2011 University of Arkansas Combined Research and Extension Plan of Work

Status: Accepted

Date Accepted: 06/08/2010

I. Plan Overview

1. Brief Summary about Plan Of Work

The University of Arkansas Division of Agriculture's Integrated Plan of Work addresses many of the issues facing citizens of Arkansas, the United States and the world through concentrated efforts in both research and Extension education. 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 industries having a value-added economic impact of over $15 billion or 12% of the Gross State Product. Agriculture accounts for about one in five jobs (270,000 in 2006) and an annual payroll of $9.2 billion. Agriculture 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 and catfish and is consistently one of the top producers of cotton and soybeans.

The diversity of Arkansas agriculture includes fruits, vegetables, nuts, beef and dairy, broilers and eggs, corn, wheat, and many other crops. The state also ranks fourth nationally in timber production.

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 and declining populations, health and nutrition, unemployment, one-parent families, biosecurity, and many other economic and societal challenges facing 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
2011	523.2	0.0	148.8	0.0
2012	526.2	0.0	155.8	0.0
2013	529.2	0.0	160.8	0.0

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

Year	Extension		Research	
	1862	1890	1862	1890
2014	529.2	0.0	166.8	0.0
2015	529.2	0.0	167.8	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

Programs go through 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 program identification and review is 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 open to under-served or under-represented individuals, groups or organizations. For Extension, county councils and 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.

Administrative Approval and Review

Identified planned program areas of research or Extension activity are administratively reviewed and approved by the Director of the Agricultural Experiment Station or Cooperative Extension Service, as appropriate, within the context of the Division of Agriculture's 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 Division of Agriculture has utilized both formal and informal mechanisms for ensuring the planned program areas address areas of strategic importance to the state. Each planned program was identified based on the needs identified in a series of regional and statewide listening sessions of current and potential stakeholders representing the diversity of the population in the regions and state. Stakeholders of specific programs such as community health, 4-H and youth, and commodity groups, research and Extension faculty and staff also identify needed programs and, in some cases, provide partial funding to support them. Single issue meetings are held as needed to address emerging issues to craft additional program areas, if needed, to promptly address the problem.

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

The Southern Region SARE program is conducted as a comprehensive program incorporated into many of the Extension programs within Arkansas. Some efforts include the SARE Program Resources/Grant Funding Opportunities Training for county agents statewide, training for Small Farm Managers in Vegetable Production and Marketing, and training on Farm Support Program Availability and Access for county agents, small farm program specialists, farmers, and community leaders in South and Central Arkansas. The 13-state Southern Region 4-H programs are participating in a program working with rural audiences building youth adult partnerships to enhance their local communities. A grant helps to support this program.

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

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 efficiency?

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 selected individuals from general public
- Survey of traditional stakeholder groups
- Survey of traditional stakeholder individuals
- Survey of selected individuals from the general public
- Other (County Council 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 councils and 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.

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

1. Method to identify individuals and groups

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

Brief explanation.

Participants in the University of Arkansas Division of Agriculture stakeholder sessions 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 fifteen stakeholder categories: county services (e.g., DHS, Food Bank or Pantry); 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 program (e.g., leader, teen, alumni, foundation); government officials (e.g., county, city); Extension homemakers; natural resources (e.g., wildlife, forestry, conservation); media (e.g., radio, newspaper, television); and youth services (e.g., community center, youth organizations). In addition to these criteria, Extension staffs were also asked to identify individuals within the fifteen 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 county.

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
- Meeting with the general public (open meeting advertised to all)
- Meeting specifically with non-traditional groups
- Meeting specifically with non-traditional individuals
- Meeting with invited selected individuals from the general public
- Other (Meeting with regulatory groups, state agencies, & commodity prom)

Brief explanation.

Participants in the University of Arkansas Division of Agriculture stakeholder sessions assisted Arkansas Experiment Station faculty and administrators and county Extension staffs in identifying individuals in their local communities. In addition, Extension staffs were also asked to identify 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 Extension and/or county programs.

3. A statement of how the input will be considered

- To Identify Emerging Issues
- Redirect Extension Programs
- To Set Priorities
- Other (Strategic Planning)

Brief explanation.

Division of Agriculture Extension and research faculty members 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

Families, Youth, & Communities

2. Brief summary about Planned Program

The Division of Agriculture addresses a wide variety of specific research topics that address issues relevant to family life education, parenting education, positive youth development, quality of life enhancement, healthy lifestyle, leadership, and community development. The Arkansas 4-H Youth Development program embodies the goals of positive youth development and has the potential and human capital to enhance the lives of youth and families throughout the state. It is our assumption that through the delivery of quality programs and activities there exists an opportunity to positively enhance the lives of Arkansans. The Arkansas 4-H program is dedicated to youth development and the creation of rich opportunities to cultivate, enhance and broaden the skills of those we interact with through educational programs (i.e.: school enrichment, project groups, community clubs, cooperative and competitive activities, special interest groups, and leadership development opportunities. The Marriage, Parenting, and Family Life team focuses their programming efforts in four areas: 1. Personal Development and Well-being, 2. Marriage and Relationship Education, 3, Parenting, and 4. Child Care Provider training. Personal development focuses on helping teens and adults develop the skills, attitudes, and practices for personal well-being. Marriage and relationship education focuses on helping couples develop and maintain strong couple relationships. Our parenting programs provide knowledge and skills training for those who are parents. Our child care provider programs provide three ways for Arkansas' child care providers to receive the verified training they need. The Best Care program provides 10 hours of in-person instruction annually. Best Care Connected provides 5 hours of Web-based training annually. Guiding Children Successfully is a 28-hour self-study series that offers sensible advice and techniques for working with children.

Arkansas Extension offers child care providers professional development training and education. Extension addresses provider needs for continuing education through a variety of formats to meet individual needs. There are three components. The Best Care program provides ten hours of child care provider training addressing resource management, nutrition, health and safety, and child development. The second component is a child care provider training program called Best Care Connected. Best Care Connected is a five-hour online child care provider training program. The last component is a child care provider training program called Guiding Children Successfully (GCS). GCS is a 28-hour self-study series that offers sensible advice and techniques for working with children. The professional development needs of school age care providers are provided through the Arkansas 4-H Afterschool training program. The University of Arkansas Cooperative Extension Service has defined community and economic development program efforts as "People working together to create or preserve their desired community." It is the objective of this planned program to improve the social and economic well-being of Arkansas communities through research-based educational programming that increases the knowledge, skills and participation of citizens in creating their desired future."A critical component of such efforts is the development of strong leaders who are able to understand the critical issues facing our country, state and communities and work with community members to achieve that desired future. To accomplish this, the Community and Economic Development Program will be a leading, unbiased source of expertise in leadership development and provide educational programming for state and local current and emerging leaders."

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
802	Human Development and Family Well-Being	40%		40%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	5%		5%	
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures	5%		5%	
806	Youth Development	50%		50%	
	Total	100%		100%	

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

1. Situation and priorities

There are 680,369 youth under age 18 living in 371,331 households. Over 20 percent of Arkansas' young people are living in poverty. Currently, 167,902 children live in a single-parent family and 62,167 children live in a household with other relatives. There are 273,182 children with both parents in the workforce, 150,000 children with one parent in the workforce and 20,075 children with neither parent in the household. Many children have very little nurturing or mentoring from committed adults. Societal challenges combine with limited parenting and relationship skills and poorer social support networks overwhelm many Arkansans. Arkansas is also experiencing a significant increase in the Hispanic youth population, now totaling 32,016 children under age 18. Ethnic diversity is an increasing important factor in programming decisions. The needs and desires of adolescents are diverse and rapidly changing and as such our programs cannot remain static. Extension through creative outreach strategies and just-in-time programming has a unique chance to address youth/family issues using both prevention and promotion models.

Twenty-eight percent of Arkansas families are headed by a single parent; 65% of mothers with children under the age of five are in the workforce; 72% of children under the age of six live in families with both parents working; over 70% of children three-six years of age spend substantial amounts of time in non-parental care; 52% of children under three are in non-parental care. In 2005, 553 of Arkansas' 2,851 licensed child care facilities have achieved quality approval status. Training available at times, locations and formats convenient to child care providers is essential to improving the quality of Arkansas child care.

Improving the economic well-being and quality of life for Arkansans and Arkansas communities is increasingly challenging in today's world. Issues such as globalization, changes in information technologies, government regulatory and fiscal policy, demographic shifts, threats of terrorism, and social needs all impact our society. Education programs that focus on leadership development are needed to help citizens and communities deal with these issues and take advantage of opportunities that accompany these changes.

2. Scope of the Program

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

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

1. Assumptions made for the Program

Programs addressing quality of life and leadership development issues focus on addressing specific needs of youth and families in close collaboration with state and federal agencies and policymakers. Close coordination is required between the experiment station and Cooperative Extension to ensure that research studies are conducted that meet specific needs of importance and that needed information is utilized in a public outreach program or to provide needed information for policymakers.

The Arkansas 4-H Program focuses its work on teaching youth and adults the life skills necessary to become capable, competent and caring citizens. 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 on a statewide basis.

The life skills are:
Decision Making
Wise Use of Resources
Communication
Accepting Differences
Leadership
Useful/Marketable Skills
Healthy Lifestyle Choices
Self-Responsibility

Childcare training will continue to be a need because of state mandated licensing requirements. Funding will remain stable or increase during the next seven years. Knowledge can lead to attitude and behavior change. Child care providers will be motivated to learn and adopt recommended practices. Targeted audiences are willing and able to participate in child care training programs.

Youth and adults need leadership, government, citizenship, and issue-driven knowledge and skills. Such knowledge and skills will enable Arkansans to act strategically to position their communities for sustainable economic viability and a high quality of life.

2. Ultimate goal(s) of this Program

- To strengthen and increase the quality of marriage and couple relationships
- Quality parenting that leads to socially competent children
- Individuals (teens and adults) achieve personal well-being through skill development, attitude change, and the adoption of effective practices
- Provide opportunities for youth to acquire knowledge, develop life skills, form attitudes, and practice behavior that will enable them to become self directing, productive, and contributing members of society
- To improve the quality of care for the children in Arkansas
- To improve the social and economic well-being of Arkansas communities through research-based educational programming that increases the knowledge, skills and participation of citizens in creating their desired future.

V(E). Planned Program (Inputs)

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

Year	Extension		Research	
	1862	1890	1862	1890
2011	185.3	0.0	3.6	0.0

Year	Extension		Research	
	1862	1890	1862	1890
2012	185.3	0.0	3.6	0.0
2013	185.3	0.0	3.6	0.0
2014	185.3	0.0	3.6	0.0
2015	185.3	0.0	3.6	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Division of Agriculture research programs address family relationship and youth development issues in close collaboration with state and federal agencies and policy makers.

Family, Youth, & Communities educational programs within the University of Arkansas - Divisions of Agriculture include events and activities in the areas of Family & Consumer Sciences, and 4-H Youth Development and Leadership development.

Family & Consumer Science programs provide research based information that help Arkansans raise caring, responsible children; and have strong families and strong relationships.

4-H Youth Development programs provide opportunities for youth to acquire knowledge, develop life skills, form attitudes, and practice behavior that will enable them to become self directing, productive, and contributing members of society. Arkansas Cooperative Extension addresses the professional development needs of school age care providers through the Arkansas 4-H Afterschool training program. School-age providers receive five hours of training in the areas of experiential learning, staff management, 4-H youth development, guidance and discipline, environmental stewardship, and service learning. The training materials are selected from existing 4-H curriculum and are adapted to fit the needs of providers working in after school settings.

Leadership development programs provide research-based education for current and emerging community and state leaders. Participants include youth, county residents and lay leaders, civic groups, quorum court members and other elected officials, volunteers and Extension Homemakers.

Methods for providing programs entail:
Workshops
Training Sessions
One-to-one counseling
Develop curriculum
Presentations
School enrichment programs
Organize 4-H clubs
Train-the-Trainer
Committee Meetings
Hard-copy fact sheets
Newsletters
Video and compressed video
Radio, television and print media

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	● Public Service Announcement ● Newsletters ● TV Media Programs ● Web sites ● Other 1 (Social Networking) ● Other 2 (Podcasts)

3. Description of targeted audience

Adolescents and adults
Adolescents and adults who expect to become parents
Parents
Grandparents
Adult caregivers

4-H members
4-H youth participants
4-H volunteers
4-H parents
Adults
School teachers

Extension Homemakers Council members and trainers
All married couples or those couples considering marriage
Child care providers
Local, state, and community leaders
Elected officials

V(G). Planned Program (Outputs)

1. Standard output measures

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

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2011	176600	150500	72000	51625
2012	177300	152250	73000	51800
2013	178000	154000	73000	51975
2014	178500	154400	75000	52450
2015	179000	154800	75000	52825

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

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

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2011	15	4	19
2012	15	4	19
2013	15	4	19
2014	15	4	19
2015	15	4	19

V(H). State Defined Outputs

1. Output Target

- Number of organized 4-H Clubs

  2011:900 **2012:**900 **2013:**900 **2014:**900 **2015:**900

- Number of non-duplicated participants in 4-H Youth Development Healthy Lifestyles programs

  2011:5000 **2012:**5000 **2013:**5000 **2014:**5000 **2015:**5000

- Number non-duplicated participants in 4-H science, technology, engineering and math programs

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

- Number of non-duplicated participants in 4-H Citizenship programs

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

- Number of federal grants and contracts

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

- Dollar amounts in 1,000's of federal grants and contracts

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

- Number of non-federal grants and contracts

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

- Dollar amounts in 1,000's of non-federal grants and contracts

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

V(I). State Defined Outcome

O. No.	Outcome Name
1	Number of 4-H participants who learned life skill
2	Number of child care providers who increased knowledge through child care provider programs
3	Number of participants who increased knowledge through leadership development programs
4	Number of participants who increased knowledge through parent education programs
5	Number of participants who increased knowledge through marriage education programs
6	Number of participants who increased knowledge through personal development programs
7	Number of 4-H Journals completed
8	Number of volunteer hours contributed through the 4-H program by youth and adults
9	Number of participants (youth and adults) who reported conducting programs, community service projects, adopting new skills or accepting new leadership roles as a result of leadership development educational efforts
10	Number of Refereed Journal Publications
11	Estimated dollar value in thousands of 4-H volunteers
12	Estimated dollar value in thousands of EH volunteers

Outcome # 1

1. Outcome Target

Number of 4-H participants who learned life skill

2. Outcome Type : Change in Knowledge Outcome Measure

2011:5500	**2012:**5500	**2013:**5500	**2014:**5500	**2015:**5500

3. Associated Knowledge Area(s)

- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 2

1. Outcome Target

Number of child care providers who increased knowledge through child care provider programs

2. Outcome Type : Change in Knowledge Outcome Measure

2011:2000	**2012:**2010	**2013:**2020	**2014:**2030	**2015:**2040

3. Associated Knowledge Area(s)

- 802 - Human Development and Family Well-Being

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 3

1. Outcome Target

Number of participants who increased knowledge through leadership development programs

2. Outcome Type : Change in Knowledge Outcome Measure

2011:4000	**2012:**4500	**2013:**4550	**2014:**5000	**2015:**5000

3. Associated Knowledge Area(s)

- 802 - Human Development and Family Well-Being

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 4

1. Outcome Target

Number of participants who increased knowledge through parent education programs

2. Outcome Type : Change in Knowledge Outcome Measure

2011:200	**2012:**210	**2013:**220	**2014:**230	**2015:**240

3. Associated Knowledge Area(s)

- 802 - Human Development and Family Well-Being

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 5

1. Outcome Target

Number of participants who increased knowledge through marriage education programs

2. Outcome Type : Change in Knowledge Outcome Measure

2011:200	**2012:**210	**2013:**220	**2014:**230	**2015:**240

3. Associated Knowledge Area(s)

- 802 - Human Development and Family Well-Being

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 6

1. Outcome Target

Number of participants who increased knowledge through personal development programs

2. Outcome Type : Change in Knowledge Outcome Measure

2011:200	**2012:**210	**2013:**220	**2014:**230	**2015:**240

3. Associated Knowledge Area(s)

- 802 - Human Development and Family Well-Being

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 7

1. Outcome Target

Number of 4-H Journals completed

2. Outcome Type : Change in Action Outcome Measure

2011:750	**2012:**750	**2013:**750	**2014:**750	**2015:**750

3. Associated Knowledge Area(s)

- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 8

1. Outcome Target

Number of volunteer hours contributed through the 4-H program by youth and adults

2. Outcome Type : Change in Action Outcome Measure

2011:40000	**2012:**40000	**2013:**40000	**2014:**40500	**2015:**40500

3. Associated Knowledge Area(s)

- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 9

1. Outcome Target

Number of participants (youth and adults) who reported conducting programs, community service projects, adopting new skills or accepting new leadership roles as a result of leadership development educational efforts

2. Outcome Type : Change in Action Outcome Measure

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

3. Associated Knowledge Area(s)

- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 10

1. Outcome Target

Number of Refereed Journal Publications

2. Outcome Type : Change in Knowledge Outcome Measure

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

3. Associated Knowledge Area(s)

- 802 - Human Development and Family Well-Being
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities
- 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 11

1. Outcome Target

Estimated dollar value in thousands of 4-H volunteers

2. Outcome Type : Change in Knowledge Outcome Measure

2011:810	**2012:**810	**2013:**810	**2014:**810	**2015:**810

3. Associated Knowledge Area(s)

- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 12

1. Outcome Target

Estimated dollar value in thousands of EH volunteers

2. Outcome Type : Change in Knowledge Outcome Measure

2011:3200	**2012:**3200	**2013:**3200	**2014:**3200	**2015:**3200

3. Associated Knowledge Area(s)

- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities
- 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.)
- Other (Fuel prices & loss of personel)

Description

The University of Arkansas Division of Agriculture is positioned to respond proactively through educational activities and demographic changes that affect the quality of life for Arkansans and assist families and youth to improve their lives.

