuum of one for poor quality and seven for excellent quality. Informational meetings concerning accreditation and the Arkansas Quality Approval System process will be introduced to center directors during the observational visit.

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

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Other 1 (Direct mail)</li> <li>● Education Class</li> <li>● Workshop</li> <li>● Group Discussion</li> <li>● One-on-One Intervention</li> </ul>	<ul style="list-style-type: none"> <li>● Public Service Announcement</li> <li>● Web sites</li> <li>● Newsletters</li> </ul>

**3. Description of targeted audience**

Our target audience will be the family home day care operators, infant/toddler, and preschool day care center directors, centers' employees, children in day care centers, teachers, and parents in Jefferson County and Southeast Arkansas' early childcare centers, head start centers, and family daycare homes.

**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 Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	134	135	500	500
2011	134	135	500	500
2012	134	135	500	500
2013	134	135	500	500
2014	134	135	500	500

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

**Expected Patent Applications**

2010 :1                      2011 :0                      2012 : 1                      2013 : 0                      2014 : 0

**3. Expected Peer Review Publications**



Year	Research Target	Extension Target	Total
2010	1	0	0
2011	0	0	0
2012	1	0	0
2013	0	0	0
2014	0	0	0

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

**1. Output Target**

- Number of surveys completed with Day care operators, parents, and staff in Jefferson County and Southeast Arkansas. Also, the number of participants in group educational sessions regarding the research project, etc.

**2010** 250

**2011** 250

**2012** 250

**2013** 250

**2014** 250

**V(I). State Defined Outcome**

<b>O. No</b>	<b>Outcome Name</b>
1	For child care facilities to improve the quality of child care after becoming more aware of practices that enhance quality of care (e.g., adequate space and equipment indoors and outdoors which allow the children to safely and conveniently develop their large muscles; furniture is sturdy; centers are labeled so that children can return items where they belong and develop their early reading skills; and the room is arranged in special interest areas, such as dramatic play and art centers, etc.)
2	To identify quality practices present in early childhood programs in Southeast Arkansas and to present these practices for adoption by early childhood providers in the region.

**Outcome #1****1. Outcome Target**

For child care facilities to improve the quality of child care after becoming more aware of practices that enhance quality of care (e.g., adequate space and equipment indoors and outdoors which allow the children to safely and conveniently develop their large muscles; furniture is sturdy; centers are labeled so that children can return items where they belong and develop their early reading skills; and the room is arranged in special interest areas, such as dramatic play and art centers, etc.)

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

2010 :376                      2011 : 376                      2012 : 350                      2013 :400                      2014 :350

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

- 1890 Research

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

- 802 - Human Development and Family Well-Being

**Outcome #2****1. Outcome Target**

To identify quality practices present in early childhood programs in Southeast Arkansas and to present these practices for adoption by early childhood providers in the region.

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

2010 :25                      2011 : 50                      2012 : 75                      2013 :100                      2014 :125

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

- 1890 Research

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

- 802 - Human Development and Family Well-Being

**V(J). Planned Program (External Factors)****1. External Factors which may affect Outcomes**

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

**Description**

External factors which may affect the outcomes are as follows: program implementation, participants and recipients, the speed and degree to which change occurs, and staffing patterns and resources available needed to obtain an acceptable quality rating according to the survey rating scales' criteria used to assess each participating early childhood/family daycare home center in the program.

**V(K). Planned Program (Evaluation Studies and Data Collection)****1. Evaluation Studies Planned**

- Comparisons between program participants (individuals,group,organizations) and non-participants
- Before-After (before and after program)

**Description**

Our planned evaluation studies may include before and after program assessments. In addition, comparisons between program participants (individuals, group, organizations) and non-participants also may be planned.

## 2. Data Collection Methods

- Observation
- Mail
- On-Site
- Sampling
- Whole population
- Telephone

### Description

At the initial stage, a cover letter with the survey will be sent to early childcare and home daycare center directors stating the purpose and importance of the survey informing them about the benefits of their participation in the study. Instructions will be outlined in the cover letter asking the directors to provide us with a list of their teachers/parents, so that surveys can be mailed to them as well. Precautions will be taken to ensure confidentiality of all respondents. A deadline and method for returning questionnaires will also be stated in the letter. Prior to the return deadline, a reminder announcement and/or telephone call will be placed to those participants who have not responded about completing the survey as a second follow-up. Finally, after the completion deadline, a postcard reminder will be mailed to non-respondents as a third follow-up in order to obtain at least a 50% returned response rate.

The quality of 269 early childhood programs in Southeast Arkansas will be assessed from data obtained from surveys administered in objective/goal 1. The surveys were pilot tested with seven preschool centers, four infant/toddler centers, and two preschool centers during July 2007.

The collection of baseline data will include surveying the directors, teachers, and parents in both center-based and family homes to gain basic demographic information about the early childhood workforce in Southeast Arkansas. Included on the survey will be an open-ended interview question to directors, teachers and parents to allow them an opportunity to give in-depth views on their perceptions of childcare quality.

Surveys will be distributed to the 269 early childhood programs in Southeast Arkansas. The director will be asked to distribute the surveys at their center to approximately four teachers per center (unless it is a family day care home) and approximately 10 parents per center. Approximately 4,050 surveys will be distributed with an expectation of a 75% return rate. A second mailing is anticipated to reach the 75% return rate.

Trained observers will rate the early childhood programs that agreed, from the survey to be re-contacted, to participate in on-site observation using the surveys. A systematic random sampling will be used to assess the on-site observations of the 269 early childhood programs that agreed to be re-contacted to participate in this study.

**V(A). Planned Program (Summary)****Program #4****1. Name of the Planned Program**

Food Animal Production and Management

**2. Brief summary about Planned Program**

The project will examine low cost alternative feed sources and management systems for food animals such as swine, goats and beef cattle in order to assist small and limited resource farmers in southeast Arkansas to remain economically viable. The use of crop by products and other low-cost feed sources as well as economic assessment of utilizing these low-cost feeds will continue.

**3. Program existence :** Mature (More than 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
302	Nutrient Utilization in Animals		100%		100%
	<b>Total</b>		100%		100%

**V(C). Planned Program (Situation and Scope)****1. Situation and priorities**

Limited resource farmers in Southeast Arkansas are constantly reviewing economically viable alternative farming to the traditional row crop agriculture. It is increasingly difficult for small-scale row crop farmers to remain economically viable. Meat goats, small scale swine and beef production have become attractive because of the low capital investment involved in their start up. In addition, goats and beef cattle can utilize the abundant crop by-products available in southeast Arkansas which would otherwise go to waste. Although the priority for this program is to provide limited resource farmers in Southeast Arkansas with information needed for efficient utilization of crop by-products for goats and swine, other livestock e.g. beef cattle can benefit from recommendations coming out of this research effort.

**2. Scope of the Program**

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

**V(D). Planned Program (Assumptions and Goals)****1. Assumptions made for the Program**

The assumption made is that the outcome of the research will be accepted and adopted by small limited resource farmers in southeast Arkansas and others of similar production levels from neighboring states. It is also assumed that the crop by products will continue to be in abundant supply and relatively cheap long term to facilitate small scale but profitable swine, meat goat and beef cattle production as an alternative or in addition to current farming enterprises. Further, small limited resource farmers are expected to work together and share the use of some equipment(s) e.g. grinder, mixer, etc. in order to lower

production costs and maximize profits.

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

The ultimate goal of this program is to provide research based information that will enable limited resource farmers to efficiently and economically produce swine, meat goats, beef cattle and other livestock on a small scale using locally available crop by products. We expect that farm proceeds will not only be diversified but also increased, thus, economic viability and even sustainability of livestock as a business is anticipated.

**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
2010	0.0	0.1	0.0	1.8
2011	0.0	0.1	0.0	1.8
2012	0.0	0.1	0.0	1.8
2013	0.0	0.1	0.0	1.8
2014	0.0	0.1	0.0	1.8

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

**1. Activity for the Program**

Conduct research experiments and production demonstrations on low cost feed rations for goats and swine. Continue the analysis of data collected from experiments completed in 2008.

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

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Workshop</li> <li>● One-on-One Intervention</li> <li>● Demonstrations</li> </ul>	<ul style="list-style-type: none"> <li>● Public Service Announcement</li> <li>● Newsletters</li> <li>● Web sites</li> </ul>

**3. Description of targeted audience**

The targeted audience will include small limited resource farmers in Southeast Arkansas, college students, high school students and Extension agents.

**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 Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	70	200	160	60
2011	80	200	160	60
2012	100	210	165	70
2013	50	150	100	100
2014	120	200	160	100

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

**Expected Patent Applications**

2010 :0                      2011 :0                      2012 :0                      2013 :0                      2014 :0

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2010	1	1	2
2011	0	1	1
2012	2	1	3
2013	1	1	2
2014	2	1	3

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

**1. Output Target**

- Expected reduction in cost of production (%) of swine and meat goats which will result in increased cash earnings and improved economic earnings for samll limited resource farmers.

2010 :10                      2011 :15                      2012 :15                      2013 :20                      2014 :20

**V(I). State Defined Outcome**

<b>O. No</b>	<b>Outcome Name</b>
1	Expected increase in farmer income (%) as a result of increased efficiency (low cost input and high product output) of producing market goats and pigs.



**Outcome #1****1. Outcome Target**

Expected increase in farmer income (%) as a result of increased efficiency (low cost input and high product output) of producing market goats and pigs.

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

2010 :10

2011 : 15

2012 : 15

2013 :20

2014 :20

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

- 1890 Extension
- 1890 Research

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

- 302 - Nutrient Utilization in Animals

**V(J). Planned Program (External Factors)****1. External Factors which may affect Outcomes**

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

**Description**

Natural disasters such as droughts and weather extremities would reduce forage and other crop yields leading to decrease in forages, cereals, oil seeds and their processed by products. With the reduction in the availability of these feeds, productivity of animals such as goats and swine will decrease or cost of production will increase, reducing farmer income. Down turn in the economy is another serious concern whose consequences may influence the realization of stated outcomes.

**V(K). Planned Program (Evaluation Studies and Data Collection)****1. Evaluation Studies Planned**

- After Only (post program)

**Description**

Forage utilization by goats stocked at varying densities (number of goats per acre) will continue to be compared and evaluated. Performance of breeding hogs and growing pigs fed varying levels of crop byproducts and supplemental rations will be compared and evaluated.

The post program evaluation will be determined by the level of interest and adoption demonstrated by farmers, extension personnel and processors, and the economic benefits reported by farmers.

**2. Data Collection Methods**

- Observation
- Whole population
- Sampling

**Description**

Data will be collected on whole population of animals that are involved in the experiments. However, forage yields and their nutrient composition in the fields will be done by sampling. Variables of interest include average daily gain, feed efficiency, and cost of gain of the animals to be evaluated.

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

**Program #5**

**1. Name of the Planned Program**

Improved Management Options to Improve Catfish Production Efficiencies and Lower Costs

**2. Brief summary about Planned Program**

New enterprise budgets and cash flow budgets are needed for accurate farm planning. Accurate assessment of fish farm inventories are needed. Priority areas include improved understanding of consumer preferences for various attributes of farm-raised catfish. Producers are interested in performance of new feed formulations and winter feeding. Assessment of strategies to produce larger catfish are needed.

**3. Program existence :** Mature (More than 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
302	Nutrient Utilization in Animals		20%		20%
307	Animal Production Management Systems		20%		20%
308	Improved Animal Products (Before Harvest)		20%		20%
601	Economics of Agricultural Production and Farm Management		15%		15%
602	Business Management, Finance, and Taxation		15%		15%
603	Market Economics		10%		10%
	<b>Total</b>		100%		100%

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

**1. Situation and priorities**

Catfish is the leading segment of U.S. aquaculture, contributing over 46% of the value of aquaculture production in the United States. 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. The very low prices and extended recovery period have

been attributed to a series of factors, including increasing quantities of lower-priced imports of basa/tra (Pangasius sp.) from Vietnam. Productivity gains will reduce costs through improved management. New farm budgets and cash flow budgets are needed for accurate farm planning. This is causing producers' to lose their market share. Maintaining profitability is important to catfish producers in order to operate farms as efficiently as possible. This will require improved enterprise budgets and accurate assessment of producer fish inventories.

Differentiation of catfish products to market higher-valued products forms to those segments of the market willing to pay for the specific attributes that are different and unique will result in higher prices and profits on U.S. catfish farms.

Feed accounts for up to 50% of production costs and feed costs in 2008 reached record highs. Producers are interested in novel diet ingredients and feeding strategies that can improve the profitability of their industries. Human consumers are interested in products that taste good and are beneficial for health. New diet ingredients and feeding strategies must be tested in different species under controlled conditions to provide a scientific foundation for changing existing diet formulations and feeding strategies.

Priority areas include development of improved management recommendations for stocking, grading, and harvesting catfish and improved understanding of consumer preferences for various attributes of farmed catfish.

**2. Scope of the Program**

- In-State Extension
- Integrated Research and Extension

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

**1. Assumptions made for the Program**

New management technologies can be utilized to improve pond performance efficiency. Farmers will have the cash flow needed to implement the recommended management changes.

- Demand for catfish increases slightly each year. • That the cheaper imports do not take too much of the current market.
- Improved farm efficiency increases farm profitability. U.S. consumers are sufficiently discriminating so as to be willing to pay more for differentiated catfish products that exhibit specific and desirable characteristics.

The efficiency and profitability of catfish can be improved through changes in diet and feeding strategies.

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

Increased efficiency of catfish food-fish production, reduced costs of production and economic viability for the catfish industry, are the ultimate goals of this program.

**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
2010	0.0	0.5	0.0	0.9
2011	0.0	0.5	0.0	0.9
2012	0.0	0.5	0.0	0.9
2013	0.0	0.5	0.0	0.9
2014	0.0	0.5	0.0	0.9

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

**1. Activity for the Program**

- Conduct tank feeding trials
- Conduct field trials
- Conduct method demonstrations
- Publish results

- Give presentations
- Develop individual enterprise budgets for catfish producers
- Develop news articles on improving farm efficiency
- Develop producer workshop targeting efficiency improvements for producers
- Test various new feed formulations

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

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Other 2 (Tank trials-results distributed)</li> <li>● One-on-One Intervention</li> <li>● Other 1 (Field trials and demonstrations)</li> </ul>	<ul style="list-style-type: none"> <li>● Newsletters</li> <li>● Other 2 (Extension publications)</li> <li>● Other 1 (Posters)</li> <li>● Web sites</li> </ul>

**3. Description of targeted audience**

•Catfish farmers throughout Arkansas •CountyExtension agents •Grocery store manager •Consumers • Commercial catfish producers • Interested potential producers • Commercial Bankers

**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 Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	16	100	0	0
2011	16	100	0	0
2012	18	100	0	0
2013	18	100	0	0
2014	18	100	0	0

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

**Expected Patent Applications**

2010 :0                      2011 :0                      2012 :0                      2013 :0                      2014 :0

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2010	3	2	5
2011	2	2	4
2012	2	2	4
2013	2	2	4
2014	2	2	4

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

**1. Output Target**

- Number of Refereed Journal Articles

<b>2010</b> 2	<b>2011</b> 2	<b>2012</b> :2	<b>2013</b> 2	<b>2014</b> 2
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- Number of Abstracts Published

<b>2010</b> 6	<b>2011</b> 6	<b>2012</b> :7	<b>2013</b> 7	<b>2014</b> 7
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- Number of Presentations at Scientific Meetings

<b>2010</b> 8	<b>2011</b> 8	<b>2012</b> :8	<b>2013</b> 8	<b>2014</b> 8
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- Number of Trade Magazine Articles

<b>2010</b> 3	<b>2011</b> 3	<b>2012</b> :3	<b>2013</b> 3	<b>2014</b> 3
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- Number of Catfish Farms Adopting Recommendations

<b>2010</b> 97	<b>2011</b> 100	<b>2012</b> :100	<b>2013</b> :100	<b>2014</b> 35
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- Number of Catfish Acres Using Recommendations

<b>2010</b> :16700	<b>2011</b> 17000	<b>2012</b> :17000	<b>2013</b> :17000	<b>2014</b> :17000
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**V(I). State Defined Outcome**

<b>O. No</b>	<b>Outcome Name</b>
1	Number of producers willing to test successful ingredients or feeding strategies on a commercial scale
2	Number of Arkansans Gaining Access to and benefitting from Catfish Management Information
3	Number of diets with new ingredients that are commercially available, or number of new feeding strategies implemented by industry
4	Number of farmers and stores gaining information, adopting recommendations, and increasing sales of catfish

**Outcome #1**

**1. Outcome Target**

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

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

**2010** :3                      **2011** : 3                      **2012** : 3                      **2013** 3                      **2014** :3

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

- 1890 Extension
- 1890 Research

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

- 302 - Nutrient Utilization in Animals

**Outcome #2**

**1. Outcome Target**

Number of Arkansans Gaining Access to and benefitting from Catfish Management Information

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

**2010** :50                      **2011** : 50                      **2012** : 0                      **2013** 0                      **2014** :0

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

- 1890 Extension
- 1890 Research

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

- 601 - Economics of Agricultural Production and Farm Management

**Outcome #3**

**1. Outcome Target**

Number 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

**2010** :1                      **2011** : 1                      **2012** : 1                      **2013** 1                      **2014** :1

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

- 1890 Extension
- 1890 Research

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

- 302 - Nutrient Utilization in Animals

**Outcome #4**

**1. Outcome Target**

Number of farmers and stores gaining information, adopting recommendations, and increasing sales of catfish

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

**2010** :18                      **2011** : 18                      **2012** : 10                      **2013** :10                      **2014** :10

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

- 1890 Extension
- 1890 Research

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

- 603 - Market Economics

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

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

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

#### **Description**

Changing market demands for aqua-cultured products, new disease or other production barrier, and public acceptance of recommendations. Global economic situation changes, regulatory laws change.

