2013 University of Arkansas Combined Research and Extension Plan of Work

Status: Accepted

Date Accepted: 08/22/2012

I. Plan Overview

1. Brief Summary about Plan Of Work

The University of Arkansas Division of Agriculture's Integrated Plan of Work continues to address many of the issues facing citizens of Arkansas, the United States and the world through concentrated efforts in both research and Extension education.

The University of Arkansas Combined Research and Extension 2013-2017 Plan of Work has been crafted to incorporate the programs and projects that will address the needs of and issues facing Arkansans to better align with the five NIFA program initiative areas.

This plan of work also is based upon the major initiative areas identified in the 2011-15 Division of Agriculture Strategic Plan, which was developed based on issues and needs identified through stakeholder input and expert analysis of environmental scanning data by Division of Agriculture faculty of major trends that are expected to impact Arkansas, the nation and the world in the near future.

The Division's administration, faculty and staff will continue to commit time and resources from federal, state, county, city and private sources to address these many issues. The issues are challenging and broad and so are the planned programs. The approach will be through careful planning and the involvement of partners, volunteers, constituents, and local, state and national leaders.

Arkansas is a rich state in terms of natural resources. Agriculture is one of the largest Arkansas industries having an annual value-added economic impact of over $17 billion and contributes 10.4% of Arkansas's Gross State Product. Agriculture accounts for about one in six jobs in the state (275,435 jobs) and an annual labor income of $10.7 billion (17% of the state's total labor income). Agriculture in Arkansas consists of agronomic and horticultural crops, animal agriculture and forestry. Over one-half of Arkansas is in forests, much of which is owned by private landowners.

Food processing adds much value to the commodities grown in the state. Arkansas is the nation's largest rice producer, one of the top producers of poultry (2nd in broilers, 5th on turkeys and 9th in chicken eggs) and catfish (3rd) and is consistently one of the top producers of cotton (3rd) and soybeans (11th). The diversity of Arkansas agriculture also includes fruits, vegetables, nuts, beef, corn, wheat, sorghum, oats, hay and forage and many other crops. The state also ranks fourth nationally in saw-log timber production. This diversity is a major asset in helping the state's agriculture sector to weather downturns in a specific commodity.

The Division of Agriculture develops and conducts fundamental and applied research and extension programs to address the production, environmental and economic sustainability of Arkansas agriculture and the farms, farm families, and allied agricultural industries that depend on agriculture production and associated jobs.

Arkansas, though a major agriculture state, has issues similar to that of the remainder of the U.S. Arkansas must address issues, such as: rapid growth in some areas of the state and declining populations and economies in other areas; health and nutrition issues, including obesity in children and adults; food insecurity for limited-resource individuals and families; food safety issues from production through consumption; unemployment; the impacts of higher energy costs on all aspects of daily life; environmental issues that both impact and are impacted by agricultural production; and many other economic and societal challenges facing Arkansas agricultural producers, families, youth and communities.

The Division of Agriculture's Plan of Work includes discovery and applied research and educational activities and programs that will result in: efficient and sustainable agricultural production and increased capacity of agricultural producers in order to meet growing food demands and in addressing food security issues; reduction in the incidences of childhood obesity; conservation and protection of Arkansas's natural resources; the development of processes and technology to help agricultural producers remain viable in the face of climatic changes; a more safe and secure food supply for all; development and evaluation of biomass-based strategies for use in bioenergy production; developing leaders, sustaining communities, workforce preparation, parenting skills, youth development and many more.

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

Year	Extension		Research	
	1862	1890	1862	1890
2013	370.0	0.0	484.0	0.0
2014	370.0	0.0	483.0	0.0
2015	370.0	0.0	476.0	0.0
2016	370.0	0.0	473.0	0.0
2017	370.0	0.0	472.0	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
- External Non-University Panel
- Combined External and Internal University Panel
- Expert Peer Review

2. Brief Explanation

University of Arkansas Division of Agriculture programs are reviewed using a three-tiered review process:

1. Stakeholder program identification and review
2. Administrative approval and review
3. External review

Stakeholder Program Identification and Review

Stakeholder input into Division of Agriculture program identification and review continues to be derived from both formal and informal means for all program areas. Public comment on current and future research programs are obtained from county and community meetings, commodity and community associations, commodity check-off boards, state legislative committees and open public forums concerning specific issues. Open public meetings, field days and county and regional production meetings provide forums for stakeholder input and are open to under-served or under-represented individuals, groups or organizations. For Extension, county advisory councils and program advisory groups meet annually, at a minimum, specifically to review programs and provide input, feedback and/or review of program implementation, redirection, or newly identified needs. Members of these groups are invited to participate in programs, field days, special tours, workshops and conferences throughout the year and for the duration of the program. Membership on these groups is designed to include members who are representative of the community demographic and potential clientele makeup. All reviews of research and Extension programs include stakeholder members or members of the community or industry most influenced by the program area. Open public forums are held to address specific issues of importance to the stakeholder community or industry.

Administrative Approval and Review

Identified planned program areas of research or Extension activity are administratively reviewed and approved by the University of Arkansas's Vice-President for Agriculture and the Director of the Agricultural Experiment Station or Cooperative Extension Service, as appropriate, within the context of the Division of Agriculture's 2011-2015 Strategic Plan and the specific needs identified by stakeholder groups. Smith-Lever, Hatch, McIntire-Stennis, Animal Health and regional research projects are administratively reviewed and approved by the subject matter department head and the director of the Arkansas Agricultural Experiment Station. All research projects are reviewed by three outside scientists prior to submission to the respective subject matter department head and the experiment station.

External Review

Merit review is conducted as part of the Division of Agriculture's on-going program review process. The reviews may be departmental or programmatic and cut across departments. Reviews are scheduled on a five-to-seven year cycle and conducted concurrently for research, Extension and instruction. All reviews are conducted by a team of recognized outside research, Extension and teaching professionals, balanced to reflect programmatic needs and diversity. All reviews include one or more stakeholders. The actual review process involves a period of self-study, followed by program assessment and benchmarking. The review team evaluates the program's effectiveness relative to the stated mission and goals of the department or program, as well as the needs of stakeholders. Following the outside review teams written evaluation, the department or program prepares a response to the review. The Division of Agriculture and University administration then meet with the department or program faculty one more time to

develop a plan for implementing changes. Thereafter, annual progress is reported to Division and University administration.

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's Division of Agriculture utilizes both formal and informal mechanisms for ensuring the planned program areas address areas of strategic importance to the state. The Division of Agriculture's Combined Plan of Work reflects the priority issues identified by stakeholders from around the state during the development of the Division of Agriculture's 2011-2015 Strategic Plan. Priority programmatic areas were identified based on stakeholder needs identified through a statewide needs assessment survey and a state-level clientele listening session that provided input from current and potential clientele that was used to identify the major issue areas that will provide direction for Division of Agriculture research and extension efforts over the five years of the strategic plan. Stakeholders of specific programs such as community and economic development, 4-H and youth, and commodity groups, research and Extension faculty and staff also identify emerging issues that can be addressed by Division of Agriculture efforts. In many cases, those who help in identifying issues are also able to provide partial funding support for those efforts.

2. How will the planned programs address the needs of under-served and under-represented populations of the State(s)?

University of Arkansas Division of Agriculture research and extension programs are developed and implemented to address the needs of citizens of Arkansas. Examples of multi-state or joint activities and programs that are being implemented to address needs of under-served and under-represented populations include:

Stronger Economies Together - a national initiative sponsored by USDA Rural Development in partnership with the four Regional Rural Development Centers and the Cooperative Extension Service. The SET program is currently active in more than 40 regions in 27 states across the country. The purpose of SET is to help rural communities and counties work together as a team in developing and implementing an economic development blueprint for their region. SET focuses on building local capacity for economic development as well as building on the local strengths and assets within (mostly disadvantaged) regions.

Turning the Tide on Poverty - Turning the Tide on Poverty is modeled after the successful poverty fighting efforts of the Horizon program in the northwest region. It has been supported by Everyday Democracy, the Farm Foundation and the Kettering Foundation. Tide is based on civic engagement and public deliberation relating to local poverty issues and place-based strategies for addressing these issues.

4-H Afterschool Program - Provides after-school-hours educational opportunities for youth, many in urban environments, who don't have other opportunities.

SERA-37: New Hispanic South - A multi-state project to strengthen the research, outreach, and public policy work associated with Latino issues.

Southern Region Disaster Resilient Communities Project - A 5-state project (Arkansas,

Florida, Louisiana, Missouri and Oklahoma) to assess current disaster-related strategies being used in rural communities, increasing disaster awareness and preparedness activities to assist communities in preparing for and responding to extreme events and the needs of disadvantaged residents.

Healthy Relationship and Marriage Education Training Project - A five-state, collaborative project (Arkansas, Georgia. Iowa, North Carolina and Missouri) to refine and deliver relationship education training to child welfare professionals to improve their capacity of dealing with their own clientele and to teach their clientele about healthy relationship practices.

HOPE 2: Nutrition Education Project - A multi-state project (working through a collaboration with the Mississippi Food Network) that includes a partnership between the Division of Agriculture Extension Service and North Little Rock School District, a large urban school district., that has Extension educators training personnel from eight elementary schools to deliver nutrition education in grades K-5 and to work with the district's food service personnel to promote better nutrition.

National Network of Forest Practitioners - A national alliance of rural people working on the ground to build a forest economy that is both ecologically sound and socially just. Members include foresters, harvesters, extension specialists, advocates, and policy makers interested in sustainable forestry.

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

Through the development of program logic models, planned programs have identified specific outputs and short, medium and long-term outcomes for the life of the programs. Program planning and accountability data will be entered by all CES faculty through the Arkansas Information Management System (AIMS), a Web-based data management system, and aggregated to identify the outcomes and impacts. Qualitative data and case studies will likewise be entered into the AIMS system, in order to produce a comprehensive understanding of the program outcomes. Research-based outputs and outcomes will be documented using annual departmental faculty review reports that include research progress, outcomes and refereed publications and presentations.

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

Through the use of program logic models, planned programs have identified target audiences, program methods, and output and outcome measures prior to program initiation. The use of the planned program (input) elements and the faculty POW process allows faculty to identify which audiences, methods, curriculum, etc. county faculty have identified as the focus of their work each October (at the beginning of each fiscal year). This planning information allows specialists to better focus their program support efforts by understanding the scope of work for each planned program, allowing increased and timely responsiveness to specific county needs. Through the use of output and outcome indicators, uniform data collection methods, and the live Web-based AIMS database, process improvement is possible throughout the fiscal year due to the compilation of program specific data. Identification of best practices, innovative approaches, and emerging issues over the life of the program can both inform research and provide guidance for other educational resource investments.

IV. Stakeholder Input

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

- Targeted invitation to traditional stakeholder groups
- Targeted invitation to non-traditional stakeholder groups
- Targeted invitation to traditional stakeholder individuals
- Targeted invitation to non-traditional stakeholder individuals
- Survey of traditional stakeholder individuals
- Survey specifically with non-traditional groups
- Survey specifically with non-traditional individuals
- Survey of selected individuals from the general public
- Other (County Extension Council and program advisory committee planning meetings.)

Brief explanation.

Stakeholder input into program identification and review is derived from both formal and informal means for all program areas. Public comment on current and future research programs is obtained from county and community meetings, commodity and community associations, commodity check-off boards, state legislative committees and open public forums concerning specific issues. Open public meetings, field days and county and regional production meetings provide forums for stakeholder input open to under-served or under-represented individuals, groups or organizations. For Extension, County Extension Councils and program advisory groups meet annually, at a minimum, to provide input, feedback and/or review of program implementation, redirection, or newly identified needs. Members of these groups are invited to participate in programs, field days, special tours, workshops and conferences throughout the year and for the duration of the program. All reviews of research and Extension programs include stakeholder members or members of the community or industry most influenced by the program area. Open public forums are held to address specific issues of importance to the stakeholder community or industry. In addition to the standard methods of obtaining stakeholder input described above,

In 2010, the University of Arkansas Division of Agriculture updated its strategic plan. As part of this update process, the Division conducted a state-level external stakeholder listening session and an online survey of external stakeholders from across the state. A total of 172 external stakeholders participated in these processes. Specific surveys were conducted with individuals representing two specific underserved or underrepresented groups, women in agriculture and small farm operation producers. The result of the strategic planning effort is the 2011-2015 Division of Agriculture Strategic Plan. The strategic plan identifies those important initiaitve areas upon which the priorities identified in the University of Arkansas 2013-2017 NIFA Combined Research and Extension Plan of Work is based.

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

1. Method to identify individuals and groups

- Use Advisory Committees
- Use Internal Focus Groups
- Needs Assessments

- Use Surveys

Brief explanation.

Stakeholder participation on county-level advisory councils and committees is open to any interested citizen. Stakeholder members are also recruited to ensure that the councils and committees are representative of the communities in which they live. The composition of and level of activity and input from advisory councils and committees is a major component of annual county Extension reviews conducted by district administrators.