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

1. Evaluation Studies Planned

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

Description

The Arkansas 4-H Program has developed an on-line life skill evaluation database system to measure life skills learned during 4-H programming. Agents can choose indicators from eight (8) targeted life skills. The program will produce retrospective evaluations for use at the end of educational programming. The agents will then input the answers into the database for result compilation.

2. Data Collection Methods

- Sampling
- Whole population
- On-Site
- Portfolio Reviews

Description

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.

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Economics & Commerce

2. Brief summary about Planned Program

University of Arkansas Division of Agriculture's Economic and Commerce faculty work to promote increased prosperity and economic security for individuals and families, farmers, entrepreneurs, and consumers. Economic and Commerce faculty coordinate efforts to address research, education, and extension activities that help people incorporate sound financial management strategies in their daily lives, discover new economic opportunities, develop successful agricultural and nonagricultural enterprises, take advantage of new and consumer-driven markets at both the local and international levels, and understand the implications of public policy on these and other activities.

The Community and Economic Development faculty will conduct research and provide educational assistance to help elected officials and rural communities with the public-decision making process, and identify and implement new rural and community economic development strategies. The Community and Economic Development program offers educational and technical assistance to encourage economic diversification through entrepreneurship, small business and value-added development. County Staff Chairs are trained to identify viable vendors to public agencies. The program also provides the only in-state program that focuses exclusively on helping Arkansas businesses sell products and services to public agencies, and helps public agencies meet their diversity goals.

The Agricultural Economics and Agribusiness Department will conduct research, education, and extension activities to help Arkansas producers and the agricultural sector develop and incorporate sound financial management strategies in their businesses, discover new economic opportunities, develop successful agricultural and sector enterprises, take advantage of new and consumer-driven markets at both the local and international levels, and understand the implications of public policy on these and other activities. The objective of these programs is to help producers overcome the uncertainties associated with today's global economy. This work also will give citizens, consumers, policymakers and others a better understanding of the agricultural, food, and biofuels sector. Extension education in alternative agricultural systems occurs in non-food program areas, such as agri-tourism, wildlife enterprises on farmland and decorative gourd/pumpkin production, requiring components of production, economics and environmental issues.

The Individual and Family Resource Management program key focus is helping people incorporate sound financial management strategies into their daily lives. The overall goal is for people to acquire the knowledge, skills, and motivation to build financial security. Programs focus on behavioral change, starting with achieving financial self-sufficiency, then stability. The ultimate goal, financial security, is the cornerstone of prosperous communities, nurturing neighborhoods, and strong families. County Family and Consumer Sciences Agents are trained to deliver personal finance and other resource management education through a variety of non-formal educational programs. Resource management programs teach youth and adults financial literacy concepts, skills and practices. Arkansas families who learn financial management skills can lay the foundation for a secure financial future and gain increased economic opportunities.

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

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

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

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

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
601	Economics of Agricultural Production and Farm Management	25%		35%	
602	Business Management, Finance, and Taxation	12%		19%	
603	Market Economics	5%		8%	
604	Marketing and Distribution Practices	6%		6%	
605	Natural Resource and Environmental Economics	1%		9%	
606	International Trade and Development	2%		4%	
608	Community Resource Planning and Development	18%		5%	
609	Economic Theory and Methods	1%		2%	
610	Domestic Policy Analysis	15%		10%	
611	Foreign Policy and Programs	1%		2%	
801	Individual and Family Resource Management	7%		0%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	5%		0%	
805	Community Institutions, Health, and Social Services	2%		0%	
	Total	100%		100%	

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

1. Situation and priorities

To maintain a highly competitive agriculture and food system, the U.S. and the state of Arkansas must ensure that firms operating in the industry are economically viable and efficient, and prepared to compete in the global marketplace. Factors affecting the global competitiveness of the U.S. and Arkansas agriculture include: firm management decisions, macroeconomic, environmental, farm and trade policies, government policies, financial markets, domestic and international supply and demand conditions, industry structure and organization, and the development and adoption of new technologies. There is a significant need for developing and evaluating new technologies, and for extension of this knowledge base to all factors that influence the industry's competitive position in global markets. For example, high speed internet is essential to modern communication and electronic commerce but is unavailable in many areas of the state. The emerging biofuels industry provides another example. Arkansas agricultural producers continue to face volatile prices due in part to natural disasters, fluctuating energy prices and the uncertainty of the global marketplace. The biofuels industry is impacting many aspects of Arkansas agriculture and rural communities. The volatility caused by these new factors in the marketplace requires Arkansans to have a better understanding of sound financial management practices.

There are distinct economic differences between rural and urban areas of the state. While most urban areas are growing, rural communities and families in Arkansas are struggling. Despite a strong agricultural economic base, off-farm employment is a critical source of income for the majority of farm families. In the past manufacturing has provided employment opportunities for rural families with more than a third of the counties in Arkansas depending heavily on manufacturing employment (15% or more). However, large manufacturers continue to downsize and relocate to places where the costs of production are lower. Small manufacturers struggle to develop new products and find new customers. As a result

of these trends, many rural counties are faced with shrinking tax bases, higher tax rates and high unemployment creating financial distress. Economic diversification and community development are critical to the sustainability of rural areas. Arkansas has the seventh highest poverty rate (17 percent) in the country. Pockets of extreme poverty remain throughout the state. Seventeen Arkansas counties are designated as "persistent poverty" counties, where more than 20 percent of their people have lived in poverty for 30 years or more (http://www.ers.usda.gov/briefing/Rurality/Typology/) and four counties in the Delta continue to have poverty rates of 30 percent or greater (U.S. Census Bureau).

Compounding these social and economic conditions, as of Fall 2008, 75% of the counties were classified as "distressed" and by spring of 2009, a series of natural disasters had resulted in disaster declarations for almost all counties. Recovery from both of these conditions is a long-term process that is expected to continue well into this five-year forecast.

The past few years have been a time of economic crisis for Americans. Arkansas consumers face concerns about financial stability, job loss, a teetering stock market, unprecedented national government deficits, and short-falls in state revenues. More consumers are facing job loss, longer-term job loss, and reduced work hours. The unemployment rate in Arkansas has increased steadily over the past few years from around 5% in July 2008 up to 7.7% in December 2009. Arkansas had over 100 layoff events in 2009 (Bureau of Labor Statistics). According to the 2008 national Jump$tart survey of high school seniors, the financial literacy of high school students has fallen to its lowest level ever, with a score of just 48.3 percent. Arkansas students scored below the national average with an overall score of 47(Jump$tart Coalition.) Many consumers never receive any training in financial management, yet this crucial life skill greatly impacts individual and family well-being.

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

Agricultural Economics and Agribusiness programs are based on strong partnerships and interactions with leadership from promotion boards, farm organizations, recognized progressive farmers, consumers, industry and public representatives. These stakeholders have identified the priority areas addressed by the program. Current trends indicate declining numbers of full-time farmers but an increase in part-time and alternative farmers. These part-time and alternative agricultural producers will continue to seek new and innovative ways to generate farm income. Identifying niche markets and capitalizing on specialized agricultural opportunities will be a matter of economic sustainability and cultural survival for many agricultural producers. The basic premise of Extension Family Resource Management educational programs is that through the programs, citizens will increase knowledge and skills. The knowledge and skills will lead to behavior change and the consumer will begin to use recommended financial management techniques. Then, the use of recommended financial management techniques will lead to increased financial security. Rural communities are willing to invest resources to building community capacity for economic development and identifying and implementing appropriate economic development strategies.

2. Ultimate goal(s) of this Program

- Identify and assist in the adoption of new technologies and practices that enhance profitability and manage risk.
- Broaden the understanding of linkages among policy, socioeconomic conditions, market conditions, industry structure, and system competitiveness.

- Investigate and address concerns as they emerge.
- Position policy decision makers at all levels to understand and use the policy tools important to community, regional, and statewide economic viability.
- Continue to support strategic partnerships that create value-added benefits for Arkansas' environment and its people.
- Help Arkansas to achieve high degree of competitiveness in a global economy.
- Increase family financial security by providing individual and family resource management training for youth and adults.

V(E). Planned Program (Inputs)

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

Year	Extension		Research	
	1862	1890	1862	1890
2011	32.1	0.0	9.0	0.0
2012	32.1	0.0	9.0	0.0
2013	32.1	0.0	9.0	0.0
2014	32.1	0.0	9.0	0.0
2015	32.1	0.0	9.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Conduct research and facilitate the development and adoption of new technologies, products and strategies that will enhance global competitiveness
- Conduct economic and policy research and evaluations that may increase economic efficiencies and improve socioeconomic conditions
- Create and distribute educational products and materials using print and electronic mediums
- Develop and conduct educational meetings
- Provide professional services to clientele
- Develop, evaluate, and disseminate education programs and curricula, incorporating new research
- Develop county and economic profiles for educational purposes
- Convene issue forums for both internal and external audiences
- Develop, conduct and evaluate educational programs related to alternative agricultural systems for non-food products.

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
● Demonstrations	● Other 1 (Train students and volunteers)
● Other 1 (Service participation)	● Other 2 (Publish scientific articles)
● Other 2 (Professional presentations)	

3. Description of targeted audience

- Producers - Small, large, limited resource, retirement, and other
- Non-Farm Private Landowners
- Businesses - Industry, small, large, rural, urban, consultants, and other
- Consumers - Limited resource, families, retired, youth, middle age, and other
- Elected Officials - city, county, state, and federal
- Organizations - Civic, community, producer, consumer, nonprofit and other
- Government Personnel - Public agencies and administrators, and other
- Voters
- Research, Extension and teaching professionals
- General Public

V(G). Planned Program (Outputs)

1. Standard output measures

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

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2011	17000	106400	1500	600
2012	17300	107600	1500	700
2013	17400	109500	1500	800
2014	17500	111500	1500	800
2015	17600	112500	1500	800

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

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

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2011	21	12	33
2012	21	17	38
2013	21	12	33

Year	Research Target	Extension Target	Total
2014	21	12	33
2015	21	12	33

V(H). State Defined Outputs

1. Output Target

- Number of educational products and materials developed or updated for print, electronic media, radio, podcasts, or display.

  2011:220 **2012:**220 **2013:**220 **2014:**220 **2015:**220

- Number of scientific publications.

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

- Number of educational activities conducted related to economics and commerce.

  2011:105 **2012:**105 **2013:**110 **2014:**110 **2015:**115

- Number of clientele attending educational activities related to economics and commerce.

  2011:1575 **2012:**1575 **2013:**1700 **2014:**1700 **2015:**1750

- Number of participants in individual and family resource management programs.

  2011:500 **2012:**500 **2013:**500 **2014:**500 **2015:**500

- Number of non-food product related alternative agricultural systems education classes, workshops, group discussions, and other educational events.

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

- Number of alternative agricultural systems demonstrations (e.g., demonstration study farm, plots, etc.) not related to food products.

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

V(I). State Defined Outcome

O. No.	Outcome Name
1	Number of participants who increase knowledge of Community and Economic Development.
2	Number of participants who indicate a change in behavior based on what they've learned about Community and Economic Development.
3	Number of jobs created or retained through educational programs (APAC).
4	Dollars of revenue generated by businesses as a result of educational programs (APAC).
5	Number of participants who increase their knowledge of individual and family resource management.
6	Number of participants who increase knowledge of Agricultural Economics and Agribusiness.
7	Sustainable, vibrant and globally competitive agricultural sector for Arkansas as indicated by Arkansas Cash Farm Receipts (in thousand dollars) (NASS)
8	Sustainable, vibrant and globally competitive agricultural sector for Arkansas as indicated by Arkansas Net Farm Incomes (in thousand dollars) (ERS)
9	Number of clientele who reported knowledge gained about non-food alternative agricultural products.
10	Value of non-food alternative agricultural products ($1000).
11	Number of acres utilized for non-food alternative agricultural products.
12	Number of clientele who initiated an alternative agricultural enterprise with non-food products.
13	Number of farms selling non-food alternative agricultural products or services using various methods.
14	Number of clientele who used program information to decide NOT to initiate an alternative agricultural enterprise with non-food products.

Outcome # 1

1. Outcome Target

Number of participants who increase knowledge of Community and Economic Development.

2. Outcome Type : Change in Knowledge Outcome Measure

2011:	**2012:**	**2013:**	**2014:**	**2015:**
17800	17900	18000	18100	18200

3. Associated Knowledge Area(s)

- 602 - Business Management, Finance, and Taxation
- 603 - Market Economics
- 604 - Marketing and Distribution Practices
- 605 - Natural Resource and Environmental Economics
- 608 - Community Resource Planning and Development
- 610 - Domestic Policy Analysis
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities
- 805 - Community Institutions, Health, and Social Services

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 2

1. Outcome Target

Number of participants who indicate a change in behavior based on what they've learned about Community and Economic Development.

2. Outcome Type : Change in Action Outcome Measure

2011:	**2012:**	**2013:**	**2014:**	**2015:**
1625	1650	1675	1700	1750

3. Associated Knowledge Area(s)

- 602 - Business Management, Finance, and Taxation
- 603 - Market Economics
- 604 - Marketing and Distribution Practices
- 605 - Natural Resource and Environmental Economics
- 608 - Community Resource Planning and Development
- 610 - Domestic Policy Analysis
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities
- 805 - Community Institutions, Health, and Social Services

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 3

1. Outcome Target

Number of jobs created or retained through educational programs (APAC).

2. Outcome Type : Change in Condition Outcome Measure

2011:2250	**2012:**2250	**2013:**2250	**2014:**2250	**2015:**2250

3. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 604 - Marketing and Distribution Practices
- 605 - Natural Resource and Environmental Economics
- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 4

1. Outcome Target

Dollars of revenue generated by businesses as a result of educational programs (APAC).

2. Outcome Type : Change in Condition Outcome Measure

2011:75000000	**2012:**75000000	**2013:**75000000	**2014:**75000000	**2015:**75000000

3. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 604 - Marketing and Distribution Practices
- 605 - Natural Resource and Environmental Economics
- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 5

1. Outcome Target

Number of participants who increase their knowledge of individual and family resource management.

2. Outcome Type : Change in Knowledge Outcome Measure

2011:300	**2012:**300	**2013:**300	**2014:**300	**2015:**300

3. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 6

1. Outcome Target

Number of participants who increase knowledge of Agricultural Economics and Agribusiness.

2. Outcome Type : Change in Knowledge Outcome Measure

2011:25022	**2012:**25365	**2013:**25410	**2014:**25460	**2015:**25580

3. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 603 - Market Economics
- 604 - Marketing and Distribution Practices
- 605 - Natural Resource and Environmental Economics
- 606 - International Trade and Development
- 609 - Economic Theory and Methods
- 610 - Domestic Policy Analysis
- 611 - Foreign Policy and Programs

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 7

1. Outcome Target

Sustainable, vibrant and globally competitive agricultural sector for Arkansas as indicated by Arkansas Cash Farm Receipts (in thousand dollars) (NASS)

2. Outcome Type : Change in Condition Outcome Measure

2011:7814520	**2012:**7932960	**2013:**8046360	**2014:**8192520	**2015:**8312000

3. Associated Knowledge Area(s)

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

- 604 - Marketing and Distribution Practices
- 605 - Natural Resource and Environmental Economics
- 606 - International Trade and Development
- 609 - Economic Theory and Methods
- 610 - Domestic Policy Analysis
- 611 - Foreign Policy and Programs

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 8

1. Outcome Target

Sustainable, vibrant and globally competitive agricultural sector for Arkansas as indicated by Arkansas Net Farm Incomes (in thousand dollars) (ERS)

2. Outcome Type : Change in Condition Outcome Measure

2011:2542947	**2012:**2539724	**2013:**2568731	**2014:**2649306	**2015:**2654000

3. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 603 - Market Economics
- 604 - Marketing and Distribution Practices
- 605 - Natural Resource and Environmental Economics
- 606 - International Trade and Development
- 609 - Economic Theory and Methods
- 610 - Domestic Policy Analysis
- 611 - Foreign Policy and Programs

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 9

1. Outcome Target

Number of clientele who reported knowledge gained about non-food alternative agricultural products.

2. Outcome Type : Change in Knowledge Outcome Measure

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

3. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 10

1. Outcome Target

Value of non-food alternative agricultural products ($1000).

2. Outcome Type : Change in Condition Outcome Measure

2011:	**2012:**	**2013:**	**2014:**	**2015:**
10000	10000	11000	11000	11000

3. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 11

1. Outcome Target

Number of acres utilized for non-food alternative agricultural products.

2. Outcome Type : Change in Action Outcome Measure

2011:	**2012:**	**2013:**	**2014:**	**2015:**
6000	6000	6000	6000	6000

3. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 12

1. Outcome Target

Number of clientele who initiated an alternative agricultural enterprise with non-food products.

2. Outcome Type : Change in Action Outcome Measure

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

3. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 13

1. Outcome Target

Number of farms selling non-food alternative agricultural products or services using various methods.

2. Outcome Type : Change in Action Outcome Measure

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

3. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 14

1. Outcome Target

Number of clientele who used program information to decide NOT to initiate an alternative agricultural enterprise with non-food products.

2. Outcome Type : Change in Action Outcome Measure

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

3. Associated Knowledge Area(s)

- 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 (Interstate Policy Issues)

Description

The economy can have a distinct impact on family resource management programs. Typically, in the event of difficult times, we expect more consumers will attend financial education programs. Likewise, in the event of stronger economic times, we may expect fewer consumers to be focused on the need to learn financial management skills or developing alternative agricultural enterprises. Natural disasters have the capacity to interrupt the thrust of Extension programming. In the event of an extreme natural disaster, programs and resources may be redirected to accommodate emergency needs of citizens. The number of ballot issues put before registered voters can complicate the resulting education program. The state's changing demographics necessitates changing the education program to serve a multi-lingual society. International and domestic policy and trade issues may emerge that are unanticipated. Interstate policy issues may also be an external factor to consider. In times of disasters and critical needs by government agencies the Arkansas Procurement Assistance Center (APAC) assists agencies in locating vendors that can deliver parts, materials, and services. Also, APAC trains companies in disaster planning in serving and supplying public agencies during and after a disaster.