Factors affecting overall profitability of fish culture that may have nothing to do with diet or feeding strategies:

1. Fuel costs
2. Weather
3. Competition from domestic and imported products
4. Unfavorable publicity

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

### **1. Evaluation Studies Planned**

- During (during program)

#### **Description**

### **2. Data Collection Methods**

- Tests
- Case Study
- Observation
- Sampling

#### **Description**



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

**Program #6**

**1. Name of the Planned Program**

Alternative Crop Production

**2. Brief summary about Planned Program**

Alternative crop production research is designed to develop and/or improve production practices that increase, diversity, sustainability and profits on small farms in the lower Mississippi Delta Region. Evaluation of vegetable crop rotation, screening of alternative insecticides and ornamental plants for small farmers will be the major thrust. Alternative crops and production practices that small farmers can employ without major outlays in equipment and facility enhancement will be emphasized. The planned research addresses a critical issue for LRF's who are primarily row crop farmers but produce a few acres of vegetables. The LRF's are the stakeholders and need information on vegetable rotation/planting sequences to reduce potential build-up of insects, disease and weeds as a result of using the same land for vegetables each year. The LRF's enroll practically all of their crop acreage in the DCP program in order to receive maximum payments. Planting vegetable on DCP enrolled acreage is prohibited.

**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
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants		25%		25%
205	Plant Management Systems		25%		25%
211	Insects, Mites, and Other Arthropods Affecting Plants		25%		25%
601	Economics of Agricultural Production and Farm Management		25%		25%
	<b>Total</b>		100%		100%

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

**1. Situation and priorities**

Small Farms, particular Limited Resource Farmers (LRF's), in the lower Mississippi River Delta need increased profits. Improving alternative crop production practices and increasing crop diversity on these farms have high priority. More efficient and sustainable production of vegetable and ornamental plants should increase profit on these farms. The LRF's need information on the most profitable vegetable crop rotations for farmers in their situation and effective integrated pest management systems. Adoption of innovated production practices and management schemes discovered in this program should reduce the number of LRF's going out of business. The target clientele who face the problem of growing vegetables on the same acreage each year are the LRF's (mostly black) in Eastern and Southeast Arkansas. The LRF's are reluctant to visit

the FSA office to set aside additional acreage for vegetable production.

**2. Scope of the Program**

- In-State Extension
- In-State Research

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

**1. Assumptions made for the Program**

Small farms in the lower Mississippi Delta will increase alternative crop production and use production practices to increase farm profits. Increased profits would come from use of more adaptable and sustainable production practices such as rotation/sequence planting of vegetables, and development of insect control methods to avoid disease and insect build up. The assumption is that by adapting practices developed in this research, LRF's will be able to avoid disease and insect problems by proper rotation of vegetable species and use of alternative insect control methods on their land area set aside for vegetables and ornamentals. LRF's in the UAPB clientele areas are not producing ornamental crops. This research will recommend plant species and production practices that will allow selected LRF's to be successful in ornamental horticulture production.

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

Expected goals and outcomes are vegetable crop rotations and information that allow LRF's to continue to produce high yield good quality insect free vegetables and ornamental good profit from their acreage, while continuing to enroll maximum row crop acreage in the DCP program.

**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
2010	0.0	0.1	0.0	2.2
2011	0.0	0.1	0.0	2.2
2012	0.0	0.1	0.0	2.2
2013	0.0	0.1	0.0	2.2
2014	0.0	0.1	0.0	2.2

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

**1. Activity for the Program**

Conduct research experiments; make presentations in conferences and meetings; conduct workshops and field days; develop Extension publications; and develop research publications.

The studies will be initiated to identify vegetable crop sequences under rotation and continuous systems will continue in order to identify the most profitable cropping system and the incidence of weeds, diseases and insects. Emphasis will be placed on squash, sweet corn, southern pea, and fall greens. Evaluation of alternative fertilizers for vegetable and ornamental crops and their fertilizer value and efficiency. With recent increases in fertilizer prices, it is urgent to find new types of fertilizers in order to help farmers produce vegetables and ornamentals of superior yield and quality. Further study will evaluate flower and ornamental crops considered to be popular in the lower Mississippi Delta region. Additional experiments will also be conducted to develop a crop protection system against economically beneficial pests using the natural resources. Several natural resources will be considered and determined to improve the efficiency of pest management. The suitable natural resources will be modified as necessary for field use. Establish database for predominant pests in local ornamental and flowering plants. The ornamentals those may have resistant or tolerant against insects' pests, can be identified and extracted to developed future non-restricted insecticidal treatment. The crop have tolerant against pests will be use to developing an attractant to decrease population of the targeted pests.

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

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● One-on-One Intervention</li> <li>● Group Discussion</li> <li>● Demonstrations</li> </ul>	<ul style="list-style-type: none"> <li>● Newsletters</li> </ul>

**3. Description of targeted audience**

Small Farms and Limited Resource Farmers. Limited resources farmers grow vegetables, small fruits and ornamentals as alternatives to growing row crops. High potential return per acre can be obtained with minimum investment provided best management practices such as crop rotations and insect control are used.

**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 Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	50	100	20	75
2011	60	150	30	80
2012	75	150	50	100
2013	75	150	50	100
2014	75	150	20	100

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

**Expected Patent Applications**

2010 :0                      2011 :0                      2012 :0                      2013 :0                      2014 :0

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2010	2	2	4
2011	3	3	6
2012	4	3	7
2013	4	3	7
2014	4	3	7

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

**1. Output Target**

- The number of LRFs that adopt vegetable rotations/planting sequences, and insect control practices developed by this research.

2010 50                      2011 50                      2012 :50                      2013 50                      2014 50

- Number of contacts with clientele at workshop, field days, demonstrations, etc.

<b>2010</b> 25	<b>2011</b> 25	<b>2012</b> 25	<b>2013</b> 25	<b>2014</b> 25
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- Published research articles, extension publication and present research data at professional meetings.

<b>2010</b> 5	<b>2011</b> 5	<b>2012</b> 5	<b>2013</b> 5	<b>2014</b> 5
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**V(I). State Defined Outcome**

<b>O. No</b>	<b>Outcome Name</b>
1	1) Fifty percent of the UAPB LRF's clientele adopt the rotation and insect control practices after five years.
2	2)2-3% of UAPB LRF's will adopt ornamental production after five years.
3	3

**Outcome #1****1. Outcome Target**

1) Fifty percent of the UAPB LRF's clientele adopt the rotation and insect control practices after five years.

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

**2010** :50                      **2011** : 50                      **2012** : 50                      **2013** : 50                      **2014** :50

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

•1890 Research

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

- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 205 - Plant Management Systems
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 601 - Economics of Agricultural Production and Farm Management

**Outcome #2****1. Outcome Target**

2)2-3% of UAPB LRF's will adopt ornamental production after five years.

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

**2010** :10                      **2011** : 10                      **2012** : 10                      **2013** :10                      **2014** :10

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

•1890 Research

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

- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 205 - Plant Management Systems
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 601 - Economics of Agricultural Production and Farm Management

**Outcome #3****1. Outcome Target**

3

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

**2010** :25                      **2011** : 25                      **2012** : 0                      **2013** : 0                      **2014** :0

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

•1890 Research

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

- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 205 - Plant Management Systems
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 601 - Economics of Agricultural Production and Farm Management

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

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

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

#### **Description**

Natural disaster such as drought, chilling temperatures, storm, etc. may affect the production.

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

### **1. Evaluation Studies Planned**

- After Only (post program)
- During (during program)

#### **Description**

The number and percentage of farmers adopting outcomes of research. Profitability of farms that adopt outcome of the research.

### **2. Data Collection Methods**

- Unstructured
- Observation
- Mail
- Sampling
- Telephone
- On-Site
- Tests

#### **Description**

A survey of small farm and limited resources farmers will be conducted to determine adoption of practices taught. This information and feedback will be further utilized with the UAPB Small Farm Project. Feedback from the UAPB Small Farm Project will guide this program as well.

**V(A). Planned Program (Summary)****Program #7****1. Name of the Planned Program**

Herbs, Spices, and Medicinal Crops

**2. Brief summary about Planned Program**

This program will include further studies aiming at germplasm evaluation of selected herbs, spices, and specialty vegetables for their production potential, nutritional qualities, and functional food values. The objectives will be to test varieties and experimental lines of bitter melon, bottle gourd, hot pepper, and other exotic vegetables for productivity and food values. Field trials and some of the laboratory experiments will be conducted at the UAPB Ag Research Center at Pine Bluff. Phytochemical analyses will be conducted in collaboration with Tuskegee University (TU). Some phytochemical analyses may be conducted through private companies if necessary. Selected varieties of bitter melon will be used in experiments conducted for productivity and food & medicinal values such as bitterness factors, cucurbitacine contents, some phenolic compounds. About 50 hot pepper varieties and 70 progeny lines from a Scotchbonnet / Habanera cross will be analyzed for variability in nutritional and other functional food characteristics including flavor, capsaicin, vitamins, carotenoids, flavanoides and other antioxidant levels. About 45 varieties of ornamental hot pepper varieties will be tested in field trials for aesthetic and ornamental characteristics. Bottle gourds, wax gourds, pumpkins and a few other exotic vegetables will be tested for new recipes and cooked foods. Nutritional qualities of value-added food products and their quality protection measures will be the final stage of the research program.

**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 and Biodiversity		0%		50%
502	New and Improved Food Products		0%		20%
701	Nutrient Composition of Food		0%		20%
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins		0%		10%
	<b>Total</b>		0%		100%

**V(C). Planned Program (Situation and Scope)****1. Situation and priorities**

Nutrition-related health problems, especially hypertension, obesity, diabetes, cancer and arthritis are prevalent among disadvantaged rural and urban populations. Particularly 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 are currently in use as nontraditional food items based on their perceived nutritional or medicinal qualities. Herbs and spices are used for adding taste, flavor and delicacy to foods. Vegetables and fruits possessing higher functional food qualities are known to have major impacts on disease prevention and general health. Our past research on germplasm evaluation involving specialty herbs and vegetables and taste-testing of new food recipes using these vegetables generated interests among the stakeholders, plant scientists, nutritionists, as well as collaborating partners at other universities. We plan to conduct in-depth studies on productivity and nutritional qualities of selected herbs, spices, and vegetables as well as their potential for providing new ingredients in improved foods for better health. Major emphasis will be given on variety & line selection based on special food values, production potentials, and consumer acceptances.

## 2. Scope of the Program

- In-State Research
- Multistate 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 thereby will have a significant impact on disease prevention and healthy lifestyles. Cooking methods and food processing may affect food values for these new food sources. Our preliminary knowledge of the levels of the functional compounds in bitter melon, pumpkins, hot pepper, basal, cilantro and some Ipomea species 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 diet. The existing resources are adequate to run the project; however, phytochemical analyses and food preparation experiments are costly and thus may need additional funds for acquiring new equipment and its running costs. Outside collaboration will be needed for the project and will greatly enhance outputs and dissemination of information.

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

Provide healthy food source alternatives for better human health and nutrition for targeted populations. This will help in preventing the commonly occurred physiological disorders and 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 better health and nutrition.

## 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
2010	0.0	0.1	0.0	1.3
2011	0.0	0.1	0.0	1.3
2012	0.0	0.1	0.0	1.3
2013	0.0	0.1	0.0	1.3
2014	0.0	0.1	0.0	1.3

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

### 1. Activity for the Program

Field experiments will be conducted on promising varieties/lines of specialty herbs and vegetables. Phytochemical screening of hot peppers and bitter melons for functional compounds will be performed. Laboratory experiments will be conducted for recipe development for new food products and protection of processed foods against

microbial contamination.

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

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Other 1 (Field Days)</li> <li>● Group Discussion</li> <li>● Demonstrations</li> </ul>	<ul style="list-style-type: none"> <li>● Newsletters</li> </ul>

**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.

**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 Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	5	10	0	0
2011	5	10	0	0
2012	5	15	5	5
2013	5	15	5	5
2014	10	30	7	10

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

**Expected Patent Applications**

2010 :0                      2011 :1                      2012 : 2                      2013 :1                      2014 :3

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2010	1	1	2
2011	1	1	2
2012	2	1	3
2013	2	2	4
2014	2	2	4

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

**1. Output Target**

- # of research publications

	2010 :1	2011 :1	2012 :2	2013 :2	2014 :2
● # of promising crop line identified					
	2010 :1	2011 :2	2012 :2	2013 :2	2014 :2
● # of successful food recipes					
	2010 :2	2011 :2	2012 :2	2013 :3	2014 :3

**V(I). State Defined Outcome**

<b>O. No</b>	<b>Outcome Name</b>
1	# of people have knowledge about the new crop lines
2	# of people accept/like to the new crop lines
3	# of people adopted the new recipes in their daily diets

**Outcome #1**

**1. Outcome Target**

# of people have knowledge about the new crop lines

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

**2010** 20                      **2011** : 50                      **2012** : 100                      **2013** 200                      **2014** :200

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

•1890 Research

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

- 202 - Plant Genetic Resources and Biodiversity
- 502 - New and Improved Food Products
- 701 - Nutrient Composition of Food
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

**Outcome #2**

**1. Outcome Target**

# of people accept/like to the new crop lines

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

**2010** 5                      **2011** : 10                      **2012** : 10                      **2013** 20                      **2014** :20

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

•1890 Research

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

- 202 - Plant Genetic Resources and Biodiversity
- 502 - New and Improved Food Products
- 701 - Nutrient Composition of Food
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

**Outcome #3**

**1. Outcome Target**

# of people adopted the new recipes in their daily diets

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

**2010** 0                      **2011** : 5                      **2012** : 10                      **2013** :10                      **2014** :20

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

•1890 Research

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

- 202 - Plant Genetic Resources and Biodiversity
- 502 - New and Improved Food Products
- 701 - Nutrient Composition of Food
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

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

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

- Populations changes (immigration,new cultural groupings,etc.)
- Competing Programmatic Challenges
- Natural Disasters (drought,weather extremes,etc.)
- Government Regulations
- Other (Linitations of funds)
- Appropriations changes
- Economy

#### **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 germplasm and data availability. Funding limitations and changed policies may affect the program and its outcome, and thus program implementation may not be possible. Moreover, if the participants are not skilled and wholehearted, then desired success of the program may not be achieved.

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

### **1. Evaluation Studies Planned**

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

#### **Description**

We will use output achievements as criteria in the evaluation process each year. An annual evaluation report will be prepared that will be reviewed at the subsequent evaluation meetings. In the midway of the program, the number of experiments completed will indicate progress. Number of hebs/vegetables varieties, possessing special nutritional qualities, ready to be released or adanced lines ready for on-farm testing will measure achievements. Taste testing and recipe demonstration results will be another indicator of the progress. Finally, the number of research publications, number of successful recipes developed and tested will assess the potential outcomes.

### **2. Data Collection Methods**

- On-Site
- Sampling
- Tests
- Observation
- Telephone

#### **Description**

For this year (2009), normal data collection from the field trials will be performed. In later years efforts will be made to conduct limited surveys on the Field Days and group meeting participants.

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

**Program #8**

**1. Name of the Planned Program**

Small Farm Program

**2. Brief summary about Planned Program**

The Small Farm Program provides technical assistance to small and socially disadvantaged producers (SDPs) in Eastern Arkansas (the row crop area) and in 11 counties in Southwest Arkansas ( the livestock area). Four Extension Associates in Eastern Arkansas and two Extension Associates in Southwest Arkansas provide direct one-on-one assistance and group training to (SDPs) and small farmers in the area. This program is a partnership between the University of Arkansas at Pine Bluff (UAPB), the Natural Resources Conservation Service (NRCS), the Farm Service Agency (FSA), the Risk Management Agency (RMA), Silas Hunt Community Development Corporation (SHHCDC), and Heifer Project International (HPI). This program provides direct assistance to farmers in record keeping, financial planning, using USDA Conservation Programs, and using crop insurance programs. The program also provides direct and group assistance with row and alternative crop production in Eastern Arkansas and beef cattle and goat production in Southwest Arkansas. Emphasis is also placed on estate planning and the disadvantages of heir property. Two newsletters, Farm Sense and Risk Management News, are provided directly to participants quarterly. News articles with emphasis on crop or livestock productions, USDA Programs, and important Farm dates are published regularly.