The participants in the University of Arkansas Division of Agriculture strategic planning process external stakeholder listening session were identified and recruited by a strategic planning team composed of representatives from the major units of the Division of Agriculture. In many cases, the individuals selected to participate in the listening session represented a larger group of individuals who were traditional stakeholders or represented groups whose members were non-traditional or under-served or under-represented stakeholders in Division of Agriculture programs, These individuals were brought together and led through a facilitated process to identify priority issues and needs for Division of Agriculture research and extension efforts.

Participants in the University of Arkansas Division of Agriculture stakeholder online surveys were identified by Arkansas Experiment Station faculty and administrators and by asking county Extension staffs to identify individuals in their local communities who were representative of one or more of the following nineteen stakeholder categories: social services (e.g., Dept. of Human Services, Food Bank or Pantry, non-profits); financial sector (e.g., banks, agricultural lending, investments); faith-based sector (e.g., church, youth minister); education (public, private, vocational); commercial sector (e.g., chambers of commerce, industry); health (e.g., hospital, public health, doctor); agricultural production; agricultural businesses; county Extension council; 4-H youth; 4-H adult volunteers; other youth services organizations; government officials (e.g., county, city); Extension homemakers; Extension FCS clientele; master gardeners; natural resources (e.g., wildlife, forestry, conservation); media (e.g., radio, newspaper, television); and agricultural cooperators. In addition to these criteria, Extension staffs were also asked to identify individuals within the nineteen categories who were representative of the racial make-up of the counties, to include individuals of both genders, and to identify potential participants by their level of involvement in Division of Agriculture Extension programs in the counties.

At the local community level, individuals who serve on County Extension Councils and program advisory committees are identified and asked to participate so that the committees and advisory groups are representative of the demographics of the community and can provide insight as to the importnat issues of the community.

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

1. Methods for collecting Stakeholder Input

- Meeting with traditional Stakeholder groups
- Meeting with traditional Stakeholder individuals
- Survey of traditional Stakeholder individuals
- Meeting specifically with non-traditional groups
- Survey specifically with non-traditional groups
- Meeting specifically with non-traditional individuals
- Meeting with invited selected individuals from the general public
- Survey of selected individuals from the general public
- Other (Meeting with regulatory groups, state agencies, & commodity prom)

Brief explanation.

Much of the Division of Agriculture external stakeholder input is collected through formal county-level extension councils and program advisory committees. Members of these groups assist local Extension staff in identifying local issues and problems that can be addressed through Agricultural Experiment Station research and Extension educational programs. Membership on these groups is open to any individual and is on a rotational basis to encourage new members becoming a part of these advisory groups on a regular basis. Input to guide research efforts is also collected through contacts, both formal and on-formal, with other state agency personnel, commodity group representatives and other organizations working in areas related to Division of Agriculture projects and programs.

Participants in the University of Arkansas Division of Agriculture strategic planning process external stakeholder listening session were identified and recruited by a strategic planning team composed of representatives from the major units of the Division of Agriculture. These individuals were brought together and led through a facilitated process to identify priority issues and needs for Division of Agriculture research and extension efforts. Participants in a statewide online needs assessment survey to identify priority issues that could be addressed by the Division of Agriculture were identified by county extension staff. These individuals were representative of both traditional and non-traditional Division clientele and were also identified as individuals who were representative of the racial make-up of the counties, to include individuals of both genders, and to identify potential participants by their level of involvement in Division of Agriculture research or extension programs.

3. A statement of how the input will be considered

- To Identify Emerging Issues
- Redirect Extension Programs
- Redirect Research Programs
- In the Action Plans
- To Set Priorities
- Other (Strategic Planning)

Brief explanation.

Stakeholder input is utilized at all levels of the Division of Agriculture in identifying priority issues and in planning and conducting research activities and extension educational programs that address those issues.

At the county level, annual plans of work are developed based on the feedback from local stakeholders about the priority issues that can be addressed through the dissemination and/or application of research-based knowledge and practices through extension education programs. Additional input to guide program direction is collected through formal and non-formal collaborations with other agencies and organizations working in extension-related areas.

Each year, the extension program plan of work is updated to reflect the needs of clientele at the local and state level through a formal review and revision process.

Research efforts are guided through feedback from external stakeholders, including advisory groups, agriculture commodity production groups, other collaborating local, state and federal agencies and other agriculture-related organizations, such as Farm Bureau. Feedback from local stakeholders through extension advisory committees and local demonstrations can also provide guidance for new directions in research activities

Division of Agriculture Extension and research faculty members also serve on advisory committees and work regularly with diverse stakeholder groups, including Farm Bureau, commodity promotion boards, state agency and regulatory groups, and program specific advisory groups to assist in the evaluation of current efforts and to provide feedback related to Arkansas' changing needs. Meetings are likewise conducted with internal stakeholders including county and state-level faculty, district administrators, and Experiment Station scientists to identify stakeholders and facilitate linkages between local needs and research priorities.

V. Planned Program Table of Content

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Childhood Obesity

2. Brief summary about Planned Program

Arkansas has a weight problem. Sixty seven percent of adults and 38 percent of children are overweight or obese, placing them at great risk for heart disease, diabetes, certain types of cancer and other chronic diseases. Childhood obesity is recognized as a predictor of adolescent and adult obesity. Obesity among children presents both immediate and long-term health risks and is associated with increased medical costs in both childhood and adulthood. Children develop habits when they are 5 to 10 years old that remain with them the rest of their lives. Helping children learn healthy eating and lifestyle practices in their early years can pay big dividends later in life in preventing chronic disease and reducing the healthcare burden that is directly related to obesity and its associated complications.

Preventing obesity is the focus of research by Division of Agriculture Faculty. Both human and animal studies are evaluating the role of functional foods, such as small berries, fructooligosaccharides, rice, soybean, and conjugated linoleic acid rich oils in the prevention of chronic conditions associated with increased body weight. Division of Agriculture faculty are studying the total food environment and how it affects access to healthy food for at-risk children. Investigators will develop obesity prevention strategies that will result in prevention curricula used in Head Start, preschool, and early elementary classrooms.

Using science-based information, Arkansans are engaged in Extension programs that impact childhood obesity directly and through the family unit by promoting healthy lifestyles, nutrition practices and increasing physical activity to achieve a healthier weight. Children and their caregivers learn about healthy nutrition and lifestyle through the Supplemental Nutrition Assistance Program Education (SNAP-Ed) and Expanded Food and Nutrition Education Program (EFNEP). Families can learn about healthy lifestyles through programs such as the Reshape Yourself Healthy Weight Program, and other nutrition education programs. Physical activity is encouraged through the Walk Across Arkansas activity that includes children from grades 4 through adult.

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
701	Nutrient Composition of Food	0%		10%	
702	Requirements and Function of Nutrients and Other Food Components	10%		80%	
703	Nutrition Education and Behavior	25%		10%	
704	Nutrition and Hunger in the Population	15%		0%	
724	Healthy Lifestyle	30%		0%	
806	Youth Development	20%		0%	
	Total	100%		100%	

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

1. Situation and priorities

Obese adults are at increased risk for many serious health conditions including coronary heart disease, hypertension, stroke, type 2 diabetes, certain types of cancer, and premature death. Adult obesity also is associated with reduced quality of life, social stigmatization, and discrimination. A recent study (Finkelstein 2009) showed that obese persons have estimated medical costs that are $ 1,429 higher than persons of healthy weight.

Sixty-seven percent of adults and 38 percent of youth in grades K-12 are overweight or obese. Lifestyles are directly related to these diseases. Less than half of Arkansas' adults and youth get the recommended amount of daily moderate physical activity, About one half of adolescents are trying to lose weight and more than 10% are using unhealthy practices to decrease weight. One fourth of children in Arkansas are at risk for hunger which has been linked to an increase in obesity in adults.

Unhealthy lifestyles, including poor diet and, physical inactivity, cost Arkansas taxpayers millions of dollars each year in health care costs and lost productivity. Lifestyle changes can prevent at least 20 percent of annual deaths from heart disease, cancer, stroke and diabetes while lowering lifetime medical costs.

2. Scope of the Program

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

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

1. Assumptions made for the Program

Our Extension education process is a straight-forward approach to Arkansas health issues. Arkansans will choose to be active participants in the decisions that affect their health to remain active and healthy. Evidence-based education can enable rural individuals and families to better maintain healthy lifestyles and manage physical health. Nutrition education is based on the belief that: 1) Participants have access to and consume specific foods, 2) Targeted audiences are willing and able to participate in nutrition education programs, 3) Knowledge change can lead to behavior change, 4) People will be motivated to learn/change, 5) Targeted audiences are willing and able to make healthy food choices.

Childhood obesity research is dependent on grant funding and the extent of the research depends on extramural funding.

2. Ultimate goal(s) of this Program

* Educate and encourage individuals and families to adopt nutrition behaviors and lifestyles that promote health and prevent disease thus increasing longevity and reducing health care costs.
* Reduce risk factors for lifestyle-related chronic diseases.
* Assist individuals in achieving healthier weight
* Develop knowledge through basic and applied research to better understand the relationship between food, diet and human health.
* Increase the knowledge and improve behavioral practices of youth and families/caregivers to engage in healthy food consumption practices based on the US Dietary Guidelines for Americans.

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
2013	25.0	0.0	8.0	0.0
2014	25.0	0.0	8.0	0.0
2015	25.0	0.0	8.0	0.0
2016	25.0	0.0	8.0	0.0
2017	25.0	0.0	8.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Division of Agriculture faculty will develop, evaluate, and disseminate education programs and curricula, incorporating new research and emphasizing healthy lifestyles to prevent and/or reduce childhood obesity. Programs Include but are not limited to:

Supplemental Nutrition Assistance Program Education (SNAP- Ed) Adults and Youth

Expanded Food and Nutrition Education Program (EFNEP) Adults and Youth

Reshape Yourself Healthy Weight Program
Walk Across Arkansas Youth
BodyWalk
Adventures in Grandparenting

Division of Agriculture faculty will conduct novel research to determine the impact of diet and food composition and functional food components on body weight.

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

Extension

Direct Methods	Indirect Methods
● Education Class	● Public Service Announcement
● Workshop	● Newsletters
● Group Discussion	● Web sites other than eXtension
● One-on-One Intervention	● Other 1 (Grant Development)
● Demonstrations	● Other 2 (Podcast & Online Education)
● Other 1 (On-line class)	
● Other 2 (Fact sheets)	

3. Description of targeted audience

Youth
School personnel
Parents
Adults
Grandparents
Child Care Providers
County, State and Federal Agency Employees

Researchers

V(G). Planned Program (Outputs)

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

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

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

V(H). State Defined Outputs

1. Output Measure

- # grants/contracts funded in support of childhood obesity issues
- # of 4-H/Youth Food, Nutrition and Physical activity programs delivered related to eating healthy and being active
- # of youth contacts in 4-H/ Youth Food, Nutrition, and Physical Activity programs related to eating healthy and being active
- # of funded Federal grants and/or contracts
- # of adult clientele contacts from educational events (educational classes, workshops, group discussions, one-on-one interventions, demonstrations and other educational activities) related to eating healthy and being active
- # of active research projects on the development or adoption of healthy eating guidelines and childhood obesity.

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

V(I). State Defined Outcome

O. No	Outcome Name
1	# of children and youth who increased consumption of foods recommended by the U.S. Dietary Guidelines for Americans.
2	# of families/caregivers who increased consumption of foods recommended by the U.S. Dietary Guidelines for Americans.
3	# of Children/Youth who intend to adopt healthy eating patterns.
4	# of families/caregivers who intend to adopt healthy eating patterns.
5	# of Children/Youth who gained knowledge about healthy eating patterns (foods to increase and/or decrease).
6	# of families/caregivers who gained knowledge about healthy eating patterns (foods to increase and/or decrease).
7	# of Children/Youth who increased their physical activity and/or reduced sedentary time.
8	# of families/caregivers that reported spending time together in physical activity.
9	# of Children/Youth who increased physical activity to 60 minutes or more daily.
10	# of Children/Youth who understand the importance of balancing food intake and physical activity.
11	# of new delivery systems/access points offering healthy foods (farmers markets, produce at corner stores, and school food programs).
12	# of families with children that report an intention to access/produce/preserve healthy foods.
13	# of children who increased consumption of fruits and vegetables.
14	# of children who decreased consumption of sugar sweetened beverages.

Outcome # 1

1. Outcome Target

# of children and youth who increased consumption of foods recommended by the U.S. Dietary Guidelines for Americans.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 2

1. Outcome Target

# of families/caregivers who increased consumption of foods recommended by the U.S. Dietary Guidelines for Americans.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 704 - Nutrition and Hunger in the Population
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 3

1. Outcome Target

# of Children/Youth who intend to adopt healthy eating patterns.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior

- 724 - Healthy Lifestyle
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 4

1. Outcome Target

# of families/caregivers who intend to adopt healthy eating patterns.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 704 - Nutrition and Hunger in the Population
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 5

1. Outcome Target

# of Children/Youth who gained knowledge about healthy eating patterns (foods to increase and/or decrease).

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 6

1. Outcome Target

# of families/caregivers who gained knowledge about healthy eating patterns (foods to increase and/or decrease).

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 704 - Nutrition and Hunger in the Population
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 7

1. Outcome Target

# of Children/Youth who increased their physical activity and/or reduced sedentary time.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 8

1. Outcome Target

# of families/caregivers that reported spending time together in physical activity.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior

- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 9

1. Outcome Target

# of Children/Youth who increased physical activity to 60 minutes or more daily.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 704 - Nutrition and Hunger in the Population
- 724 - Healthy Lifestyle
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 10

1. Outcome Target

# of Children/Youth who understand the importance of balancing food intake and physical activity.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 11

1. Outcome Target

# of new delivery systems/access points offering healthy foods (farmers markets, produce at corner stores, and school food programs).