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

1. Evaluation Studies Planned

- After Only (post program)
- Retrospective (post program)
- Before-After (before and after program)
- During (during program)
- Time series (multiple points before and after program)
- Case Study
- Comparisons between program participants (individuals, group, organizations) and non-participants
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.

Description

Community and Economic Development has a relationship with the University of Arkansas Survey Research Center that provides the opportunity for longitudinal analysis of educational program effectiveness. Comprehensive departmental and programmatic evaluations for research, extension, and teaching programs are conducted on a five to seven year cycle. We systematically use a post-program evaluation to assess clientele knowledge and program effectiveness.

2. Data Collection Methods

- Sampling
- Whole population
- Mail
- Telephone
- On-Site
- Structured
- Unstructured
- Case Study
- Observation
- Tests
- Other (Web Based)

Description

We collect data from a sample of program participants who complete educational programs. Some audiences are small enough that the whole population can be evaluated. Contacts are surveyed by mail, on-site, online and in-person to determine impact of programs. Certain program participants are required to successfully complete a post program certification test. A few select case studies will be conducted to collect data on longer-term activiteis (e.g., demonstration farms). Direct observation of changes made by clientele will also be utilized. We have standing extension advisory councils in each of 75 counties that also provide feedback as to the effectiveness of progams. We have formalized external advisory councils that serve specific programs. We have ad hoc special interest groups that convene for the purpose of guiding and providing feedback data for issue-based education.

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Food, Nutrition & Health

2. Brief summary about Planned Program

Five of the ten leading causes of death in the U.S. have been linked to diet and lifestyle as contributing factors. Poor diet and obesity remain as common problems especially among under-served populations. The Extension 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. The nutrition and health program identifies and promotes evidence-based policies and practices that will reduce the incidence of chronic disease.

Using science-based information, Arkansans are engaged in programs such as Walk Across Arkansas, Strong Women, Arthritis Initiative, and Fit in 10 to prevent chronic disease, promote healthy lifestyles and increase physical activity. Be Medwise Arkansas is a new medication literacy awareness program to address proper use of medications and Healthy Homes Healthy People is a new Environmental Health program that teaches how to create a safe home with healthy indoor air. The nutrition education program responds to the nutritional issues and needs of Arkansans across the lifespan and socioeconomic spectrum. Participants gain knowledge and skills that will help them adopt appropriate behaviors to prevent or delay lifestyle-related chronic diseases.

Extension will also conduct a new program, the Arkansas AgrAbility Project, which will offer a comprehensive program for Arkansas farmers and farm family members with a disability or long-term health condition who want to remain in production agriculture.

Adult Arkansans with diabetes participate in the Living Well with Diabetes program; those wanting to learn healthy food preparation techniques to manage chronic diseases participate in the Right Bite cooking school. The Mediterranean Cooking School will help adults choose and prepare foods rich in nutrients and health-promoting phytochemicals.

Like never before, biotechnology and an improved understanding of food constituents that improve human health and nutrition will make possible the development of food products with improved nutritional value. Advances in knowledge of human nutrition can be rapidly utilized to produce improved food products. Nutritionists and dietitians must be linked to multi-disciplinary teams of food scientists, biotechnologists and medical experts to address this need.

The Division of Agriculture's Institute of Food Science and Engineering was created to focus multi-disciplinary research on food issues. This Institute draws on expertise in microbiology, food science, processing, nutrition, engineering, sensory analysis, and other disciplines; bringing together corporate partners and faculty members with the appropriate research expertise to address research problems of immediate need to the industry. The Institute of Food Science and Engineering is organized is three interactive centers, namely, the Center for Food Processing and Engineering (CFPE), the Center for Food Safety (CFS) and the Center for Human Nutrition (CHN). Of particular importance to the Food, Nutrition & Health program are CFPE and CHM

The mission of the Center for Food Processing and Engineering (CFPE) is to take a scientific, multidisciplinary approach to research to create a high-quality, wholesome, palatable, safe and nutritionally balanced food supply. In order to fulfill this mission, CFPE has established the primary objectives of facilitating and encouraging research leading to value-added products and improving the efficiency and effectiveness of processing of agricultural products.

The Center for Human Nutrition's mission is to conduct research on existing and novel foods that provide individuals with appropriate levels of required nutrients as well as other biologically important phytochemicals and to evaluate how these factors relate to the health and well-being of the individual.

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
403	Waste Disposal, Recycling, and Reuse	0%		10%	
501	New and Improved Food Processing Technologies	0%		25%	
502	New and Improved Food Products	2%		15%	
503	Quality Maintenance in Storing and Marketing Food Products	2%		15%	
701	Nutrient Composition of Food	0%		15%	
702	Requirements and Function of Nutrients and Other Food Components	16%		15%	
703	Nutrition Education and Behavior	35%		5%	
724	Healthy Lifestyle	35%		0%	
806	Youth Development	10%		0%	
	Total	100%		100%	

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

1. Situation and priorities

Nationally, Arkansas ranks first in stroke mortality, ninth in mortality due to heart disease and eleventh in overall cancer and diabetes mortality. Additionally, our state ranks first in teenage prescription drug abuse based on the most recent available statistics.

Sixty-six percent of adults and 38 percent of youth in grades K-12 are overweight or obese. Lifestyles are directly related to these chronic diseases. Less than half of Arkansas' adults and about a third of youth get the recommended amount of daily moderate physical activity, and one-fourth of adults and one-fifth of teens smoke. Twenty-two percent of Arkansas teens have abused prescription drugs by the time they reach senior year in high school. Sixty-three percent of teens think it is easy to get prescription drugs from the family home, up from 56% last year. About 30% of adults report regularly using more over the counter medication than drug facts labels recommend. Improper medicine use places a tremendous burden on the healthcare system (Over $177 billion!) and includes lost work productivity, unnecessary hospitalization and emergency room visits and even death. Finally, 7% of adults have asthma in Arkansas, the fifth highest prevalence of asthma in the US. Keeping a home clean of environmental pollutants, such as mold and dust mites can greatly aid in controlling asthma episodes as well as prevent future respiratory disease onset.

Unhealthy lifestyles, including poor diet, physical inactivity, smoking and substance abuse, cost Arkansas taxpayers billions 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.

In addition, 14% of the Arkansas population are 65 years of age or older and therefore in greater need of assistance.

The Division of Agriculture research goals for the Food, Nutrition Health and Aging programs are achieved through discovery and developmental research in food science and Human Nutrition and through IFSE affiliated scientists from multiple Division of Agriculture Units, USDA and the University of Arkansas for Medical Sciences. The Division's extension goals for Food, Nutrition, Health and Aging are achieved through a partnership with Extension 1890, county and state educational programs such as demonstrations, applied research, education booths, presentations, publications, newsletters, web pages, in-service training of county faculty, and news releases. Through consumer education on nutrition and the preparation and selection of more nutritious foods, Cooperative Extension faculty and staff enable Arkansans to make health-promoting choices. The success of our food safety programs is due to our Extension/Research integration and proximity of Extension and Experiment Station faculty/staff who work on new processing ingredients and technologies which are disseminated in Extension workshops, newsletters, roundtables, etc. 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.

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, and 4) People will be motivated to learn/change. One in five Arkansans is without health insurance coverage. Lack of health care professionals and facilities in rural Arkansas limit access to quality health care. Extension programs designed for the food industry include food labeling, food product development and sensory and consumer evaluation workshops.Since the programs are clientele-driven, it is believed that they represent the concerns and needs of the food processing industry. Similarly, they will continue to be important, and this concern will be reflected in the attendance and participation of the food manufacturing companies. 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-processing and food-related businesses.

2. Ultimate goal(s) of this Program

- Educate and encourage individuals and families to adopt healthy 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.
- Raise medication literacy awareness to prevent overmedication and interactions errors and promote empowerment in maneuvering through the health care system
- Educate individuals about common environmental health issues such as mold and lead and how to prevent complications from environmental pollutants
- Improve the efficiency and competitiveness of Arkansas and U.S. food industries through improvements in food

products and processing systems, , the development of novel products and processes and increased understanding and application of food science and food technology-based principles.

- Reduce the incidence of chronic diseases through research focused on better understanding the impact of food components on health
- Educate on primary and secondary prevention of common farm-related accidents.

V(E). Planned Program (Inputs)

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

Year	Extension		Research	
	1862	1890	1862	1890
2011	86.8	0.0	22.9	0.0
2012	86.8	0.0	22.9	0.0
2013	86.8	0.0	22.9	0.0
2014	86.8	0.0	22.9	0.0
2015	86.8	0.0	22.9	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Health and Nutrition:

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:

Walk Across Arkansas (Adults)
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

Commercial Food Processing:

Improve food processing efficiency through an improved understanding of food chemistry.
Determine the impact of food processing systems on product quality
Develop new food products that utilize Arkansas raw products.
Identify health related nutritional factors that will improve human health.
Conduct Labeling workshop.
Conduct Sensory and consumer Science workshop
Conduct new product development workshop.
Provide assistance to small food companies and entrepreneurs in the form of services, nutritional labeling, and consulting.
Conduct both basic and applied research.

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
● One-on-One Intervention	● Other 1 (Grant Development)
● Demonstrations	● Other 2 (Podcast and Online Education)
● Other 1 (On-line class)	

3. Description of targeted audience

Food Companies
Entrepreneurs and Restaurants
Youth, adults and senior adults
Child Care Providers
School personnel
Health Professionals
Worksites
Famers
Consumers
Commodity Boards

V(G). Planned Program (Outputs)

1. Standard output measures

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

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2011	20000	4500	250	300
2012	20000	4500	250	300
2013	20000	4500	250	300
2014	20000	4500	250	300
2015	20000	4500	250	300

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

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

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total

Year	Research Target	Extension Target	Total
2011	41	1	42
2012	40	1	41
2013	41	2	43
2014	40	2	42
2015	40	2	42

V(H). State Defined Outputs

1. Output Target

- # of 4-H Youth Food, Nutrition and Health programs delivered

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

- # of 4-H participants in Food, Nutrition, and Health programs

2011:2500 **2012:**2500 **2013:**2500 **2014:**2500 **2015:**2500

- # of funded commodity board grants

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

- # of funded Federal grants and contracts

2011:5 **2012:**6 **2013:**6 **2014:**6 **2015:**7

- # of funded non-federal grants/contracts funded

2011:25 **2012:**25 **2013:**28 **2014:**30 **2015:**30

- $ received through commodity board grants/contracts

2011:140000 **2012:**140000 **2013:**140000 **2014:**140000 **2015:**140000

- $ received through funded Federal grants and contracts

2011:1200000 **2012:**1200000 **2013:**1200000 **2014:**1200000 **2015:**1200000

- $ received through non-federal grants/contracts funded (industry, state)

2011:900000 **2012:**900000 **2013:**900000 **2014:**900000 **2015:**900000

- # of Food, Nutrition, and Health adult clientele contacts from educational events

2011:20000 **2012:**20000 **2013:**20000 **2014:**20000 **2015:**20000

- # of Food, Nutrition, and Health adult educational events

2011:2600 **2012:**2600 **2013:**2600 **2014:**2600 **2015:**2600

- # of adults enrolled in physical activity programs

2011:600 **2012:**700 **2013:**800 **2014:**800 **2015:**800

- # of Nutrition labels developed

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

V(I). State Defined Outcome

O. No.	Outcome Name
1	# of participants who indicated that they increased their knowledge related to food, nutrition and/or health following an educational class, seminar or workshop
2	# of individuals who increased physical activities as a result of completing an Extension program
3	# of Peer reviewed publications
4	# of books or book chapters published in Food Science or Nutrition
5	# of national or international conferences where research in food, nutrition and health was disseminated
6	# of participants who adopted at least one positive nutrition practice.
7	# of participants reporting a reduction of at least one risk factor for chronic disease after completing a nutrition education program
8	# of new food businesses started
9	# of Participants who indicated that they have gained new knowledge on universal design, assistive technology, services available, housing options or other issues related to aging in place.

Outcome # 1

1. Outcome Target

# of participants who indicated that they increased their knowledge related to food, nutrition and/or health following an educational class, seminar or workshop

2. Outcome Type : Change in Knowledge Outcome Measure

2011:	**2012:**	**2013:**	**2014:**	**2015:**
15000	15000	16000	16000	17000

3. Associated Knowledge Area(s)

- 502 - New and Improved Food Products
- 503 - Quality Maintenance in Storing and Marketing Food Products
- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 2

1. Outcome Target

# of individuals who increased physical activities as a result of completing an Extension program

2. Outcome Type : Change in Action Outcome Measure

2011:	**2012:**	**2013:**	**2014:**	**2015:**
500	500	500	500	500

3. Associated Knowledge Area(s)

- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 3

1. Outcome Target

# of Peer reviewed publications

2. Outcome Type : Change in Action Outcome Measure

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

3. Associated Knowledge Area(s)

- 501 - New and Improved Food Processing Technologies
- 502 - New and Improved Food Products
- 503 - Quality Maintenance in Storing and Marketing Food Products
- 701 - Nutrient Composition of Food

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

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 4

1. Outcome Target

# of books or book chapters published in Food Science or Nutrition

2. Outcome Type : Change in Action Outcome Measure

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

3. Associated Knowledge Area(s)

- 501 - New and Improved Food Processing Technologies
- 502 - New and Improved Food Products
- 503 - Quality Maintenance in Storing and Marketing Food Products
- 701 - Nutrient Composition of Food
- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 5

1. Outcome Target

# of national or international conferences where research in food, nutrition and health was disseminated

2. Outcome Type : Change in Knowledge Outcome Measure

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

3. Associated Knowledge Area(s)

- 501 - New and Improved Food Processing Technologies
- 502 - New and Improved Food Products
- 503 - Quality Maintenance in Storing and Marketing Food Products
- 701 - Nutrient Composition of Food
- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 6

1. Outcome Target

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

2. Outcome Type : Change in Action Outcome Measure

2011:600	**2012:**600	**2013:**600	**2014:**600	**2015:**600

3. Associated Knowledge Area(s)

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

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 7

1. Outcome Target

# of participants reporting a reduction of at least one risk factor for chronic disease after completing a nutrition education program

2. Outcome Type : Change in Condition Outcome Measure

2011:45	**2012:**45	**2013:**50	**2014:**50	**2015:**50

3. Associated Knowledge Area(s)

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

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 8

1. Outcome Target

# of new food businesses started

2. Outcome Type : Change in Action Outcome Measure

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

3. Associated Knowledge Area(s)

- 501 - New and Improved Food Processing Technologies
- 502 - New and Improved Food Products
- 503 - Quality Maintenance in Storing and Marketing Food Products

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 9

1. Outcome Target

# of Participants who indicated that they have gained new knowledge on universal design, assistive technology, services available, housing options or other issues related to aging in place.

2. Outcome Type : Change in Knowledge Outcome Measure

2011:410	**2012:**420	**2013:**430	**2014:**440	**2015:**450

3. Associated Knowledge Area(s)

- 724 - Healthy Lifestyle

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 activities on policy, regulatory, economic and demographic changes that affect the quality of life and economic value for Arkansans.

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

1. Evaluation Studies Planned

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

Description

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, post-test assessments and self-report of practice change. Unobtrusive means (request for additional information, purchase of video's and materials, increased participation and observation) will also be used to capture information.

2. Data Collection Methods

- Sampling
- Whole population
- Mail
- On-Site
- Observation
- Tests
- Other (Self-reported & secondary data)

Description

Quantitative and qualitative collection methods will be used in gathering data for food nutrition and health related programs. Collection methods may occur using web-based surveys, observations, random samples, telephone interviews, on-site assessments.

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Natural Resources & Environment

2. Brief summary about Planned Program

Planned programs in the Division of Agriculture will continue to focus on the primary problems of forest stewardship, bioenergy, air quality, soil and water conservation and protection, wildlife populations and their management, and animal waste management. Multi-disciplinary research teams will be utilized to address these complex environmental problems. Strong linkages are needed with state agencies and policymakers to provide the necessary research base to address complex natural resource issues. Industry-university coalitions must address environmental issues along with special interest groups and under-served populations.

The UA Division of Agriculture has a continuous goal of assisting agricultural producers and landowners with integrating environmental goals and regulations as part of farm planning. It also promotes a more integrated approach to natural resource management to include forestry, wildlife, and ecological sustainability as part of the planning process. As environmental and natural resource concerns shift, so will our educational efforts. For example, new programs have been developed in bioenergy, air quality, and watershed management.

Natural resource and environmental stewardship has been a long lasting program of the UA Division of Agriculture. Workshops, short courses, meetings, publications, and field days will continue as touchstones of the program. As access to technology expands, the program can be delivered via the web, satellite, and other electronic media. The county agents, located in each county of the State, are central to natural resource efforts as well. County agents develop and deliver meetings, workshops, and field days focused on issues important to their local clientele and leadership. UA Division of Agriculture faculty will continue to work closely with county level programs as well as with stakeholders at the State level.

Some examples include efforts in natural resource management implemented through the Arkansas Forest Resources Center. The goal of the Arkansas Forest Resources Center is to develop and deliver programs in research and extension that enhance and insure the sustainability of forest-based natural resources.

The UA Division of Agriculture continues to deliver a nutrient management certification training program. Research continues to develop best management practices for nutrient applications. Manure management is a critical component of sustainable livestock and associated crop production operations. Improper manure management increases risks to the environment. The Division also provides research and Extension efforts in the area of quantification and mitigation of air emission from animal feeding operations.

The program therefore, is broadly defined to include a vast array of topics, issues, and strategies aimed at promoting the sustainable and wise use of Arkansas' forest resources.

