

2007 University of Arkansas Combined Research and Extension Plan of Work

Natural Resources & Environment

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

- 101 5% Appraisal of Soil Resources
- 102 5% Soil, Plant, Water, Nutrient Relationships
- 111 10% Conservation and Efficient Use of Water
- 112 15% Watershed Protection and Management
- 123 25% Management and Sustainability of Forest Resources
- 124 5% Urban Forestry
- 133 15% Pollution Prevention and Mitigation
- 135 5% Aquatic and Terrestrial Wildlife
- 605 15% Natural Resource and Environmental Economics

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

1. Situation and priorities

As the natural state, Arkansas has abundant natural resources. Tourism is an important and growing part of the state's economy. More than 50% of the state's land area remains forested and outdoor recreation is important to many Arkansas residents and visitors. 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 richest agricultural areas are degrading over time requiring increased inputs to maintain maximum productivity. Salinity and pH of some delta soils have increased due to irrigation with water of poor quality and soil organic matter content has declined due to excessive tillage. A number of Arkansas counties have been designated as critical water use areas including our most productive rice producing areas.

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 an elusive goal if we are to address these issues in a comprehensive manner in partnership with state regulatory agencies and policymakers.

Excess nutrients in Northwest Arkansas - 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, or agricultural or residential) to be done according to a nutrient management plan or an approved protective use rate. Arkansas's forest resources provide a diversity of important benefits including wood products, wildlife habitat, watershed protection, and aesthetic values. Forests represent approximately 56% of the State's land base. 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.

One new issue is the development of alternative energy sources including biomass protection from forests. Although research into bio-fuel production is on going, key questions remain unanswered. As people move to the outlying areas previously managed as working forests, some negative impacts can result including increased risk from wildfire, loss of habitat, loss of biodiversity, and significant 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 urban-rural interface arena is needed.

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

1. Assumptions made for the Program

Environment & Natural Resources:

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 is 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 continue to be well connected to Regional (multi-state) water quality efforts – Evidence: The UA-CES continues to participate to the Southern Regional CSREES project. The University of Arkansas, Division of Agriculture provides solutions to natural resource and environmental concerns through the integrated missions of research, education, and Extension outreach - Evidence: The formation and functioning of the UA Environmental Task Force that meets monthly to quarterly to ensure this integrated approach. The UA-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 UA-CES will continue to produce timely educational products - Evidence: The UA-CES led a multi state and federal agency effort to develop the Arkansas Nutrient Management Planning Guide and the Arkansas Nutrient Applicator Guide to help citizens comply with new State nutrient management and application laws.

Forestry:

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 and the US Forest Service. The University of Arkansas, Division of Agriculture provides solutions to forest resource management concerns through the integrated missions of research, education, and extension outreach .The UA-CES will continue to produce timely educational products.

2. Ultimate goal(s) of this Program

Environment & Natural Resources:

- « Public understanding and support for water resource development and quality protection on a regional and/or watershed basis.
- « Economical and abundant sources of water for sustaining the lives and economic well being of Arkansas citizens.
- « Continued collection of scientifically defensible data for the analysis of the water quality and quantity circumstance across Arkansas.
- « Development of technologies that provide cost effective alternatives for protecting water quality and increasing water use efficiency.
- « An environmentally defensible state water development and protection strategy for use of the state's water resources, based primarily in a voluntary and incentive driven approach.
- « Water use and quality regulations that protect the resource while not adding a significant financial burden to Arkansas families, business and industry.
- « Coordinated efforts to use the 2005 drought as a planning tool in preparation for solving the water supply problems identified as a result.
- « An expanded financial capacity to assist local governments and development authorities in building the needed infrastructure to protect water quality and deliver safe drinking water to the consuming public.
- « Interstate communication and cooperation that produces tangible benefits for the cooperating partners in the protection of water quality and supplies.
- « Continued research and public education regarding major sources of water quality degradation and alternative protection strategies.

Forest Resources Management Program:

- « Family forest landowners will understand the value of their forest resources: both the timber and non-timber values. As a result, forest landowners will be able to make better informed decisions concerning the conservation, management and marketing of their forest resources.
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V(F). Planned Program (Activity)

1. Activity for the Program

4-H Rice for Ducks programs
Arkansas Acres for Wildlife
Continued education and development support for Farm and Home*A*Syst educational materials
Continued leadership development efforts in the "Building Common Ground" and "Conflict Resolution
Environmental management educational programs
Geographic Information Systems (GIS) and Geographic Positioning Systems (GPS) training
Master Farmer Curriculum is being developed for workshops
Nutrient Management Training notebook for certification training
Nutrient Management Planning Guide for certification training
Nutrient Management Website
Nutrient applicator guide for certification training
Nutrient applicator training notebook for certification training
Nutrient Management Fact sheets
Nutrient management planning workshops
One-on-one consultations
Nutrient applicator workshops
Field Days
Farm Visits
Demonstrations
Educational Meetings
Farm*A*Syst/Home*A*Syst
Link to the Southern Region SARE program
Natural resource conservation and environmental protection education
News-articles
Newsletter
Water, forage, hay, manure, and soil testing
Watershed water quality projects
Well testing
Wildlife education
Geographic Information Systems (GIS) and Geographic Positioning Systems (GPS) training
Water conservation education programs conducted in "Critical Water Use Areas"

Precision agriculture
Reducing urban non-point source pollution through proper lawn care
Small farm programs
Watershed water quality projects
Web-based Education
Water conservation through proper irrigation management and scheduling