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 704 - Nutrition and Hunger in the Population
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 12

1. Outcome Target

# of families with children that report an intention to access/produce/preserve healthy foods.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 704 - Nutrition and Hunger in the Population
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 13

1. Outcome Target

# of children who increased consumption of fruits and vegetables.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle

- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 14

1. Outcome Target

# of children who decreased consumption of sugar sweetened beverages.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

The University of Arkansas Division of Agriculture is positioned to respond proactively through educational and research activities to policy, regulatory, economic and demographic changes that affect the quality of life for Arkansans and assist food processors to improve their economic position.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Several strategies will be initiated and utilized for collecting program assessment information to determine program results, outcomes and impacts. Extension educators will use a variety of

recommended methods to gather needed information. Collection methodology and assessment tools will be programmatic- and audience- centered. Programs focusing on physical activity will use skill-based change assessments, before-after program assessments, behavioral changes, surveys, observation, and questionnaires.

Nutrition and health- related activities will use anecdotal information; pre-test, post-test assessments; and self-reports of practice change. The SNAP-Ed youth program has evaluation instruments specific to curricula used. Most instruments are paper-based pre- and posttests, however, some instruments have been adapted for handheld electronic audience response devices. Pre-posttests measure changes in eating and activity practices or intent to change eating and activity practices as a result of nutrition education. Youth programs are also evaluated using post-surveys sent home to parents/caregivers. These surveys provide insight into nutrition and physical activity information youth share with parents/caregivers and reveal whether parents have made positive changes to food and activity practices of the household. The parent survey has provided valuable information on the benefits of school-based nutrition education programs for several years. UA Division of Agriculture is in the process of validating the survey via focus groups with parents around the state.

Adult EFNEP programs and SNAP-Ed participants in a series of lessons are evaluated using the EFNEP Behavior Checklist or an adaptation of that instrument. This is a self-report pre- and post-survey that assesses behavior change in nutrition, resource management and food safety practices. Follow-up surveys measure sustainability of changed behavior.

Adult healthy weight programs utilize a self-report retrospective pre-posttest to capture changes in eating practices; and changes in weight, waist circumference, blood pressure, blood lipid and blood glucose levels as a result of weight loss and/or adoption of healthier eating and activity practices.

Unobtrusive means (requests for additional information, purchase of video's and materials, increased participation and observation) will also be used to capture information.

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Food Safety

2. Brief summary about Planned Program

Food safety issues associated with the poultry industry and other food processing firms are of high priority to the Division of Agriculture. The implementation of extension programing including HACCP roundtables, Better Process Control School, ServSafe workshop, the Germ City exhibit for youth and related food safety programs for youth, consumers and food handlers significantly increases the need for research-based information. The Center for Food Safety within the Institute of Food Science and Engineering and the Center for Poultry Excellence provide the research infrastructure where food safety research can be addressed from the producer through processing and product preparation. The Division of Agriculture's Institute of Food Science and Engineering was created to focus multi-disciplinary research on food issues to include food safety. Scientists from various Division of Agriculture Departments including Food Science, Poultry Science, Biological and Agricultural Engineering and Animal Science collaborate under the IFSE Institute banner to resolve industry's problems and goals with scientific insight and innovation.The University of Arkansas Division of Agriculture faculty conduct research to control food-borne pathogens and toxins in the food supply, develop innovative methods to detect, identify and control foodborne pathogens, toxins and contaminants in agricultural production and processing, and investigate economical, practical and naturally occurring antimicrobials and other compounds that target food pathogens. The success of Food Safety programs with the Division of Agriculture are due in part to the integration of its research and Extension missions through the delivery of Extension programming rooted in the translation and application of scientific findings on Food Safety research.

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

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

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

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

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
501	New and Improved Food Processing Technologies	0%		50%	
504	Home and Commercial Food Service	35%		0%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	65%		50%	
	Total	100%		100%	

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

1. Situation and priorities

Food production and processing is a large business in Arkansas. Approximately 25% of all manufacturing in Arkansas is food processing, representing an $11 billion per year business. There are 232 food processing establishments in Arkansas directly employing over 55,000 people. The Centers for Disease Control has estimated that 76 million persons in the United States are affected by food borne illness. The costs for persons infected include those associated with health care for afflicted individuals, costs related to caring for those who are ill, absenteeism from work and school, as well as travel costs to seek medical care. For these reasons, it is paramount that the University of Arkansas maintains a viable and active research and extension program in food safety.

The success of our food safety programs is due to our excellent research and extension functions and their work across department and college lines.

The Extension/Research integration and proximity of Extension and Experiment Station faculty/staff who work on food safety and technologies which are disseminated in Extension workshops, newsletters, roundtables, etc. contributes to this success. The quarterly HACCP Roundtables serve not only state companies but are regional in scope and serve as a model at the national level as an example of food companies cooperating along with USDA through the University of Arkansas to address food safety issues.

2. Scope of the Program

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

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

1. Assumptions made for the Program

The Better Process Control School is a nationally-mandated program, and other food safety programs are at the request of food processing companies, entrepreneurs, retail establishments, and consumers**.** Since the programs are clientele-driven, it is believed that they represent the concerns and needs of the food processing industry. It is also assumed that the Experiment Station scientists will continue to secure grant funding to assist in developing new information and technologies and to assist the delivery of outreach programs. Finally, it is assumed that by working with food scientists and agricultural economists, entrepreneurs will continue to be identified and assisted to ultimately establish more successful food safety programs.

2. Ultimate goal(s) of this Program

- Reduce the incidence of food-borne illness
- Increase the number of viable technologies to improve food safety
- Increase the adoption of recommended safe food handling practices at the individual, family, community, production, and supply system level
- Increase the understanding of the ecology of threats to food safety from microbial and chemical sources
- Improve the food processing/safety aspects of manufacturing to foster growth of food manufacturers and entrepreneurs in Arkansas.
- Improve the efficiency and competitiveness of Arkansas and U.S. food industries through improvements in food safety and quality control programs.

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
2013	3.5	0.0	74.0	0.0
2014	3.5	0.0	74.0	0.0
2015	3.5	0.0	72.0	0.0
2016	2.5	0.0	72.0	0.0
2017	2.5	0.0	72.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

The division of Agriculture faculty and staff will develop, evaluate and disseminate education and curricula incorporating research and teaching. Programs include:

Quarterly HACCP Roundtable meeting

HACCP workshops

Food safety and preservation workshops
Better Process Control School
Labeling workshop
ServSafe workshops
Online distance education in food safety and manufacturing
Assistance to small food companies and entrepreneurs in the form of services, workshops, and consulting.

Research activities in food safety include work to better understand the ecology of food pathogens, improve food processing systems to minimize food pathogens and to improve detection systems for Listeria, Salmonella, EColi and other major food pathogens.

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

Extension

Direct Methods	Indirect Methods
● Education Class	● Public Service Announcement
● Workshop	● Newsletters
● Group Discussion	● Web sites other than eXtension
● One-on-One Intervention	● Other 1 (Grant Development)
● Demonstrations	● Other 2 (Podcast)
● Other 1 (On-line classes)	

3. Description of targeted audience

Food Manufacturers
Farmers (Farmer's Markets)
Entrepreneurs and Restaurants
Food Service Employees and/or Food Handlers
Employers & Employees
Health Professionals
Consumers
Youth

V(G). Planned Program (Outputs)

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

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

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

V(H). State Defined Outputs

1. Output Measure

- Number of participants in educational programs leading to certification for food handlers (ServSafe and Better Process Control School)
- Number of participants in quarterly HACCP roundtables
- Number of ServSafe classes offered
- Number of Food Safety education classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational events
- Numbers of federal grants written and received in food safety.
- Number of all other grants written and funded related to Food Safety.
- Number of Online Master of Agriculture (Food Safety Emphasis) students enrolled in courses.
- Number of projects focused on increased understanding of the ecology of fecal indicators and pathogens
- Number of projects focused on increased understanding of preharvest and postharvest processes impacts on microbial and chemical threats.

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

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of participants receiving certification in Better Process Control
2	Number of participants receiving certification in ServSafe
3	Number of participants in other workshops related to Food Safety including HACCP, food safety, food defense, food labeling, and food microbiology workshops receiving attendance certification
4	Number of growers and producers receiving GAP certification or equivalent
5	Number of youth demonstrating improved knowledge of food safety or hand washing
6	Number of Online Master of Agriculture (Food Safety Emphasis)graduates employed in the food industry.
7	Number of viable technologies developed or modified for the detection and characterization of foodborne pathogens
8	Number of viable prevention, control and interventiion strategies for food borne threats along the food production continuum

Outcome # 1

1. Outcome Target

Number of participants receiving certification in Better Process Control

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 2

1. Outcome Target

Number of participants receiving certification in ServSafe

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 504 - Home and Commercial Food Service
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 3

1. Outcome Target

Number of participants in other workshops related to Food Safety including HACCP, food safety, food defense, food labeling, and food microbiology workshops receiving attendance certification

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 4

1. Outcome Target

Number of growers and producers receiving GAP certification or equivalent

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 5

1. Outcome Target

Number of youth demonstrating improved knowledge of food safety or hand washing

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 6

1. Outcome Target

Number of Online Master of Agriculture (Food Safety Emphasis)graduates employed in the food industry.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 7

1. Outcome Target

Number of viable technologies developed or modified for the detection and characterization of foodborne pathogens

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 501 - New and Improved Food Processing Technologies
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

4. Associated Institute Type(s)

- 1862 Research

Outcome # 8

1. Outcome Target

Number of viable prevention, control and interventiion strategies for food borne threats along the food production continuum

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 501 - New and Improved Food Processing Technologies
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

4. Associated Institute Type(s)

- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

The University of Arkansas Division of Agriculture is positioned to respond proactively through educational and research activities to policy, regulatory, economic and demographic changes that affect the quality of life for Arkansans and assist food processors to improve their economic position.

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V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Some educators will utilize pre- and post-tests, and some will use retrospective post-tests, depending on their program and target audiences. Case studies will be utilized for evaluation of environmental and systematic long-term program outcomes. Assessment tools will be utilized during the program to evaluate knowledge gain and intent to change behavior.

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Sustainable Energy

2. Brief summary about Planned Program

The Energy Independence and Security Act of 2007 requires US biofuels production to increase to 36 billion gallons by 2022. Of that total, the majority (21 billion gallons) must be derived from advanced biofuels such as cellulosic ethanol and biomass-based diesel; the remaining 15 billion gallons may be made from conventional feedstocks such as corn and sugarcane. Arkansas is well positioned for bioenergy production with large areas of cropland and forest and an innovative processing industry for agricultural and forest products. The University of Arkansas, Division of Agriculture has made significant investments in sustainable energy, including biodiesel fuel, biomass crop production, and public issue education. The UA Division of Agriculture faculty work together to conduct field based research into potential crop and fast growing tree species that show the good potential for bioenergy production. However, reaching the sustainable energy goals outlined by the Federal government involves policy analysis, policy issue education, and understanding public perceptions about sustainable energy. Managing potential biomass crops can impact the environment especially if increased application of fertilizer and pesticides are required. The UA, Division of Agriculture faculty work across several disciplines to investigate the potential impacts of biomass production and biofuel use on water quality, forest sustainability, soil nutrients, and other environmental concerns to help Arkansans understand the benefits and costs of biofuel production.

The sustainable energy program is an essential integrated research and extension program that keeps Arkansans, including row crop and livestock producers, up to date on the state of sustainable energy research, policy, and applications. The goal is to contribute to energy independence by investigating and designing optimum forestry and crops for bioenergy production while ensuring sustainable and adaptive management 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
101	Appraisal of Soil Resources	10%		10%	
102	Soil, Plant, Water, Nutrient Relationships	10%		10%	
112	Watershed Protection and Management	10%		10%	
123	Management and Sustainability of Forest Resources	20%		20%	
133	Pollution Prevention and Mitigation	10%		10%	
136	Conservation of Biological Diversity	5%		5%	
204	Plant Product Quality and Utility (Preharvest)	5%		5%	
402	Engineering Systems and Equipment	5%		5%	
403	Waste Disposal, Recycling, and Reuse	5%		5%	
511	New and Improved Non-Food Products and Processes	5%		5%	
601	Economics of Agricultural Production and Farm Management	5%		5%	
605	Natural Resource and Environmental Economics	5%		5%	
610	Domestic Policy Analysis	5%		5%	
	Total	100%		100%	

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

1. Situation and priorities

There is a need to find synergy between existing biomass streams while developing new streams. We need to explore additional existing biomass sources and to develop those that are suitable into useable biomass streams, and to explore new sources of biomass. This must be done while working to maintain the integrity of existing streams and supporting the current bioenergy-related industry, without negatively impacting the existing agriculture industry and land mass. The State of Arkansas and its agronomic, economic, and business-related resources are well positioned to meet this challenge. As incentive programs for bioenergy programs decline, we must work toward building a sustainable bioenergy program that serves Arkansas and needs little external support.