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%		4%	
102	Soil, Plant, Water, Nutrient Relationships	4%		4%	
111	Conservation and Efficient Use of Water	9%		9%	
112	Watershed Protection and Management	9%		9%	
122	Management and Control of Forest and Range Fires	4%		4%	
123	Management and Sustainability of Forest Resources	20%		20%	
124	Urban Forestry	4%		4%	
131	Alternative Uses of Land	4%		4%	
133	Pollution Prevention and Mitigation	15%		15%	
135	Aquatic and Terrestrial Wildlife	9%		9%	
136	Conservation of Biological Diversity	4%		4%	
403	Waste Disposal, Recycling, and Reuse	4%		4%	
605	Natural Resource and Environmental Economics	10%		10%	
	Total	100%		100%	

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

1. Situation and priorities

Arkansas has abundant natural resources which are important to the state's economy. More than 50% of the state's land area remains forested. These forests provide multiple benefits including forest products, outdoor recreation, wildlife habitat, watershed protection, and scenic beauty. Development of crop and animal production systems that minimize the impact on the land and water resources of the state remains a high priority.

Soil and water resources in our agricultural areas are degrading over time requiring increased inputs to maintain productivity. Salinity and pH of some delta soils have increased due to irrigation with water of poor quality. Soil organic matter content has declined due to excessive tillage. A number of counties have been designated as critical water use areas including our most productive rice producing areas.

Half of Arkansas's agricultural revenue is generated by livestock and poultry production. A challenge is to maximize the resource value of manure byproducts while minimizing waste/disposal environmental concerns.

The size of our poultry industry has created animal waste issues that must be addressed to protect our water resources. In some areas, litter production exceeds available pasture land for use as a fertilizer. Although poultry litter makes a valuable soil amendment, litter production occurs in areas distant from row crop areas that would benefit from use of the litter. Although research is addressing short term mitigation strategies, a long term approach remains a goal if we are to address these issues in a comprehensive manner in partnership with state regulatory agencies and policymakers.

Arkansas Acts 1059 and 1061 of 2003 identifies nutrient sensitive areas in the state, designates them as Nutrient

Surplus Areas, and requires all nutrient applications (whether manure or commercial fertilizer, agricultural or residential) to be done according to a nutrient management plan or an approved protective use rate.

Air quality impact from confined animal feeding operations is an emerging issue. Potential regulations could affect the economic viability of animal agriculture. Mitigation of ammonia emission from broiler houses is important for the future viability of broiler operations and protecting the environment and community health.

Although the forest products industry is one of the largest industries in the State, most of the forest land is owned by non-industrial private forest or family forest landowners. Forest sustainability, forest health, urban encroachment, loss of biodiversity, watershed protection and conservation are issues that serve as a counter-point to forest resource production.

A new issue is the development of alternative energy sources including biomass protection from forests. Although research into bio-fuel production is ongoing, key questions remain unanswered.

As people move to outlying areas previously managed as working forests, negative impacts can result, including increased risk from wildfire, loss of habitat, loss of biodiversity, changes in ownership patterns, and even changes to vital watershed functions. Although fire protection and the National FireWise programs are active in the state, more research in the wildland-urban interface arena is needed.

2. Scope of the Program

- Integrated Research and Extension
- Multistate Integrated Research and Extension

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

1. Assumptions made for the Program

Natural Resources & Environment:

The University of Arkansas Division of Agriculture will continue to have strong relationships among state and federal natural resource agencies - Evidence: The Division of Agriculture works with numerous State and Federal Natural Resource Agencies including the Arkansas Forestry Commission, the Arkansas Agriculture Department, the Arkansas Game and Fish Commission, the US Forest Service., the Arkansas Department of Environmental Quality, and the Arkansas Soil and Water Commission. The Division of Agriculture is also involved in several formal partnerships such as the Arkansas Conservation Partnership; The Division helps support a Regional Extension liaison to EPA.

The University of Arkansas, Division of Agriculture will also continue to be well connected to Regional (multi-state) natural resource education efforts &ndash Evidence: The Division of Agriculture continues to participate to the Southern Regional NIFA project and the Southern Region Forestry Extension program. The Division of Agriculture provides solutions to natural resource and environmental concerns through the integrated missions of research, education, and Extension outreach - Evidence: Forestry and wildlife extension efforts are administered through the Division of Agriculture's Arkansas Forest Resources Center that integrates research, teaching and extension. Further evidence can be found in the formation and functioning of the UA Environmental Task Force.

The Division of Agriculture will continue to seek financial support in our effort to address the key issues mentioned above - Evidence: During the past 5 years the UA-CES has received over 3.5 million dollars in outside funding. The Division of Agriculture will continue to produce timely educational products.

Partnerships between the agricultural community and the Division of Agriculture will result in a receptive audience to receive and implement research based information and the identification of areas needed additional research and extension efforts. Evidence: The Division of Agriculture has a history of partnerships with Arkansas agricultural-related organizations such as Farm Bureau and commodity groups, and a long history of involving local stakeholders in the program development process through county Extension councils and program committee participation.

2. Ultimate goal(s) of this Program

The ultimate goals of this program are to:

Increase the benefits landowners derive from their lands through better management.

Improve the quality and sustainability of natural resources and the environment.

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

Reduce the dependency on foreign oil by using renewable resources for bioenergy and biofuel production.

Build the capacity of natural resource professionals to help meet the above stated goals.

Minimize adverse environmental impacts while maintaining a viable food supply.

V(E). Planned Program (Inputs)

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

Year	Extension		Research	
	1862	1890	1862	1890
2011	17.7	0.0	24.4	0.0
2012	17.7	0.0	24.4	0.0
2013	17.7	0.0	24.4	0.0
2014	17.7	0.0	24.4	0.0
2015	17.7	0.0	24.4	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Develop and disseminate educational materials, curricula, & resources

New technology trainings

One-on-one consultations

Workshops

.

Field Days

Site Visits

Demonstrations

Educational Meetings

News articles

Newsletter

Web-based Education

Continuing Education

Basic and Applied Research

Establish partnerships and collaborations

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
● One-on-One Intervention	● Other 1 (Mass Media Programs)
● Demonstrations	● Other 2 (Publications/Fact Sheets)

3. Description of targeted audience

4-H Club Youth
Agri Business Personnel
Row Crop Agricultural Producer Organizations
Row Crop Agricultural Producers
Certified Crop Advisors
Conservation District Directors
Consultants
Forest Landowner Groups
Forest Industry personnel
Loggers
Natural Resource Professionals
Landowners
Homeowners
Educators
State & Federal Agency personnel
Watershed Organizations
Wildlife Organizations
Private nutrient applicators
Commercial nutrient applicators
Livestock and Poultry producers
Livestock and Poultry industry personnel
Livestock and Poultry producer organizations
General public
Researchers
Policy makers
Youth
Teaching faculty
Research funding personnel and agencies

V(G). Planned Program (Outputs)

1. Standard output measures

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

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2011	10850	51700	2500	250
2012	10850	51700	2500	250
2013	10850	51700	2500	250
2014	10850	51700	2500	250
2015	10850	51700	2500	250

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

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

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2011	15	9	24
2012	15	9	24
2013	16	10	26
2014	15	10	25
2015	16	10	26

V(H). State Defined Outputs

1. Output Target

- Number of programs held for professional natural resource managers

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

- Number of Natural Resource Educational Meetings conducted for landowners/public

  2011:50 **2012:**55 **2013:**60 **2014:**60 **2015:**60

- Number of Natural Resource Field Demonstrations

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

- Number of Natural Resource Field Days

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

- Total Number of Natural Resources program participants through all programs and activities

  2011:10000 **2012:**10000 **2013:**10000 **2014:**10000 **2015:**10000

- Number of Acres impacted as self-reported

  2011:550000 **2012:**550000 **2013:**550000 **2014:**550000 **2015:**550000

- Number of Educational Materials & Currica developed (fact sheets, presentations, handouts)

  2011:100 **2012:**120 **2013:**130 **2014:**140 **2015:**150

- Number of Natural Resource Newsletters developed

  2011:6 **2012:**6 **2013:**7 **2014:**7 **2015:**7

- Number of web-based modules, sites developed and/or maintained

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

- Number of Educational Materials & Currica delivered

  2011:50000 **2012:**50000 **2013:**50000 **2014:**50000 **2015:**50000

- Number of Natural Resource Newsletters delivered

2011:40000 **2012:**40000 **2013:**40000 **2014:**40000 **2015:**40000

- Number of individuals attending manure management related presentations addressing environmental issues

2011:500 **2012:**500 **2013:**500 **2014:**500 **2015:**500

- Number of individuals engaged in manure management related consultations addressing environmental issues.

2011:200 **2012:**200 **2013:**200 **2014:**200 **2015:**200

- Number of hits at manure management Web page addressing environmental issues.

2011:1000 **2012:**1000 **2013:**1000 **2014:**1000 **2015:**1000

- Number of educational meetings related to air quality/emissions.

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

V(I). State Defined Outcome

O. No.	Outcome Name
1	Number of participants indicating an increased knowledge of forestry and wildlife management
2	number of participants who adopt forestry and wildlife managment practices
3	Number of participants indicating an increased knowledge of air quality/emissions
4	Number of participants indicating an increased knowledge of water quality/quantity
5	Number of participants who adopt water quality/quantity practices
6	Number of participants indicating an increased knowledge of bioenergy production and energy conservation
7	Number of participants who adopt bioenergy production and energy conservation practices
8	Number of registered foresters maintaining certification
9	Number of nutrient management planners and applicators maintaining state certification
10	Number of livestock production clientele who gained knowledge related to manure management issues.
11	Number of clientele who implemented improvements in their manure management practices.
12	Number of participants indicating an increased knowledge of air quality/emissions.

Outcome # 1

1. Outcome Target

Number of participants indicating an increased knowledge of forestry and wildlife management

2. Outcome Type : Change in Knowledge Outcome Measure

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

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
- 122 - Management and Control of Forest and Range Fires
- 123 - Management and Sustainability of Forest Resources
- 124 - Urban Forestry
- 131 - Alternative Uses of Land
- 133 - Pollution Prevention and Mitigation
- 135 - Aquatic and Terrestrial Wildlife
- 136 - Conservation of Biological Diversity
- 605 - Natural Resource and Environmental Economics

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 2

1. Outcome Target

number of participants who adopt forestry and wildlife managment practices

2. Outcome Type : Change in Action Outcome Measure

2011:85	**2012:**90	**2013:**90	**2014:**95	**2015:**95

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
- 122 - Management and Control of Forest and Range Fires
- 123 - Management and Sustainability of Forest Resources
- 124 - Urban Forestry
- 131 - Alternative Uses of Land
- 133 - Pollution Prevention and Mitigation

- 135 - Aquatic and Terrestrial Wildlife
- 605 - Natural Resource and Environmental Economics

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 3

1. Outcome Target

Number of participants indicating an increased knowledge of air quality/emissions

2. Outcome Type : Change in Knowledge Outcome Measure

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

3. Associated Knowledge Area(s)

- 133 - Pollution Prevention and Mitigation

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 4

1. Outcome Target

Number of participants indicating an increased knowledge of water quality/quantity

2. Outcome Type : Change in Knowledge Outcome Measure

2011:5000	**2012:**5500	**2013:**6000	**2014:**6500	**2015:**7500

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
- 133 - Pollution Prevention and Mitigation

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 5

1. Outcome Target

Number of participants who adopt water quality/quantity practices

2. Outcome Type : Change in Action Outcome Measure

2011:1200	**2012:**1500	**2013:**1800	**2014:**2000	**2015:**2500

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
- 133 - Pollution Prevention and Mitigation
- 136 - Conservation of Biological Diversity

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 6

1. Outcome Target

Number of participants indicating an increased knowledge of bioenergy production and energy conservation

2. Outcome Type : Change in Knowledge Outcome Measure

2011:300	**2012:**300	**2013:**300	**2014:**300	**2015:**300

3. Associated Knowledge Area(s)

- 605 - Natural Resource and Environmental Economics

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 7

1. Outcome Target

Number of participants who adopt bioenergy production and energy conservation practices

2. Outcome Type : Change in Knowledge Outcome Measure

2011:300	**2012:**300	**2013:**300	**2014:**300	**2015:**300

3. Associated Knowledge Area(s)

- 123 - Management and Sustainability of Forest Resources
- 136 - Conservation of Biological Diversity
- 605 - Natural Resource and Environmental Economics

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 8

1. Outcome Target

Number of registered foresters maintaining certification

2. Outcome Type : Change in Action Outcome Measure

2011:610	**2012:**615	**2013:**620	**2014:**620	**2015:**630

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
- 122 - Management and Control of Forest and Range Fires
- 123 - Management and Sustainability of Forest Resources
- 124 - Urban Forestry
- 131 - Alternative Uses of Land
- 133 - Pollution Prevention and Mitigation
- 135 - Aquatic and Terrestrial Wildlife
- 136 - Conservation of Biological Diversity
- 605 - Natural Resource and Environmental Economics

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 9

1. Outcome Target

Number of nutrient management planners and applicators maintaining state certification

2. Outcome Type : Change in Condition Outcome Measure

2011:1500	**2012:**1500	**2013:**1500	**2014:**1500	**2015:**1500

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
- 133 - Pollution Prevention and Mitigation

- 605 - Natural Resource and Environmental Economics

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 10

1. Outcome Target

Number of livestock production clientele who gained knowledge related to manure management issues.

2. Outcome Type : Change in Knowledge Outcome Measure

2011:500	**2012:**500	**2013:**500	**2014:**500	**2015:**500

3. Associated Knowledge Area(s)

- 133 - Pollution Prevention and Mitigation
- 403 - Waste Disposal, Recycling, and Reuse

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 11

1. Outcome Target

Number of clientele who implemented improvements in their manure management practices.

2. Outcome Type : Change in Action Outcome Measure

2011:200	**2012:**200	**2013:**200	**2014:**200	**2015:**200

3. Associated Knowledge Area(s)

- 133 - Pollution Prevention and Mitigation
- 403 - Waste Disposal, Recycling, and Reuse

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 12

1. Outcome Target

Number of participants indicating an increased knowledge of air quality/emissions.

2. Outcome Type : Change in Knowledge Outcome Measure

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

3. Associated Knowledge Area(s)

- 133 - Pollution Prevention and Mitigation

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.)

Description

Natural resources including forests, water, and wildlife are easily impacted by external forces beyond our control. Wildfires for example, impact all components of the ecosystem resulting in both short and long term effects. How these wildfires are managed, however, is influenced by public policy, agency capacity, and government regulations. Weather, economics, program funding, regulations etc. all have the potential to impact research and Extension educational efforts in this program area. Therefore each of the above external factors can influence both the direction and implementation of our programs.

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

1. Evaluation Studies Planned

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

Description

Most of our evaluation efforts focus on gathering as much input as possible from the audience attending the workshop, meeting, or field day.We may not have access to this audience again; therefore on-site evaluation methods work well.In other situations, for example in the dissemination of a fact sheet or guide, we have no direct contact with the individual and therefore limited opportunity to evaluate the effectiveness of the educational material.

2. Data Collection Methods

- Sampling
- Whole population
- Mail
- On-Site
- Tests
- Other (Web-based surveying)

Description

On-site data collection is the primary method that will be utilized to collect needs assessment and program evaluation data. Data will be collected prior to, during and following educational programs for both process and outcome evaluation.

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Pest Management

2. Brief summary about Planned Program

Insect, weed and disease pests affect all the major agricultural commodities in Arkansas including row-crops (cotton, wheat, rice, soybeans and corn), livestock, poultry, fruit and vegetable crops, ornamental shrubs, trees, and turf. The loss of many traditional low cost animal and crop protection chemicals without replacement by effective alternatives limits available management options. The advent of new limitations to meet the requirements of the Food Quality Protection Act will limit crop protection options further. New discoveries from research on host plant resistance and pest biology continue to provide alternatives, but must be integrated into our crop and animal production systems. Significant work remains to be done to minimize losses from pests, diseases and weeds in all major animal and crop commodities of importance to Arkansas.

Integrated pest management (IPM) is an essential research and educational program that helps agricultural producers and homeowners control pests more efficiently and reduce their reliance on pesticides.Increasing concerns for producers and homeowners include pesticide drift, soil and water quality; pesticide resistance, and the utilization of Genetically Modified Organisms (GMO).

Although most of the destructive pests are endemic, an increasing numbers of problem species are finding their way to the United States from outside our borders. Adapting Division of Agriculture activities to cope with these threats is a primary consideration for planning future pest management research and extension efforts.

Continued use of pesticides can lead to resistance and overuse of pesticides, which can result in contamination of water supplies. Division of Agriculture research scientists and Extension faculty conduct research and train county agents on the latest pest management research. Pest management and pesticide applicator training is then conducted statewide each year by county agents and faculty through various means to inform producers and homeowners about recommended effective and environmentally friendly chemical and non-chemical research based pest management and pesticide use practices.

The human IPM program focuses on the management of insect pests that impact humans, and has resulted in considerable benefit to the citizens of the state. These insect pests pose both direct and indirect threats to human health and well-being, as well as having the potential to adversely impact the value of property.

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
211	Insects, Mites, and Other Arthropods Affecting Plants	10%		10%	
212	Pathogens and Nematodes Affecting Plants	20%		20%	
216	Integrated Pest Management Systems	30%		30%	
312	External Parasites and Pests of Animals	20%		20%	
403	Waste Disposal, Recycling, and Reuse	5%		5%	
721	Insects and Other Pests Affecting Humans	10%		10%	
723	Hazards to Human Health and Safety	5%		5%	
	Total	100%		100%	

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

1. Situation and priorities

Major row crops, forages, livestock, poultry and fruit, vegetable, turf crops and ornamentals in Arkansas are all intensively managed relative to input costs (pest control, feed, fertilizer, irrigation, etc.), to provide the highest profit margin possible for producers. The monoculture production system in many parts of the state has resulted in a number of severe pest problems. Of particular concern are various plant insect pests, plant diseases, weeds, nematodes, flies, and fire ants.Correct identification of these pests, and the availability of research-based information for control, are of paramount importance for the continued success of our producers.