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

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

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

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

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

**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants		20%		0%
213	Weeds Affecting Plants		20%		0%
301	Reproductive Performance of Animals		15%		0%
601	Economics of Agricultural Production and Farm Management		30%		0%
602	Business Management, Finance, and Taxation		15%		0%
	<b>Total</b>		100%		0%

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

**1. Situation and priorities**

Many socially disadvantaged producers (SDPs) and small farmers are not comfortable with and do not trust USDA, or the Cooperative Extension Service (CES), and other agencies. Therefore, many of these producers do not use USDA Programs and they won't ask for crop or livestock production assistance from the CES. As a result, many SDPs and small producers have missed valuable farm income by not using the USDA programs; and as a result of not using CES recommendations, many SDPs and small farmers have low yields (below the county average) which contributes to reduced farm income. These factors have contributed to the decline of SDPs in Arkansas and pose a serious threat to the survival of SDPs and small farmers in Arkansas. Most SDPs and small farmers in the area are comfortable with and trust the UAPB staff, therefore the UAPB extension associates are assigned to work individually and collectively with SDPs and small farmers to help them access the programs provided by USDA and the services provided by CES. These associates also introduce SDPs to alternative enterprises.

The priorities of this program are: to help SDPs and small farmers access USDA Programs, to help SDPs and small farmers use CES recommendation, to train and assist SDPs and small farmers in conducting annual financial analysis, and to help SDPs and small farmers diversify with alternative enterprises.

**2. Scope of the Program**

- Multistate Integrated Research and Extension
- In-State Extension

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

**1. Assumptions made for the Program**

SDPs and small producers will access more of the programs provided by USDA and the services provided by CES through the assistance provided by the 1890 extension associates with the Small Farm Project.

SDPs and small farmers will improve farm income once they utilize programs available to them through USDA and production recommendation of the UAPB Cooperative Extension Program (CEP), and the CES.

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

The ultimate goal of this project is to help SDPs and small farmers become self sufficient in owning, operating and maintaining their farms.

**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
2010	0.0	0.6	0.0	0.0
2011	0.0	0.6	0.0	0.0
2012	0.0	0.6	0.0	0.0
2013	0.0	0.6	0.0	0.0
2014	0.0	0.6	0.0	0.0

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

**1. Activity for the Program**

The following activities will be conducted: educational meetings, alternative enterprise tours, newsletters, news articles, fact sheets, one-on-one assistance, assistance in financial planning, assistance in developing production plans, assistance in developing marketing plans, assistance in using USDA Program, and assistance in using CES recommendations.



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

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Demonstrations</li> <li>● Education Class</li> <li>● Other 1 (Tours)</li> <li>● One-on-One Intervention</li> <li>● Workshop</li> <li>● Group Discussion</li> </ul>	<ul style="list-style-type: none"> <li>● Newsletters</li> <li>● Web sites</li> <li>● Other 1 (News Articles)</li> <li>● Public Service Announcement</li> <li>● Other 2 (Memorandums to Farmers)</li> </ul>

**3. Description of targeted audience**

The targeted audience for the Small Farm Program include African Americans, Hispanics, Women, and farms with gross farm sales less than \$250,000.

**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 Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	7500	10000	250	300
2011	8000	10000	250	350
2012	8000	10500	300	400
2013	8000	10500	330	400
2014	8000	25000	330	400

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

**Expected Patent Applications**

2010 :0                      2011 :0                      2012 :0                      2013 :0                      2014 :0

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2010	0	1	1
2011	0	1	1
2012	0	1	1
2013	0	1	1
2014	0	1	1

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

**1. Output Target**

- Number of farmers participating in workshops and farm tours

	2010	2011	2012	2013	2014
	600	700	:750	800	800
● Number of farmers assisted in developing financial plans and or assisted in completing USDA loan applications					
	:120	:150	:150	:150	:200
● Number of newsletters, fact sheets and news articles produced					
	20	20	:25	25	25
● The number of SDF's identified for the program					
	500	525	:525	550	550
● The number of USDA programs introduced to farmers					
	25	25	:25	25	25
● The number of producers assisted in using extension recommended crop and livestock production practices					
	200	300	:350	400	440
● The number of producer growing or adding alternative crops to their operations					
	:75	85	:100	:125	:150

**V(I). State Defined Outcome**

<b>O. No</b>	<b>Outcome Name</b>
1	The number of dollars recieved (in millions) by program participants from government programs not normally accessed without the assistance of small farm staff
2	The increase (percent change) in farm income as a result of participants adopting alternative crops, adopting new varieties and using improved production techniques as a result of being enrolled in the Small Farm Program
3	The increase in farm income (percent change) as a result of using marketing strategies recommended by Small Farm Program staff
4	The increase (percent change) in yields as a result of implementing land improvement practices recommended by Small Farm Program staff

**Outcome #1****1. Outcome Target**

The number of dollars received (in millions) by program participants from government programs not normally accessed without the assistance of small farm staff

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

<b>2010</b> 4	<b>2011</b> : 4	<b>2012</b> : 5	<b>2013</b> 6	<b>2014</b> :6
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**3. Associated Institute Type(s)**

- 1890 Extension

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

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

**Outcome #2****1. Outcome Target**

The increase (percent change) in farm income as a result of participants adopting alternative crops, adopting new varieties and using improved production techniques as a result of being enrolled in the Small Farm Program

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

<b>2010</b> 25	<b>2011</b> : 30	<b>2012</b> : 30	<b>2013</b> 35	<b>2014</b> :35
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**3. Associated Institute Type(s)**

- 1890 Extension

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

- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 213 - Weeds Affecting Plants
- 301 - Reproductive Performance of Animals

**Outcome #3****1. Outcome Target**

The increase in farm income (percent change) as a result of using marketing strategies recommended by Small Farm Program staff

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

<b>2010</b> 25	<b>2011</b> : 25	<b>2012</b> : 25	<b>2013</b> 25	<b>2014</b> :25
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**3. Associated Institute Type(s)**

- 1890 Extension

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

- 602 - Business Management, Finance, and Taxation

**Outcome #4****1. Outcome Target**

The increase (percent change) in yields as a result of implementing land improvement practices recommended by Small Farm Program staff

**2. Outcome Type :** Change in Action Outcome Measure**2010** 25**2011** :25**2012** : 25**2013** 25**2014** :25**3. Associated Institute Type(s)**

- 1890 Extension

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

- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 601 - Economics of Agricultural Production and Farm Management

**V(J). Planned Program (External Factors)****1. External Factors which may affect Outcomes**

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

**Description**

Natural disasters such as droughts and excessive rains can significantly reduce farm income by reducing crop yields. Asian Soybean Rust has the potential to reduce soybean yields in Eastern Arkansas ; and most SDPs and small farmers grow soybeans (80%). Also the extra extension associates that work on this program are funded by grants, which may or may not be available.

**V(K). Planned Program (Evaluation Studies and Data Collection)****1. Evaluation Studies Planned**

- Case Study
- During (during program)

**Description**

Each project objective is evaluated with a evaluation survey. This survey will be completed by producers in the program. Some of the questions that will be asked by the evaluation forms are as follows: the producers opinion on quality of service provided by UAPB, if service was useful, if farmer benefitted from service, if farmers opinion or action changed as a result of the service, and economic impact from service. Objectives may be modified as a result of information obtained from the evaluationsform.

A case study for two participants will be conducted in conjunction with the Agricultural Economic unit at UAPB. Several years of records from producers will be provided to the Agricultural Economics Unit for analysis to determine if any improvement in the operation has occurred.

**2. Data Collection Methods**

- On-Site
- Case Study

**Description**

The evaluation survey form is given to project participants to complete during the project period. This evaluation form is generally given during one-on-one visits with the farmer. The case study information is collected annually by an extension associate on a specific operation. This information includes acres of crops, income, expenses, yields, and any improvements mades.

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

**Program #9**

**1. Name of the Planned Program**

Extension Livestock Management Program

**2. Brief summary about Planned Program**

The Extension Livestock Management Program is a state-wide program that provides unbiased, research based information to livestock producers, youth involved in livestock activities, county agents, UAPB staff, other organizations, and other individuals. Special target clientele are small livestock producers. The main species covered are beef cattle and goats with minor activities with swine and sheep. The major areas of work include feeds, feeding livestock, rations, herd health, herd or flock records, animal identification (including NAIS), working facilities, cow herd performance testing, bull breeding soundness clinics, breeding seasons, and herd breeding programs. The goal of the program is to improve the level of management in the herd or flock. With improved management, herd production and income should increase and help make the livestock operation more competitive. The Extension Livestock Program is also involved in youth (4-H and FFA) livestock activities. These activities include conducting competitive events at the Southeast District Fair, the Arkansas State Fair, the Southeast District 4-H Horse Show and conducting the 4-H Veterinary Science Project for Arkansas.

**3. Program existence :** Mature (More than 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
301	Reproductive Performance of Animals		10%		0%
303	Genetic Improvement of Animals		10%		0%
306	Environmental Stress in Animals		15%		0%
307	Animal Production Management Systems		25%		0%
806	Youth Development		40%		0%
	<b>Total</b>		100%		0%

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

**1. Situation and priorities**

Arkansas ranks seventeenth in the nation in beef production with 30,000 to 31,000 producers and somewhat over 980,000 beef cows. This equals an average herd size of just over 30 cows. Actually 80% of the herds in state have 30 cows or less. The vast majority of these herds are sideline operations to off-farm jobs, other farming operations, or they are a retirement vocation.

In most of these herds the level of reproduction and the level of production is low or below average because they are not being managed as an income producing enterprise or business. In the last several years the interest in meat goats has grown rapidly. The meat goat business is very similar to beef cattle in that these are sideline operations. Many livestock producers, as well as limited resource producers and small farmers have recently expressed a need for information and help on breed selection, herd health, improved herd performance, marketing information, herd fertility, and general herd management. Improvements in these specific management areas as well improvements in general herd or flock management will improve the profitability and competitiveness of these livestock operations by helping the producer market more animals, market heavier animals, and market animals with more market value. Youth livestock projects are quite popular (market hogs, market lambs and market goats). They are shown at county, district and at the state fair. These are usually some of the largest shows on the fairgrounds and are an excellent means of introducing livestock production to youth.

**2. Scope of the Program**

- In-State Extension

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

**1. Assumptions made for the Program**

Livestock producers will improve total herd and flock management as a result of knowledge obtained through various educational activities. These management practices will increase the net farm income. Youth will gain some basic knowledge about animal agriculture as well as develop an interest in animal agriculture from their participation in animal projects and area and state livestock shows.

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

The ultimate goal of this program for adult livestock producers is to have them achieve more profit from their herds and to be more competitive in the livestock industry. The ultimate goal for youth is to have them develop an appreciation for animal agriculture, develop a desirable work ethic, and develop a sense of responsibility through their participation in livestock projects and livestock shows.

**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
2010	0.0	1.0	0.0	0.0
2011	0.0	1.0	0.0	0.0
2012	0.0	1.0	0.0	0.0
2013	0.0	1.0	0.0	0.0
2014	0.0	1.0	0.0	0.0

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

**1. Activity for the Program**

Primary activities with producers will be individual farm visits, educational meetings, field days, farm demonstrations, office conferences, and the preparation and/or distribution of educational materials. Primary youth activities are the Southeast District Fair, swine shows at the State Fair, the Southeast District 4-H Horse Show, and the Arkansas 4-H Veterinary Science Project activities.

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

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Other 1 (field days)</li> <li>● One-on-One Intervention</li> <li>● Other 2 (educational meetings)</li> <li>● Demonstrations</li> </ul>	<ul style="list-style-type: none"> <li>● Other 2 (newspaper articles)</li> <li>● Other 1 (distribution of educational mate)</li> </ul>

**3. Description of targeted audience**

Livestock producers. 4-H and FFA youth.

**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 Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	150	25	1000	0
2011	150	25	1000	0
2012	150	25	1000	0
2013	150	25	1000	0
2014	150	25	1000	0

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

**Expected Patent Applications**

2010 :0                      2011 :0                      2012 :0                      2013 :0                      2014 :0

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	0	0	0
2014	0	0	0

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

**1. Output Target**

- Output measures will be number of producers working with the program (175 annual contacts), increase in number of animals weaned per breeding age female, and increase in average weaning weight of animals in cooperating herds. Number of youth (1000 annual contacts) participating in various livestock activities.

2010 :175                      2011 :175                      2012 :175                      2013 :175                      2014 :0



**V(I). State Defined Outcome**

<b>O. No</b>	<b>Outcome Name</b>
1	The desired outcome is increased knowledge of livestock production and recommended management practices. The results of imcreased knowledge about livestock production and recommended management practices should result in better managed herds and more productive herds.

**Outcome #1****1. Outcome Target**

The desired outcome is increased knowledge of livestock production and recommended management practices. The results of increased knowledge about livestock production and recommended management practices should result in better managed herds and more productive herds.

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

2010 :15

2011 : 20

2012 : 25

2013 : 25

2014 : 0

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

- 1890 Extension

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

- 301 - Reproductive Performance of Animals
- 303 - Genetic Improvement of Animals
- 306 - Environmental Stress in Animals
- 307 - Animal Production Management Systems
- 806 - Youth Development

**V(J). Planned Program (External Factors)****1. External Factors which may affect Outcomes**

- Government Regulations
- Other (market prices)
- Natural Disasters (drought, weather extremes, etc.)

**Description**

Drought can have the most serious effect by limiting pasture growth and hay supplies for cattle, goats and sheep. In the worst case situations, some producers have to sell out because they do not have enough pasture or hay for their animals and they are unable to purchase hay for feed. Government regulations can have a major impact. The NAIS system may be the biggest problem for some small producers because they have never kept records. Some may go out of business before they will keep records and report information on animal sales or movement. Market price can be a major item determining whether some producers will stay with a particular enterprise. The market for cattle and goats looks good for the next several years so this should not be a major factor. However, market prices for feedstuffs (especially corn) may have a major effect on all livestock enterprises since it has risen from \$2 per bushel in mid 2006 to \$3.60 per bushel in late 2006 in response to the large number of ethanol plants coming on line. There are some predictions of \$4 or higher corn. The whole livestock industry is waiting to see how the corn market shakes out in the end.

**V(K). Planned Program (Evaluation Studies and Data Collection)****1. Evaluation Studies Planned**

- During (during program)

**Description**

Evaluation on participating herds will come from herd records and performance records. If these can be secured on a portion of the participating herds, we will extrapolate it to the other herds.

**2. Data Collection Methods**

- Other (herd records)

**Description**

Basic herd records will be kept on as many herds as possible along with performance records on some herds. These records will measure improvement in the level of reproduction and the increase in herd production.

**V(A). Planned Program (Summary)****Program #10****1. Name of the Planned Program**

Value Added Products

**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 delivery in a ready-to-eat condition and the increased consumer demand for fresh and convenient food. Because fresh-cut produce can be consumed raw without further heating or cooking, the microbial stability, and nutritive and sensory quality need to be optimized. Therefore, this project will focus on each preservation 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. In addition, the program will study various packaging, storage, and value-added processing methods of blackberries.

**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%
	<b>Total</b>		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
2010	0.0	0.3	0.0	0.7
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

**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 surrogate 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
<ul style="list-style-type: none"> <li>● Workshop</li> <li>● One-on-One Intervention</li> </ul>	<ul style="list-style-type: none"> <li>● Newsletters</li> </ul>

**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 Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	20	30	0	0
2011	20	30	0	0
2012	20	30	0	0
2013	20	30	0	0
2014	20	30	0	0

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

**Expected Patent Applications**

2010 :0                      2011 :0                      2012 :0                      2013 :0                      2014 :0

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2010	0	1	1
2011	1	0	1
2012	0	1	1
2013	1	0	1
2014	0	1	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.

2010 :12                      2011 :12                      2012 :12                      2013 :12                      2014 :12

**V(I). State Defined Outcome**

<b>O. No</b>	<b>Outcome Name</b>
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

**2010** :10                      **2011** : 10                      **2012** : 10                      **2013** :10                      **2014** :10

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

- 1890 Extension
- 1890 Research

**4. 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

**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**

- Telephone
- Mail
- On-Site

**Description**

Initially a survey will be conducted with farmers and Extension specialists to identify and prioritize 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 #11****1. Name of the Planned Program**

Agricultural Policy

**2. Brief summary about Planned Program**

Minority and limited-resource farmers are experiencing economic problems. Some of these problems include: 1) decreasing farm profits, 2) difficulty acquiring capital, 3) increased costs of inputs and significant interest charges and 4) an increase in the rate at which farmers are going out business. Limited-resource farmers may be defined as "those farmers having gross sales less than \$100,000; total assets less than \$150,000 and operator household incomes less than \$20,000" (Steel and Mishra, 1996). Agricultural policies have been adopted by government regarding farm income for limited-resource farmers. Government payments are made to the farm sector. These payments include payments for commodity programs (i.e. direct payments, counter cyclical payments and marketing loan gains, and payments for conservation programs – Conservation Reserve Program (CRP)). Payments are based upon acreage and yield: (Payment \* Payment Acreage \* Payment Rate). In the past, limited-resource farmers have not had adequate proof of their yields. This may be attributed to poor recordkeeping. When there is no historical record county averages are used. In some cases, the limited-resource farmers' yields may be much higher than the county average. Some studies have also suggested that limited-resource farmers must control their variable and fixed costs and lower their debt-to-asset ratio in order to become more profitable. It may be more profitable to lease land and equipment. In addition to, or as a result of these challenges, limited-resource farmers receive fewer government payments than other farmers. This research program will focus on determining the factors that affect small, limited-resource farmers participation in agricultural programs. Surveys of farmers, and economic modeling and analysis will be conducted. The findings of this research will be used to suggest more viable policy options for limited resource farmers, thus enhancing the socioeconomic status of limited-resource farmers.