With the increased use of biomass the resultant extractive practices from the landmass will lead to the need for investing in intensive crop and forestry management. This includes increased use of inputs, such as fertilizers and pesticides, that may result in environmental quality issues including water pollution, declining soil fertility, and in the case of using exotic species, potential for the introduction of invasive species. The ability to rapidly assess potential impacts of new technologies and practices of biofeedstock production on water quality, spatial distribution of biomass crops, spatial location of potential markets and other data in production decisions is critical, especially given emerging technologies and evolving

needs. There is also a need to assess the impact of bioenergy products on the environment and local economy.

Educating producers, stakeholders and consumers on sustainable bioenergy production and applications is a priority in building a sustainable energy economy. Building a sustainable bioenergy economy will depend on educating producers, stakeholders, consumers, and policy makers.

2. Scope of the Program

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

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

1. Assumptions made for the Program

Renewable alternative fuels have already had a major impact on Arkansas agriculture. Increased demand for corn, soybeans and other oilseeds used for bio-fuel has resulted in higher prices and larger acreages of those crops in the state. The next generation of bio-fuel technology is expected to use non-food, cellulosic bio-mass, such as the fast-growing grass and tree species being field tested Division of Agriculture experiment station locations.

We cannot assume that federal and state incentives for biofuel production and use will continue. Further, we cannot shift large amounts of production capacity from food to energy. Increases in production of biofeedstocks must come largely from non-food input sources and through increased efficiencies in production practices.

The University of Arkansas, Division of Agriculture will continue research and education into developing biomass crop and forestry systems for sustainable energy production. Evidence: Field tests of bioenergy crops will continue to be conducted at a number of Division of Agriculture locations, including the Southeast Research and Extension Center at Monticello, Southwest Research and Extension Center at Hope, Lon Mann Cotton Research Center at Marianna, Pine Tree Research Center at Colt, Northeast Research and Extension Center at Keiser, Rohwer Research Station, Arkansas Agricultural Research and Extension Center at Fayetteville and in fields of cooperating farmers.

Interdisciplinary teams in research and extension are necessary to address critical issues in sustainable bioenergy. The Division of Agriculture faculty will work across disciplines and departments to investigate sustainable energy projects, issues, and policies through the integrated missions of research, education, and Extension outreach - Evidence: Formation of the UA Environmental Task Force charged with inventorying existing research and extension activities, setting priorities and, where needed, initiating new programs. The Task Force will continue to work across departments on critical sustainable energy issues.

The Division of Agriculture will continue to seek financial support in our effort to address the key issues mentioned above -and it is assumed that funding will be available. The Division of Agriculture will

continue to produce timely educational products.

2. Ultimate goal(s) of this Program

Increase production of available renewable bio-based energy.

Increased production and use of fast growing woody biomass for bioenergy production.

Increase available energy from biomass sources while maintaining and sustaining a viable food and fiber supply.

Evaluate the impact of biomass production on water quality and ecosystem health.

Educate stakeholders to make informed decisions regarding bioenergy production and use.

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
2013	8.5	0.0	25.0	0.0
2014	8.5	0.0	25.0	0.0
2015	8.5	0.0	22.0	0.0
2016	8.5	0.0	20.0	0.0
2017	8.5	0.0	20.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Develop educational materials, curriculum, & resources
Workshops, meetings
Field Days
Demonstrations
News articles
Newsletter
Web-based Education
Continuing Education
Lab and Field Research
Deliver Services
Provide Training

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

Extension

Direct Methods	Indirect Methods
● Education Class ● Workshop ● Group Discussion ● One-on-One Intervention ● Demonstrations ● Other 1 (Educational Programs and Events)	● Newsletters ● Web sites other than eXtension

3. Description of targeted audience

Youth
Agri Business
Row Crop Agricultural Producers
Consultants
Forest Landowner Groups
Forest Industry
Loggers
Natural Resource Professionals
Landowners
Educators
Agency personnel
Livestock producers
Watershed and other Not-for-profit organizations
General public
Researchers
Policy makers
Research funding personnel and agencies

V(G). Planned Program (Outputs)

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

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

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

V(H). State Defined Outputs

1. Output Measure

- Number of educational programs and events held related to sustainable energy.
- Number of field days related to sustainable energy
- Number of educational materials & curriculum developed related to sustainable energy.
- Number of locations for bioenergy crop demonstrations and research field days.
- Number of refereed research articles published related to sustainable energy.
- Number of research-based, non-refereed publications published related to sustainable energy.
- Number of research-based scientific presentations at scientific or professional meetings related to sustainable energy.
- Number of research projects on biomass crops conducted in Arkansas.
- Number of research projects on biofuels performance and emissions conducted in Arkansas.

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

V(I). State Defined Outcome

O. No	Outcome Name
1	Individuals adopting one practice from the recommended list of energy conserving practices.
2	Energy audits conducted.
3	Graduate students working on bioenergy projects or biofuels labs.

Outcome # 1

1. Outcome Target

Individuals adopting one practice from the recommended list of energy conserving practices.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management
- 123 - Management and Sustainability of Forest Resources
- 133 - Pollution Prevention and Mitigation
- 136 - Conservation of Biological Diversity
- 402 - Engineering Systems and Equipment
- 403 - Waste Disposal, Recycling, and Reuse
- 601 - Economics of Agricultural Production and Farm Management
- 605 - Natural Resource and Environmental Economics
- 610 - Domestic Policy Analysis

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 2

1. Outcome Target

Energy audits conducted.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 605 - Natural Resource and Environmental Economics

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 3

1. Outcome Target

Graduate students working on bioenergy projects or biofuels labs.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 101 - Appraisal of Soil Resources
- 102 - Soil, Plant, Water, Nutrient Relationships
- 112 - Watershed Protection and Management
- 123 - Management and Sustainability of Forest Resources
- 133 - Pollution Prevention and Mitigation
- 204 - Plant Product Quality and Utility (Preharvest)
- 402 - Engineering Systems and Equipment
- 403 - Waste Disposal, Recycling, and Reuse
- 511 - New and Improved Non-Food Products and Processes
- 601 - Economics of Agricultural Production and Farm Management

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

Sustainable energy crops are easily impacted by external forces beyond our control. These diverse external factors can include changes in the economy, regulations, markets for other energy sources, shifts in public policy, and technology. For example, a downturn in economy may reduce the ability of landowners to adopt alternative crops/production practices. Government regulations can have significant impact on where and what practices can be adopted. Competition for natural resources such

as land, water etc. may limit the choices available to landowners. Assignment of duties can impact the staff support available for this program area.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Programs in sustainable energy are relatively new therefore the evaluation process is in its early stages. For example, field demonstrations indicate that the technological processes for developing sustainable energy through biomass sources exist however, the economic viability is unknown. We will also be conducting evaluations on economic viability, bio energy, and evalutiaons of educational progrm effectiveness. Such evaluations may include: benefit/cost analyses, participant surveys of knowledge gained, and adoption of recommended practices.

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Global Food Security and Hunger

2. Brief summary about Planned Program

The University of Arkansas Division of Agriculture strives to address global food security and hunger by increasing crop and animal production and helping producers remain competitive and sustainable in the global economy. Programs to address crop yields will include cultivar/hybrid development and selection, nutrient management, production practices, timing of inputs, crop rotation benefits, irrigation timing, controlling weeds, diseases, insects, and soil, plant, water and nutrient relationships. The Division's Center for Agricultural and Rural Sustainability has the goals of exploring, understanding, and innovating food production systems at all scales to insure production of nutritious, safe, affordable, and profitable food for the next 50 years by integrating global data on natural resources, global climate change, and agricultural production, post-harvest processing, distribution and consumption. Division faculty will also work to address issues of livestock production, animal products and processing, manure management and aquaculture. The goal of the animal research program is to provide basic and practical information on animal and poultry physiology, genetics, nutrition and animal health that will help Arkansas livestock producers and food companies remain competitive in the global market place. Extension goals include developing better production strategies through training courses for poultry and breeder hatchery management, short courses for poultry and allied industry personnel, education programs for producers, water quality demonstrations, disease recognition and/or preventative programs and environmental control of confined livestock housing.

Because agriculture contributes more than 12 percent to Arkansas's gross domestic product, executing sustainable research and outreach programs in food security and hunger are paramount.

The Division of Agriculture will provide information and technical assistance related to production, processing, biosecurity and bioterrorism. Needs will focus on the general public and consumers, and livestock, poultry, crop, and alternative agriculture system producers and programs.

The Division of Agriculture faculty will collaboratively develop and deliver efficient production and processing practices and breakthrough science technology.

These sustainable efficiencies will be used to increase youth and general public awareness of science based programs in Global Food Security and Hunger.

18.8% of Arkansans live below the poverty line and can't afford enough food to eat. That means that 1 in 6 of our neighbors struggle with making ends meet and providing enough food for their family. 10.2% of Arkansans over the age 65 live below the poverty line and have to choose between food and medicine. Arkansas is ranked 3rd in the nation for the most incidences of food insecurity. 18.6% of households in Arkansas are Food Insecure.

When food and nutrients are chronically inadequate, hunger leads to high medical, educational, psychological, economic, and social costs.

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

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

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

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

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
101	Appraisal of Soil Resources	4%		6%	
102	Soil, Plant, Water, Nutrient Relationships	9%		9%	
111	Conservation and Efficient Use of Water	4%		5%	
112	Watershed Protection and Management	4%		5%	
201	Plant Genome, Genetics, and Genetic Mechanisms	4%		5%	
204	Plant Product Quality and Utility (Preharvest)	6%		9%	
205	Plant Management Systems	10%		13%	
211	Insects, Mites, and Other Arthropods Affecting Plants	1%		1%	
212	Pathogens and Nematodes Affecting Plants	1%		1%	
213	Weeds Affecting Plants	7%		8%	
301	Reproductive Performance of Animals	2%		4%	
302	Nutrient Utilization in Animals	2%		4%	
303	Genetic Improvement of Animals	2%		4%	
306	Environmental Stress in Animals	4%		8%	
307	Animal Management Systems	2%		5%	
311	Animal Diseases	3%		6%	
601	Economics of Agricultural Production and Farm Management	4%		6%	
703	Nutrition Education and Behavior	10%		0%	
704	Nutrition and Hunger in the Population	20%		0%	
722	Zoonotic Diseases and Parasites Affecting Humans	1%		1%	
	Total	100%		100%	

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

1. Situation and priorities

Food production agriculture is a large and diverse industry in Arkansas. Research and Extension programs in rice, wheat, soybean, corn, and grain sorghum are crucial to make Arkansas competitive in the global economy. Over 6 million acres of row crops are grown annually in Arkansas, contributing over $3 billion to the state's economy. Although relatively small in size, fruit, nut and vegetable production is a significant and growing industry.

Increased demand for primary production products is increasing pressure on non-developed lands, especially the most biologically diverse landscapes on Earth. Increased production without increasing the land base means increased yield from current agricultural lands. This will require increased irrigation, fertilization, and pest control. A comprehensive assessment of impacts of decisions related to agricultural production is essential to make informed and rational decisions.

The Arkansas poultry and livestock industry is a major source of jobs, income and cash flow. Arkansas commodity poultry production exceeds $3.6 billion per year and commodity livestock exceeds $520 million per year. Arkansas has 1.8 million head of cows and calves. Increased input costs (including higher energy costs), fluctuating market prices, and production efficiency continue to be major concerns of the state's livestock and poultry industry.

Biosecurity research and education is critical to the sustainability of Arkansas agriculture. In Arkansas, diseases could cost the industries more than $230 million a year. Since the production of poultry in Arkansas is approximately 24% of the US production total any outbreak in Arkansas or anywhere in the US would be devastating in terms of dollar value on the economy of Arkansas or the nation.

Monitoring for crop diseases, for insects and weeds is an important ongoing effort to prevent or mitigate disruption of sustainable crop production. Introduction of new pathogens and pests, and evolution of new, more aggressive strains of existing pathogens or resistent weeds and insects continues to pose biosecurity threats to crop production in Arkansas.

Agricultural producers and landowners are seeking alternative ways to generate income from their land. There is a trend of increased sales direct to the public and substantial emergence of organic and farmer markets. Growth in the organic market ranges from 15% to 20% annually since 1997. Arkansas continues to experience increased demand for locally produced food from numberous production methods.

15.9% of Arkansas households are food insecure. 5.6% have very low food security where household members reduced food intake because of insufficient money or other food resources. When food and nutrients are chronically inadequate, hunger leads to high medical, educational, psychological, economic, and social costs. In addition, 14% of the Arkansas population are 65 years or older and therefore in greater need of assistance.