Each year, many new crop cultivars come to the marketplace, generally with little information on pest or pesticide resistance. A goal of this program is to provide our growers with a rapid and accurate assessment of the resistance of new cultivars to the most common pests. The pest management program strives to provide support to clientele through applied research, leading to field demonstrations, educational materials and updated management recommendations to match local situations.

The intense use of pesticides in these commodities generates substantial market opportunities for pesticide companies, resulting often in the overuse of pesticides by growers and homeowners. In recent years, overuse of pesticides has created increasing problems with pesticide resistant organisms. Farmers and homeowners end up paying for wasted inputs and "super" pests in the short and long term. The incorrect use of pesticides and home pest management remedies can also contaminate surface and ground water.

By federal and state laws, applicators of restricted use pesticides must be certified or work under direct supervision of a certified applicator, who must be periodically recertified by attending educational programs on pesticide safety, IPM, etc. Arkansas, Louisiana, and Mississippi have chosen Pesticide Applicator Training as a multi-state cooperative effort.

As the urban population increases, more emphasis and demand will be placed on growing desirable and profitable horticultural crops for both large businesses and backyard gardeners. Gardening, as a hobby or a necessity, continues to grow in popularity among urban and retired Arkansans. This interest creates an increase in the demand for expertise and training in the area of pest management, which may impact everyone from the backyard gardener to the commercial producer.

The Human IPM program focuses on education of homeowners in proper methods of management of termites, fire ants, cockroaches, bees and other pests of human-health concern. The cases of West Nile Virus peaked at 42 in Arkansas during 2002. After initiation of the Extension education program on mosquito control/disease prevention, human cases of West Nile

virus dropped and no deaths were recorded.

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

This program is based on the county agent system and on basic and applied research funded by federal formula funds, grower check-off programs, competitive grants, and industry grants-in-aid. This system has been proven effective since 1914. Growers trust the Division of Agriculture for research-based, unbiased, accurate, and up-to-date information. Well-trained crop consultants are more of a mainstay of the farmers' source of information. Considerable effort has been focused over the last few years in educating this segment of the industry as well as our county agents. Research-based information from field and greenhouse trials is provided to specialists and from them to county agents annually in the fall and early winter for use in educational programs via meetings, newsletters, annual printed and electronic updates and various software programs developed for growers and homeowners statewide. Effective education is best done at the local level by direct contact using experiential methods. This system has been successful in the past but must continually be adjusted as biological factors and production practices evolve.

Since 1976, the Pesticide Safety Education Program has provided the necessary training for certified applicators. Surveys of attendees have indicated that most who attend change their pesticide practices as a result. This program contacts/impacts more pesticide applicators than any other Extension program, but continued success is dependent upon sufficient funding.The program will continue to work only so long as the required funding is provided.

Although county agents have comprehensive knowledge of pest management in major commodities and horticulture crops, emphasis on ornamental and vegetable pests is critical.Agents are making more "house calls" than ever before.Homeowner questions about stresses and diseases in horticultural plants are putting increased demands on Division of Agriculture faculty.Education and training of faculty will better equip faculty to address these problems.

Research demonstrates the benefit of pest management for the support of human health and well-being.This program focuses on increaing recognition and adoption of IPM practices by cliente.We use both direct and indirect methods to educate the public, based on fact-based recommendations.

2. Ultimate goal(s) of this Program

To reduce the impact of major pests on animal and crop production systems and urban landscapes in Arkansas.

To make clientele more aware of critical crop insect, disease, and weed problems that they may face in the state, and improve their understanding and management of same.

To reduce accidental pesticide exposures and pesticide complaints, and to promote environmental improvements in agricultural and urban areas in Arkansas.

To reduce overall pesticide use &ndash or at least make pesticide use as efficient as possible, and prevent or minimize periodic disasters caused by pest outbreaks, resulting in highly stable and efficient crop and livestock production.

To provide near-real-time cultivar reaction information to growers and others involved in Arkansas crop production.

To increase the knowledge and awareness of insects, plant diseases and weeds and their impact for urban and

commercial clientele and to educate and train Extension personnel to address pest problems.

Consistent application of Division of Agriculture recommendations by the public to reduce incidence of human-health issues caused by insects, while decreasing over-reliance on and misuse of pesticides.

V(E). Planned Program (Inputs)

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

Year	Extension		Research	
	1862	1890	1862	1890
2011	30.6	0.0	2.2	0.0
2012	30.6	0.0	2.2	0.0
2013	30.6	0.0	2.2	0.0
2014	30.6	0.0	2.2	0.0
2015	30.6	0.0	2.2	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

The University of Arkansas Division of Agriculture research program in pest management will reduce the impacts of major pests by: increasing the knowledge base on major pests, diseases, and weeds of importance to Arkansas; developing improved crop protection strategies and technologies for our major crop systems; and integrating new knowledge in plant and animal genomics and basic science into the development new pest management strategies.Our methods will include grower meetings, training extension agents and crop consultants, educational newsletters, Extension publications, visits to individual growers /homeowners, diagnosis of pest problems, newspaper/magazine /professional journal articles, interviews, field days, web-based information, and/or applied on- farm research.

Extension Pest Management education will be delivered through the following programs and methods, targeting issues specific to Arkansas:

The Cotton Nematode and Disease Management Program supports and assists county extension programs in the state, particularly the Delta region to better identify, understand, and manage major cotton diseases in Arkansas.

The Pesticide Applicator Training Program provides initial certification and recertification training sessions for private and commercial/non-commercial pesticide applicators statewide each year. County agricultural Extension agents provide the training for private applicators (farmers), and the pesticide assessment specialist is responsible for training the commercial/non-commercial applicators.

The Cotton, Rice and Soybean IPM Programs offer simple grant funding for county extension education efforts focused primarily on integrated pest management of cotton, rice and soybean pests. County extension education efforts are aimed at improving crop production and pest management through adoption of research-based recommendations.

The Rice, Soybean, and Wheat Pathology Programs assist county extension programs to educate growers and others involved to better identify, understand and manage the many rice, soybean, and wheat diseases in Arkansas.

The Soybean Cultivar Disease Screening Program assists soybean producers in selecting the most appropriate soybean cultivars for their farms to avoid costly losses from soybean diseases and nematodes.

As part of the Diversified IPM Program, urban and commercial horticulture educational programs are delivered to train urban and commercial vegetable, ornamental, turf and fruit clientele in pest and plant disease management practices.

Human Integrated Pest Management will develop sound recommendations for IPM targeting pests affecting humans, and to deliver the recommendations to a variety of sectors of the public. Pests to be targeted include Africanized bees, termites, and fire ants in residential settings. Delivery methods include presentations at educational meetings and workshops, extension publications and newsletters, web-based materials and visits to households of affected citizens.

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 (On-Farm Research) ● Other 2 (Field Days/Diagnostic Services)	● Public Service Announcement ● Newsletters ● Web sites ● Other 1 (Scientific/Technical Publication) ● Other 2 (Grant Proposals/File Patents)

3. Description of targeted audience

Crop producers
Livestock producers
Division of Agriculture personnel
Agricultural consultants
Agricultural industry personnel
Pesticide applicators
Pest Control Operators
Homeowners
Golf course superintendents
Commercial pest management personnel
Master gardeners
Commercial landscapers
Landscape management staff
Public Health Officials
Other researchers
Students
Extension Specialists
Research Funding Personnel and Agencies
Policy and Decision Makers
Regulatory Personnel
State Plant Board Personnel
General Public

V(G). Planned Program (Outputs)

1. Standard output measures

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

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2011	70000	70000	0	0
2012	70000	70000	0	0
2013	70000	70000	0	0

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2014	70000	70000	0	0
2015	70000	40000	0	0

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

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

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2011	50	5	55
2012	50	7	57
2013	50	7	57
2014	50	7	57
2015	45	5	50

V(H). State Defined Outputs

1. Output Target

- # of farm tours related to pest management

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

- # of farm visits made related to pest management

  2011:6000 **2012:**6000 **2013:**6000 **2014:**6000 **2015:**6000

- # of pesticide applicator education classes

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

- # of homeowner education classes related to pest management

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

- # of research field days related to pest management

  2011:15 **2012:**15 **2013:**15 **2014:**15 **2015:**25

- # of workshops related to pest management

  2011:10 **2012:**10 **2013:**10 **2014:**10 **2015:**25

- # of newsletter articles related to pest management

  2011:70 **2012:**70 **2013:**70 **2014:**70 **2015:**100

- # of Arkansas Commodity Board grants received

  2011:8 **2012:**8 **2013:**8 **2014:**8 **2015:**15

- # of federal grants and contracts

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

- # of educational classes related to pest management

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

- # of Pest Management clientele contacts from education classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational methods

2011:70000 **2012:**70000 **2013:**70000 **2014:**70000 **2015:**70000

V(I). State Defined Outcome

O. No.	Outcome Name
1	# of participants gaining knowledge of proper pesticide application practices
2	# of participants passing commercial pesticide certification exams
3	# of submissions to diagnostic clinic
4	# of clients using scouting programs
5	# of pest monitoring traps utilized
6	Annual soybean yield - bushels per acre
7	Annual value of soybean production (1,000 Dollars)
8	Annual rice (all) yield -- pounds per acre
9	Annual value of rice (all) production (1,000 dollars)
10	Annual cotton (all) yield -- pounds per acre
11	% of soybean acreage receiving herbicide applications
12	Pounds (1,000) of herbicides applied to planted soybean acreage
13	% of soybean acreage receiving insecticide applications
14	Pounds (1,000) of insecticides applied to planted soybean acreage
15	% of soybean acreage receiving fungicide applications
16	Pounds (1,000) of fungicides applied to planted soybean acreage

Outcome # 1

1. Outcome Target

# of participants gaining knowledge of proper pesticide application practices

2. Outcome Type : Change in Knowledge Outcome Measure

2011:4000	**2012:**4000	**2013:**4000	**2014:**4000	**2015:**4000

3. Associated Knowledge Area(s)

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 216 - Integrated Pest Management Systems
- 312 - External Parasites and Pests of Animals
- 403 - Waste Disposal, Recycling, and Reuse
- 721 - Insects and Other Pests Affecting Humans
- 723 - Hazards to Human Health and Safety

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 2

1. Outcome Target

# of participants passing commercial pesticide certification exams

2. Outcome Type : Change in Knowledge Outcome Measure

2011:75	**2012:**75	**2013:**75	**2014:**75	**2015:**75

3. Associated Knowledge Area(s)

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 216 - Integrated Pest Management Systems
- 312 - External Parasites and Pests of Animals
- 403 - Waste Disposal, Recycling, and Reuse
- 721 - Insects and Other Pests Affecting Humans
- 723 - Hazards to Human Health and Safety

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 3

1. Outcome Target

# of submissions to diagnostic clinic

2. Outcome Type : Change in Action Outcome Measure

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

3. Associated Knowledge Area(s)

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 312 - External Parasites and Pests of Animals
- 721 - Insects and Other Pests Affecting Humans

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 4

1. Outcome Target

# of clients using scouting programs

2. Outcome Type : Change in Action Outcome Measure

2011:1200	**2012:**1200	**2013:**1200	**2014:**1200	**2015:**1200

3. Associated Knowledge Area(s)

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 216 - Integrated Pest Management Systems
- 312 - External Parasites and Pests of Animals
- 723 - Hazards to Human Health and Safety

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 5

1. Outcome Target

# of pest monitoring traps utilized

2. Outcome Type : Change in Action Outcome Measure

2011:250	**2012:**270	**2013:**300	**2014:**300	**2015:**300

3. Associated Knowledge Area(s)

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 216 - Integrated Pest Management Systems
- 312 - External Parasites and Pests of Animals

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 6

1. Outcome Target

Annual soybean yield - bushels per acre

2. Outcome Type : Change in Condition Outcome Measure

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

3. Associated Knowledge Area(s)

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 216 - Integrated Pest Management Systems
- 403 - Waste Disposal, Recycling, and Reuse

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 7

1. Outcome Target

Annual value of soybean production (1,000 Dollars)

2. Outcome Type : Change in Condition Outcome Measure

2011:791094	**2012:**791094	**2013:**791094	**2014:**791094	**2015:**791094

3. Associated Knowledge Area(s)

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 216 - Integrated Pest Management Systems
- 403 - Waste Disposal, Recycling, and Reuse

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 8

1. Outcome Target

Annual rice (all) yield -- pounds per acre

2. Outcome Type : Change in Condition Outcome Measure

2011:6610	**2012:**6610	**2013:**6610	**2014:**6610	**2015:**6610

3. Associated Knowledge Area(s)

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 216 - Integrated Pest Management Systems
- 403 - Waste Disposal, Recycling, and Reuse

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 9

1. Outcome Target

Annual value of rice (all) production (1,000 dollars)

2. Outcome Type : Change in Condition Outcome Measure

2011:740648	**2012:**740648	**2013:**740648	**2014:**740648	**2015:**740648

3. Associated Knowledge Area(s)

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 216 - Integrated Pest Management Systems
- 403 - Waste Disposal, Recycling, and Reuse

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 10

1. Outcome Target

Annual cotton (all) yield -- pounds per acre

2. Outcome Type : Change in Condition Outcome Measure

2011:916	**2012:**916	**2013:**916	**2014:**916	**2015:**916

3. Associated Knowledge Area(s)

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 216 - Integrated Pest Management Systems
- 403 - Waste Disposal, Recycling, and Reuse

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 11

1. Outcome Target

% of soybean acreage receiving herbicide applications

2. Outcome Type : Change in Condition Outcome Measure

2011:	**2012:**	**2013:**	**2014:**	**2015:**
95	95	95	95	95

3. Associated Knowledge Area(s)

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 216 - Integrated Pest Management Systems
- 403 - Waste Disposal, Recycling, and Reuse

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 12

1. Outcome Target

Pounds (1,000) of herbicides applied to planted soybean acreage

2. Outcome Type : Change in Condition Outcome Measure

2011:	**2012:**	**2013:**	**2014:**	**2015:**
4152	4152	4152	4152	4152

3. Associated Knowledge Area(s)

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 216 - Integrated Pest Management Systems
- 403 - Waste Disposal, Recycling, and Reuse

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 13

1. Outcome Target

% of soybean acreage receiving insecticide applications

2. Outcome Type : Change in Condition Outcome Measure

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

3. Associated Knowledge Area(s)

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 216 - Integrated Pest Management Systems
- 403 - Waste Disposal, Recycling, and Reuse

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 14

1. Outcome Target

Pounds (1,000) of insecticides applied to planted soybean acreage

2. Outcome Type : Change in Condition Outcome Measure

2011:344	**2012:**344	**2013:**344	**2014:**344	**2015:**344

3. Associated Knowledge Area(s)

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 216 - Integrated Pest Management Systems
- 403 - Waste Disposal, Recycling, and Reuse

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 15

1. Outcome Target

% of soybean acreage receiving fungicide applications

2. Outcome Type : Change in Condition Outcome Measure

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

3. Associated Knowledge Area(s)

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 216 - Integrated Pest Management Systems
- 403 - Waste Disposal, Recycling, and Reuse

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 16

1. Outcome Target

Pounds (1,000) of fungicides applied to planted soybean acreage

2. Outcome Type : Change in Condition Outcome Measure

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

3. Associated Knowledge Area(s)

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 216 - Integrated Pest Management Systems
- 403 - Waste Disposal, Recycling, and Reuse

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
- Other (NASS)

Description

Pest Management program outcomes will be influenced by changes in the current Farm Bill affecting payments to farmers, land grant university funding from CSREES, increasing fuel costs, downturns in the economy and extreme weather conditions. Unanticipated insect pest problems and diseases will influence usage of pesticides and yields. Any or all of these factors will cause anticipated projected outcome results to vary widely.

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

1. Evaluation Studies Planned

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

- Other (NASS)

Description

Longitudinal evaluation will be conducted by subcomponents of this program through various research based methods. Comprehensive programmatic and departmental reviews for research, extension and teaching programs are conducted on a five to seven year cycle.

2. Data Collection Methods

- Sampling
- Mail
- Telephone
- On-Site
- Unstructured
- Observation
- Tests
- Other (NASS)

Description

Data will be collected from producers, consultants and other agricultural practitioners, through telephone and mail surveys, questionnaires at producer meetings and other on-site visits. and by observations to be made by Extension faculty.Indirect methods of collecting data will include those data gleaned from NASS.

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Plants & Plant Products

2. Brief summary about Planned Program

NOTE: This plan of work is related to non-food plants and plant products. Plans for research and Extension efforts for food-related plants and plant products are included in the Global Food Security and Hunger planned program POW.

Arkansas ranks as one of the primary agricultural states in the nation. Row crops are grown on over six million acres of farm land and, along with forestry, contribute over $3 billion to the state's economy annually. Arkansas is has long been a major producer of cotton,. Turf, ornamentals and landscape plants are the fastest growing segment of the agricultural industry nationally. Both large and small farms continue to be an important part of the state's economy.

The University of Arkansas, Division of Agriculture strives to increase efficiency of crop and forage production through research and education focusing on best management practices, to ensure that producers remain competitive in the global economy, while protecting our natural resources. Research and educational programs addressing cultivar/hybrid development and selection, nutrient management, production practices, timing of inputs, crop rotation benefits, and irrigation timing are key factors involved in increased crop yields that have been seen in the state. Areas of educational emphasis included variety selection, , nutrient management, and controlling of weeds, diseases, and insects.

Soil, plant, water and nutrient relationships are key factors involved in increasing the efficiency of crop production. Soil testing is the foundation of a sound nutrient management program and nearly 100,000 soil samples are received at the Soil Testing Lab at Marianna. Soil testing not only provides a guide to develop fertilizer recommendations for the intended crops, but also, together with plant analysis, can aid in the identification of potential problems.