**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
610	Domestic Policy Analysis		0%		100%
	<b>Total</b>		0%		100%

**V(C). Planned Program (Situation and Scope)****1. Situation and priorities**

Small, limited-resource farmers benefit from agricultural programs at a lower rate than other farmers.

**2. Scope of the Program**

- In-State Research

**V(D). Planned Program (Assumptions and Goals)****1. Assumptions made for the Program**

Underlying issues that prevent small limited-resource farmers' participation in agricultural programs will be determined. Identification of factors that prevent participation will result in recommended changes in agricultural policy that benefit small



limited-resource farmers. Increased awareness/understanding of agricultural programs will increase farmer benefits.

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

Recommended changes in agricultural policy that benefit small limited-resource farmers.

**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
2010	0.0	0.1	0.0	0.4
2011	0.0	0.1	0.0	0.4
2012	0.0	0.1	0.0	0.4
2013	0.0	0.1	0.0	0.4
2014	0.0	0.0	0.0	0.4

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

**1. Activity for the Program**

Survey of 250-300 farmers that participate in the University of AR-Pine Bluff, Small Farm Project. Economic modeling and analysis of data collected will be done. Information will be disseminated to farmers via workshops, publications, pamphlets, newsletters and a farmer meeting.

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

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● One-on-One Intervention</li> <li>● Workshop</li> <li>● Group Discussion</li> </ul>	<ul style="list-style-type: none"> <li>● Newsletters</li> </ul>

**3. Description of targeted audience**

Three-hundred (300) farmers that participate in the University of AR-Pine Bluff, Small Farm Project.

**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 Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	30	30	0	0
2011	30	30	0	0
2012	30	30	0	0
2013	30	30	0	0
2014	0	0	0	0

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

**Expected Patent Applications**

2010 :0                      2011 :0                      2012 :0                      2013 :0                      2014 :0

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2010	1	1	2
2011	1	1	2
2012	1	1	2
2013	1	1	2
2014	0	0	0

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

**1. Output Target**

- Number of published journal articles on project results and analysis that are distributed to farmers.

2010 :0                      2011 :0                      2012 :0                      2013 :0                      2014 :0

- Number of participants at professional conference presentations on project results and analysis.

2010 :0                      2011 :0                      2012 :0                      2013 :0                      2014 :0

- Number of participants at other forums when presentations of project results and analysis are given.

2010 :0                      2011 :0                      2012 :0                      2013 :0                      2014 :0

- Number of participants at stakeholder meetings and interest group forums on project results and analysis.

2010 :0                      2011 :0                      2012 :0                      2013 :0                      2014 :0

**V(I). State Defined Outcome**

<b>O. No</b>	<b>Outcome Name</b>
1	Changes in production and consumption behavior of minority and limited-resource farmers in response to greater awareness of agricultural policy.
2	Increased participation of minority and limited-resource farmers in agricultural programs.
3	Increased access to credit and other programs by minority and limited-resource farmers.

**Outcome #1**

**1. Outcome Target**

Changes in production and consumption behavior of minority and limited-resource farmers in response to greater awareness of agricultural policy.

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

**2010** 60                      **2011** : 60                      **2012** : 60                      **2013** 60                      **2014** :0

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

- 1890 Extension
- 1890 Research

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

- 610 - Domestic Policy Analysis

**Outcome #2**

**1. Outcome Target**

Increased participation of minority and limited-resource farmers in agricultural programs.

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

**2010** 60                      **2011** : 60                      **2012** : 60                      **2013** 60                      **2014** :0

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

- 1890 Extension
- 1890 Research

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

- 610 - Domestic Policy Analysis

**Outcome #3**

**1. Outcome Target**

Increased access to credit and other programs by minority and limited-resource farmers.

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

**2010** 60                      **2011** : 60                      **2012** : 60                      **2013** 60                      **2014** :0

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

- 1890 Extension
- 1890 Research

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

- 610 - Domestic Policy Analysis

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

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

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

**Description**

Any changes that would reduce financial resources needed to contact farmers. This would also include changes that would discourage farmers from participating in surveys, workshops, and etc.

Essentially, a reduction in the financial budget needed to conduct the project would compromise the research.

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

##### **1. Evaluation Studies Planned**

- During (during program)

###### **Description**

Yearly mail and face-to-face evaluations/questionnaires to determine whether or not farmers' socioeconomic status and awareness/understanding of agricultural programs has increased.

##### **2. Data Collection Methods**

- Observation
- Telephone
- On-Site
- Sampling
- Mail
- Journals
- Structured

###### **Description**

Three-hundred (250-300) farmers that participate in the University of AR-Pine Bluff, Small Farm Project will be surveyed. Secondary data will be collected from journals and observation.

**V(A). Planned Program (Summary)****Program #12****1. Name of the Planned Program**

Breeding and Biotechnology

**2. Brief summary about Planned Program**

The program is designed to develop improved cowpea cultivars that resist biotic and abiotic stresses. Current cultivars do not offer protection against insects. Through biotechnology, transgenic cowpeas containing insect resistant genes will be developed for the benefit of small-farm, limited resource farmers in Arkansas and elsewhere. Conventional breeding will be done to produce cowpeas with characteristics such as drought resistance, yield, fresh pod color, pod length, seed size and synchronised maturity for adoption by limited resources producers.

**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
201	Plant Genome, Genetics, and Genetic Mechanisms		0%		20%
202	Plant Genetic Resources and Biodiversity		0%		30%
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants		0%		30%
211	Insects, Mites, and Other Arthropods Affecting Plants		0%		20%
	<b>Total</b>		0%		100%

**V(C). Planned Program (Situation and Scope)****1. Situation and priorities**

Cowpea is important as an alternative crop for small-farm, limited-resource farmers, particularly to those farming in the lower Mississippi River Delta. Cowpea is produced mainly in Alabama, Arkansas, California, Georgia, Louisiana, Mississippi, Missouri, South Carolina, Tennessee, and Texas. However, lack of cultivars with characteristics such as high yield, uniform pod maturity, erect plant type for mechanized harvesting, pod sell-out, drought resistance has hindered the production efficiency. Cowpea is also severely infected by insects such as pod borer and storage weevils causing significant damage to crop production and yield. Conventional breeding (selection and combining ability) will be performed to produce high potential cowpea lines for adoption by limited resource producers. The primary plant traits of focus for selection will include fresh pod color, length, seed size and maturity for mechanical harvest and variety adoption. Techniques of genetic engineering will be used to produce transgenic cowpeas that prevent pod borer and storage weevil infestation. Current cowpea cultivars do not offer

protection against insects. Production of insect resistant cowpeas will lead to increased yield and profits for the limited resource farmers.

**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 small-farm, limited-resource farmers will be able to increase yield by adopting cowpeas with improved characteristics such as insect and drought resistance, fresh pod color, length, seed size, uniform maturity for mechanical harvest etc.

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

-Production of improved cowpea cultivars that resist biotic and abiotic stresses. - Publications in reviewed journals.

**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
2010	0.0	0.1	0.0	1.5
2011	0.0	0.1	0.0	1.5
2012	0.0	0.1	0.0	1.5
2013	0.0	0.1	0.0	1.5
2014	0.0	0.1	0.0	1.5

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

**1. Activity for the Program**

- Conduct research experiments
- Research publications
- Presentation in the conferences and Field day

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

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Demonstrations</li> <li>● Group Discussion</li> <li>● One-on-One Intervention</li> </ul>	<ul style="list-style-type: none"> <li>● Newsletters</li> <li>● Web sites</li> </ul>

**3. Description of targeted audience**

Small-farm, 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 Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	50	75	25	50
2011	50	75	25	50
2012	50	75	25	50
2013	50	75	25	50
2014	50	75	25	50

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

**Expected Patent Applications**

2010 :0                      2011 :0                      2012 :0                      2013 :0                      2014 :0

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2010	1	0	0
2011	0	0	0
2012	1	0	0
2013	1	0	0
2014	0	0	0

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

**1. Output Target**

- Production of improved cowpea cultivars that resist biotic and abiotic stresses. Publications in reviewed journals.

2010 :1                      2011 0                      2012 :1                      2013 :1                      2014 0



**V(I). State Defined Outcome**

<b>O. No</b>	<b>Outcome Name</b>
1	Establishment of plant regeneration system for different cowpea cultivars
2	Development of transgenic protocol
3	Identification of cultivars for breeding cowpeas with improved yield.
4	Long-term outcome measures are the production of disease and insect-resistant, high yielding cowpeas

**Outcome #1****1. Outcome Target**

Establishment of plant regeneration system for different cowpea cultivars

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

<b>2010</b> :1	<b>2011</b> : 0	<b>2012</b> : 0	<b>2013</b> 0	<b>2014</b> :0
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**3. Associated Institute Type(s)**

•1890 Research

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

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources and Biodiversity
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 211 - Insects, Mites, and Other Arthropods Affecting Plants

**Outcome #2****1. Outcome Target**

Development of transgenic protocol

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

<b>2010</b> 0	<b>2011</b> : 1	<b>2012</b> : 1	<b>2013</b> 0	<b>2014</b> :0
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**3. Associated Institute Type(s)**

•1890 Research

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

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources and Biodiversity
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 211 - Insects, Mites, and Other Arthropods Affecting Plants

**Outcome #3****1. Outcome Target**

Identification of cultivars for breeding cowpeas with improved yield.

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

<b>2010</b> 0	<b>2011</b> : 1	<b>2012</b> : 0	<b>2013</b> :1	<b>2014</b> :1
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**3. Associated Institute Type(s)**

•1890 Research

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

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources and Biodiversity
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 211 - Insects, Mites, and Other Arthropods Affecting Plants

#### **Outcome #4**

##### **1. Outcome Target**

Long-term outcome measures are the production of disease and insect-resistant, high yielding cowpeas

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

**2010 :** 0                      **2011 :** 0                      **2012 :** 0                      **2013 :** 1                      **2014 :** 1

##### **3. Associated Institute Type(s)**

•1890 Research

##### **4. Associated Knowledge Area(s)**

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources and Biodiversity
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 211 - Insects, Mites, and Other Arthropods Affecting Plants

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

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

- Government Regulations
- Natural Disasters (drought,weather extremes,etc.)
- Appropriations changes

##### **Description**

Products from genetically-modified crops are not yet fully accepted by the public.

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

##### **1. Evaluation Studies Planned**

- During (during program)
- After Only (post program)

##### **Description**

Number of plants regenerated, number of transgenic lines generated, number of breeding lines generated etc.

##### **2. Data Collection Methods**

- On-Site
- Mail
- Unstructured
- Observation
- Journals
- Telephone

##### **Description**

Data will be collected from field trials and laboratory experiments.

**V(A). Planned Program (Summary)****Program #13****1. Name of the Planned Program**

Improving Hatchery Production Efficiency

**2. Brief summary about Planned Program**

Arkansas leads the nation in hatchery production. There is little research support for hatchery businesses. This program will develop research and Extension projects related to catfish, baitfish, hybrid striped bass, and sportfish species.

**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
301	Reproductive Performance of Animals		80%		80%
307	Animal Production Management Systems		20%		20%
	<b>Total</b>		100%		100%

**V(C). Planned Program (Situation and Scope)****1. Situation and priorities**

Decreasing profit margins on catfish production facilities and recent research advances have re-kindled interest in the production of channel x blue catfish hybrids for food-fish production. Hybrids have been shown to grow faster and survive better than channel catfish, but large-scale production of hybrid fingerlings remains problematic. Techniques for utilizing ultrasound technology for selecting females and staging eggs, cryo-preservation of blue catfish sperm, and the use of geothermal water for out-of-season spawning will be investigated and refined in order to improve production efficiencies of hybrid production. The US runs an \$8 billion annual trade deficit for edible seafood. Production of hybrid striped bass could reduce this trade deficit. The hybrid striped bass industry must become more productive and efficient to help reduce the trade deficit. Hybrid striped bass fingerling producers and grow-out facilities would benefit from improved management techniques. Priorities –UAPB has been conducting research on hybrid striped bass fingerling culture for more than a decade. Tank culture of hybrid striped bass offers great potential for increasing production. Fingerling producers would like to move away from pond production in the spring toward tank production year-round.

**2. Scope of the Program**

- Integrated Research and Extension

**V(D). Planned Program (Assumptions and Goals)****1. Assumptions made for the Program**

New technologies can be utilized to improve hybrid production efficiencies, hatchery managers are capable of learning hybrid production techniques, food-fish producers will value a genetically superior fingerling. Specific strains or stocks of white and striped bass will be available to producers and researchers. Some subset of those strains will be most appropriate for tank

culture If hybrid striped bass fingerling producers see that techniques are established, they will increase tank production and increase production out of season.

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

Increase efficiency of catfish food-fish production, increase the number of catfish fingerling operations producing hybrids, and year-round fingerling production in tanks throughout the industry.

**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
2010	0.0	0.3	0.0	0.5
2011	0.0	0.3	0.0	0.5
2012	0.0	0.3	0.0	0.5
2013	0.0	0.3	0.0	0.5
2014	0.0	0.3	0.0	0.5

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

**1. Activity for the Program**

- Conduct field trials
- Conduct method demonstrations
- Publish results
- Give presentations
- 1. Conduct research to determine the relationship between egg size and size at hatch for hybrid striped bass.
- 2. Conduct research to re-define the relation between temperature and egg stage duration.
- 3. Conduct research to determine ways of reducing cannibalism in tank culture of hybrid striped bass
- 4. Partner with Keo Fish Farm, Inc. to acquire seed stock from specific males and females

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

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● One-on-One Intervention</li> <li>● Other 1 (Educational meetings)</li> </ul>	<ul style="list-style-type: none"> <li>● Other 2 (Extension Publications)</li> <li>● Newsletters</li> <li>● Other 1 (Posters)</li> <li>● Web sites</li> </ul>

**3. Description of targeted audience**

- Catfish farmers throughout Arkansas
- County Extension agents Hybrid striped bass fingerling producers Hybrid striped bass grow-out facility operators

**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 Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	5	50	0	0
2011	0	50	0	0
2012	5	50	0	0
2013	5	50	0	0
2014	5	50	0	0

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

**Expected Patent Applications**

2010 :0                      2011 :0                      2012 :0                      2013 :0                      2014 :0

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	0	0	0
2014	0	0	0

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

**1. Output Target**

- Number of Abstracts

2010 2                      2011 1                      2012 4                      2013 4                      2014 6

- Number of Presentations

2010 2                      2011 2                      2012 5                      2013 5                      2014 6

- Number of Refereed Journal Articles

2010 2                      2011 2                      2012 1                      2013 1                      2014 2

- Number of Popular Articles and Newsletter Articles

2010 0                      2011 1                      2012 1                      2013 1                      2014 0

**V(I). State Defined Outcome**

<b>O. No</b>	<b>Outcome Name</b>
1	Number of Scientists and Producers That Learned What We Know
2	Number of Scientists and Producers that Use What We Know
3	Percent of Increase in Hybrid Striped Bass Fingerlings Produced in Arkansas
4	Number of Arkansans Gaining Access to Hybrid Catfish Information
5	Number of Arkansans Adopting Hybrid Catfish Production
6	Number of Arkansans Increasing Efficiency, Profitability Through Hybrid Catfish Production

**Outcome #1**

**1. Outcome Target**

Number of Scientists and Producers That Learned What We Know

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

**2010** :30                      **2011** : 15                      **2012** : 35                      **2013** 35                      **2014** :40

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

- 1890 Extension
- 1890 Research

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

- 307 - Animal Production Management Systems

**Outcome #2**

**1. Outcome Target**

Number of Scientists and Producers that Use What We Know

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

**2010** :15                      **2011** : 15                      **2012** : 15                      **2013** :15                      **2014** :7

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

- 1890 Extension
- 1890 Research

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

- 301 - Reproductive Performance of Animals
- 307 - Animal Production Management Systems

**Outcome #3**

**1. Outcome Target**

Percent of Increase in Hybrid Striped Bass Fingerlings Produced in Arkansas

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

**2010** 2                      **2011** : 2                      **2012** : 4                      **2013** 4                      **2014** :0

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

- 1890 Extension
- 1890 Research

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

- 307 - Animal Production Management Systems

**Outcome #4**

**1. Outcome Target**

Number of Arkansans Gaining Access to Hybrid Catfish Information

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

**2010** 60                      **2011** : 60                      **2012** : 60                      **2013** 60                      **2014** :50

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

- 1890 Extension
- 1890 Research



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

- 307 - Animal Production Management Systems

**Outcome #5**

**1. Outcome Target**

Number of Arkansans Adopting Hybrid Catfish Production

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

2010 :7                      2011 : 7                      2012 : 7                      2013 :7                      2014 :3

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

- 1890 Extension
- 1890 Research

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

- 307 - Animal Production Management Systems

**Outcome #6**

**1. Outcome Target**

Number of Arkansans Increasing Efficiency, Profitability Through Hybrid Catfish Production

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

2010 :7                      2011 : 7                      2012 : 7                      2013 :7                      2014 :3

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

- 1890 Extension
- 1890 Research

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

- 307 - Animal Production Management Systems

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

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

- Government Regulations
- Natural Disasters (drought,weather extremes,etc.)
- Appropriations changes

**Description**

- Changing market demands for aqua-cultured products.
- New disease or other production barrier
- Public acceptance of recommendations
- Natural disasters
- Economy
- Competing public priorities
- Population changes.