2. Scope of the Program

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

- Integrated Research and Extension
- Multistate Integrated Research and Extension

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

1. Assumptions made for the Program

Some primary assumptions that are made related to this program include: Arkansas producers will continue to face many challenges in producing profitable crops and maintaining sustainability of land; cooperative efforts with grower groups, commodity boards, regulatory agencies, and other organizations will provide valuable feedback to enhance programming on a regional and statewide basis; on-farm research results will generate data from which recommendations are derived; fruit, nut, and vegetable production will remain as a major emphasis area for long-range educational programs; new and existing horticultural production and service industries will require on-going research and educational assistance; livestock production will continue to be a major industry in Arkansas; livestock producers will face ever changing challenges, and they will look to the UA Division of Agriculture to help them face those challenges; demand for agricultural products will continue to increase over the next 40 years, driven by increasing populations and increasing prosperity; demand for high quality food will continue expanding rapidly; demand for biofuels will increase as petrochemical prices continue to climb; urban landscapes will continue expanding, taking peri-urban farmlands at increasing rates; the result of these and other pressures on the landscape is a dramatic loss in biodiversity, as forests, wetlands and prairies are converted to urban and agricultural systems; given current trends in declining numbers of farms, part-time and hobby farmers, specialized farming, and the globalization of agriculture, producers will continue to seek new and innovative ways to generate farm income, identifying niche markets and capitalizing on specialized agricultural opportunities; strong livestock and poultry industries will remain vital components of Arkansas's economy; water and air quality issues will continue as important issues; regulations and court actions will impact manure management options; economically viable alternative higher value uses of animal manure can be found; the classic "personal property rights vs. public good" situation will require a blend of science, economics, legal, community relations, and compromises; increased collaborations will occur with regulatory officials, state health officials, policy-makers, growers/producers, and the general public to develop an effective biosecurity strategy and plan; Division of Agriculture testing and monitoring laboratories and facilities will continue to operate in order to process and diagnose plant, soil and animal-related samples to identify possible threats to the food-producing capability of Arkansas agriculture; targeted audiences are willing and able to participate in nutrition education and food security programs; and that a growing number of part-time and alternative agricultural producers will continually seek new and innovative ways to generate farm income, identify niche markets and capitalize on specialized agricultural opportunities as a matter of economic sustainability and cultural survival.

2. Ultimate goal(s) of this Program

Through integrated UA Division of Agriculture research and education efforts, the ultimate goals of the Global Food Security and Hunger planned program include:

- Providing quantitatively rigorous geospatial predictions of crop yields globally under a variety of scenarios
- Reducing global food pressures by increasing yield in areas most threatened by climate change impacts
- Providing transparent assessments of the impact of agricultural consumer decisions on rural prosperity globally using life cycle assessment
- Developing crop production systems that are sustainable and competitive in the global marketplace while providing food to feed the growing world population
- Collaborating with industry, commodity groups, etc., to facilitate technology development and

adoption
- Initiating cooperative work among scientific disciplines to fine-tune the best food production management practices over a variety of geographic regions
- Continue supporting strategic partnerships that create value-added benefits for Arkansas' environment and its people
- Expanding programs for effective sustainable agriculture systems
- Increasing and enhancing horticulture knowledge and expertise of commercial and consumer audiences and Extension staff
- Increasing number of and improving both quality and profitability of commercial fruit, nut, and vegetable production operations
- Ensuring the viability and efficiency of the livestock, poultry and forage industries so they compete effectively in domestic and global markets
- Supporting the aquaculture industry as a sustainable alternative enterprise
- Improving animal biosecurity and reducing the risk of a disease threat in poultry and livestock operations
- Improving the security of plant health through early identification and management of invasive plant pests
- Maintaining and sustaining a viable food supply by providing the needed information on livestock manure management practices
- Educating and encouraging individuals and families to adopt practices to extend food resources and household food security
- Educating individuals and communities to create environments where all Arkansans have access, at all times, to enough food for an active, healthy life for all household members
- Enhancing economic opportunities for landowners and tenants using sustainable land management practices to improve rural economies in 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
2013	106.2	0.0	267.0	0.0
2014	106.2	0.0	266.0	0.0
2015	106.2	0.0	265.0	0.0
2016	106.2	0.0	264.0	0.0
2017	106.2	0.0	263.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

University of Arkansas Division of Agriculture faculty will discover new knowledge and disseminate that knowledge related to global food security and hunger to target audience groups using a broad range of direct and indirect methods will be used to provide information to both groups and individuals that make up the target audiences for this program area. Methods to be used include: conducting discovery and applied research, developing and conducting educational classes, workshops, meetings, demonstrations, tours, and field days, direct clientele contacts through office visits, on-site visits and one-on-one

consultations, creating and publishing educational materials and resources, providing diagnostic services, disseminating information using the mass media outlets of print, radio and television, distribution of information through newsletters and other direct mailings, and using online electronic delivery methods (Web-based learning modules, publications, podcasts, etc.). Many of these efforts will be accomplished through collaborative efforts with other agency, organizational and industry partners.

Faculty with the Division of Agriculture's Center for Agricultural and Rural Sustainability will also be conducting focused research related to global food productivity and security in the following ways:

* Developing the DSSAT-CERES model for maize globally in order to evaluate blue versus green water demand.
* Developing water use scenarios for maize yield under a range of climate change models.
* Analyzing the impact by basin of the increase in urban demand for water resources and their impacts on agricultural blue water availability.
* Analyzing the impacts of climate change scenarios on local and global crop production strategies.
* Evaluating the impact of crop production strategies on food security by region.
* Evaluating the potential impact of alternative crop strategies (small producers) on regional food security.
* Exploring the relationship between profit, market stability, social stability, prosperity, and food security at local, regional, and global levels.

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

Extension

Direct Methods	Indirect Methods
● Education Class	● Public Service Announcement
● Workshop	● Newsletters
● Group Discussion	● TV Media Programs
● One-on-One Intervention	● Web sites other than eXtension
● Demonstrations	● Other 1 (Mass Media)
● Other 1 (Soil/Water Testing)	● Other 2 (Electronic methods and Podcasts)
● Other 2 (Surveillance and Monitoring)	

3. Description of targeted audience

Target audiences for the various aspects of the Arkansas Global Food Security and Hunger planned program include:

Agricultural food crop growers/producers
Livestock/poultry producers
Commercial poultry producers
Commercial poultry company personnel
Aquaculture producers
Non-farm private landowners
Agricultural consultants
Agribusiness/allied Industry personnel
Horticulture production and service business personnel
Local, state and federal agency personnel

Master gardeners
Community leaders
Policy and decision makers
Low-income families with children
Low-income older adults
Hispanic/Latino families
African-American families
Single women
First responder emergency personnel
Research funders
General Public
Policy makers (US and international agricultural water resource managers), Supply chain managers (consumer package good manufacturers and biotech companies)

V(G). Planned Program (Outputs)

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

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

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

V(H). State Defined Outputs

1. Output Measure

- # of agronomic production education meetings related to food production
- # of demonstrations/on-farm research related to food crop production
- # of farm visits related to food crop production
- # of row crop field days related to food production
- # of educational meetings, demonstrations, field days, site visits, and other group events held to educate commercial and consumer clientele in fruit, nut, and vegetable production
- # of clientele contacts from educational classes, workshops, group discussions, one-on-one, on farm demonstration interventions, demonstrations, and other educational methods related to food crop production.
- # of livestock or poultry related educational programs, workshops, educational meetings and/or field days.
- # of clientele attending livestock or poultry related educational programs (field days, workshops, etc.)
- # of producers receiving livestock or poultry related educational materials (newsletters, fact sheets, etc.)
- # of livestock or poultry related farm visits or one-on-one consultations with producers.
- # of clientele trained on agricultural biosecurity.
- # of requested consultations related to exotic animal disease concerns.
- # of hits to the CES Website regarding avian and livestock biosecurity.
- # of farm visits or one-on-one consultations with clientele related to biosecurity.
- # attending food production alternative agricultural systems related education classes, workshops, demonstrations, group discussions, and other educational events.
- # of food production alternative agricultural systems related demonstrations (e.g., demonstration study farm, food plots, etc.)
- # of food and nutrition clientele contacts from education classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational methods.
- # of food and nutrition education classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational events.

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

V(I). State Defined Outcome

O. No	Outcome Name
1	# of clientele (non-duplicated) who use the DD50 program for improved rice production.
2	# of clientele using the RICESEED program.
3	# of clientele that utilize SOYVA to assist with variety selection.
4	# of livestock producers who increased knowledge related to livestock production management practices.
5	# of livestock producers who initiated or improved their record keeping.
6	# of poultry producers who adopted new practices or technology.
7	# of livestock producers who changed an existing management practice or adopted a new practice.
8	# of growers/producers reporting knowledge gained about the need for biosecurity.
9	# of growers/producers reporting intent to adopt new biosecurity practices for animal production facilities.
10	# of diagnostic plant pest samples submitted.
11	# of diagnostic nematode samples submitted.
12	# of Asian Soybean Rust positive samples.
13	# of samples submitted for exotic animal diseases testing.
14	# of clientele who reported knowledge gained about speciality food related products.
15	# of clientele who initiated specialty food-related enterprises.
16	# of participants who indicated that they increased their knowledge related to food, nutrition and/or food resource management following completion of a nutrition education program.
17	# of participants who adopted at least one positive nutrition practice.
18	# of participants who adopted at least one food resource management practice.
19	# of participants who reported saving money on groceries following completion of a nutrition education program.
20	# of participants who reported they less often run out of food before the end of the month following completion of a nutrition education program.
21	# of plant varieties developed.

Outcome # 1

1. Outcome Target

# of clientele (non-duplicated) who use the DD50 program for improved rice production.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 111 - Conservation and Efficient Use of Water
- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 205 - Plant Management Systems

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 2

1. Outcome Target

# of clientele using the RICESEED program.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 3

1. Outcome Target

# of clientele that utilize SOYVA to assist with variety selection.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 4

1. Outcome Target

# of livestock producers who increased knowledge related to livestock production management practices.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 306 - Environmental Stress in Animals
- 307 - Animal Management Systems
- 311 - Animal Diseases
- 601 - Economics of Agricultural Production and Farm Management

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 5

1. Outcome Target

# of livestock producers who initiated or improved their record keeping.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 205 - Plant Management Systems
- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 306 - Environmental Stress in Animals
- 307 - Animal Management Systems
- 311 - Animal Diseases
- 601 - Economics of Agricultural Production and Farm Management

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 6

1. Outcome Target

# of poultry producers who adopted new practices or technology.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 306 - Environmental Stress in Animals
- 311 - Animal Diseases

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 7

1. Outcome Target

# of livestock producers who changed an existing management practice or adopted a new practice.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 306 - Environmental Stress in Animals
- 307 - Animal Management Systems
- 311 - Animal Diseases
- 601 - Economics of Agricultural Production and Farm Management

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 8

1. Outcome Target

# of growers/producers reporting knowledge gained about the need for biosecurity.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants
- 311 - Animal Diseases
- 722 - Zoonotic Diseases and Parasites Affecting Humans

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 9

1. Outcome Target

# of growers/producers reporting intent to adopt new biosecurity practices for animal production facilities.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 311 - Animal Diseases
- 722 - Zoonotic Diseases and Parasites Affecting Humans

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 10

1. Outcome Target

# of diagnostic plant pest samples submitted.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 11

1. Outcome Target

# of diagnostic nematode samples submitted.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 212 - Pathogens and Nematodes Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 12

1. Outcome Target

# of Asian Soybean Rust positive samples.

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 212 - Pathogens and Nematodes Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 13

1. Outcome Target

# of samples submitted for exotic animal diseases testing.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 311 - Animal Diseases
- 722 - Zoonotic Diseases and Parasites Affecting Humans

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 14

1. Outcome Target

# of clientele who reported knowledge gained about speciality food related products.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 601 - Economics of Agricultural Production and Farm Management

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 15

1. Outcome Target

# of clientele who initiated specialty food-related enterprises.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 307 - Animal Management Systems
- 601 - Economics of Agricultural Production and Farm Management

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 16

1. Outcome Target

# of participants who indicated that they increased their knowledge related to food, nutrition and/or food resource management following completion of a nutrition education program.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 704 - Nutrition and Hunger in the Population

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 17

1. Outcome Target

# of participants who adopted at least one positive nutrition practice.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 704 - Nutrition and Hunger in the Population

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 18

1. Outcome Target

# of participants who adopted at least one food resource management practice.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 704 - Nutrition and Hunger in the Population

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 19

1. Outcome Target

# of participants who reported saving money on groceries following completion of a nutrition education program.

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 704 - Nutrition and Hunger in the Population

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 20

1. Outcome Target

# of participants who reported they less often run out of food before the end of the month following completion of a nutrition education program.

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 704 - Nutrition and Hunger in the Population

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 21

1. Outcome Target

# of plant varieties developed.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 201 - Plant Genome, Genetics, and Genetic Mechanisms

4. Associated Institute Type(s)

- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

External factors that may impact outcomes within the Global Food Security and Hunger priority planned program area include the following: 1) program realignment and prioritization efforts within the NIFA will impact the availability and allocation of both formula and competitive grants from the Federal partner; 2) a reduction in faculty and staff (FTEs) due to budget reductions from the state and local partners may reduce the Division of Agriculture's ability to deliver educational programming in the state. State, as well as global, food production outcomes will be influenced by market conditions, including the fuel vs. food pressure, changes in payments to farmers, increased production input costs, land grant university funding, the downturn in the economy, weather conditions, natural disasters, the condition of the overall economy, changes in public policy and regulations, and outbreaks of diseases affecting plants or animals. Global climate change will alter basin-level water supplies around the world, destabilizing crop production, and potentially exacerbating already tenuous food supplies.