Plant management systems are key to helping producers who are often challenged to find varieties/hybrids that will perform well on their farm due to the large volume of varieties/hybrids available. In 2009, 75 cotton varieties were tested in the Arkansas Variety Testing program. The Cotton Research Verification Program demonstrated in 2009 that variety selection and optimum timing of inputs can improve income per acre by an average of $100.

Horticulture (commercial production and service industries and recreational/home clientele) contributes to the state's economy and improves the quality of the environment and the quality of life lives for many Arkansans. Existing and new horticulture businesses and farms require training and exposure in new plants and production methods to stay competitive and to develop best management practices. Consumers require training and education in various aspects of home horticulture.

The forage production research and management programs provide research-based information through non-formal educational methods for the sustainability of agricultural production systems to improve Arkansans quality of life.

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	10%		10%	
102	Soil, Plant, Water, Nutrient Relationships	10%		10%	
111	Conservation and Efficient Use of Water	10%		10%	
112	Watershed Protection and Management	10%		10%	
201	Plant Genome, Genetics, and Genetic Mechanisms	10%		10%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	10%		10%	
204	Plant Product Quality and Utility (Preharvest)	10%		10%	
205	Plant Management Systems	10%		10%	
206	Basic Plant Biology	10%		10%	
213	Weeds Affecting Plants	10%		10%	
	Total	100%		100%	

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

1. Situation and priorities

Agriculture is a very large and diverse industry in Arkansas. Programs in cotton are crucial to making Arkansas highly competitive in the global economy., Arkansas cotton producers continue to face many challenges in order to produce a profitable crop and maintain sustainability of the land. In 2009, Arkansas had less than ideal cotton yields due to adverse weather during much of the growing season. However, the yields were still higher than in any year prior to 2000, in spite of the weather. Total cotton production declined in 2009 due to reduced acres of cotton and reduced yields. With the current economic situation, it becomes extremely challenging for cotton producers to maintain sustainability. A key factor in maintaining high yields and consequently increased competitiveness and profitability in row crops is weed control. Weed control continues to be a key management decision that cotton farmers face each season. After variety selection, it is often the first management decision made each year. Failure to control weeds can often nullify other concerns as weed competition has the potential to completely rob crops of profitability. In turf and pasture management, for example, lack of effective weed control is preventing many farmers from taking advantage of the new seeded varieties and the accompanying cost of establishment savings.

Extension and research faculty also work together to identify and implement best management practices in horticulture enterprises and systems, to educate fruit, vegetable, ornamentals, turfgrass, commercial, and consumer clientele to enhance economic development and protect the environment in Arkansas, and to develop a system that is highly competitive in the regional and global economy.

Arkansas' climate and most of its soil and terrain are suited for the production of grasses and legumes necessary to support the livestock industries. Primary forages include tall fescue, clover and bermudagrass. Over 4.6 million acres of pastureland and 1.4 million acres of hay land (total 6 million acres) are managed to enhance livestock production and land stewardship. Livestock producers will benefit from forage management production programs to improve production efficiency and returns.

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

While average yields for most commodities grown in Arkansas have increased significantly, Arkansas producers continue to face many challenges in order to produce profitable crops and maintain sustainability of land. The most significant issues include optimum variety selection, diminishing irrigation water quantity, integrated pest management issues, nutrient management, and soil conservation. Many of these issues are addressed through education programs and various verification programs which are providing growers with key recommendations for efficient production, weed control issues, and other resources. Cooperative efforts with grower groups, commodity boards, regulatory agencies, and other organizations also provide valuable feedback in programming on a regional and statewide basis. On-farm research results generate data from which recommendations are derived.

The majority of county Extension Councils in Arkansas have identified horticulture as a major emphasis area for their long range educational program. Horticulture inquiries are an increasing demand on the county agent's time and few have training in these diverse subjects. With support from the state horticulture staff, they will be able to better serve their clientele. New and existing horticultural production and service industries require on-going research and educational assistance in developing and adapting new technology and best management practices.

2. Ultimate goal(s) of this Program

▪ Develop crop production systems that are sustainable, and competitive in the global marketplace ▪ Collaborate with industry, commodity groups, etc., to facilitate technology development and adoption
▪ Initiate cooperative work among scientific disciplines to fine-tune the best management practices over a variety of geographic regions
▪ Investigate and address concerns, as they emerge
▪ Continue to support strategic partnerships that create value-added benefits for Arkansas' environment and its people
▪ Expand programs for effective sustainable agriculture systems
▪ Increase and enhance horticulture knowledge and expertise of commercial and consumer audiences and extension staff
▪ Increase number of and improve both quality and profitability of commercial horticulture operations in the state
▪ Increase forage production efficiency

V(E). Planned Program (Inputs)

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

Year	Extension		Research	
	1862	1890	1862	1890
2011	17.4	0.0	8.9	0.0
2012	17.4	0.0	8.9	0.0
2013	17.4	0.0	8.9	0.0
2014	17.4	0.0	8.9	0.0
2015	17.4	0.0	8.9	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Develop and conduct workshops, educational meetings, demonstrations, and field days
- Direct clientele contact: on- site visits, phone calls, mail and emails
- Develop and produce educational products and materials
- Conduct tours and demonstrations
- Conduct discovery and applied research
- Publish educational materials
- Provide diagnostic services
- Media work through print, radio, TV and internet
- Partnering with commodity associations, groups, Master Gardeners, and traditional and nontraditional groups
- Coordination of Master Gardener programs
- Develop improved crop production systems that maximize profitability and sustainability

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

Extension

Direct Methods	Indirect Methods
● Education Class	● Newsletters
● Workshop	● Web sites
● Group Discussion	● Other 1 (Grants/Prof.Publications)
● One-on-One Intervention	● Other 2 (Mass Media)
● Demonstrations	
● Other 1 (Farm Visits/Field Days)	
● Other 2 (Soil/Water Testing)	

3. Description of targeted audience

Growers/producers
Consultants
Agri Business/Allied Industries
Horticulture production and Service Businesses
Master Gardeners
General Public
Other researchers
Students

Extension Specialists
Teaching faculty
Research funding personnel and agencies
Public

V(G). Planned Program (Outputs)

1. Standard output measures

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

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2011	56000	110500	0	0
2012	56500	111000	0	0
2013	57000	111500	0	0
2014	57500	112000	0	0
2015	58000	112500	0	0

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

2011:3 **2012:**3 **2013:**1 **2014:**1 **2015:**1

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2011	6	3	9
2012	10	3	13
2013	10	3	13
2014	10	3	13
2015	10	3	13

V(H). State Defined Outputs

1. Output Target

- # of agronomic production education meetings related to production of non-food crops

  2011:60 **2012:**65 **2013:**70 **2014:**75 **2015:**80

- # of demonstrations/on-farm research related to production of non-food crops

  2011:50 **2012:**52 **2013:**54 **2014:**56 **2015:**58

- # of farm visits related to production of non-food crops

  2011:90 **2012:**92 **2013:**94 **2014:**96 **2015:**98

- # of row crop field days related to production of non-food crops

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

- # of educational meetings, demonstrations, field days, site visits, and other group events held to educate commercial and consumer clientele in horticulture

  2011:160 **2012:**170 **2013:**200 **2014:**200 **2015:**200

- # of educational meetings, demonstrations, farm visits and/or field days held to educate clientele on forage production and grazing management

  2011:2600 **2012:**2600 **2013:**2600 **2014:**2600 **2015:**2600

- $ of Arkansas Commodity Board Grants received

  2011:350000 **2012:**350000 **2013:**350000 **2014:**350000 **2015:**350000

- $ of federal grants and contracts

  2011:150000 **2012:**150000 **2013:**150000 **2014:**150000 **2015:**150000

- # of Plants & Plant Products clientele contacts from education classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational methods

  2011:51625 **2012:**52000 **2013:**52500 **2014:**53000 **2015:**54000

V(I). State Defined Outcome

O. No.	Outcome Name
1	# of commercial forage producers who gained knowledge related to management technology
2	# of new Master Gardeners trained and certified
3	# of commercial forage producers who changed or adopted a new forage management practice
4	# of non commercial participants who changed or adopted a new forage and/or grazing management practice
5	# of Master Gardeners who recertified
6	# of new horticultural businesses and new farmers markets
7	# of samples submitted for soil testing related to non-food crop production
8	# of samples submitted for plant testing related to non-food crop production
9	Total production (bales) of harvested cotton (all)
10	Total production (tons) harvested of hay (all)
11	# of clientele who make plant management decisions based on COTMAN

Outcome # 1

1. Outcome Target

# of commercial forage producers who gained knowledge related to management technology

2. Outcome Type : Change in Knowledge Outcome Measure

2011:200	**2012:**200	**2013:**200	**2014:**200	**2015:**200

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
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 213 - Weeds Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 2

1. Outcome Target

# of new Master Gardeners trained and certified

2. Outcome Type : Change in Knowledge Outcome Measure

2011:700	**2012:**700	**2013:**700	**2014:**700	**2015:**700

3. Associated Knowledge Area(s)

- 101 - Appraisal of Soil Resources
- 102 - Soil, Plant, Water, Nutrient Relationships
- 111 - Conservation and Efficient Use of Water
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 213 - Weeds Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 3

1. Outcome Target

# of commercial forage producers who changed or adopted a new forage management practice

2. Outcome Type : Change in Action Outcome Measure

2011:70	**2012:**75	**2013:**80	**2014:**80	**2015:**80

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
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 213 - Weeds Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 4

1. Outcome Target

# of non commercial participants who changed or adopted a new forage and/or grazing management practice

2. Outcome Type : Change in Action Outcome Measure

2011:500	**2012:**500	**2013:**500	**2014:**500	**2015:**500

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
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 213 - Weeds Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 5

1. Outcome Target

# of Master Gardeners who recertified

2. Outcome Type : Change in Action Outcome Measure

2011:500	**2012:**500	**2013:**550	**2014:**500	**2015:**500

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
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 213 - Weeds Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 6

1. Outcome Target

# of new horticultural businesses and new farmers markets

2. Outcome Type : Change in Condition Outcome Measure

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

3. Associated Knowledge Area(s)

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 7

1. Outcome Target

# of samples submitted for soil testing related to non-food crop production

2. Outcome Type : Change in Action Outcome Measure

2011:30000	**2012:**30000	**2013:**30000	**2014:**30000	**2015:**30000

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
- 205 - Plant Management Systems
- 213 - Weeds Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 8

1. Outcome Target

# of samples submitted for plant testing related to non-food crop production

2. Outcome Type : Change in Action Outcome Measure

2011:600	**2012:**610	**2013:**620	**2014:**630	**2015:**640

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
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 213 - Weeds Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 9

1. Outcome Target

Total production (bales) of harvested cotton (all)

2. Outcome Type : Change in Condition Outcome Measure

2011:850000	**2012:**875000	**2013:**900000	**2014:**925000	**2015:**950000

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
- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 213 - Weeds Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 10

1. Outcome Target

Total production (tons) harvested of hay (all)

2. Outcome Type : Change in Condition Outcome Measure

2011:2680000	**2012:**2680000	**2013:**2680000	**2014:**2680000	**2015:**2680000

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
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 213 - Weeds Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 11

1. Outcome Target

# of clientele who make plant management decisions based on COTMAN

2. Outcome Type : Change in Action Outcome Measure

2011:500	**2012:**750	**2013:**1000	**2014:**1100	**2015:**1200

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
- 206 - Basic Plant Biology

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.)

Description

Program outcomes will be influenced by changes in the current Farm Bill affecting payments to farmers, land grant university funding from NIFA, increasing fuel costs, downturns in the economy and extreme weather conditions. Any or all of these factors will cause anticipated projected outcomes to vary widely.

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

1. Evaluation Studies Planned

- After Only (post program)
- Retrospective (post program)
- Before-After (before and after program)
- During (during program)
- Time series (multiple points before and after program)
- Comparisons between program participants (individuals, group, organizations) and non-participants

- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- Comparison between locales where the program operates and sites without program intervention
- Other (NASS)

Description

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 on shifts in production methods, acreage, cropping systems, and enrollment will be compared to historic levels and trends.

2. Data Collection Methods

- Sampling
- Whole population
- Mail
- Telephone
- On-Site
- Structured
- Unstructured
- Case Study
- Observation
- Tests
- Journals
- Other (NASS)

Description

Data will be collected from producers, consultants, industry representatives, and other individuals involved with agriculture through on-site informal surveys and questionnaires at production meetings, field days, and on-site visits. Mail and telephone surveys, will also be utilized along with observations made by Extension faculty. Indirect methods of collecting data will include web page visits on Extension website pages and practice change data taken from the National Agriculture Statistics Service.

V(A). Planned Program (Summary)

Program # 7

1. Name of the Planned Program

Childhood Obesity

2. Brief summary about Planned Program

Arkansas has a weight problem. Sixty six 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, including that of a sedentary lifestyle. Helping children learn healthy eating and lifestyle practices in their early years can pay big dividends later in life as well as reduce the healthcare burden that is directly related to obesity and its associated complications.

Preventing obesity is the focus of extensive 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.

Using science-based information, Arkansans are engaged in 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. For example, children learn about healthy nutrition and lifestyle through the Supplemental Nutrition Assistance Program Education (SNAP Ed). Families can learn about healthy lifestyles through programs such as Reshape Yourself Healthy Weight Program and Eating Better Today program. Activity is encouraged through the Walk Across Arkansas that includes children from grades 4 through adult.

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%		10%	
502	New and Improved Food Products	0%		30%	
701	Nutrient Composition of Food	0%		30%	
702	Requirements and Function of Nutrients and Other Food Components	10%		30%	
703	Nutrition Education and Behavior	25%		0%	
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

Nationally, Arkansas ranks first in stroke mortality, ninth in mortality due to heart disease and eleventh in overall cancer and diabetes mortality.

Sixty-six 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 about a third of youth get the recommended amount of daily moderate physical activity, and one-fourth of adults and one-fifth of teens smoke.

Unhealthy lifestyles, including poor diet, physical inactivity, smoking and substance abuse, cost Arkansas taxpayers billions 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, and 4) People will be motivated to learn/change.

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 both basic and applied research to better understand the relationship between food and human health.

V(E). Planned Program (Inputs)

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

Year	Extension		Research	
	1862	1890	1862	1890
2011	22.0	0.0	3.0	0.0

Year	Extension		Research	
	1862	1890	1862	1890
2012	25.0	0.0	4.0	0.0
2013	25.0	0.0	4.0	0.0
2014	25.0	0.0	5.0	0.0
2015	25.0	0.0	5.0	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) Youth
Expanded Food and Nutrition Education Program (EFNEP) Youth
Reshape Yourself Healthy Weight Program
Eating Better Today
HOPE-HOPS Program
Walk Across Arkansas Youth
BodyWalk
Best Care
Grandparents Raising Grandchildren

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	● Billboards
● Group Discussion	● Newsletters
● One-on-One Intervention	● Web sites
● Demonstrations	● Other 1 (Grant Development)
● Other 1 (On-line class)	● Other 2 (Podcast & Online Education)
● Other 2 (Fact sheets)	

3. Description of targeted audience

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

Minorities
Researchers
Food manufacturers

V(G). Planned Program (Outputs)

1. Standard output measures

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

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2011	4000	175000	20000	3000
2012	4000	175000	20000	3000
2013	4000	175000	20000	3000
2014	4000	175000	20000	3000
2015	4000	175000	20000	3000

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

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

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2011	15	1	16
2012	15	1	16
2013	20	2	22
2014	20	2	22
2015	20	2	22

V(H). State Defined Outputs

1. Output Target

- # grants/contracts funded in support of childhood obesity issues

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

- # news articles, public service announcements, radio and TV media programs in support of Childhood obesity issues

  2011:20 **2012:**20 **2013:**25 **2014:**25 **2015:**25

- # of 4-H/Youth Food, Nutrition and Health programs delivered related to eating healthy and being active

  2011:2000 **2012:**2100 **2013:**2200 **2014:**2300 **2015:**2400

- # of participants in 4-H/ Youth Food, Nutrition, and Health programs related to eating healthy and being active

  2011:30000 **2012:**31000 **2013:**32000 **2014:**33000 **2015:**34000

- # of funded Fedral grants and/or contracts

  2011:16 **2012:**13 **2013:**16 **2014:**13 **2015:**14

- # 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

  2011:12000 **2012:**12500 **2013:**12600 **2014:**12700 **2015:**12800

- # of extension educators involved in discussions regarding public and organizational childhood obesity policies, regulations and industry practices.

  2011:20 **2012:**25 **2013:**30 **2014:**35 **2015:**40

V(I). State Defined Outcome

O. No.	Outcome Name
1	# of participants who indicated that they increased their knowledge related to healthy eating and lifestyles following an educational class, seminar or workshop
2	# of individuals who increased physical activities as a result of completing an Extension program
3	# of participants who adopted one or more positive nutrition practice
4	# of participants reporting reduction in body weight after completing a nutrition education program
5	# of participants who indicated that they intend to adopt one or more positive nutrition practice
6	# of students involved in research focusing on overweight and obesity
7	# of peer reviewed research articles focusing on obesity

Outcome # 1

1. Outcome Target

# of participants who indicated that they increased their knowledge related to healthy eating and lifestyles following an educational class, seminar or workshop

2. Outcome Type : Change in Knowledge Outcome Measure

2011:5000	**2012:**6000	**2013:**7000	**2014:**8000	**2015:**9000

3. Associated Knowledge Area(s)

- 702 - Requirements and Function of Nutrients and Other Food Components
- 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 # 2

1. Outcome Target

# of individuals who increased physical activities as a result of completing an Extension program

2. Outcome Type : Change in Action Outcome Measure

2011:5000	**2012:**6000	**2013:**7000	**2014:**8000	**2015:**9000

3. Associated Knowledge Area(s)

- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 3

1. Outcome Target

# of participants who adopted one or more positive nutrition practice

2. Outcome Type : Change in Action Outcome Measure

2011:3000	**2012:**4000	**2013:**5000	**2014:**6000	**2015:**7000

3. Associated Knowledge Area(s)

- 702 - Requirements and Function of Nutrients and Other Food Components
- 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 # 4

1. Outcome Target

# of participants reporting reduction in body weight after completing a nutrition education program

2. Outcome Type : Change in Condition Outcome Measure

2011:150	**2012:**150	**2013:**150	**2014:**200	**2015:**200

3. Associated Knowledge Area(s)

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

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 5

1. Outcome Target

# of participants who indicated that they intend to adopt one or more positive nutrition practice

2. Outcome Type : Change in Knowledge Outcome Measure

2011:1000	**2012:**1000	**2013:**1000	**2014:**1500	**2015:**2000

3. Associated Knowledge Area(s)

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

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 6

1. Outcome Target

# of students involved in research focusing on overweight and obesity

2. Outcome Type : Change in Knowledge Outcome Measure

2011:20	**2012:**20	**2013:**25	**2014:**25	**2015:**25

3. Associated Knowledge Area(s)

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

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 7

1. Outcome Target

# of peer reviewed research articles focusing on obesity

2. Outcome Type : Change in Action Outcome Measure

2011:15	**2012:**15	**2013:**20	**2014:**20	**2015:**20

3. Associated Knowledge Area(s)

- 502 - New and Improved Food Products
- 701 - Nutrient Composition of Food
- 703 - Nutrition Education and Behavior

4. Associated Institute Type(s)

- 1862 Extension
- 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.