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

**1. Evaluation Studies Planned**

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

**Description**

**2. Data Collection Methods**

- Observation
- Sampling
- Case Study

**Description**

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

**Program #14**

**1. Name of the Planned Program**

Improving Disease Status for Baitfish and Catfish Production and Marketing

**2. Brief summary about Planned Program**

Diseases and parasites of baitfish species are a major source of losses on baitfish farms. This program will develop new diagnostic tools, provide timely and accurate diagnoses and treatment recommendations to baitfish producers. Special attention will be given to biosecurity initiatives to prevent infections.

Research will be conducted to determine the distribution of catfish trematodes and their impact on fish growth and survival and to assess the efficacy of trematode treatment methods. Extension programs will provide catfish disease diagnostic services, conduct field studies of trematode distribution and conduct education programs on trematode control.

**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
307	Animal Production Management Systems		20%		20%
311	Animal Diseases		30%		30%
312	External Parasites and Pests of Animals		25%		25%
313	Internal Parasites in Animals		25%		25%
	<b>Total</b>		100%		100%

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

**1. Situation and priorities**

Baitfish diseases impact fish survival and restrict market opportunities. To maintain profitability and access to markets, it is critical for these industries to understand and eradicate important diseases and to demonstrate specific disease free status to trading partners. Priorities

To improve detection methods for important diseases

To improve farm biosecurity and disease prevention

To eradicate diseases of regulatory of fish health concern

To help farmers demonstrate pathogen free status to improve marketing opportunities.

The profitability of catfish farming is impacted by reduced fish growth and survival attributable to catfish diseases. Disease

losses can account for over \$7 million a year in Arkansas. Spread of the catfish trematode has been a growing concern as well as columnaris infections. Biosecurity initiatives are expected to prevent diseases and reduce losses by maintaining fish health.

Priorities:

1. To provide swift and accurate diagnosis of diseases
2. To determine the impact and prevalence of catfish diseases
3. To concentrate effort on the control and eradication of catfish trematodes
4. To promote biosecurity in the catfish industry.

**2. Scope of the Program**

- Integrated Research and Extension

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

**1. Assumptions made for the Program**

That industry will continue to feel that certification of disease status is a beneficial marketing tool. That industry will agree attributes are needed for certification. That we will be able to establish and maintain the desired disease status.

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

National recognition of the safety of Arkansas baitfish, reduced disease-related trade restrictions, and a reduction on reliance upon wild caught baitfish.

Farmers will manage their own pathogen and vector control programs that will effectively prevent losses from catfish trematodes and other diseases.

**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
2010	0.0	1.2	0.0	0.3
2011	0.0	1.2	0.0	0.3
2012	0.0	1.2	0.0	0.3
2013	0.0	1.2	0.0	0.3
2014	0.0	1.2	0.0	0.3

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

**1. Activity for the Program**

- Research will be conducted to
  - Improve diagnostic tests for important pathogens (viral, parasitic, and bacterial)
  - Improve understanding of the epidemiology of important pathogens
  - Discover new pathogens responsible for fish losses
  - Improve methods to eradicate pathogens from afflicted farms.

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

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Other 2 (Farm demonstrations)</li> <li>● Other 1 (Educational meetings)</li> <li>● One-on-One Intervention</li> </ul>	<ul style="list-style-type: none"> <li>● Other 2 (Extension Publications)</li> <li>● Web sites</li> <li>● Newsletters</li> <li>● Other 1 (Posters)</li> </ul>

**3. Description of targeted audience**

Commercial baitfish and catfish producers

**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 Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	40	60	0	0
2011	40	60	0	0
2012	40	60	0	0
2013	40	60	0	0
2014	85	160	25	0

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

**Expected Patent Applications**

2010 :0                      2011 :0                      2012 :0                      2013 :0                      2014 :0

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	0	0	0
2014	0	0	0

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

**1. Output Target**

- Number of publications

2010 2                      2011 2                      2012 2                      2013 2                      2014 4

- Number of presentations

<b>2010</b> 3	<b>2011</b> 3	<b>2012</b> 3	<b>2013</b> 3	<b>2014</b> 5
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- Number of experiments and field trials of treatments for fish parasite and parasite vectors conducted on farms

<b>2010</b> 2	<b>2011</b> 0	<b>2012</b> 2	<b>2013</b> 2	<b>2014</b> 4
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**V(I). State Defined Outcome**

<b>O. No</b>	<b>Outcome Name</b>
1	Percent of Arkansas bait and ornamental fish production farms participating in the State certification program
2	Number of farms that have attempted eradication procedures
3	Number of major farms adopting treatments
4	Number of farmers helped with catfish disease cases
5	Number of catfish ponds sampled for trematodes
6	Number of educational meetings conducted to assist farmers with trematode detection and control
7	Number of commercial Arkansas baitfish farmer learning about Extension recommendations and program results
8	Number of commercial Arkansas catfish farmers adopting Extension recommendations
9	Number of commercial Arkansas catfish farmers increasing efficiency and profitability

**Outcome #1**

**1. Outcome Target**

Percent of Arkansas bait and ornamental fish production farms participating in the State certification program

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

**2010 :**75                      **2011 :**75                      **2012 :**165                      **2013 :**165                      **2014 :**210

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

- 1890 Extension
- 1890 Research

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

- 311 - Animal Diseases

**Outcome #2**

**1. Outcome Target**

Number of farms that have attempted eradication procedures

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

**2010 :**10                      **2011 :**10                      **2012 :**20                      **2013 :**20                      **2014 :**24

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

- 1890 Extension
- 1890 Research

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

- 311 - Animal Diseases

**Outcome #3**

**1. Outcome Target**

Number of major farms adopting treatments

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

**2010 :**10                      **2011 :**10                      **2012 :**10                      **2013 :**10                      **2014 :**10

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

- 1890 Extension
- 1890 Research

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

- 312 - External Parasites and Pests of Animals

**Outcome #4**

**1. Outcome Target**

Number of farmers helped with catfish disease cases

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

**2010 :**500                      **2011 :**500                      **2012 :**500                      **2013 :**500                      **2014 :**500

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

- 1890 Extension
- 1890 Research

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



- 311 - Animal Diseases

**Outcome #5**

**1. Outcome Target**

Number of catfish ponds sampled for trematodes

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

2010 25                      2011 : 25                      2012 : 25                      2013 25                      2014 :25

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

- 1890 Extension
- 1890 Research

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

- 311 - Animal Diseases

**Outcome #6**

**1. Outcome Target**

Number of educational meetings conducted to assist farmers with trematode detection and control

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

2010 2                      2011 : 2                      2012 : 2                      2013 2                      2014 :2

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

- 1890 Extension
- 1890 Research

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

- 311 - Animal Diseases

**Outcome #7**

**1. Outcome Target**

Number of commercial Arkansas baitfish farmer learning about Extension recommendations and program results

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

2010 90                      2011 : 90                      2012 : 90                      2013 90                      2014 :90

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

- 1890 Extension

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

- 307 - Animal Production Management Systems

**Outcome #8**

**1. Outcome Target**

Number of commercial Arkansas catfish farmers adopting Extension recommendations

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

2010 2                      2011 : 2                      2012 : 2                      2013 2                      2014 :2

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

- 1890 Extension

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

- 307 - Animal Production Management Systems

**Outcome #9**

**1. Outcome Target**

Number of commercial Arkansas catfish farmers increasing efficiency and profitability

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

2010 2                      2011 : 2                      2012 : 2                      2013 2                      2014 :2

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

- 1890 Extension

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

- 307 - Animal Production Management Systems

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

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

- Government Regulations
- Appropriations changes
- Natural Disasters (drought,weather extremes,etc.)

**Description**

Statutory changes in state, federal, and international fish health regulations

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

**1. Evaluation Studies Planned**

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

**Description**

A comprehensive evaluation of our fish health program is planned for 2009-2010.

**2. Data Collection Methods**

- On-Site
- Sampling

**Description**

An IMPLAN based analysis of the fish health program is planned.

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

**Program #15**

**1. Name of the Planned Program**

Improving Management Techniques for Baitfish

**2. Brief summary about Planned Program**

Arkansas leads the nation in baitfish production, one of the top five segments of U.S. aquaculture. This program is designed to improve profitability through improving management and production efficiencies through improved larval rearing, pond preparation, stocking, and feeding recommendations.

**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
302	Nutrient Utilization in Animals		45%		45%
307	Animal Production Management Systems		45%		45%
308	Improved Animal Products (Before Harvest)		10%		10%
	<b>Total</b>		100%		100%

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

**1. Situation and priorities**

Commercial production of rosy red fathead minnows in outdoor ponds is problematic due to poor survival. Based on their success in tank hatching eggs of other species, producers are interested in a similar system for fathead minnows. Priorities include improving the efficiency of fathead minnow egg collection and removal, and developing improved diets.

A priority problem identified by baitfish producers is management of algal density. Development of appropriate fertilization recommendations is critical to establishing desired bloom densities in ponds while avoiding unnecessary or excessive applications of nutrients.

**2. Scope of the Program**

- Integrated Research and Extension

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

**1. Assumptions made for the Program**

That cost effective methods for commercial fathead minnow production can be developed based upon this research and that markets are not constrained by regulations affecting the interstate shipment of live fish.

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

Reduce costs of producing farm-raised minnows.

**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
2010	0.0	0.7	0.0	0.3
2011	0.0	0.7	0.0	0.3
2012	0.0	0.7	0.0	0.3
2013	0.0	0.7	0.0	0.3
2014	0.0	0.7	0.0	0.3

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

**1. Activity for the Program**

A series of studies are being conducted on the components of an egg collection, removal and incubation system, and on new feed ingredients and strategies for feeding baitfish.

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

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Other 1 (PowerPoint Presentations)</li> <li>● One-on-One Intervention</li> </ul>	<ul style="list-style-type: none"> <li>● Newsletters</li> <li>● Other 1 (Posters)</li> <li>● Web sites</li> <li>● Other 2 (Extension Publications)</li> </ul>

**3. Description of targeted audience**

Commercial baitfish producers

**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 Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	40	80	0	0
2011	40	80	0	0
2012	40	80	0	0
2013	40	80	0	0
2014	40	80	0	0

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

**Expected Patent Applications**

**2010 :0                      2011 :0                      2012 :0                      2013 :0                      2014 :0**

**3. Expected Peer Review Publications**

<b>Year</b>	<b>Research Target</b>	<b>Extension Target</b>	<b>Total</b>
2010	1	0	1
2011	0	0	0
2012	0	0	0
2013	0	0	0
2014	0	0	0

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

**1. Output Target**

- Number of Peer Reviewed Journal Articles

**2010 :1                      2011 :1                      2012 :1                      2013 :1                      2014 :1**

- Number of Abstracts

**2010 :1                      2011 :2                      2012 :3                      2013 :3                      2014 :3**

- Number of Articles in Producer Trade Magazines

**2010 :2                      2011 :1                      2012 :1                      2013 :1                      2014 :1**

- Number of Fact Sheets and Newsletters

**2010 :1                      2011 :1                      2012 :2                      2013 :2                      2014 :2**

- Number of Presentations

**2010 :1                      2011 :2                      2012 :3                      2013 :3                      2014 :3**

**V(I). State Defined Outcome**

<b>O. No</b>	<b>Outcome Name</b>
1	Number of producers who learn project results
2	Number of producers willing to test successful ingredients or feeding strategies on a commercial scale
3	Percent of baitfish producers (by acreage) adopting diets with new ingredients that are commercially available, or number of new feeding strategies implemented by industry

**Outcome #1**

**1. Outcome Target**

Number of producers who learn project results

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

**2010 :**1                      **2011 :** 1                      **2012 :** 3                      **2013 :** 3                      **2014 :**3

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

- 1890 Extension
- 1890 Research

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

- 307 - Animal Production Management Systems

**Outcome #2**

**1. Outcome Target**

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

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

**2010 :**1                      **2011 :** 0                      **2012 :** 3                      **2013 :** 3                      **2014 :** 3

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

- 1890 Extension
- 1890 Research

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

- 302 - Nutrient Utilization in Animals

**Outcome #3**

**1. Outcome Target**

Percent of baitfish producers (by acreage) adopting 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

**2010 :**25                      **2011 :** 25                      **2012 :** 25                      **2013 :** 25                      **2014 :**25

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

- 1890 Extension
- 1890 Research

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

- 302 - Nutrient Utilization in Animals

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

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

- Other (changing prices of feed ingredie)

**Description**

Factors affecting overall profitability of fish cultue that may have nothing to do with diet or feeding strategies: fuel costs, weather, restrictions on interstate transport and sales of baitfish, animal rights movement.

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

### **1. Evaluation Studies Planned**

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

**Description**

### **2. Data Collection Methods**

- Observation
- Sampling

**Description**



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

**Program #16**

**1. Name of the Planned Program**

Aquaculture Alternatives in Arkansas

**2. Brief summary about Planned Program**

Aquaculture is a major and diverse industry in Arkansas. This program addresses all species and production systems other than catfish and baitfish, including sportfish, marine shrimp, prawns, crawfish, carps, and tilapia. Both production and marketing requirements are addressed.

This program will involve young people in fishing and aquaculture education and recreational activities. The program is expected to assist teachers to integrate academic skills in a hands-on activity, to teach positive lifelong habits and values, and develop an appreciation for environmental stewardship.

**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
302	Nutrient Utilization in Animals		10%		10%
307	Animal Production Management Systems		30%		30%
308	Improved Animal Products (Before Harvest)		10%		10%
311	Animal Diseases		10%		10%
602	Business Management, Finance, and Taxation		10%		10%
603	Market Economics		10%		10%
806	Youth Development		20%		20%
	<b>Total</b>		100%		100%

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

**1. Situation and priorities**

Arkansas fish farmers are seeking new crops to diversify their operations. Baitfish markets are not expanding, and catfish prices have been hurt by competition from imports. The priority is to facilitate the continued operation of existing farms, and the development of new aquaculture businesses.

Fishing can be a hobby that teaches kids positive lifelong values, which can prevent kids from using drugs and taking part in other detrimental behavior. However, the number of young who fish has been declining the past twenty years. The decline is partially due to the movement of people in cities, where fishing can be limited when compared to rural settings. Fishing can be an activity enjoyed by kids who live in rural or urban settings, when fishing activities and suitable fishing areas are made available for the community. Aquaculture is also an excellent way to teach traditional subjects in a non-traditional learning environment. Traditional classroom instruction includes teaching math, chemistry, and biology in separate classes within a formal setting.

**2. Scope of the Program**

- Integrated Research and Extension
- In-State Extension

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

**1. Assumptions made for the Program**

That research will identify economically viable alternative aquaculture crops.

Extension agents are perfect mediums for introducing youth to fishing education through 4-H activities, county fishing clubs, and using educational fishing curricula in county meetings. However, county agents have had little or no support in the past in the area of youth fishing education. We will provide that support by responding to County Extension Agent needs in the area of youth fishing education. These needs have been determined through a needs assessment survey and prioritized. In Arkansas, some high schools use aquaculture as an alternative to traditional agriculture when space is limited, or the school is within city limits. Schools also use aquaculture as a non-traditional teaching method of agriculture.

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

To improve the economy of rural Arkansas through the development of new businesses.

Children will learn to appreciate the outdoors and learn about the natural environment.

**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
2010	0.0	1.0	0.0	0.9
2011	0.0	1.0	0.0	0.9
2012	0.0	1.0	0.0	0.9
2013	0.0	1.0	0.0	0.9
2014	0.0	1.0	0.0	0.9

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

**1. Activity for the Program**

Compile existing information on alternative aquaculture crops, budgets and markets for those crops. Disseminate the information through newsletters, fact sheets, presentations, and individual contacts. Year 1. Fact sheet on aquaculture

alternatives. Field day poster presentation on alternative species. Year 2. Update fact sheet on small scale catfish production. Revise fact sheet on baitfish budgets. Year 3. Revise fact sheet on holding fish for sale. Year 4. Revise fact sheet on using existing ponds for fish production. Year 5. Revise fact sheet on cleaning fish for sale.

Determine basic nutrient requirements for alternative species such as largemouth bass, and test feed additives (such as prebiotics) in these species to determine their potential inclusion in practical diets.

Provide 4-H approved youth fishing education program materials to county agents. Maintain a youth fishing trailer and train agents in its use. Also add fishing education module to the trailer for county agents to use. Work with 4-H and county agents directly to implement new or improved sportfishing and aquatic curriculums, which include baitcasting and reel into sportfishing competitions. Organize and conduct workshops through CE agents that deal with aquatic education and 4-H O'Rama activities. Continue to provide assistance with county, regional, and state O'Ramas. Two types of systems will be set up; one with very low technology and a second with better technology. Raise all tilapia needed for the schools during the summer and overwinter broodstock for spawning the following year. Some small fish should also be overwintered to re-supply systems that fail.