Other factors that could impact program outcomes would be human epidemics and bioterrorism/agroterrorism attacks. Any of these factors could cause projected outcomes to vary widely.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Comprehensive program and departmental evaluation reviews to determine the quality and efficacy of research and Extension programs are conducted on a five to seven year cycle by various research based evaluation methods. Evaluation studies within individual Extension programs that are delivered to target audiences will be conducted using accepted program evaluation methodology and tools to determine changes in knowledge, skills, attitudes, behaviors, practices, and any social, environmental or economic condition changes that occur as a result of the programs.

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Climate Change

2. Brief summary about Planned Program

The University of Arkansas Division of Agriculture developed the Center for Agricultural and Rural Sustainability (CARS) in 2007 in order to better coordinate, integrate, and motivate innovation in research, outreach, and education into land-based prosperity. As part of this work, CARS has initiated a series of projects aimed at measuring and reducing greenhouse gas (GHG) emissions from agricultural production, processing, and distribution practices. CARS has pioneered use of life cycle analyses (LCAs) in US agriculture using high spatial resolution data. The three major projects are: 1. Dairy LCA for liquid milk, from cradle to grave; 2. Cotton LCA for GHG emissions from seed to farm gate; 3. Pork LCA from cradle to grave. These projects will provide the most comprehensive and geographically explicit LCAs for US agriculture ever conducted, and will support innovations in reductions of GHG emissions across agricultural production practices. In addition, CARS is spearheading a global initiative on the impact of climate change on crop production at high spatial resolution. Additional research efforts are focused on direct quantification of GHG emissions from rice; assessments of soil carbon storage and sequestration; and evaluations of potential economic and impacts of various production practices based on their carbon footprints and how potential policies variations may affect production agriculture in Arkansas. Collectively, these efforts are focused on i) generating knowledge to develop agricultural systems that maintain high productivity in the face of climate changes and reduce greenhouse gas emissions, and ii) helping producers to plan and make decisions in adapting to changing environments, sustaining economic vitality, and taking advantage of emerging economic
opportunities offered by climate change mitigation technologies.

Arkansas is the nation's leading producer of rice. Rice production is a major consumer of water and nitrogen in Arkansas. Division of Agriculture Scientists have developed a novel soil test for rice producers called N-STaR, a superior prediction model of nitrogen needs of rice grown on silt loam soils in Arkansas. If N-STaR is adopted by rice producers, nitrogen use efficency should increase in many fields and nitrogen rates may be reduced on many fields. The principles involved in creating N-STaR will be tested on clay soils for rice, for corn production and for wheat production.

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

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

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

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

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
101	Appraisal of Soil Resources	20%		10%	
102	Soil, Plant, Water, Nutrient Relationships	0%		12%	
111	Conservation and Efficient Use of Water	15%		5%	
112	Watershed Protection and Management	10%		5%	
123	Management and Sustainability of Forest Resources	10%		3%	
131	Alternative Uses of Land	5%		2%	
132	Weather and Climate	0%		2%	
133	Pollution Prevention and Mitigation	5%		3%	
136	Conservation of Biological Diversity	0%		2%	
141	Air Resource Protection and Management	0%		15%	
201	Plant Genome, Genetics, and Genetic Mechanisms	0%		5%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	0%		10%	
205	Plant Management Systems	0%		3%	
302	Nutrient Utilization in Animals	5%		2%	
306	Environmental Stress in Animals	0%		2%	
307	Animal Management Systems	5%		2%	
402	Engineering Systems and Equipment	0%		2%	
405	Drainage and Irrigation Systems and Facilities	10%		5%	
601	Economics of Agricultural Production and Farm Management	15%		10%	
	Total	100%		100%	

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

1. Situation and priorities

Agriculture is commonly cited as a major source of GHGs. However, agricultural production practices can significantly reduce the emission rate of GHGs, and in some cases convert agricultural practices to a net sink for carbon. Demand for food, feed, fiber, and now fuel from agricultural production systems may have to increase by 50 to 100 percent in the next 40 years in order to meet the global food needs of the projected 9.25 billion people in 2050. This increase in demand for land-based primary production products

is increasing pressure on non-developed lands, especially the most biologically diverse landscapes on Earth: rainforests, wetlands, and prairies. Increasing production without increasing the land base means increasing yield from current agricultural lands. This will require increased energy and fertilizer inputs. Understanding where the pressures are greatest, and the opportunities for increasing yield while decreasing GHGs will allow for a more strategic expansion of agricultural technology globally. The complexity of global food production has led to deep fragmentation of knowledge across supply chains.

2. Scope of the Program

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

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

1. Assumptions made for the Program

The program assumes that demand for agricultural products will continue to increase over the next 40 years. This increase in demand will be driven by increasing populations and increasing prosperity. The rate of population growth measured as numbers of people added to Earth per year has never been greater. The rate of increase in prosperity, especially in Asia, has never been higher, as a percent or total numbers. The program assumes demand for high quality food will continue expanding rapidly. Concurrent with this expansion, the biofuels revolution is well under way. Demand for biofuels will increase as petrochemical prices continue to climb. The program assumes that the result of these and other pressures on the landscape is a dramatic loss in biodiversity, as forests, wetlands and prairies are converted to urban and agricultural systems. The program assumes that demand for forest products like paper, lumber, biofuels feedstocks will increase in the long term, but will remain relatively stable in the next five years.

The Division of Agriculture assumes that creating efficiency (whether by reducing inputs without sacrificing yield, by increasing yields without increased inputs, or by increasing yields by superior management of inputs) is creating Climate Change mitigation. The program does not assume that all Climate Change mitigation can be profitably adopted, rather that some Climate Change mitigating practices will be adopted slowly or not at all due to increased risk or loss of profitability.

2. Ultimate goal(s) of this Program

The ultimate goals of this program are to provide quantitatively rigorous analyses of crop production practice impacts on GHG emissions and carbon footprints, provide strategies that seek to mitigate GHG emissions from crop and forestry production, and production strategies which allow adaptation to Climate Change which do not compromise yield 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

Year	Extension		Research	
	1862	1890	1862	1890
2013	1.8	0.0	43.0	0.0
2014	1.8	0.0	43.0	0.0
2015	2.0	0.0	42.0	0.0
2016	2.0	0.0	42.0	0.0
2017	2.0	0.0	42.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Basic and applied research efforts will continue to be conducted in the areas of life cycle analyses for dairy(milk), cotton, and swine production; temperature stress in rice, cotton, and poultry; greenhouse gas emissions from natural and managed agroecosystems and from alternative-fuel-powered engines; assessment of soil carbon storage and sequestration in natural and managed agroecosystems; efficient water and nitrogen use in rice; efficient use of nitrogen in corn and wheat production, and on projections of economic impacts of climate-adaptive practices on crop production.

Research to expand the utiltiy of N-STaR is planned for clay soils. The adaptation of N-STaR by rice producers in Arkansaswill be quantified. The principles of N-STaR will be investigated for use in corn and wheat.

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

Extension

Direct Methods	Indirect Methods
● Education Class ● Workshop ● One-on-One Intervention ● Demonstrations ● Other 1 (Rice Verification Program)	● Public Service Announcement ● Newsletters ● TV Media Programs ● Web sites other than eXtension

3. Description of targeted audience

Producers of rice, cotton, poultry, swine, corn, wheat, and forestry.

V(G). Planned Program (Outputs)

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

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

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

V(H). State Defined Outputs

1. Output Measure

- Funded research amounts (in dollars)related to the Climate Change Program.
- Number of current year climate relevant research programs
- Number of current year climate relevant educational programs

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

V(I). State Defined Outcome

O. No	Outcome Name
1	Life cycle inventory methodology and data for row crops for greenhouse gases.
2	Number of N-StaR samples processed
3	Number of new assessment and management tools developed, including models and measurements of greenhouse gas emmisions
4	Number of current year citations of climate related publications

Outcome # 1

1. Outcome Target

Life cycle inventory methodology and data for row crops for greenhouse gases.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 101 - Appraisal of Soil Resources
- 102 - Soil, Plant, Water, Nutrient Relationships
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 131 - Alternative Uses of Land
- 132 - Weather and Climate
- 136 - Conservation of Biological Diversity
- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 205 - Plant Management Systems
- 405 - Drainage and Irrigation Systems and Facilities
- 601 - Economics of Agricultural Production and Farm Management

4. Associated Institute Type(s)

- 1862 Research

Outcome # 2

1. Outcome Target

Number of N-StaR samples processed

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

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

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 3

1. Outcome Target

Number of new assessment and management tools developed, including models and measurements of greenhouse gas emmisions

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 101 - Appraisal of Soil Resources
- 102 - Soil, Plant, Water, Nutrient Relationships
- 302 - Nutrient Utilization in Animals
- 601 - Economics of Agricultural Production and Farm Management

4. Associated Institute Type(s)

- 1862 Research

Outcome # 4

1. Outcome Target

Number of current year citations of climate related publications

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 101 - Appraisal of Soil Resources
- 102 - Soil, Plant, Water, Nutrient Relationships
- 111 - Conservation and Efficient Use of Water
- 123 - Management and Sustainability of Forest Resources
- 131 - Alternative Uses of Land
- 302 - Nutrient Utilization in Animals
- 601 - Economics of Agricultural Production and Farm Management

4. Associated Institute Type(s)

- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Appropriations changes
- Government Regulations
- Competing Public priorities
- Other (Global climate change)

Description

Rainfall and temperature regimes affect agricultural practices. Arkansas can experience wide temperature and rainfall ranges from year-to-year. Additionally, Arkansas can experience prolonged flooding and drought in a single season which may affect outcomes.

The effects of Global Climate change have not been fully and clearly elucidated; thus adaptation outcomes are nearly impossible to foresee.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Development and implementation of greenhouse gas (GHG) estimates from agricultural supply chains requires a retrospective assessment of the activities associated with production of an agricultural product, inventorying current activities, and analysis of case studies for validation of the analyses. Innovations for reducing GHG emissions require comparisons by regions.

Adoption of N-STaR can be predicted and quantified by the number of soil samples submitted for N-STaR analysis.

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Environment, Economics, Families and Community

2. Brief summary about Planned Program

This Planned Program allows the University of Arkansas Division of Agriculture to effectively identify and report a broad but connected range of economically and socially important aspects of Extension and Research investment in Arkansas. Components of the program include: Families, Youth and Communities; Economics and Commerce; Pest and Invasive Species Management; Non-Food Plants and Plant Products; Natural Resources and Environmental Management; and Food, Nutrition and Health.

The Division invests more than four hundred FTEs of professional program development, research and education in these state stakeholder defined areas of emphasis.

Families, Youth and Communities based efforts are grounded in 4-H programs including:
1) STEM (Science, Technology, Engineering and Math) 2); Citizenship; and 3) Healthy Living. All initiatives are designed to develop skills in communication, wise use of resources, social acceptance, leadership, entrepreneurship, healthy lifestyle choices, and self-responsibility.

Marriage, Parenting and Family Life Preparation programs focus on four areas: 1) Personal Development and Well Being; 2) Marriage and Couples Education; 3) Parenting; and 4) Child Care Provider Training.

Community and Economic Development Programs focus on people working together to create and protect their desired community. Local stakeholders are encouraged and provided with the knowledge and skills required in today's technology centered network of community interests.

Economics and Commerce Program efforts complement the focus area above by emphasizing the interconnectedness between the individual entrepreneur, family, farm, consumer, business, elected officials and government on both a local and regional level. Faculty uses the product of research to inform public policy decision-making and assist communities in identifying and implementing new community and economic development strategies designed to encourage entrepreneurship, small business and value-added development.

Program objectives include reduced risk and uncertainty in the marketplace and broader understanding of the agriculture, food and biofuel sectors of today's economy. Alternative agriculture enterprise is an additional emphasis. Included are agri-tourism, wildlife enterprise development and value added processing as economic development examples.

Three areas of program emphasis 1) Plants and Plant Products, 2) Pest Management, and 3) Natural Resource and Environment Programs have separate but closely connected faculty investment and program components. The Plants and Plant Products Program is centered in non-food component of Arkansas's agriculture economy. The primary plant production emphasis includes cotton, turf grasses, ornamental and landscape plants and the developing production systems for biofuel crops such as switchgrass, camelina, and miscanthus.

Research and education programs are designed to address cultivar/hybrid development and

selection, nutrient management, production practices, timing of inputs, crop rotation benefits, and irrigation timing as factors key to crop yields and production efficiency.

Pest management is also an important consideration in overall production management whether in the farm field, forest, home garden or urban landscape. Integrated Pest Management (IPM) is an essential research and education program that helps the agriculture producer, landscape manager or homeowner control pests in a more environmentally sensitive and efficient way. Attention is given to the growing public concern for risk of pesticide drift, soil and water quality concerns, pesticide resistance, and genetically modified organisms (GMO).