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

1. Evaluation Studies Planned

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

Description

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, post-test assessments and self-report of practice change. Unobtrusive means (request for additional information, purchase of video's and materials, increased participation and observation) will also be used to capture information.

2. Data Collection Methods

- Sampling
- Whole population
- Mail
- On-Site
- Observation
- Tests
- Other (Self-reported data & secondary d)

Description

Quantitative and qualitative collection methods will be used in gathering data for food nutrition and health related programs. Collection methods may occur using web-based surveys, observations, random samples, telephone interviews, on-site and onsite assessments.

V(A). Planned Program (Summary)

Program # 8

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 also of high priority to the Division of Agriculture. The implementation of HACCP, ServSafe and related food safety programs for 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 provides scientists and the research infrastructure which are major resources 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.

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 maintain 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 Food Safety Consortium comprised of University of Arkansas, Iowa State University and Kansas State University work collaboratively as a team on animal products food safety issues on a national scope and share results of their work. 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. The

quarterly HACCP Roundtables serves not only state companies but are regional in scope and serves 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. Similarly, they will continue to be important, and this concern will be reflected in the attendance and participation of the food manufacturing companies. 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 and product recalls
- 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
2011	3.5	0.0	5.0	0.0
2012	3.5	0.0	6.0	0.0
2013	3.5	0.0	6.0	0.0
2014	3.5	0.0	6.0	0.0
2015	3.5	0.0	7.0	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.
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.

Research activities in food safety include work to improve food processing systems to minimize food pathogens and to improve detection systems for Listeria, Salmonella 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
● 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

V(G). Planned Program (Outputs)

1. Standard output measures

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

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2011	1000	900	0	0
2012	1000	900	0	0
2013	1000	900	0	0
2014	1000	900	0	0

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2015	1000	900	0	0

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

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

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2011	12	3	15
2012	12	3	15
2013	12	3	15
2014	12	3	15
2015	12	3	15

V(H). State Defined Outputs

1. Output Target

- Number of participants in educational programs leading to certification for food handlers (ServSafe and Better Process Control School)

2011:200 **2012:**200 **2013:**200 **2014:**200 **2015:**200

- Number of participants in quarterly HACCP roundtables

2011:140 **2012:**140 **2013:**140 **2014:**140 **2015:**140

- Number of ServSafe classes offered

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

- Number of Food Safety clientele contacts from education classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational methods

2011:500 **2012:**500 **2013:**500 **2014:**500 **2015:**500

- Number of Food Safety education classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational events

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

- Numbers of federal grants written and received in food safety.

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

- Number of commodity grants written and received in food safety.

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

- Number of Online Master of Agriculture (Food Safety Emphasis) students enrolled in courses.

2011:12 **2012:**15 **2013:**13 **2014:**20 **2015:**20

- Number of all other grants written and funded.

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

V(I). State Defined Outcome

O. No.	Outcome Name
1	Number of participants who indicated that they increased their knowledge related of Food Safety following an educational class, seminar or workshop.
2	Number of participants receiving certification in Better Process Control and ServSafe
3	Number of participants who adopted positive safe food handling practices.
4	Number of participants who indicate that they intend to adopt one or more safe food handling practices.
5	Number of food process improvements related to food safety.
6	Number of biosensors developed to detect food pathogens.

Outcome # 1

1. Outcome Target

Number of participants who indicated that they increased their knowledge related of Food Safety following an educational class, seminar or workshop.

2. Outcome Type : Change in Knowledge Outcome Measure

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

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 # 2

1. Outcome Target

Number of participants receiving certification in Better Process Control and ServSafe

2. Outcome Type : Change in Knowledge Outcome Measure

2011:200	**2012:**200	**2013:**200	**2014:**200	**2015:**200

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 who adopted positive safe food handling practices.

2. Outcome Type : Change in Action Outcome Measure

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

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 # 4

1. Outcome Target

Number of participants who indicate that they intend to adopt one or more safe food handling practices.

2. Outcome Type : Change in Action Outcome Measure

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

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 # 5

1. Outcome Target

Number of food process improvements related to food safety.

2. Outcome Type : Change in Action Outcome Measure

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

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 # 6

1. Outcome Target

Number of biosensors developed to detect food pathogens.

2. Outcome Type : Change in Action Outcome Measure

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

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.

.

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

1. Evaluation Studies Planned

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

Description

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 an intent to change behavior.

2. Data Collection Methods

- Sampling
- Whole population
- Mail
- On-Site
- Observation
- Tests
- Other (Self-reported and secondary data)

Description

{NO DATA ENTERED}

V(A). Planned Program (Summary)

Program # 9

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 discipline to investigate the potential impacts of biomass production 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)	10%		10%	
402	Engineering Systems and Equipment	5%		5%	
403	Waste Disposal, Recycling, and Reuse	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

Arkansas is well positioned for bioenergy production with large areas of cropland and forest and an innovative processing industry for agricultural and forest products. Several Arkansas companies are producing biodiesel using soy oil and other vegetable oils and animal fats as feed stock and as potential for biodiesel production. Arkansas has also developed incentives for biodiesel suppliers. A tax credit is offered to biodiesel suppliers as well as a tax refund. An income tax credit is available to biodiesel suppliers for up to five percent of the facility and equipment costs incurred in the wholesale or retail distribution of biodiesel fuels. The Arkansas General Assembly has also created incentives for alternative fuel production. In April 2007, HB 1379, now Act 873 was passed which provides up to $2 million in grant incentives for alternative fuel producers and an additional $2 million in grant incentives to feedstock processors. The Arkansas Alternative Fuels Development Program offers up to $50,000 in grants for alternative fuel distributors to assist with storage and distribution of alternative fuels.

Investing in intensive crop and forestry management requires increased inputs of pesticides, fertilizer, and more extractive practices, (eg: total biomass removal) that can lead to environmental quality problems including water pollution, declining soil fertility, and in the case of using exotic tree species, introduction of invasive species. Advances in technology especially computer modeling enable UA Division of Agriculture faculty to assess potential impacts of biofeedstock production on water quality, spatial distribution of biomass crops, spatial location of potential markets and other data important in production decisions.

Research and demonstration efforts will be used to educate potential producers and stakeholders about the benefits and costs associated with sustainable energy initiatives and production practices.

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.

The University of Arkansas, Division of Agriculture will continue research and education info developing biomass crop and forestry systems for sustainable energy production. Evidence: Field tests of bioenergy crops are being 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.

The Division of Agriculture faculty 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 - Evidence: During the past 2 years the UA-CES has received over 2 million dollars in outside funding. The Division of Agriculture will continue to produce timely educational products.

2. Ultimate goal(s) of this Program

Reduce the dependency on foreign oil by using renewable resources for bioenergy and biofuel production.
Investigate the utility of fast growing woody forest species and other woody plant species as biomass.

Maintain and sustain a viable food supply while increasing available energy supplies by providing the needed information on livestock manure management practices

Increase awareness about the impact of biofeed stock production on water quality and ecosystem health.

Provide education that will enable stakeholders to make informed decisions regarding forest and other woody biomass utilization.

V(E). Planned Program (Inputs)

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

Year	Extension		Research	
	1862	1890	1862	1890
2011	3.0	0.0	4.0	0.0

Year	Extension		Research	
	1862	1890	1862	1890
2012	3.0	0.0	4.0	0.0
2013	3.0	0.0	4.0	0.0
2014	3.0	0.0	4.0	0.0
2015	3.0	0.0	4.0	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	● Newsletters
● Workshop	● Web sites
● Group Discussion	
● One-on-One Intervention	
● Demonstrations	

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)

1. Standard output measures

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

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2011	750	1000	100	0
2012	750	1000	100	0
2013	750	1000	100	0
2014	750	1000	100	0
2015	750	1000	100	0

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

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

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2011	5	2	7
2012	5	2	7
2013	5	2	7
2014	5	2	7
2015	5	2	7

V(H). State Defined Outputs

1. Output Target

- Number of programs held related to sustainable energy.

2011:3 **2012:**4 **2013:**5 **2014:**5 **2015:**5

- Number of sustainable energy field demonstrations.

2011:5 **2012:**5 **2013:**6 **2014:**6 **2015:**7

- Number of field days related to sustainable energy

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

- Number of educational materials & curriculum developed and/or delivered.

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

- Number of sustainable energy events for row crop producers.

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

- Number of sustainable energy events for livestock producers.

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

- Watershed models developed for a watershed of interest.

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

- # of individuals engaged in manure-to-energy related consultations

2011:200 **2012:**200 **2013:**200 **2014:**200 **2015:**200

V(I). State Defined Outcome

O. No.	Outcome Name
1	Number of landowners indicating an increased understanding of sustainable energy.
2	Number of locations for bioenergy crop demonstrations and research fields.
3	Number of people who increased their knowledge about impact of biofeedstock development on water quality
4	# of livestock clientele who gained knowledge related to manure to energy issues (Short Term)

Outcome # 1

1. Outcome Target

Number of landowners indicating an increased understanding of sustainable energy.

2. Outcome Type : Change in Knowledge Outcome Measure

2011:750	**2012:**750	**2013:**800	**2014:**850	**2015:**850

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
- 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

Number of locations for bioenergy crop demonstrations and research fields.

2. Outcome Type : Change in Action Outcome Measure

2011:6	**2012:**6	**2013:**7	**2014:**7	**2015:**7

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
- 136 - Conservation of Biological Diversity
- 204 - Plant Product Quality and Utility (Preharvest)

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 3

1. Outcome Target

Number of people who increased their knowledge about impact of biofeedstock development on water quality

2. Outcome Type : Change in Knowledge Outcome Measure

2011:100	**2012:**100	**2013:**150	**2014:**150	**2015:**200

3. Associated Knowledge Area(s)

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

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 4

1. Outcome Target

# of livestock clientele who gained knowledge related to manure to energy issues (Short Term)

2. Outcome Type : Change in Knowledge Outcome Measure

2011:500	**2012:**500	**2013:**500	**2014:**500	**2015:**500

3. Associated Knowledge Area(s)

- 133 - Pollution Prevention and Mitigation
- 403 - Waste Disposal, Recycling, and Reuse

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 (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- After Only (post program)
- During (during program)
- Comparison between locales where the program operates and sites without program intervention
- Other (Economic Models)

Description

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.

2. Data Collection Methods

- Sampling
- Observation
- Tests
- Other (Economic models)

Description

The UA Division of Agriculture Experiment Station received a 1.9 million dollar multi-state DOE grant in 2009 to develop bioenergy programs. This includes oil seed crops for biodiesel and biomass crops for ethanol and syngas production. Results from these studies and associated demonstrations will provide the majority of data utilized to evaluate efforts in this program area.

V(A). Planned Program (Summary)

Program # 10

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 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 agroicultural 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. Aquaculture programs are conducted through collaborative efforts with 1890 land-grant faculty at the University of AR at Pine Bluff. 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.

The Division of Agriculture will provide information and technical assistance related to biosecurity and bioterrorism focusing on the needs of consumers, the general public and livestock and row crop producers. Faculty work collaboratively with animal agriculture industry leaders to increase biosecurity awareness.

Alternative agricultural system programs educate producers about opportunities for providing supplemental income to their farming operation. Examples of alternative food-related enterprises are organic vegetable and fruit production, bees, grass-fed beef, shiitake mushrooms, herb production and small livestock enterprises.

An estimated 433,900 people received assistance from Feeding America food banks annually in Arkansas, an increase of over 140,000 Arkansans since 2006. 35% receiving assistance from food banks are children and 14% are elderly. 52% report having to choose between paying for food and paying for utilities or heating fuel. 42% had to choose between paying for food and paying for medicine or medical care. Only 29% of the Feeding America client households in Arkansas are receiving SNAP benefits and only 31% are on WIC. Limited resources children and adults will learn healthy eating and activity practices that will enhance food security through the Supplemental Nutrition Assistance Program and Expanded Food and Nutrition Education Programs.

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 industry is a major source of jobs, income and cash flow. Arkansas livestock sales exceed $4.1 billion. Arkansas has 1.8 million head of cows and calves. Gross income from Arkansas' beef cattle industry reached $406 million. 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. Arkansas has a $62 million aquaculture industry, located mainly in the poverty-stricken Delta region of Arkansas.

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.

In 2007, Asian soybean rust damage was noted in 3 Arkansas counties on late-planted soybeans after wheat. In 2009, the disease became epidemic throughout Arkansas over a 50 day period. Significant damage was averted by timely fungicide sprays, while other soybean acres were not sprayed based on information provided by the soybean rust monitoring program. Monitoring also identified major epidemics during the summer of 2009 in rice (rice blast disease, false smut disease); sorghum (anthracnose); corn (southern rust); and cucurbits (gummy stem blight, anthracnose). Introduction of new pathogens and evolution of new, more aggressive strains of existing pathogens, continue 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.

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 program; 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 scenario
- 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

Year	Extension		Research	
	1862	1890	1862	1890
2011	125.1	0.0	56.1	0.0
2012	125.1	0.0	56.1	0.0
2013	128.1	0.0	56.1	0.0
2014	128.1	0.0	56.1	0.0
2015	128.1	0.0	56.1	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
● 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)

1. Standard output measures

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

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2011	275050	515700	0	0
2012	277900	517200	0	0
2013	278500	518200	0	0
2014	279100	518700	0	0
2015	275600	519200	0	0

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

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

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total

Year	Research Target	Extension Target	Total
2011	231	31	262
2012	239	31	270
2013	241	32	273
2014	239	32	271
2015	238	32	270

V(H). State Defined Outputs

1. Output Target

- # of agronomic production education meetings related to food production

  2011:195 **2012:**200 **2013:**205 **2014:**210 **2015:**215

- # of demonstrations/on-farm research related to food crop production

  2011:145 **2012:**148 **2013:**150 **2014:**152 **2015:**154

- # of farm visits related to food crop production

  2011:275 **2012:**280 **2013:**285 **2014:**290 **2015:**300

- # of row crop field days related to food production

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

- ●# 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

  2011:485 **2012:**490 **2013:**495 **2014:**500 **2015:**500

- Dollars of Arkansas Commodity Board Grants received

  2011:4500000 **2012:**4500000 **2013:**4500000 **2014:**4500000 **2015:**4500000

- Dollars of federal grants and contracts received

  2011:250000 **2012:**250000 **2013:**250000 **2014:**250000 **2015:**250000

- # of clientele contacts from educational classes, workshops, group discussions, one-on-one interventions, demonstrations, and othe educational methods related to food crop production.

  2011:155000 **2012:**156000 **2013:**157000 **2014:**158000 **2015:**159000

- # of livestock or poultry related educational programs, workshops, educational meetings and/or field days.

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

- # of clientele attending livestock or poultry related educational programs (field days, workshops, etc.)

  2011:38000 **2012:**38000 **2013:**38000 **2014:**38000 **2015:**38000

- # of producers receiving livestock or poultry related educational materials (newsletters, fact sheets, etc.)

  2011:45000 **2012:**45000 **2013:**45000 **2014:**45000 **2015:**50000

- # of producers conducting livestock or poultry related on-farm demonstrations.

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

- # of livestock or poultry related farm visits or one-on-one consultations with producers.

  2011:2500 **2012:**2500 **2013:**2500 **2014:**2500 **2015:**2500

- # of clientele trained on agricultural and food biosecurity.

  2011:2500 **2012:**2500 **2013:**2500 **2014:**2500 **2015:**2500

- # of educational materials developed on agricultural and food biosecurity.

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

- # of requested consultations related to exotic animal disease concerns.

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

- # of hits to the CES Website regarding avian biosecurity.

  2011:10000 **2012:**10000 **2013:**10000 **2014:**10000 **2015:**10000

- # of hits to the CES Website regarding livestock biosecurity.

  2011:15000 **2012:**15000 **2013:**15000 **2014:**15000 **2015:**15000

- # of plant sites surveyed or monitored related to biosecurity.

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

- # of farm visits or one-on-one consultations with clientele related to biosecurity.

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

- # of individuals attending manure management related presentations addressing food production.

  2011:500 **2012:**500 **2013:**500 **2014:**500 **2015:**500

- # of individuals engaged in manure management related consultations addressing food animal prodution.

  2011:200 **2012:**200 **2013:**200 **2014:**200 **2015:**200

- # of hits at manure management related Webpages addressing food animal production.

  2011:1000 **2012:**1000 **2013:**1000 **2014:**1000 **2015:**1000

- # of educational meetings related to environmental control of confined animal housing and energy efficiency improvement.

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

- # of field demonstrations related to environmental control of confined animal housing and energy efficiency improvement.

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

- # of food production alternative agricultural systems related education classes, workshops, group discussions, and other educational events.