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

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● One-on-One Intervention</li> <li>● Other 1 (Educational Meetings)</li> <li>● Demonstrations</li> <li>● Other 2 (Fishing Derbies)</li> </ul>	<ul style="list-style-type: none"> <li>● Other 1 (Posters)</li> <li>● Web sites</li> <li>● Newsletters</li> <li>● Other 2 (Extension Publications)</li> </ul>

**3. Description of targeted audience**

County Extension faculty, existing fish farmers and potential farmers.  
Youth

**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 Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	260	450	1000	200
2011	260	450	1000	200
2012	260	450	1000	200
2013	260	450	1000	200
2014	260	450	1000	200

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

**Expected Patent Applications**

2010 :0                      2011 :0                      2012 :0                      2013 :0                      2014 :0

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2010	1	0	1
2011	0	0	0
2012	0	0	0
2013	0	0	0
2014	0	0	0

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

**1. Output Target**

- Number of Peer Reviewed Journal Articles

2010 :1                      2011 :1                      2012 :2                      2013 :2                      2014 :2

- Number of Presentations

2010 :2                      2011 :2                      2012 :6                      2013 :4                      2014 :5

- Number of Published Abstracts

2010 :2                      2011 :2                      2012 :5                      2013 :4                      2014 :4

- Number of County Agents using the fishing education modules

2010 :15                      2011 :15                      2012 :15                      2013 :15                      2014 :15

- Number of teachers participating in aquaculture workshops

2010 :20                      2011 :20                      2012 :20                      2013 :20                      2014 :20

- Number of tilapia delivered to teachers

2010 :1000                      2011 :1000                      2012 :1000                      2013 :1000                      2014 :1000

- Number of teachers using tilapia

2010 :10                      2011 :10                      2012 :10                      2013 :10                      2014 :10

- Number of teachers receiving aquaculture education newsletter

2010 :25                      2011 :25                      2012 :25                      2013 :25                      2014 :25

- Number of schools visited annually

2010 :5                      2011 :5                      2012 :5                      2013 :5                      2014 :5

- Number of students participating in aquaculture events and educational programs

2010 :1500                      2011 :1500                      2012 :1500                      2013 :1500                      2014 :1500

**V(I). State Defined Outcome**

<b>O. No</b>	<b>Outcome Name</b>
1	Number of Arkansans adopting sound management practices
2	Number of Arkansans Increasing Efficiency, and Profitability
3	Number of researchers and producers gaining knowledge from results from presentations and publications
4	Number of researchers that will cite results
5	Number of producers that will modify feeding and management
6	Percent decrease in cool weather mortalities and decrease in off-flavor
7	Percent of cool weather plankton-related problems that will decrease
8	Percent of warm weather plankton-related problems that will decrease
9	Number of producers willing to test successful ingredients or feeding strategies on a commercial scale
10	Percent of diets with new ingredients that are commercially available, or number of new feeding strategies implemented by industry
11	Number of County Extension agents using the aquatic education fishing trailer for youth fishing activities
12	Number of students participating in events related to the aquatic education fishing trailer for youth fishing activities

**Outcome #1**

**1. Outcome Target**

Number of Arkansans adopting sound management practices

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

**2010** :150                      **2011** : 150                      **2012** : 150                      **2013** :150                      **2014** :150

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

- 1890 Extension
- 1890 Research

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

- 602 - Business Management, Finance, and Taxation

**Outcome #2**

**1. Outcome Target**

Number of Arkansans Increasing Efficiency, and Profitability

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

**2010** :50                      **2011** : 50                      **2012** : 50                      **2013** :50                      **2014** :50

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

- 1890 Extension
- 1890 Research

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

- 602 - Business Management, Finance, and Taxation

**Outcome #3**

**1. Outcome Target**

Number of researchers and producers gaining knowledge from results from presentations and publications

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

**2010** :100                      **2011** : 100                      **2012** : 100                      **2013** :100                      **2014** :100

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

- 1890 Extension
- 1890 Research

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

- 307 - Animal Production Management Systems

**Outcome #4**

**1. Outcome Target**

Number of researchers that will cite results

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

**2010** : 2                      **2011** : 2                      **2012** : 4                      **2013** : 4                      **2014** :4

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

- 1890 Extension
- 1890 Research

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

- 307 - Animal Production Management Systems

**Outcome #5**

**1. Outcome Target**

Number of producers that will modify feeding and management

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

**2010 :**1                      **2011 :** 1                      **2012 :** 1                      **2013 :** 1                      **2014 :**1

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

- 1890 Extension
- 1890 Research

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

- 302 - Nutrient Utilization in Animals

**Outcome #6**

**1. Outcome Target**

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

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

**2010 :**10                      **2011 :** 10                      **2012 :** 10                      **2013 :** 10                      **2014 :** 10

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

- 1890 Extension
- 1890 Research

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

- 307 - Animal Production Management Systems

**Outcome #7**

**1. Outcome Target**

Percent of cool weather plankton-related problems that will decrease

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

**2010 :**50                      **2011 :** 50                      **2012 :** 50                      **2013 :** 50                      **2014 :** 50

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

- 1890 Extension
- 1890 Research

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

- 307 - Animal Production Management Systems

**Outcome #8**

**1. Outcome Target**

Percent of warm weather plankton-related problems that will decrease

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

**2010 :**10                      **2011 :** 10                      **2012 :** 10                      **2013 :** 10                      **2014 :** 10

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

- 1890 Extension
- 1890 Research

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

- 307 - Animal Production Management Systems

**Outcome #9**

**1. Outcome Target**

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

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

2010 :4                      2011 : 4                      2012 : 4                      2013 :4                      2014 :4

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

- 1890 Extension
- 1890 Research

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

- 302 - Nutrient Utilization in Animals

**Outcome #10**

**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

2010 :75                      2011 : 75                      2012 : 75                      2013 :75                      2014 :75

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

- 1890 Extension
- 1890 Research

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

- 302 - Nutrient Utilization in Animals

**Outcome #11**

**1. Outcome Target**

Number of County Extension agents using the aquatic education fishing trailer for youth fishing activities

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

2010 :25                      2011 : 25                      2012 : 25                      2013 :25                      2014 :25

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

- 1890 Extension

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

- 806 - Youth Development

**Outcome #12**

**1. Outcome Target**

Number of students participating in events related to the aquatic education fishing trailer for youth fishing activities

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

2010 :1300                      2011 : 1300                      2012 : 1300                      2013 :1300                      2014 :1300

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

- 1890 Extension



#### 4. Associated Knowledge Area(s)

- 806 - Youth Development

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

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

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

##### Description

Changing market demands for aquaculture products, media coverage of aquaculture related developments, fish prices and demand, equipment failure - Factors affecting overall profitability of fish culture such as fuel costs, weather, competition and consumer demand for alternative species.

Global economic situation changes, regulatory laws change

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

##### 1. Evaluation Studies Planned

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

##### Description

##### 2. Data Collection Methods

- On-Site
- Observation
- Sampling

##### Description

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

**Program #17**

**1. Name of the Planned Program**

Improving Largemouth Bass Fishing in the Arkansas River

**2. Brief summary about Planned Program**

This program will assess the largemouth bass population in the Arkansas River to answer critical questions of our fisheries management stakeholder, The Arkansas Game and Fish Commission.

**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
134	Outdoor Recreation		0%		100%
	<b>Total</b>		0%		100%

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

**1. Situation and priorities**

In recent years, the Arkansas Game and Fish Commission (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. AGFC has little fisheries data collected from the river, especially outside of Lake Dardanelle. AGFC desired a comprehensive stock assessment of largemouth bass in the different pools of the lower Arkansas River. The Commission 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 help the AGFC with assessment, to suggest methods for improvement of the largemouth bass population, and to monitor the effects of management decisions.

Priorities - The Arkansas Game and Fish Commission would like to determine whether hatchery-reared fingerlings stocked into pools of the Arkansas River replace or supplement wild produced largemouth bass fingerlings. We have assessed contribution of stocked largemouth bass fingerlings to year classes in the Arkansas River in previous research. We can design and execute research that would indicate the possible effects of stocked fingerlings on the wild population. Arkansas Game and Fish Commission (AGFC) has been collecting fish samples from rotenone samplings across the pools of Arkansas rivers and lakes since 1971. The long term data sets can provide quantitative measures on fish abundance in the habitats. However, the data has not been closely examined or analyzed for scientific research and fisheries management. It's partly due to a negative perception about the reliability of rotenone data. The proposed study will be the first attempt to make careful examinations of the Arkansas rotenone data set for checking the variability of data as well as the comparison with electrofishing data for black bass species in some matched areas. Owing to longterm collection of data, it would be possible to assess the temporal pattern of fish populations in Arkansas.

Assessment of the variability of rotenone data for major sport fish species in selected Arkansas water bodies to examine the reliability of data for scientific researches.

Comparison between rotenone data and electrofishing data for black bass species for the effectiveness of different sampling methods.

Assess the long-term pattern of fish populations and its relationship with external environmental factors.

**2. Scope of the Program**

- In-State Research

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

**1. Assumptions made for the Program**

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

But in the absence of any supporting data, a comprehensive baseline stock assessment is warranted that encompasses the biological and user aspects of the fishery

Any management recommendations from this research are subject to intra-agency approval and adoption by AGFC. AGFC will stock bass if it can be demonstrated that stocked bass actually supplement wild populations. Stocking largemouth bass will enhance recreational fishing in the Delta. AGFC might consider harvest regulation changes if the warranted by research.

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

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 representatives pools

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 guidelines 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
2010	0.0	0.1	0.0	0.9
2011	0.0	0.1	0.0	0.9
2012	0.0	0.1	0.0	0.9
2013	0.0	0.1	0.0	0.9
2014	0.0	0.1	0.0	0.9

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

**1. Activity for the Program**

Creel surveys during 2007-2009 in two pools 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 length limit and no maximum length limit yield

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

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Other 1 (PowerPoint Presentations)</li> <li>● One-on-One Intervention</li> </ul>	<ul style="list-style-type: none"> <li>● Web sites</li> <li>● Other 1 (Posters)</li> <li>● Other 2 (Extension Publications)</li> <li>● Newsletters</li> </ul>

**3. Description of targeted audience**

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

**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 Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	0	0	0	0
2011	0	0	0	0
2012	5	50	0	0
2013	5	50	0	0
2014	25	50	0	0

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

**Expected Patent Applications**

2010 :1                      2011 :1                      2012 :0                      2013 :0                      2014 :0

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	0	0	0
2014	0	0	0

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

**1. Output Target**

- Number of Abstracts

	2010 ‡	2011 §	2012 :‡	2013 ‡	2014 0
● Number of Presentations					
	2010 ‡	2011 §	2012 :‡	2013 ‡	2014 0
● Number of Refereed Journal Articles					
	2010 ‡	2011 §	2012 :‡	2013 :‡	2014 :‡
● Number of Research Reports Submitted to Stakeholders					
	2010 :‡	2011 §	2012 :0	2013 0	2014 0
● Number of Non-peer Reviewed Publications					
	2010 :‡	2011 §	2012 :0	2013 0	2014 0
● Number of Peer Reviewed Publications					
	2010 :‡	2011 §	2012 :0	2013 0	2014 0

**V(I). State Defined Outcome**

<b>O. No</b>	<b>Outcome Name</b>
1	The percent of AGFC fisheries biologists and managers that are informed about use of rotenone samples for scientific research topics through scientific meetings and conferences
2	Percent of AGFC fisheries biologists and managers who use the study results to solve management issues
3	Number of tournament largemouth bass anglers that learned what we know
4	Number of recreational anglers that learned what we know
5	Number of non-agency fisheries biologists that use what we know
6	Percent reduction in complaints to the AGFC regarding largemouth bass in the Arkansas River
7	Percent increase in largemouth bass tournaments on the Arkansas River
8	Number of AGFC personnel that learned what we know
9	Number of non-agency fisheries biologists that learned what we know
10	Number of AGFC personnel that use what we know

**Outcome #1**

**1. Outcome Target**

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

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

**2010** :120                      **2011** : 130                      **2012** : 100                      **2013** :100                      **2014** :100

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

•1890 Research

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

- 134 - Outdoor Recreation

**Outcome #2**

**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

**2010** :47                      **2011** : 57                      **2012** : 65                      **2013** : 65                      **2014** :50

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

•1890 Research

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

- 134 - Outdoor Recreation

**Outcome #3**

**1. Outcome Target**

Number of tournament largemouth bass anglers that learned what we know

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

**2010** :30                      **2011** : 30                      **2012** : 30                      **2013** : 30                      **2014** :30

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

•1890 Research

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

- 134 - Outdoor Recreation

**Outcome #4**

**1. Outcome Target**

Number of recreational anglers that learned what we know

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

**2010** :50                      **2011** : 50                      **2012** : 50                      **2013** : 50                      **2014** :30

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

•1890 Research

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

- 134 - Outdoor Recreation

**Outcome #5**

**1. Outcome Target**

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

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

**2010** #0                      **2011** : 40                      **2012** : 40                      **2013** #0                      **2014** :40

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

•1890 Research

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

- 134 - Outdoor Recreation

**Outcome #6**

**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

**2010** 2                      **2011** : 2                      **2012** : 2                      **2013** 2                      **2014** :2

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

•1890 Research

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

- 134 - Outdoor Recreation

**Outcome #7**

**1. Outcome Target**

Percent increase in largemouth bass tournaments on the Arkansas River

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

**2010** 3                      **2011** : 3                      **2012** : 3                      **2013** 3                      **2014** :5

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

•1890 Research

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

- 134 - Outdoor Recreation

**Outcome #8**

**1. Outcome Target**

Number of AGFC personnel that learned what we know

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

**2010** 30                      **2011** : 30                      **2012** : 30                      **2013** 30                      **2014** :30

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

•1890 Research

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

- 134 - Outdoor Recreation



**Outcome #9**

**1. Outcome Target**

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

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

**2010** :40                      **2011** : 40                      **2012** : 40                      **2013** :40                      **2014** :40

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

- 1890 Research

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

- 134 - Outdoor Recreation

**Outcome #10**

**1. Outcome Target**

Number of AGFC personnel that use what we know

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

**2010** :7                      **2011** : 7                      **2012** : 7                      **2013** :7                      **2014** :7

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

- 1890 Research

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

- 134 - Outdoor Recreation

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

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

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

**Description**

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  
 Funding availability .Natural disasters .Economy .Public policy .Government Regulations .Competing Public Priorities  
 The rotenone sample collection has been conducted in a consistent manner to avoid any sampling bias.  
 AGFC scientists and managers will be willing to continue to share the rotenone data and other information even if preliminary analyses indicate negative results about the rotenone data quality and rotenone sampling method.  
 Fisheries managers have to consider other socioeconomic factors in the process of determination of fisheries management plans. Thus the study results would not effectively influence the fisheries management decision makings, regardless of quality of the research outcomes.

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

**1. Evaluation Studies Planned**

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

**Description**

Interview key biologists with AGFC to assess degrees to which results are being used

## 2. Data Collection Methods

- Observation
- Sampling
- Case Study

### Description

Track where specific results are being used towards what management objectives for AGFC  
Conduct case study of how research is being coordinated through state black bass biologists

**V(A). Planned Program (Summary)****Program #18****1. Name of the Planned Program**

Water and Environmental Quality

**2. Brief summary about Planned Program**

The United States is the world's second largest producer, consumer, exporter, and importer of pork and pork products. These hogs generate an estimated 120 million to 200 million tons of solid waste per year. Surface water quality associated with swine waste is a key concern for many small farmers in the Southern U.S. 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 waste water. The specific research objectives of this project are:

- 1) Monitor and compare long-term water quality in the swine waste treatment system lagoon prior to transport to near-by constructed wetland cell,
- 2) Hach test-in-tube total nitrogen and total phosphorus tests will be used to analyze water samples. Comparisons of inlet and outlet samples will be conducted
- 3) Monitor and validate beginning and ending water quality associated with treated lagoon effluent from constructed wetland cells planted with a nutrient reducing hydrophyte (*Canna* spp.).

The specific Extension objectives of this project are:

- 1) Utilize the Swine Waste Treatment System and Constructed Wetland System as public outreach/demonstration examples for local farmers,
- 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.

In addition to the above water quality methodology, *Canna* spp. will be analyzed for nitrogen and phosphorus at the end of the growing season. Total nitrogen will be analyzed using the combustion method. Phosphorus will be analyzed using the colorimetry method. Comparisons of inlet and outlet water quality will be made from year to year. Future work will include the use of different wetland plants in the constructed wetland, air quality and cut plant production evaluations. Preliminary work has focused on the preparation of *Canna* spp. seeds for planting. We found that the most effective technique for preparing *Canna* spp. seeds, is an acid bath immersion. This method may easily be used to prepare large numbers of seeds for planting with high germination percentages. Extension objectives will be address in sequence to the research program.

**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%		20%
133	Pollution Prevention and Mitigation		20%		20%
204	Plant Product Quality and Utility (Preharvest)		20%		20%
403	Waste Disposal, Recycling, and Reuse		20%		20%
	<b>Total</b>		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.

#### 2. Scope of the Program

- 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.

#### 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.

**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
2010	0.0	0.5	0.0	0.5
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

**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.

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

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Workshop</li> <li>● Demonstrations</li> </ul>	<ul style="list-style-type: none"> <li>● Web sites</li> <li>● Other 1 (Fact Sheets)</li> <li>● TV Media Programs</li> </ul>

**3. Description of targeted audience**

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

**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 Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	111	206	56	56
2011	112	207	57	57
2012	113	208	58	58
2013	114	209	59	59
2014	115	210	60	60

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

**Expected Patent Applications**

2010 :0                      2011 :0                      2012 :0                      2013 :0                      2014 :0

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2010	0	1	1
2011	1	0	1
2012	0	1	1
2013	1	0	1
2014	0	1	1

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

**1. Output Target**

- Complete one peer reviewed research article every two years.