An increasing problem is the number of problem foreign invasive species that are being intentionally or accidentally introduced into the United States. Coping with these threats is a primary consideration for planning future pest management Research and Extension efforts.

Environmental concerns continue to be an underlying concern for most if not all of the Division's plant and animal science program development. The state has significant forest land both publicly and privately owned. These lands are home to abundant wildlife, recreational opportunity, ecosystem services and provide the fiber resource base from which we build and support homes and businesses. The state's forests provide water quality protection benefits, sequester carbon, and have potential as a significant source of bio-based fuel and energy.

Program emphasis in this program includes water quality and quantity, forest stewardship, wildlife habitat, value added enterprise, economics, pest and invasive species management, resource mapping, and defensible metrics to value services provided by forest ecosystems.

Food, Nutrition and Health programs are designed to help Arkansas citizens both understand the nature and quality of the food they eat and engage in the physical activity necessary to a healthy future and lifestyle. Extension's Food, Nutrition, Health and Aging programs have six components: 1) participation in regular physical activity; 2) adoption and maintenance of healthy lifestyles; 3) chronic disease prevention; 4) nutrition education; 5) medication literacy; and 6) environmental health. These nutrition and health based program efforts identify and promote evidence-based policies and practices that reduce the incidence of chronic disease.

The Division is challenged to bring its biotechnology resources and improved scientific understanding of food constituents related to human health and nutrition to the market-place. Advances in knowledge of human nutrition can drive improvements in food products and diets. Our multi-disciplinary teams of food scientists, bio-technologists, and medical experts are poised to be of significant benefit to the nutritional health and well being of Arkansas citizens.

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

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

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

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

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships	1%		7%	
112	Watershed Protection and Management	2%		9%	
123	Management and Sustainability of Forest Resources	1%		8%	
133	Pollution Prevention and Mitigation	1%		5%	
136	Conservation of Biological Diversity	1%		4%	
205	Plant Management Systems	1%		5%	
206	Basic Plant Biology	2%		2%	
216	Integrated Pest Management Systems	4%		3%	
403	Waste Disposal, Recycling, and Reuse	1%		5%	
501	New and Improved Food Processing Technologies	7%		18%	
601	Economics of Agricultural Production and Farm Management	3%		8%	
602	Business Management, Finance, and Taxation	2%		5%	
607	Consumer Economics	1%		1%	
608	Community Resource Planning and Development	4%		1%	
610	Domestic Policy Analysis	1%		1%	
701	Nutrient Composition of Food	11%		12%	
723	Hazards to Human Health and Safety	3%		1%	
724	Healthy Lifestyle	10%		0%	
802	Human Development and Family Well-Being	19%		2%	
806	Youth Development	25%		3%	
	Total	100%		100%	

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

1. Situation and priorities

Arkansas is home to more than 680 thousand youth under the age of eighteen. Twenty percent of these young people live in poverty and more than 160 thousand live in single parent families. This combination of circumstances compounded by the current economic state and limited job prospects, leaves little in the way of family based resources available to nurture and support children. These

beleaguered parents and guardians gain markedly from programs designed to strengthen their parenting and relationship building skills.

Add to the above circumstance the increasing Hispanic youth population (more than 32,000 children under the age of 18) and language becomes an additional hurdle for children and families.

Child care professionals are increasingly called to be a major contributor to the mentoring and nurturing needs of children. These professionals need on-going opportunities to update knowledge, skills and other aspects of their professional development.

Many rural communities are experiencing population declines, threatening the basic services necessary to community success. Strong forward thinking leaders are needed to both understand the current challenges and see opportunities for adapting successfully to this changing world.

The distinct differences between rural and urban areas of the state are underscored by the poverty statistics. Seventeen of Arkansas' most rural counties have the distinction of being designated as "persistent poverty" counties, where more than 20% of their people have lived in poverty for 30 years or more (www.ers.usda.gov/briefing/Rural/Typology/) and four Delta counties continue to register poverty rates of 30% or greater (U.S. Census Bureau). These same statistics inform the infrastructure development and maintenance difficulties in rural counties. Population declines, unemployment increases, mass lay-off events and a persistently low graduation rate and college attendance level further defines both the need and potential for positive intervention.

As a natural resource rich and dependent state, Arkansas' economic well being is constantly affected by the marketplace. High commodity prices are offset by extremely low forest products values, natural disasters, high energy input and equipment costs. The margins for error are minute. The farmer population is both aging and declining. The 2007 Census of Agriculture depicts the average age of the Arkansas farmer as 57 years. The total farm operations in 2007 numbered 49, 346, down from the 49,493 farms of record in 1997 (NASS).

Issues of herbicide and drug tolerant pests continue to drive management concerns for both animal and plant agriculture. The issues are also of concern to human health and diseases that emerge from the interface between humans and managed agriculture species. Arkansas continues to deal with persistent problems including: imported fire ant migration; insecticide resistant crop insect pests; herbicide resistant pigweed; soybean rust; feral hogs; white-nose bat syndrome; and the list continues.

Non-Food plants and plant products are becoming an increasingly important part of the Arkansas agriculture economy. As the urban population continues to increase, there is more demand for locally grown, horticulture crops, landscape and lawn plant materials and specialty plant materials for migratory songbirds and butterflies.

Energy issues are also driving investment in crops grown specifically for the fiber, oil an ethanol markets, primarily outside the state of Arkansas. Arkansas has in development, 5,000 plus acres of Miscanthus under the guidance of a MFA based BCAP program in Missouri. Proximity to Memphis Bioworks and the Tennessee and Oklahoma biofuels development programs will also continue to pressure Arkansas farmers to explore new crop alternatives. All of this pressure to explore plant and plant products comes at a time when the University of Arkansas Research faculty has released one of the highest performing public varieties of cotton in the system's history.

These high value crops pose potential threats to the historical base of agriculture in the state by adding to the demand for irrigation systems and competing directly for an already compromised water supply.

Natural resource concerns continue. Water quantity and quality, forest stewardship and health, wildlife habitat management, life cycle analysis and ecosystem services are all issues that challenge the institutions in Arkansas. The state is entering a three year Water Plan development process that will require significant time and attention from the Division. Nutrient sensitive areas have been declared by the state. Farmers and farm service providers in the identified areas require assistance, planning support and nutrient management education beyond anything traditionally provided by Extension educators.

Land managers are in constant search for answers to changing policy questions related to natural resource management issues such as: carbon trading and credits; nutrient trading and credits; water quality regulations; best management practices for the range of agriculture production management situations; Spill Prevention Control and Countermeasures (SPCC) rules for agriculture; pesticide application permit rules; animal manure and mortality management rules, etc. The list is long and growing. These issues are grounded in both the health of the natural environment and the health of citizens working and recreating therein.

Human well being also comes into play as a part of the Division's investment in Food, Nutrition and Health. Sixty-seven percent of adults and 38 percent of youth in grades K-12 are overweight or obese. Lifestyles are directly related to chronic diseases. Less than half of the state's adults and youth get the recommended amount of daily moderate physical activity. Twenty percent of youth and adults smoke and twenty-two percent of Arkansas teens have abused prescription drugs by the time they reach their senior year in high school. Approximately, thirty percent of adults, report regular use of "over-the-counter" medication in amounts exceeding recommended drug label doses. This misuse of medications places a tremendous cost and services burden on the state's health care system. Finally, seven percent of Arkansas adults have asthma. This incidence is the fifth highest prevalence of any state in the U.S.

2. Scope of the Program

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

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

1. Assumptions made for the Program

The theory of Positive Youth Development guides program development for the Arkansas 4-H Program. The research-based Targeting Life Skills Model is the foundation for measuring life skill development. Eight life skills have been selected to measure statewide. They include: decision-making; wise use of resources; communication; accepting differences; leadership; useful/marketable skills; healthy lifestyle choices; and self-responsibility.

Childcare training will continue to be needed because of state licensing requirements and the nature of families and the workforce.

Youth and adults need leadership, government, citizenship, civic engagement, and issue based knowledge and skills to better engage and serve local communities.

Community based stakeholders will engage in a process of identifying needs and opportunities for research and education in service to their economic and social interests.

Rural communities are willing to invest their own resources to build community capacity for economic development and long term planning,

Citizens are willing to learn new skills and obtain the knowledge necessary to productive change.

Members of the rural agriculture and business community are in search of new and innovative ways to generate income, while protecting the long term sustainability of their enterprise.

Pest management and pesticide safety requires a continuing investment in adaptation and grower/homeowner education.

Effective pest management education including, Integrated Pest Management (IPM) systems is best done at the local level by trusted County Extension Agents using experiential learning methods.

Cooperative relationships with grower groups, commodity boards, regulatory agencies, and other organizations is the best available system for providing information needed to design education programs suited to the needs of the audience.

On-farm research provides necessary and trusted data from which defensible management recommendations can be derived.

Best management practices designed to protect water quality and support broad sustainability objectives must be a component of the continuing research agenda.

Local County Extension Counsels provide a strong connection to the needs and priorities of local businesses, agriculture enterprises and communities.

Regional Research and Extension networks will continue to be encouraged and supported by both state and USDA NIFA organizations.

The University of Arkansas Division of Agriculture will continue to encourage and support multi-disciplinary teams of faculty in targeted natural resource management research, extension and education projects.

The University of Arkansas Division of Agriculture will continue to seek and support efforts to obtain the funding necessary to support on-going research and extension efforts associated with natural resource management and sustainability.

Arkansas has significant potential to better the lives of individuals and families through improved diets, healthy lifestyles and better managed physical health. A core piece of this effort is nutrition education. Nutrition education is based in the belief that : 1) participants have access to and consume specific foods; 2) targeted audiences are willing and able to participate in nutrition education programs; 3) knowledge change can lead to behavior change; and 4) people will be motivated to learn/change.

2. Ultimate goal(s) of this Program

Quality parenting that leads to socially competent children.

Individuals (teens and adults achieve personal well-being through skill development, attitude change and adoption of effective practices

Improved quality care for Arkansas' children

Improved social and economic well being for Arkansas communities of interest through research based educational programming that increases knowledge, skills and participation in creating a desired future.

Marriage and couple relationships strengthened and enhanced.

Implement research programs that provide insight into the strengths and needs of at-risk individuals, families and communities.

Identify and assist in the adoption of new technologies and practices that enhance profitability and manage risk, while protecting the environment and ensuring long term sustainability.

Position policy decision-makers at all levels to understand and use the policy tools important to community, regional, and state-wide economic viability.

Help Arkansas to achieve a high degree of competitiveness in a global economy.

Continue to support strategic partnerships that create value-added benefits for Arkansas' environment and citizens.

Reduce overall pesticide use and increase the efficiency of pesticides used.

Reduce the economic impact of major pests of animal and plant production systems.

Provide near real-time pest situation and management information to Arkansas producers.

Reduce accidental pesticide exposures and complaints, and promote environmental improvements in agriculture and urban landscapes in Arkansas.

Increase and enhance horticultural knowledge and expertise of commercial and consumer audiences and Extension professionals.

Increase forage and cotton production efficiency and environmental sustainability.

Remain vigilant and adaptive, responsive to locally identified concerns as they emerge.

Conserve habitat and water resources at the wildland/urban interface.

Increase the knowledge of community and business leaders regarding bioenergy and biofuel production and processing systems.

Raise medication literacy awareness to prevent over-medication and drug interaction errors.

Educate and encourage adoption of healthy lifestyles and nutrition behaviors, thus reducing long

term health care cost.

Reduce the incidence of chronic illness through research on issues of food, nutrition and health.

Educate rural audiences on primary and secondary prevention of common farm-related accidents.

Improve the Arkansas food industry's efficiency and competitiveness through its food products and processing system.

Educate individuals and community leaders about common environmental health issues such as mold and carbon monoxide and how to prevent complications from environmental pollutants.

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
2013	225.0	0.0	67.0	0.0
2014	225.0	0.0	67.0	0.0
2015	224.8	0.0	67.0	0.0
2016	225.8	0.0	67.0	0.0
2017	225.8	0.0	67.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Family, youth, and community focused educational programs within the University of Arkansas Division of Agriculture include events and activities in the program areas of Agriculture, Family and Consumer Sciences, 4-H Youth Development, Community and Economic Development and Leadership Development.

Specific programs include: 4-H Afterschool; ConnectAR; LeadAR; Master Gardeners; County Extension Councils; Extension Homemaker Councils; County 4-H Teen Leader Clubs and County based Youth Leadership Programs.

Conduct research and develop technology applications, products and strategies, including economic and policy issues, enabling enhanced global competitiveness.

Develop demographic information needed to support local education and decision support efforts by County Extension Agents assisting local business and community leaders.

Develop conduct and evaluate educational programs related to alternative agriculture systems and economic enterprises.

Assist and evaluate Farmers Markets for educational opportunity and community economic

development value.

Provide Pesticide Applicator Training, certifying and recertifying private and commercial/non-commercial pesticide applicators statewide each year.

Commodity based IPM programs and Pathology programs assist County Extension Agents in local efforts to improve crop production through the adoption of research based recommendations.