  2011:65 **2012:**65 **2013:**65 **2014:**65 **2015:**65

- # of food production alternative agricultural systems related demonstrations (e.g.,demonstration study farm, food plots, etc.)

  2011:30 **2012:**30 **2013:**35 **2014:**35 **2015:**35

- of grants written and funded in support of food and nutrition programming and research.

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

- # of food and nutrition clientele contacts from education classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational methods.

  2011:70000 **2012:**70000 **2013:**70000 **2014:**70000 **2015:**70000

- of food and nutrition education classes, workshops, group discussions, one-on-one interventions, demonstrations, and other educational events,

  2011:9000 **2012:**9000 **2013:**9000 **2014:**9000 **2015:**9000

V(I). State Defined Outcome

O. No.	Outcome Name
1	Total production (bushels) of harvested wheat (all).
2	Total production (bushels) of harvested soybeans (all).

O. No.	Outcome Name
3	Total production (cwt) of harvested rice (all).
4	Total production (bushels) of harvested corn in Arkansas.
5	Total production (bushels) of sorghum harvested in Arkansas.
6	# of samples submitted for plant testing related to food production.
7	# of clientele (non-duplicated) who use the DD50 program for improved rice production.
8	# of clientele using the RICESEED program.
9	# of clientele that utilize SOYVA to assist with variety selection.
10	# of livestock producers who increased knowledge related to livestock production management practices.
11	# of livestock producers who adopted a new practice.
12	# of livestock producers who initiated or improved their record keeping.
13	# of poultry producers who adopted new practices or technology.
14	# of allied poultry industry personnel who adopt new practices or technology.
15	# of livestock producers who changed an existing management practice.
16	# of clientele who reported knowledge gained related to aquaculture.
17	# of clientele who adopted new aquaculture practices.
18	# of growers/producers reporting knowledge gained about the need for biosecurity.
19	# of growers/producers reporting intent to adopt new biosecurity practices for animal production facilities.
20	# of growers/producers adopting new practices outlined in educational programs to improve biosecurity through proper methods of sanitation, disease prevention, recognition, and control.
21	# of diagnostic plant pest samples submitted.
22	# of diagnostic nematode samples submitted.
23	# of avian samples submitted to diagnostic labs for exotic animal surveillance disease testing.
24	# of Asian Soybean Rust positive samples.
25	# of livestock samples submitted to diagnostic labs for exotic animal diseases testing.
26	# of livestock clientele who gained knowledge about manure management issues related to food production.
27	# of livestock clientele who implemented improvements in their manure management practices related to food species production.
28	# of participants indicating increased knowledge of energy efficiency improvement in confined animal housing.
29	# of clientele who reported knowledge gained about alternative food products.
30	Value of alternative agricultural food products sold ($1000).
31	# of acres of alternative food products planted.

O. No.	Outcome Name
32	# of clientele who initiated an alternative agricultural food-related enterprise.
33	# of farms selling alternative agricultural food-related products or services by various methods, such as farmers markets.
34	# of clientele who used program information to decide NOT to initiate an alternative food-related enterprise.
35	An estimate of the potential impact of global climate change on corn production.
36	# 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.
37	# of participants who adopted at least one positive nutrition practice.
38	# of participants who indicated that they intend to adopt one or more healthy food/nutrition/resource management practice.
39	# of participants who adopted at least one food resource management practice.
40	# of participants who reported saving money on groceries following completion of a nutrition education program.
41	# of participants who reported they less often run out of food before the end of the month following completion of a nutrition education program.

Outcome # 1

1. Outcome Target

Total production (bushels) of harvested wheat (all).

2. Outcome Type : Change in Condition Outcome Measure

2011:25000000 **2012:**25000000 **2013:**25000000 **2014:**25000000 **2015:**25000000

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
- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 213 - Weeds Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 2

1. Outcome Target

Total production (bushels) of harvested soybeans (all).

2. Outcome Type : Change in Condition Outcome Measure

2011:	**2012:**	**2013:**	**2014:**	**2015:**
100000000	102000000	104000000	106000000	108000000

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
- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 213 - Weeds Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 3

1. Outcome Target

Total production (cwt) of harvested rice (all).

2. Outcome Type : Change in Condition Outcome Measure

2011:	**2012:**	**2013:**	**2014:**	**2015:**
90000000	90500000	91000000	91500000	92000000

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
- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 213 - Weeds Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 4

1. Outcome Target

Total production (bushels) of harvested corn in Arkansas.

2. Outcome Type : Change in Condition Outcome Measure

2011:55000000	**2012:**56000000	**2013:**57000000	**2014:**58000000	**2015:**59000000

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
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 213 - Weeds Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 5

1. Outcome Target

Total production (bushels) of sorghum harvested in Arkansas.

2. Outcome Type : Change in Condition Outcome Measure

2011:2000000	**2012:**2100000	**2013:**2200000	**2014:**2300000	**2015:**2400000

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
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 213 - Weeds Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 6

1. Outcome Target

# of samples submitted for plant testing related to food production.

2. Outcome Type : Change in Action Outcome Measure

2011:65	**2012:**66	**2013:**67	**2014:**68	**2015:**69

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
- 205 - Plant Management Systems
- 213 - Weeds Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 7

1. Outcome Target

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

2. Outcome Type : Change in Action Outcome Measure

2011:1800	**2012:**1850	**2013:**1800	**2014:**1800	**2015:**1800

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 # 8

1. Outcome Target

# of clientele using the RICESEED program.

2. Outcome Type : Change in Action Outcome Measure

2011:265	**2012:**270	**2013:**275	**2014:**275	**2015:**275

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 # 9

1. Outcome Target

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

2. Outcome Type : Change in Action Outcome Measure

2011:265	**2012:**270	**2013:**275	**2014:**275	**2015:**275

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 # 10

1. Outcome Target

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

2. Outcome Type : Change in Knowledge Outcome Measure

2011:3500	**2012:**3500	**2013:**3500	**2014:**3500	**2015:**3500

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 # 11

1. Outcome Target

# of livestock producers who adopted a new practice.

2. Outcome Type : Change in Action Outcome Measure

2011:1500	**2012:**1500	**2013:**1500	**2014:**1500	**2015:**1500

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 # 12

1. Outcome Target

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

2. Outcome Type : Change in Action Outcome Measure

2011:500	**2012:**500	**2013:**500	**2014:**500	**2015:**500

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 # 13

1. Outcome Target

# of poultry producers who adopted new practices or technology.

2. Outcome Type : Change in Action Outcome Measure

2011:125	**2012:**125	**2013:**125	**2014:**125	**2015:**125

3. Associated Knowledge Area(s)

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

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 14

1. Outcome Target

# of allied poultry industry personnel who adopt new practices or technology.

2. Outcome Type : Change in Action Outcome Measure

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

3. Associated Knowledge Area(s)

- 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 # 15

1. Outcome Target

# of livestock producers who changed an existing management practice.

2. Outcome Type : Change in Action Outcome Measure

2011:1000	**2012:**1000	**2013:**1000	**2014:**1000	**2015:**1000

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 # 16

1. Outcome Target

# of clientele who reported knowledge gained related to aquaculture.

2. Outcome Type : Change in Knowledge Outcome Measure

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

3. Associated Knowledge Area(s)

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in 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 # 17

1. Outcome Target

# of clientele who adopted new aquaculture practices.

2. Outcome Type : Change in Action Outcome Measure

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

3. Associated Knowledge Area(s)

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in 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 # 18

1. Outcome Target

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

2. Outcome Type : Change in Knowledge Outcome Measure

2011:	**2012:**	**2013:**	**2014:**	**2015:**
300	300	300	300	300

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 # 19

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

2011:	**2012:**	**2013:**	**2014:**	**2015:**
300	300	300	300	300

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 # 20

1. Outcome Target

# of growers/producers adopting new practices outlined in educational programs to improve biosecurity through proper methods of sanitation, disease prevention, recognition, and control.

2. Outcome Type : Change in Action Outcome Measure

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

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 # 21

1. Outcome Target

# of diagnostic plant pest samples submitted.

2. Outcome Type : Change in Action Outcome Measure

2011:3000	**2012:**3000	**2013:**3000	**2014:**3000	**2015:**3000

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 # 22

1. Outcome Target

# of diagnostic nematode samples submitted.

2. Outcome Type : Change in Action Outcome Measure

2011:4000	**2012:**4000	**2013:**4000	**2014:**4000	**2015:**4000

3. Associated Knowledge Area(s)

- 212 - Pathogens and Nematodes Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 23

1. Outcome Target

# of avian samples submitted to diagnostic labs for exotic animal surveillance disease testing.

2. Outcome Type : Change in Action Outcome Measure

2011:19000	**2012:**20000	**2013:**20000	**2014:**20000	**2015:**20000

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 # 24

1. Outcome Target

# of Asian Soybean Rust positive samples.

2. Outcome Type : Change in Condition Outcome Measure

2011:500	**2012:**500	**2013:**500	**2014:**500	**2015:**500

3. Associated Knowledge Area(s)

- 212 - Pathogens and Nematodes Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 25

1. Outcome Target

# of livestock samples submitted to diagnostic labs for exotic animal diseases testing.

2. Outcome Type : Change in Action Outcome Measure

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

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 # 26

1. Outcome Target

# of livestock clientele who gained knowledge about manure management issues related to food production.

2. Outcome Type : Change in Knowledge Outcome Measure

2011:500	**2012:**500	**2013:**500	**2014:**500	**2015:**500

3. Associated Knowledge Area(s)

- 306 - Environmental Stress in Animals

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 27

1. Outcome Target

# of livestock clientele who implemented improvements in their manure management practices related to food species production.

2. Outcome Type : Change in Action Outcome Measure

2011:200	**2012:**200	**2013:**200	**2014:**200	**2015:**200

3. Associated Knowledge Area(s)

- 306 - Environmental Stress in Animals

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 28

1. Outcome Target

# of participants indicating increased knowledge of energy efficiency improvement in confined animal housing.

2. Outcome Type : Change in Knowledge Outcome Measure

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

3. Associated Knowledge Area(s)

- 306 - Environmental Stress in Animals
- 307 - Animal Management Systems

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 29

1. Outcome Target

# of clientele who reported knowledge gained about alternative food products.

2. Outcome Type : Change in Knowledge Outcome Measure

2011:250	**2012:**250	**2013:**260	**2014:**260	**2015:**260

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 # 30

1. Outcome Target

Value of alternative agricultural food products sold ($1000).

2. Outcome Type : Change in Condition Outcome Measure

2011:20000	**2012:**20000	**2013:**21000	**2014:**21000	**2015:**21000

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 # 31

1. Outcome Target

# of acres of alternative food products planted.

2. Outcome Type : Change in Action Outcome Measure

2011:6000	**2012:**6000	**2013:**6000	**2014:**6000	**2015:**6000

3. Associated Knowledge Area(s)

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

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 32

1. Outcome Target

# of clientele who initiated an alternative agricultural food-related enterprise.

2. Outcome Type : Change in Action Outcome Measure

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

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 # 33

1. Outcome Target

# of farms selling alternative agricultural food-related products or services by various methods, such as farmers markets.

2. Outcome Type : Change in Action Outcome Measure

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

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 # 34

1. Outcome Target

# of clientele who used program information to decide NOT to initiate an alternative food-related enterprise.

2. Outcome Type : Change in Action Outcome Measure

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

3. Associated Knowledge Area(s)

- 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 # 35

1. Outcome Target

An estimate of the potential impact of global climate change on corn production.

2. Outcome Type : Change in Knowledge Outcome Measure

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

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
- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 205 - Plant Management Systems

4. Associated Institute Type(s)

- 1862 Research

Outcome # 36

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

2011:	**2012:**	**2013:**	**2014:**	**2015:**
800	800	800	800	800

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 # 37

1. Outcome Target

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

2. Outcome Type : Change in Action Outcome Measure

2011:	**2012:**	**2013:**	**2014:**	**2015:**
1000	1000	1000	1000	1000

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 # 38

1. Outcome Target

# of participants who indicated that they intend to adopt one or more healthy food/nutrition/resource management practice.

2. Outcome Type : Change in Knowledge Outcome Measure

2011:1500	**2012:**1500	**2013:**1500	**2014:**1500	**2015:**1500

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 # 39

1. Outcome Target

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

2. Outcome Type : Change in Action Outcome Measure

2011:800	**2012:**800	**2013:**800	**2014:**800	**2015:**800

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 # 40

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

2011:500	**2012:**500	**2013:**500	**2014:**500	**2015:**500

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 # 41

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

2011:500	**2012:**500	**2013:**500	**2014:**500	**2015:**500

3. Associated Knowledge Area(s)

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

4. Associated Institute Type(s)

- 1862 Extension

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)
- 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 (e.g., swine flu) and bioterrorism/agroterrorism attacks. Any or all of these factors could cause projected outcomes to vary widely.

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

1. Evaluation Studies Planned

- After Only (post program)
- Retrospective (post program)
- Before-After (before and after program)
- During (during program)
- Time series (multiple points before and after program)
- Case Study
- Comparisons between program participants (individuals, group, organizations) and non-participants
- Comparison between locales where the program operates and sites without program intervention
- Other (Secondary sources)

Description

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.

2. Data Collection Methods

- Sampling
- Whole population
- Mail
- Telephone
- On-Site
- Structured
- Unstructured
- Case Study
- Observation
- Tests
- Other (Secondary data sources)

Description

Evaluation data will be collected from target audience participants through a variety of accepted program evaluation methods using appropriate data collection tools. The Extension program evaluation specialists will be consulted to assist in designing the program evaluations. Some audiences are small enough that whole populations will be evaluated. A few case studies will be conducted using unstructured interviews. In addition to collecting evaluation data about behavior or condition changes directly from program participants through surveys, interviews and direct observation of changes, secondary sources of information will also be used, where feasible, to collect data about program outcomes. Examples of secondary data sources include the National Agriculture Statistics Service (NASS) and the Nutrition Education Evaluation and Reporting System (NEERS5). In addition to face-to-face methods, we will also make use of online data collection methods, such as Web-based surveys and Web usage analytic tools that collect Website usage data.

V(A). Planned Program (Summary)

Program # 11

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; 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.

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%	
111	Conservation and Efficient Use of Water	15%		15%	
112	Watershed Protection and Management	10%		10%	
131	Alternative Uses of Land	5%		5%	
132	Weather and Climate	10%		10%	
136	Conservation of Biological Diversity	10%		10%	
201	Plant Genome, Genetics, and Genetic Mechanisms	5%		5%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	5%		5%	
205	Plant Management Systems	10%		10%	
405	Drainage and Irrigation Systems and Facilities	5%		5%	
605	Natural Resource and Environmental Economics	5%		5%	
	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 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.

2. Ultimate goal(s) of this Program

The ultimate goals of this program are to provide quantitatively rigorous analyses of global crop production practice impacts on GHG emissions, and reduction strategies that do not compromise yield.

V(E). Planned Program (Inputs)

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

Year	Extension		Research	
	1862	1890	1862	1890
2011	0.0	0.0	10.0	0.0
2012	0.0	0.0	15.0	0.0
2013	0.0	0.0	20.0	0.0
2014	0.0	0.0	25.0	0.0
2015	0.0	0.0	25.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

Basic and applied research to explore greenhouse gas emission processes in row crop agriculture.

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 () ● Other 2 ()	● Public Service Announcement ● Newsletters ● TV Media Programs ● Web sites ● Other 1 () ● Other 2 ()

3. Description of targeted audience

Policy makers (USDA, USEPA, USDOE), supply chain managers (consumer package goods, WalMart, Krogers, Safeway).

V(G). Planned Program (Outputs)

1. Standard output measures

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

	Direct Contact Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
2011	800	4000	0	0
2012	800	4000	0	0
2013	800	4000	0	0
2014	800	4000	0	0
2015	800	4000	0	0

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

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

3. Expected Peer Review Publications

Year	Research Target	Extension Target	Total
2011	5	0	5
2012	10	0	10
2013	20	0	20
2014	30	0	30

Year	Research Target	Extension Target	Total
2015	50	0	50

V(H). State Defined Outputs

1. Output Target

- Number of publications.

2011:5 **2012:**10 **2013:**20 **2014:**30 **2015:**35

- Funded research amounts (in dollars).

2011:500000 **2012:**750000 **2013:**750000 **2014:**750000 **2015:**750000

V(I). State Defined Outcome

O. No.	Outcome Name
1	Number of metrics developed for greenhouse gas emissions in agriculture.
2	Life cycle inventory methodology and data for row crops for greenhouse gases.
3	Reduction of row crop agriculture in the US on biodiversity.

Outcome # 1

1. Outcome Target

Number of metrics developed for greenhouse gas emissions in agriculture.

2. Outcome Type : Change in Knowledge Outcome Measure

2011:2	**2012:**5	**2013:**5	**2014:**5	**2015:**5

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
- 605 - Natural Resource and Environmental Economics

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 2

1. Outcome Target

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

2. Outcome Type : Change in Action Outcome Measure

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

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

- 605 - Natural Resource and Environmental Economics

4. Associated Institute Type(s)

- 1862 Research

Outcome # 3

1. Outcome Target

Reduction of row crop agriculture in the US on biodiversity.

2. Outcome Type : Change in Condition Outcome Measure

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

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
- 605 - Natural Resource and Environmental Economics

4. Associated Institute Type(s)

- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Other (Global climate change)

Description

Rainfall practices and temperature regimes affect agricultural practices

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

1. Evaluation Studies Planned

- After Only (post program)
- Retrospective (post program)
- During (during program)
- Time series (multiple points before and after program)

- Case Study
- Comparison between locales where the program operates and sites without program intervention

Description

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 requires comparisons by regions.

2. Data Collection Methods

- Sampling
- Case Study
- Other (Metadata analysis - sec. sources)

Description

Data collection for this project is predominantly process-based from industries and from agricultural sectors. These data are aggregated into a metadata analysis to provide sector-based estimates of ag GHG emissions.