2010 :0                      2011 :1                      2012 :0                      2013 :1                      2014 :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.

2010 :5                      2011 :5                      2012 :5                      2013 :5                      2014 :5

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

2010 :1                      2011 :1                      2012 :1                      2013 :1                      2014 :1

**V(I). State Defined Outcome**

<b>O. No</b>	<b>Outcome Name</b>
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.

**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

<b>2010</b> 2	<b>2011</b> : 2	<b>2012</b> : 2	<b>2013</b> 2	<b>2014</b> :2
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**3. Associated Institute Type(s)**

- 1890 Extension
- 1890 Research

**4. 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

**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

<b>2010</b> 2	<b>2011</b> : 2	<b>2012</b> : 2	<b>2013</b> 2	<b>2014</b> :2
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**3. Associated Institute Type(s)**

- 1890 Extension
- 1890 Research

**4. 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

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

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

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

**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.

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

**1. Evaluation Studies Planned**

- 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

- Observation
- Sampling

### 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. Each 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 #19**

**1. Name of the Planned Program**

Cropping Systems

**2. Brief summary about Planned Program**

Demonstrations will be conducted on a working farm by using multiple acre plots rather than using small plot sizes as is customarily done in agronomic research. The demonstrations will utilize conservation tillage verses conventional tillage, level basin soybean production verses soybean production on a field with a 0.1 ft. /100 ft. grade and the use of round-up ready soybeans verses conventional soybeans during each of the next five years. A comparative analysis will be conducted to show how utilizing these practices as Best Management Practices (BMPs) can improve the bottom line for producers. This information will be a valuable teaching tool during biennial field days as well as ad hoc site visits by farmers to the University’s Pearlie S. Reed and Robert L. Cole Small Farm Outreach Wetland and Water Management Center (SFO-WWMC). Experience has shown that farmers are more likely to adopt the practices if they can see them in operation and see an increased profit margin as compared to their normal practices.

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

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

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

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

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

**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
205	Plant Management Systems		100%		0%
	<b>Total</b>		100%		0%

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

**1. Situation and priorities**

Limited Resource Farmers (LRF) and Socially Disadvantaged Farmers (SDF) must become efficient in their row crop operations if they intend to stay in business. The small profit margins in wheat and soybean crops that are often grown by these farmers mean that these farmers must maximize their yields to show a profit. However, these farmers usually do not produce yield that are on par with larger farmers. One reason for this is that LRF and SDF are slow to adopt Best Management Practices (BMPs) at the same rate that larger farmers do. This fact places LRF and SDF at a decided disadvantage and places them in danger of losing their livelihood. If they are unable to make a living, the farmers and their families may place an additional burden on society and reduce the diversity in our American agricultural system.

**2. Scope of the Program**

- In-State Extension

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

**1. Assumptions made for the Program**

The benefits of conservation tillage have been shown in many parts of the nation; however, its adoption in Arkansas has

been slow as compared to Midwestern states. Demonstrating that conservation tillage improves the bottom line and helps to conserve soil should help farmers change their minds about the practice. Likewise, if level basin soybean production and/or using round-up ready soybeans are proven to be economically viable; LRF and SDF are likely to adopt these practices.

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

1. The adoption of two or more of the demonstrated BMPs by LRF and/or SDF in the Arkansas delta to improve crop yields. This will lead to reduced environmental contamination by pesticides. 2. The development of enterprise budgets for wheat, soybeans and rice production that show differences in conventional production practices vs. BMPs.

**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
2010	0.0	2.3	0.0	0.5
2011	0.0	2.3	0.0	0.5
2012	0.0	2.3	0.0	0.5
2013	0.0	2.3	0.0	0.5
2014	0.0	2.3	0.0	0.5

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

**1. Activity for the Program**

Demonstrations on BMPs will be conducted at the SFO-WWMC site. Field days will be held to present findings and show demonstrations at the SFO-WWMC. Relevant information will be provided to field day participants and to other interested individuals.

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

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Other 1 (field Days)</li> <li>● Workshop</li> </ul>	<ul style="list-style-type: none"> <li>● Web sites</li> <li>● Other 1 (Annual Reports)</li> </ul>

**3. Description of targeted audience**

LRF and SDF serviced by the UAPB as well as other farmers who attend field days and/or visit the SFO-WWMC. Other audiences include policy makers, Extension educators, Natural Resources Conservation Service employees, U. S. Army Corps of Engineers employees, home owners and the general public.

**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 Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	500	1000	400	400
2011	500	1000	400	400
2012	500	1000	400	400
2013	400	1000	100	100
2014	1000	1000	100	100

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

**Expected Patent Applications**

2010 :0                      2011 :0                      2012 :0                      2013 :0                      2014 :0

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	0	0	0
2014	0	0	0

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

**1. Output Target**

- 1. The number of site visits by farmers

2010 :40                      2011 :40                      2012 :40                      2013 :40                      2014 :40

- 2. The number of participants that attend field days

2010 :200                      2011 :0                      2012 :200                      2013 :0                      2014 :200

- 3. Number of fact sheets developed

2010 :4                      2011 :4                      2012 :3                      2013 :3                      2014 :2

- 4. Annual Reports

2010 :1                      2011 :1                      2012 :1                      2013 :1                      2014 :1

- 5. Number of presentations made at meetings for interested groups

2010 :10                      2011 :10                      2012 :10                      2013 :10                      2014 :10

**V(I). State Defined Outcome**

<b>O. No</b>	<b>Outcome Name</b>
1	Short term outcome will be measured by the number of LRF and SDF that attend field days and observe BMP demonstrations and the knowledge gained by participants.
2	Long term outcome will be measured by the number of LRFs and SDFs that adopt 1 or more BMP

**Outcome #1****1. Outcome Target**

Short term outcome will be measured by the number of LRF and SDF that attend field days and observe BMP demonstrations and the knowledge gained by participants.

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

2010 :40                      2011 : 30                      2012 : 40                      2013 30                      2014 :40

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

- 1890 Extension
- 1890 Research

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

- 205 - Plant Management Systems

**Outcome #2****1. Outcome Target**

Long term outcome will be measured by the number of LRFs and SDFs that adopt 1 or more BMP

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

2010 :40                      2011 : 40                      2012 : 40                      2013 :40                      2014 :40

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

- 1890 Extension
- 1890 Research

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

- 205 - Plant Management Systems

**V(J). Planned Program (External Factors)****1. External Factors which may affect Outcomes**

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

**Description**

Many LRF and SDF are farming under dry land conditions this makes them susceptible to drought conditions and their yield is usually not comparable to that of farmers using irrigation. These farmers have limited resources to provide the necessary inputs into their farming operation; therefore borrowing operating capital. Sometimes borrowing creates a problem because some farmers have poor credit. These factors are likely to affect their rate of BMP adoption. Public policy changes often affect farming operations and budget considerations for federal and local budgets. Likewise, a shift in priorities for the Extension program locally influences the type of programs that are to be offered.

**V(K). Planned Program (Evaluation Studies and Data Collection)****1. Evaluation Studies Planned**

- During (during program)

**Description**

A survey will be given to LRF and SDF who attend field days to determine their interest in adopting BMPs. Comments and feedback will be solicited from individuals and groups that tour

## 2. Data Collection Methods

- On-Site
- Observation

### Description

The 2501 staff assists most of the LRF and SDF in the state of Arkansas. The staff members help the farmers to prepare their loan applications. The 2501 staff will be asked to survey farmers to determine their adoption of BMPs.

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

**Program #20**

**1. Name of the Planned Program**

Farm Pond and Community Fishing Pond Management

**2. Brief summary about Planned Program**

This program addresses priority issues for the 100,000 owners of small impoundments in Arkansas, from both research and Extension perspectives. Priority issues include improved fish population structures, fewer aquatic weed problems, and improved fishing.

**3. Program existence :** Mature (More than 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
134	Outdoor Recreation		50%		50%
307	Animal Production Management Systems		50%		50%
	<b>Total</b>		100%		100%

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

**1. Situation and priorities**

There are about 100,000 small impoundments in Arkansas. Sunfish and crappie often stunt at at small size in these ponds due to limited predatory control. Hybrid striped bass (HSB) prefer small prey, and may reduce prey populations so that stunting is prevented. Thus, HSB could be used to improve sunfish and crappie fisheries and to provide a new sport fish in ponds.

- To measure HSB survival in farm ponds
- To evaluate HSB prey selection
- To determine predatory effects of HSB in farm ponds

• To determine impacts of additional competition on consistently lower than the national average for groups such as females, African-Americans, and urban residents. A possible solution to the decline is to target underrepresented groups with fishing education programs such as Arkansas Game and Fish Commission's (AGFC) Family and Community Fish Program (FCFP), Fishing Derby Program (FDP), and Hooked on Fishing, Not on Drugs Programj (HOFNOD). However, little evaluation of these programs has been conducted. •To determine appropriate stocking frequencies for put-take species. •To assess the effect of the FDP on fishing activity at derby locations. •To monitor HOFNOD instructors and evaluate program components. •To evaluate new species for put-take fisheries. •To assess participant demographics, attitudes, and success. •To evaluate the overall impact of the FCFP on angler recruitment. There are about 100,000 ponds and small impoundments in Arkansas, many of which provide significant fisheries resources to the state. However, management of these resources often proceeds without the proper guidance, largely due to inadequate distribution of educational materials. This Extension programis designed to improve distribution of pond management information. •To respond to Extension Eductor requests. •To support pond owner management needs. •To produce timely media releases on pond management. •To produce and maintain on-line information resources for ponds. •To design fact sheets and other necessary media.



**2. Scope of the Program**

- Integrated Research and Extension

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

**1. Assumptions made for the Program**

• HSB will grow and survive in Arkansas farm ponds. •HSB will eat pond prey species. •Pond owners will use HSB if recommended. •External funding will be maintained. •AGFC will adhere to experimental designs. •County Agents will facilitate distribution.

- Management recommendations will be followed.

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

Produce effective management recommendations for using HSB in ponds for prey control and fishery diversification. To enhance angler recruitment in Arkansas. Improve pond management in the state of Arkansas.

**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
2010	0.0	0.8	0.0	0.0
2011	0.0	0.8	0.0	0.0
2012	0.0	0.8	0.0	0.0
2013	0.0	0.8	0.0	0.0
2014	0.0	0.8	0.0	0.0

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

**1. Activity for the Program**

Research Activities Include:

• Assessment of HSB requirements for water hardness in Arkansas farm ponds based on survival post-stocking using cage studies

- HSB prey selection and competition with largemouth bass
- Growth and condition of HSB under different prey communities •Influence of HSB on prey communities at two sticking densities.

Extension Activities Include:

• HOFNOD teacher workshops •AGFC training •Assist AGFC with instructional activities and evaluation design •Organize and conduct Urban Fishing Symposium Extension activities include: •Conduct pond workshops and lectures •Maintain Farm Pond Management Website •Produce Farm Pond fact sheets and other resources •Write farm pond articles •Write and distribute monthly press releases for Extension Educator use

- Conduct online and hands-on in-service training for Extension Educators

Disseminate existing information through mass media, fact sheets, direct electronic communications, group presentations, and individual contacts with clientele.

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

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Other 1 (Educational meetings)</li> <li>● One-on-One Intervention</li> <li>● Other 2 (Farm demonstrations)</li> </ul>	<ul style="list-style-type: none"> <li>● Newsletters</li> <li>● Other 1 (Posters)</li> <li>● Other 2 (Extension Publications)</li> <li>● Web sites</li> </ul>

**3. Description of targeted audience**

Commercial HSB producers Private impoundment owners and managers Extension Educators AGFC AR potential/current anglers HOFNOD instructors

County Extension Agents, pond managers, natural resource managers

**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 Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	1890	12300	0	0
2011	1890	12300	0	0
2012	1890	12300	0	0
2013	1890	12300	0	0
2014	610	3240	0	0

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

**Expected Patent Applications**

2010 :0                      2011 :0                      2012 :0                      2013 :0                      2014 :0

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	0	0	0
2014	0	0	0

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

**1. Output Target**

- Number of project annual and final reports

	2010	2011	2012	2013	2014
● Number of presentations and scientific meetings	2	2	2	2	0
● Number of published abstracts	0	2	:1	:1	:1
● Number of refereed journal articles	0	2	:1	:1	:1

**V(I). State Defined Outcome**

<b>O. No</b>	<b>Outcome Name</b>
1	Number of research recommendations transferred to AGFC staff
2	Increase in fishing license sales in cities with AGFC programs
3	Increase in ponds that are designed, stocked, and managed correctly
4	Reduced number of pond problems
5	Percent increase in contacts rearing hybrid striped bass
6	Percent increase in sales for sport fishing
7	Number of farm pond owners implementing improved weed control
8	Number of farm pond owners learning how to control aquatic weeds
9	Number of farm pond owners experiencing fewer problems with aquatic weeds

**Outcome #1**

**1. Outcome Target**

Number of research recommendations transferred to AGFC staff

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

**2010 :** 4                      **2011 :** 4                      **2012 :** 1                      **2013 :** 1                      **2014 :** 1

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

•1890 Research

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

- 134 - Outdoor Recreation

**Outcome #2**

**1. Outcome Target**

Increase in fishing license sales in cities with AGFC programs

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

**2010 :** 100                      **2011 :** 100                      **2012 :** 75                      **2013 :** 75                      **2014 :** 0

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

•1890 Extension

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

- 134 - Outdoor Recreation

**Outcome #3**

**1. Outcome Target**

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

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

**2010 :** 50                      **2011 :** 50                      **2012 :** 50                      **2013 :** 50                      **2014 :** 30

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

•1890 Extension

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

- 134 - Outdoor Recreation

**Outcome #4**

**1. Outcome Target**

Reduced number of pond problems

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

**2010 :** 25                      **2011 :** 25                      **2012 :** 25                      **2013 :** 25                      **2014 :** 15

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

•1890 Research

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

- 134 - Outdoor Recreation

**Outcome #5**

**1. Outcome Target**

Percent increase in contacts rearing hybrid striped bass

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

**2010 :**10                      **2011 :** 10                      **2012 :** 10                      **2013 :**10                      **2014 :**10

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

- 1890 Extension
- 1890 Research

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

- 134 - Outdoor Recreation

**Outcome #6**

**1. Outcome Target**

Percent increase in sales for sport fishing

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

**2010 :**10                      **2011 :** 10                      **2012 :** 10                      **2013 :**10                      **2014 :**0

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

- 1890 Extension

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

- 134 - Outdoor Recreation

**Outcome #7**

**1. Outcome Target**

Number of farm pond owners implementing improved weed control

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

**2010 :**30                      **2011 :** 30                      **2012 :** 30                      **2013 :** 30                      **2014 :**30

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

- 1890 Extension

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

- 307 - Animal Production Management Systems

**Outcome #8**

**1. Outcome Target**

Number of farm pond owners learning how to control aquatic weeds

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

**2010 :**100                      **2011 :** 100                      **2012 :** 100                      **2013 :**100                      **2014 :**100

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

- 1890 Research

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

- 307 - Animal Production Management Systems

**Outcome #9**

**1. Outcome Target**

Number of farm pond owners experiencing fewer problems with aquatic weeds

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

**2010** 20

**2011** :20

**2012** : 20

**2013** 20

**2014** :20

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

- 1890 Extension

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

- 307 - Animal Production Management Systems

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

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

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

**Description**

(predation of stocked HSB; low survival of stocked fish; HSB do not control prey AGFC participation, AGFC implementation of management recommendations. Server failure, weather, computer viruses, Educator or manager failure to follow recommendations)

Weather-related fish kills; poaching

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

**1. Evaluation Studies Planned**

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

**Description**

**2. Data Collection Methods**

- Other (Survey of farm pond owners)

**Description**

A formal evaluation study is planned for 2010-2011

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

**Program #21**

**1. Name of the Planned Program**

1890 Family and Child Development Program

**2. Brief summary about Planned Program**

Two programs will be implemented in the 1890 Family and Child Development Program: Teens on the Go and the Young Scholars. Teens on the Go is a newsletter series for students in grades 7-12. Six issues of the newsletter is offered each year. The program is a partnership between the 1890 Family and Child Development Program and the 1862 Cooperative Extension Service. The newsletter celebrated its 30th anniversary in 2008. The Young Scholars program is an after school program conducted in housing projects for low-income minority children, age 6-15 and their parents. The purpose of the program is to reverse the poor academic trends of minority children and help them succeed in school.

**3. Program existence :** Mature (More than 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
802	Human Development and Family Well-Being		40%		0%
806	Youth Development		60%		0%
	<b>Total</b>		100%		0%

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

**1. Situation and priorities**

Public officials and citizens in general in Arkansas continue to be concerned about the well-being of the state's children and their families. Forty-seven percent of the state's minority children live in single parent homes. They are more likely to be poor and are being raised without the support of a father. Family and child development programs address these issues and offer solutions to make life better for all family members.

**2. Scope of the Program**

- In-State Extension

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

**1. Assumptions made for the Program**

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. Teenagers receiving Teens on the Go are expected to develop decision making skills for dealing with critical issues they face. Children enrolled in the Young Scholars are expected to increase school performance and avoid becoming school dropouts.