Train urban and commercial horticulture clientele in IPM through the Diversified IPM Program.

The Human Integrated Pest Management Program focuses on pests affecting humans. Pest targets include Africanized bees, termites, and fire ants in residential settings.

Researchers support the efforts of wildlife managers in controlling feral swine populations on both public and private land. The effort includes both management control and public policy education related to the trapping, transport and confinement of feral hogs.

Research and Extension Faculty provide cultivar screening programs for commodity crops related to disease and nematode control.

Conduct county- based educational programs and field days, workshops, demonstrations and field days related to production management systems, pest management, soil and water quality management, water use efficiency and tillage systems.

Develop and support social media applications that provide real time information as decision support for land and crop managers, including remote sensing of field to field production management circumstances, irrigation system controls and disease/insect pest diagnostics.

Maintain strong and continuing public and private media connections and associations with both farm and non-farm audiences.

Use all available resources, newsletters (both on-line and paper copy), demonstrations, workshops, on-line educational courses, field days and one-on-one consultations to extend the research based knowledge to appropriate clientele.

Division of Agriculture faculty will develop, evaluate and disseminate education programs and curricula, incorporating new research and emphasizing healthy lifestyles. Programs include but are not limited to the following:

Walk Across Arkansas
Strong Women
Be Medwise Arkansas
Healthy Homes, Healthy People
Fit in 10
Living Well with Diabetes
Right Bite Cooking School
Mediterranean Cooking School
Aging in Place
Arthritis Initiative
AgrAbility
Acknowledging Aging

Also included is an emphasis on food processing, efficiency, chemistry, and associated nutrition and human health implications.

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

Extension

Direct Methods	Indirect Methods
● Education Class	● Public Service Announcement
● Workshop	● Newsletters
● Group Discussion	● TV Media Programs
● One-on-One Intervention	● eXtension web sites
● Demonstrations	● Web sites other than eXtension
● Other 1 (Online Class)	● Other 1 (Grant Development)
	● Other 2 (Podcasts and online education)

3. Description of targeted audience

Employers and Employees
Commodity Boards
Consumers
Farmers - regardless of agriculture enterprise or means capability or ethnicity
Health Professionals
School personnel - teachers, administrators, janitors, aides, cafeteria staff, bus drivers, students and coaches
Child Care Providers
Adults
Youth
Entrepreneurs, Hotel management, Restaurant management
Landowners - forest, crop, urban, recreational, etc.
Horticulture production and service businesses/Commercial Landscapers and Maintenance
Master Gardeners, Extension Homemakers (Councils), County Extension Councils
Military Families
Loggers
Natural Resource Professionals
Crop consultants
Homeowners
State and Federal Agency Personnel
Crop and Livestock Management Service Providers
Affiliated farm, forest, natural resource and wildlife organizations
Research and Teaching Faculty
General Public
Watershed management organizations
County and local conservation officials (Conservation District Directors)
Local Farm Organization Leaders and Boards
Extension Faculty and County Extension Agents
Project and program funding organizations
Public Health Officials
Policy Decision-makers

Regulatory Professionals
Pest Control Operators
Civic leaders and organizations
Married couples or those considering marriage
Business leaders - Industry, small, large, rural, urban, consultants and other
Voters
Parents, Grandparents, caregivers, volunteers, 4-H members

V(G). Planned Program (Outputs)

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

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

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

V(H). State Defined Outputs

1. Output Measure

- Number of non-duplicated participants in 4-H STEM, Healthy Lifestyles and Citizenship programs
- Number of organized clubs and groups supported by Division of Agriculture Research and Extension resources
- Number of educational products and materials developed or updated for print, electronic media, radio, podcasts or display
- Number of clientele attending educational activities and events related to family and/or community economics and commerce
- Number of clientele contacts resulting from education classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational methods
- Number of educational classes, tours, field days, and workshops related to pest management
- Number of education meetings, demonstrations, and field days related to the production of non-food agronomic, bioenergy, and horticulture crops
- Number of clientele participating in educational events related to non-food agronomic, bioenergy and horticulture crop production
- Number of educational materials, curricula, newsletters, web-based modules and fact sheets developed, produced and delivered
- Web content utilization data tracking including hits, clicks and content utilized
- Number of Food and Nutrition and Health and Aging programs delivered
- Number of participants in Food and Nutrition and Health & Aging programs
- Number of grants and dollars generated by grant and contract development efforts

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

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of participants (youth and adult) who report conducting programs, community service projects, adopting new skills or accepting new leadership roles as a result of leadership development education programs
2	Estimated dollar value of program support volunteers (includes: EH; 4-H, Master Gardeners; Leadership students, etc.)
3	Total annual revenue generated by active APAC business clients
4	Number of program participants who indicate a change in behavior, based on lessons learned from Division of Agriculture sponsored Research and Extension programs
5	Number of pesticide applicator training participants certified or re-certified by passing commercial pesticide certification exams
6	Number of participants (both youth and adult) indicating new knowledge gained in business management, finance, consumer economics, and taxation resulting from Division of Agriculture Research and Extension programs
7	Number of producers who gained knowledge in crop production and management
8	Number of Master Gardener participants trained, certified and re-certified
9	Number of registered crop consultants and foresters maintaining certification on an annual basis
10	Number of program participants indicating new knowledge of water quality and conservation best management practices
11	Number of participants who adopted at least one positive nutrition and/or health practice
12	Number of participants reporting a reduction of at least one risk factor for chronic disease after completing a nutrition and/or health education program
13	Number of participants reporting an increase in physical activity after completing a nutrition and/or health education program
14	Number of producers who changed or adopted new production and/or conservation management practices or technologies
15	Number of participants (both youth and adult) indicating a change in behavior in their business management, finance, consumer economics, and taxation planning and practice based on participation in Division of Agriculture Research and Extension programs
16	Number of program participants indicating the adoption or implementation of new water quality and conservation best management practices

Outcome # 1

1. Outcome Target

Number of participants (youth and adult) who report conducting programs, community service projects, adopting new skills or accepting new leadership roles as a result of leadership development education programs

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 2

1. Outcome Target

Estimated dollar value of program support volunteers (includes: EH; 4-H, Master Gardeners; Leadership students, etc.)

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management
- 205 - Plant Management Systems
- 607 - Consumer Economics
- 608 - Community Resource Planning and Development
- 724 - Healthy Lifestyle
- 802 - Human Development and Family Well-Being
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 3

1. Outcome Target

Total annual revenue generated by active APAC business clients

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 602 - Business Management, Finance, and Taxation
- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 4

1. Outcome Target

Number of program participants who indicate a change in behavior, based on lessons learned from Division of Agriculture sponsored Research and Extension programs

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management
- 123 - Management and Sustainability of Forest Resources
- 133 - Pollution Prevention and Mitigation
- 205 - Plant Management Systems
- 216 - Integrated Pest Management Systems
- 403 - Waste Disposal, Recycling, and Reuse
- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 607 - Consumer Economics
- 608 - Community Resource Planning and Development
- 724 - Healthy Lifestyle
- 802 - Human Development and Family Well-Being
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 5

1. Outcome Target

Number of pesticide applicator training participants certified or re-certified by passing commercial pesticide certification exams

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management
- 133 - Pollution Prevention and Mitigation
- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 216 - Integrated Pest Management Systems
- 403 - Waste Disposal, Recycling, and Reuse
- 601 - Economics of Agricultural Production and Farm Management

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 6

1. Outcome Target

Number of participants (both youth and adult) indicating new knowledge gained in business management, finance, consumer economics, and taxation resulting from Division of Agriculture Research and Extension programs

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 123 - Management and Sustainability of Forest Resources
- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 607 - Consumer Economics
- 608 - Community Resource Planning and Development
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 7

1. Outcome Target

Number of producers who gained knowledge in crop production and management

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 112 - Watershed Protection and Management
- 123 - Management and Sustainability of Forest Resources
- 133 - Pollution Prevention and Mitigation
- 136 - Conservation of Biological Diversity
- 205 - Plant Management Systems
- 216 - Integrated Pest Management Systems
- 403 - Waste Disposal, Recycling, and Reuse
- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 723 - Hazards to Human Health and Safety

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 8

1. Outcome Target

Number of Master Gardener participants trained, certified and re-certified

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships

- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 216 - Integrated Pest Management Systems
- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 9

1. Outcome Target

Number of registered crop consultants and foresters maintaining certification on an annual basis

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 112 - Watershed Protection and Management
- 123 - Management and Sustainability of Forest Resources
- 133 - Pollution Prevention and Mitigation
- 136 - Conservation of Biological Diversity
- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 216 - Integrated Pest Management Systems
- 602 - Business Management, Finance, and Taxation
- 610 - Domestic Policy Analysis
- 723 - Hazards to Human Health and Safety

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 10

1. Outcome Target

Number of program participants indicating new knowledge of water quality and conservation best management practices

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 112 - Watershed Protection and Management
- 123 - Management and Sustainability of Forest Resources
- 133 - Pollution Prevention and Mitigation
- 136 - Conservation of Biological Diversity
- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 216 - Integrated Pest Management Systems
- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 608 - Community Resource Planning and Development
- 610 - Domestic Policy Analysis
- 723 - Hazards to Human Health and Safety

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 11

1. Outcome Target

Number of participants who adopted at least one positive nutrition and/or health practice

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 607 - Consumer Economics
- 701 - Nutrient Composition of Food
- 723 - Hazards to Human Health and Safety
- 724 - Healthy Lifestyle
- 802 - Human Development and Family Well-Being
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 12

1. Outcome Target

Number of participants reporting a reduction of at least one risk factor for chronic disease after completing a nutrition and/or health education program

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development
- 701 - Nutrient Composition of Food
- 723 - Hazards to Human Health and Safety
- 724 - Healthy Lifestyle
- 802 - Human Development and Family Well-Being
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 13

1. Outcome Target

Number of participants reporting an increase in physical activity after completing a nutrition and/or health education program

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development
- 723 - Hazards to Human Health and Safety
- 724 - Healthy Lifestyle
- 802 - Human Development and Family Well-Being

- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 14

1. Outcome Target

Number of producers who changed or adopted new production and/or conservation management practices or technologies

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 112 - Watershed Protection and Management
- 123 - Management and Sustainability of Forest Resources
- 133 - Pollution Prevention and Mitigation
- 136 - Conservation of Biological Diversity
- 205 - Plant Management Systems
- 216 - Integrated Pest Management Systems
- 403 - Waste Disposal, Recycling, and Reuse
- 601 - Economics of Agricultural Production and Farm Management

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 15

1. Outcome Target

Number of participants (both youth and adult) indicating a change in behavior in their business management, finance, consumer economics, and taxation planning and practice based on participation in Division of Agriculture Research and Extension programs

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management

- 602 - Business Management, Finance, and Taxation
- 607 - Consumer Economics
- 608 - Community Resource Planning and Development
- 610 - Domestic Policy Analysis
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 16

1. Outcome Target

Number of program participants indicating the adoption or implementation of new water quality and conservation best management practices

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 112 - Watershed Protection and Management
- 123 - Management and Sustainability of Forest Resources
- 133 - Pollution Prevention and Mitigation
- 205 - Plant Management Systems
- 216 - Integrated Pest Management Systems
- 403 - Waste Disposal, Recycling, and Reuse
- 601 - Economics of Agricultural Production and Farm Management

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)
- Other (NASS data availability)

Description

Plan implementation processes must constantly adapt to the circumstance of time and place: the economic condition within and surrounding Arkansas; the public policy landscape; program leadership; staffing; clientele interest and capacity; environmental circumstance; natural disaster; and other unforeseen changes in the community of constituents we serve, provides a challenging and fluid basis for the success of everything planned. Fortunately, the University of Arkansas Division of Agriculture's faculty and staff are well positioned and have the experience necessary to serve and adapt as the circumstance warrants. The Division's leadership has the proven intent to keep the organization constituent grounded, agile, appropriately staffed, and adequately financed to meet the needs of each new program situation.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Several strategies will be initiated and utilized for collecting program assessment information to determine program results, outcomes and impacts. Extension educators will use a variety of recommended methods to gather needed information. Collection methodology and assessment tools will be programmatic and audience centered. Programs focusing on physical activity will use skill-based assessments, before-after program assessments, behavioral changes, observation, and questionnaires. Nutrition and health related activities will use anecdotal information, pre-test assessments and self-report of practice change. Unobtrusive means (request for additional information, purchase of videos and materials, increased participation and observation) will also be used to capture information.

Comprehensive program and departmental evaluation reviews for Research, Extension and Teaching Programs are conducted on a five to seven year cycle by various research based evaluation methods. Data relevant to shifts in production methods, acreage, cropping systems, and enrollment will be compared to historic levels and trends.

Longitudinal evaluation will be conducted by subcomponents of this program through various research based methods. Data will be collected from producers, consultants, and other agricultural practitioners, through telephone and mail surveys and questionnaires at producer meetings and other on-site visits and observations made by Extension faculty. NASS will continue to be a dependable source of indirect data. Electronic audience response (clickers) will be increasingly available and useful in broad based audience participation. Methodologies and survey content is being explored and tested in the current fiscal year.