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

1. To help teenagers make better decisions regarding critical issues they face. 2. To develop the capacity of low-income minority parents to create an environment that will enhance the development of their children. 3. To help low-income minority children increase school performance and avoid dropping out of school.

**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
2010	0.0	1.1	0.0	0.0
2011	0.0	1.1	0.0	0.0
2012	0.0	1.1	0.0	0.0
2013	0.0	1.1	0.0	0.0
2014	0.0	1.1	0.0	0.0

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

**1. Activity for the Program**

Two focused programs will be addressed in the 1890 Family and Child Development Program. These include Teens on the Go and the Young Scholars Program. The Teens on the Go is a newsletter series that will be developed for students in grades 7-12. The Young Scholars Program will be implemented in a housing project in Brinkley. The children will meet 5-days a week in an after school program that emphasizes math and science skills through human sciences and agriculture subject matter. Parents with children enrolled in the Young Scholars Program will meet weekly and focus on parenting education, stress management, coping, and job-related skills, family relationships, and economic- and self-sufficiency skills.

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

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Workshop</li> <li>● Group Discussion</li> <li>● Education Class</li> <li>● Demonstrations</li> </ul>	<ul style="list-style-type: none"> <li>● Newsletters</li> </ul>

**3. Description of targeted audience**

The target audience in the 1890 Family and Child Development focused programs will include: Teenagers in grades 7-12 for the newsletter, Teens on the Go. Parents and their children who live in a housing project in Monroe County for the Young Scholars Program.

**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 Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	45	0	55	10000
2011	45	0	55	10000
2012	45	0	55	10000
2013	45	0	55	10000
2014	45	0	55	10000

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

**Expected Patent Applications**

2010 :0                      2011 :0                      2012 :0                      2013 :0                      2014 :0

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	0	0	0
2014	0	0	0

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

**1. Output Target**

- We will provide math and science workshops for children in the Young Scholars Program.

2010 55                      2011 55                      2012 :55                      2013 55                      2014 55

- Parents will receive training in parenting, stress management, money mangement, child development, and job-related and coping skills.

2010 45                      2011 45                      2012 :45                      2013 45                      2014 45

- Write 6 issues of Teens on the Go for students in grades 7-12.

2010 6                      2011 6                      2012 :6                      2013 6                      2014 6

**V(I). State Defined Outcome**

<b>O. No</b>	<b>Outcome Name</b>
1	Forty-five percent of children in the Young Scholars Program will have an increase in school performance
2	Thirty percent of families will report being able to meet the financial obligations of their families.
3	Total contact with Arkansas teens will be 10000 through Teens on the Go.

**Outcome #1**

**1. Outcome Target**

Forty-five percent of children in the Young Scholars Program will have an increase in school performance

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

**2010** :55                      **2011** : 55                      **2012** : 55                      **2013** : 55                      **2014** :55

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

•1890 Extension

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

- 802 - Human Development and Family Well-Being
- 806 - Youth Development

**Outcome #2**

**1. Outcome Target**

Thirty percent of families will report being able to meet the financial obligations of their families.

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

**2010** :45                      **2011** : 45                      **2012** : 45                      **2013** :45                      **2014** :45

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

•1890 Extension

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

- 802 - Human Development and Family Well-Being
- 806 - Youth Development

**Outcome #3**

**1. Outcome Target**

Total contact with Arkansas teens will be 10000 through Teens on the Go.

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

**2010** :10000                      **2011** : 10000                      **2012** : 10000                      **2013** :10000                      **2014** :10000

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

•1890 Extension

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

- 806 - Youth Development

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

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

- Populations changes (immigration,new cultural groupings,etc.)
- Appropriations changes
- Economy

**Description**

The changing economy with loss of jobs could definitely affect outcomes for parents enrolled in the program. A decrease in appropriations would alter the numbers of persons served. With the influx of immigrants coming into the state, the population in the housing projects could affect who will be served.

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

### **1. Evaluation Studies Planned**

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

#### **Description**

A pre and post test will be given at the beginning of each unit in the Young Scholars Program for both youth and adults. Parents will also provide self-reporting on some activities in the program. An incomplete sentence form will be utilized with the newsletter series.

### **2. Data Collection Methods**

- Other (Self-reporting)
- Case Study
- On-Site
- Observation
- Sampling

#### **Description**

Data collection methods will include targeted sampling, incomplete sentences, case studies, observations and self-reporting.

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

**Program #22**

**1. Name of the Planned Program**

1890 Arkansas Ag Adventures - Agricultural Awareness

**2. Brief summary about Planned Program**

The 1890 Arkansas AG Adventures is a hands-on, outdoor, agricultural education program. It is a collaborative effort between the University of Arkansas at Pine Bluff (UAPB) and the University of Arkansas Division of Agriculture Cooperative Extension Service. Special focus is given to 4-H leadership skills, career building, and science education as they relate to agriculture, food, natural resources, and the environment.

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

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

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

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

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

**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
806	Youth Development		100%		0%
	<b>Total</b>		100%		0%

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

**1. Situation and priorities**

Arkansas is a diverse state that depends on a strong agricultural 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, and our climate and topography make it well suited for the production of a broad spectrum of commodities. Nationally, Arkansas ranks first in the production of rice and second in the production of broilers. Arkansas is also highly ranked in the production of catfish, turkey, cotton and soybeans.

Although Arkansas depends on agriculture, it is seldom taught in elementary or secondary schools. Along with the fact that most children are two to three generations away from the farm, there is an increasing need for agricultural awareness. Producer Focus Groups and results from the Farm Crisis Survey both identified a significant need, particularly with children and young people, for an increase in factual public information and education regarding production agriculture. In response, a center to teach youth about agriculture was established on the University of Arkansas at Pine Bluff Small Farm Outreach and Water Management Center in Lonoke, Arkansas.

Children learn a variety of science subjects as they relate to agriculture, food, natural resources and the environment through hands-on lessons and other activities at the center. Participants came from both rural or urban schools. Home schooled students are direct beneficiaries of our programs and services. The program also provides in-school visits to schools that may not be able to send children to the center due to cost or travel restraints.

**2. Scope of the Program**

- In-State Extension

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

**1. Assumptions made for the Program**

Children in today's schools are the decision makers of tomorrow. As such, they need to learn about the natural world that exists around them and about basic issues which will impact on their food supply and environmental quality. Receiving vibrant challenging hands-on instruction about agriculture and its importance is a relevant learning experience for these future decision makers, especially those in urban areas.

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

To increase and improve understanding of agriculture and ultimately encourage more youth to seek careers in the fields of agriculture, science, math, engineering, and technology.

To increase and improve the understanding of agriculture and its benefits to the general public.

**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
2010	0.0	0.3	0.0	0.0
2011	0.0	0.3	0.0	0.0
2012	0.0	0.3	0.0	0.0
2013	0.0	0.3	0.0	0.0
2014	0.0	0.3	0.0	0.0

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

**1. Activity for the Program**

Activities include field days at the UAPB Small Farm Outreach and Water Management Center, camps at the Arkansas 4-H Center, exhibits and displays at the educational fairs and conferences, and community and classroom workshops in multiple locations throughout the state.

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

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Demonstrations</li> <li>● Workshop</li> <li>● Education Class</li> <li>● One-on-One Intervention</li> <li>● Group Discussion</li> </ul>	<ul style="list-style-type: none"> <li>● Web sites</li> </ul>

**3. Description of targeted audience**

Although all youth and adults can be a part of the program, special emphasis is given to youth in grades 4-6 and their formal educators. In addition to school children, large number of home school students participate in the program and activities of the center

**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 Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	130	10	2750	200
2011	140	10	3000	200
2012	150	10	3250	200
2013	160	10	3500	200
2014	170	10	3550	200

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

**Expected Patent Applications**

2010 :0                      2011 :0                      2012 :0                      2013 :0                      2014 :0

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2010	0	0	0
2011	0	0	0
2012	0	0	0
2013	0	0	0
2014	0	0	0

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

**1. Output Target**

- Number of Participants in the 1890 Arkansas Ag Adventures workshops and other non-formal educational programs

2010 2750                      2011 3000                      2012 3250                      2013 3500                      2014 3550

- Number of groups that participate in farm field day

2010 12                      2011 15                      2012 17                      2013 20                      2014 23



**V(I). State Defined Outcome**

<b>O. No</b>	<b>Outcome Name</b>
1	To increase the understanding of agriculture and its benefits to the general public.
2	The number of youth that choose agriculture as a career or course of study in college.

**Outcome #1**

**1. Outcome Target**

To increase the understanding of agriculture and its benefits to the general public.

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

**2010 :**450                      **2011 :** 500                      **2012 :** 550                      **2013 :** 600                      **2014 :**640

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

- 1890 Extension

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

- 806 - Youth Development

**Outcome #2**

**1. Outcome Target**

The number of youth that choose agriculture as a career or course of study in college.

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

**2010 :** 2                      **2011 :** 3                      **2012 :** 4                      **2013 :** 5                      **2014 :** 6

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

- 1890 Extension

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

- 806 - Youth Development

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

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

- Public Policy changes
- Competing Public priorities
- Economy
- Government Regulations
- Competing Programmatic Challenges
- Appropriations changes

**Description**

Since this program targets students and formal educators, any changes in frameworks and/or school policies can affect the number of programs/field trips that can be allowed for schools. Another factor could be competition from non-educational agri-tourism events such as corn maizes.

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

**1. Evaluation Studies Planned**

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

**Description**

Effectiveness of program on knowledge content management.  
Effectiveness of program and logistics.

## 2. Data Collection Methods

- Whole population
- Observation
- Unstructured
- Other (notes and drawings)
- On-Site

### Description

Pre-Post tests are given to youth who participate in camps that last more than one day. Assessment tools such as thank you notes and drawings will be used for informal camps one day or less.

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

**Program #23**

**1. Name of the Planned Program**

Family Resource Management

**2. Brief summary about Planned Program**

The state of personal finances of U.S. households is often described as dismal and the solutions to change behavior as daunting. Published reports estimate that household debt has almost tripled since 1980, the personal savings rate of Americans is the lowest in 60 years, 20% of workers would not be able to make a mortgage, utility or credit card payment if they missed a paycheck and nearly 70% of all consumers live from paycheck to paycheck.

However, experts generally agree that everyone can become a stronger money manager regardless of their level of income or financial situation. The primary goal of the 1890 family resource management program is to enhance the ability of limited resource individuals and families to make informed consumer decisions and to plan and manage their finances throughout their changing lifecycle.

The specific program activities include providing training utilizing best practices in the field, developing tailored print media publications for low skilled audiences and using other forms of media to reach audiences, building on and creating partnerships with other agencies and organizations to expand outreach, implementing a research agenda to strengthen knowledge base and to encourage positive changes in financial behavior, involving target audiences in program development to strengthen impact, marketing program and conducting resource development activities for sustainability. This program requires a long-term commitment on the part of the university and target audiences.

**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
801	Individual and Family Resource Management		100%		0%
	<b>Total</b>		100%		0%

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

**1. Situation and priorities**

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 for limited-resource individuals, families and small land/property owners who are the primary audiences for this program. First, it is well documented that individuals and families increasingly rely on credit in financial emergencies and for making major purchases which reduces the availability of future income for economic well-being and security. Second, limited resource audiences are targets for subprime financial products and services that limit their ability to manage finances effectively in the short-term over their lifecycle. Thirdly, the rate of loss of real estate assets among small land and property owners in comparison to the general population is alarming. Therefore, there is a need for estate planning educational information and products that meet the needs of small land and property owners to allow the transition of assets as desired and with limited financial hardships.

The priorities of this program are to conduct research based educational and informational programs and develop products for these audiences that result in an increase in 1) households saving for emergencies, saving for major purchases and saving

to build wealth 2) consumers' knowledge about and ability to assess subprime and conventional financial services and products and their impact on financial well being 3) small land and property owners with the ability to transfer assets as desired and with limited negative financial impact through wills and estate planning.

**2. Scope of the Program**

- In-State Extension

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

**1. Assumptions made for the Program**

The first assumption is that Americans crave simplicity in an increasingly complex and stressful society. The second is that the availability of culturally competent educational products focused on behavior change is critical. Thirdly, limited resource audiences are exposed to more indept financial concepts and practices at a later age in comparison to the general population, therefore basic knowledge and awareness is an essential first step to achieving and maintaining financial security.

Limited resource individuals, families, farm families and small land and property owners participating in this program are expected to gain knowledge and skills in saving and reducing debt, selecting financial services including credit cards and mortgage loans, and in estate planning in the short-term. The long-term assumptions are that behavior changes such as increases in savings rate, reduction in use of subprime financial products and services and and increases in completed wills and estate plans will occur. Also there will be an increase in the number of faith-based and community based organizations participating in financial education programs for their clientele.

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

The primary goal of this program is to help the target audiences improve their ability to make informed consumer decisions, regarding their finances and to change or improve behaviors/habits that help them manage their finances and build wealth throughout their lifecycle.

**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
2010	0.0	0.6	0.0	0.0
2011	0.0	0.6	0.0	0.0
2012	0.0	0.6	0.0	0.0
2013	0.0	0.6	0.0	0.0
2014	0.0	0.6	0.0	0.0

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

**1. Activity for the Program**

The 1890 Family Resource Management Program will be conducted through a variety of programs and events to reach the target audiences. Education programs (workshops and siminars) will be conducted; tailored publications for low-literacy individuals including fact sheets, newsletters, news articles will be written and published; media including print, radio, university TV and university website and other available technology will be used to provide information in a user friendly format. Additionally, the program will participate in events and conferences by developing displays and presentations.

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

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> <li>● Workshop</li> <li>● Education Class</li> <li>● Group Discussion</li> </ul>	<ul style="list-style-type: none"> <li>● Newsletters</li> <li>● Public Service Announcement</li> <li>● Web sites</li> <li>● TV Media Programs</li> </ul>

**3. Description of targeted audience**

The 1890 Family Resource Management Program targets young adults, parents, families, farm families, faith-based and community based organizations and is focused particularly on limited resources audiences and small land and property owners.

**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 Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2010	300	500	0	0
2011	300	500	0	0
2012	300	500	0	0
2013	300	500	0	0
2014	300	500	0	0

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

**Expected Patent Applications**

2010 :0                      2011 :0                      2012 :0                      2013 :0                      2014 :0

**3. Expected Peer Review Publications**

Year	Research Target	Extension Target	Total
2010	0	5	5
2011	0	5	5
2012	0	5	5
2013	0	5	5
2014	0	5	5

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

**1. Output Target**

- The number of participants will participating in 10 financial management workshops;

2010 400                      2011 400                      2012 400                      2013 400                      2014 400

- The number of financial management presentations to community and faith-based organizations;

<b>2010</b> :14	<b>2011</b> :10	<b>2012</b> :16	<b>2013</b> :12	<b>2014</b> :10
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- The number of articles written in special publications addressing the needs of limited resource farms and families in the family resource area

<b>2010</b> 5	<b>2011</b> 5	<b>2012</b> :5	<b>2013</b> 5	<b>2014</b> 5
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**V(I). State Defined Outcome**

<b>O. No</b>	<b>Outcome Name</b>
1	Forty percent of the 800 program participants will gain knowledge in financial resource management and planning.
2	Ten percent of the program participants will change one or more positive financial behaviors that will be result in improved long-term financial well being.



**Outcome #1**

**1. Outcome Target**

Forty percent of the 800 program participants will gain knowledge in financial resource management and planning.

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

**2010** 320                      **2011** : 320                      **2012** : 320                      **2013** 320                      **2014** :320

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

•1890 Extension

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

- 801 - Individual and Family Resource Management

**Outcome #2**

**1. Outcome Target**

Ten percent of the program participants will change one or more positive financial behaviors that will be result in improved long-term financial well being.

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

**2010** 80                      **2011** : 80                      **2012** : 80                      **2013** 80                      **2014** :80

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

•1890 Extension

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

- 801 - Individual and Family Resource Management

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

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

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

**Description**

The external factors which may affect the outcomes are natural disasters, economy, appropriations changes, public policy changes, competing public priorities competing programmatic challenges and population changes. Natural disasters can impact appropriations, affect audience ability to participate in program and can reduce their ability to makes changes in their financial situation. Changing economic conditions can make it more difficult for the clientele to achieve financial goals and can result in an immediate need that forces a change in program focus to assist target audience. Decreased funding and appropriation changes, can also affect the ability of staff to adequately address program by causing a reduction in time i.e. programs and services available. Changes in public policies such as those related to subprime financial services can have an immediate impact on limited resources audiences by reducing the availability of these services or requiring more regulation can be a benefit to consumers. Competing public priorities and programmatic challenges can have a particularly negative impact on outcomes due redirection in programming efforts. Population changes add more time needed to design programs that are culturally competent, may cause a delay in reaching the audience at the level expected and therefore producing the desired outcomes within time framework.

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

### **1. Evaluation Studies Planned**

- During (during program)
- Case Study
- Comparisons between program participants (individuals,group,organizations) and non-participants
- Before-After (before and after program)
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.

#### **Description**

Pre and post program evaluation, self reporting, case studies and comparison of program participants are some of the evaluation strategies that will be used in this program.

### **2. Data Collection Methods**

- On-Site
- Structured
- Sampling
- Case Study

#### **Description**

Data collection methods will include sampling of the participant, structured interviews and case studies. These methods are known through research to be effective in collecting data from the target audiences of this program.