

## Introduction

Arkansas is blessed with tremendous and diverse water resources in its fifty-six 8-digit watersheds.



To help protect these water resources by reducing impacts of nonpoint source pollution (NPSP), The University of Arkansas Extension Service has been funded by EPA, USDA, and CSREES to provide watershed education. This includes:

- 8 projects in Northwest and Southwest Arkansas that address nutrient losses in runoff from livestock operations,
- 2 projects in Southeast Arkansas that address sediment losses in runoff from row crop fields,
- three projects in Northwest Arkansas that address urban nonpoint source pollution, and
- one project in South Arkansas that addresses groundwater conservation.

Through these projects, we have acquired valuable experience in delivering watershed education. This poster describes our experiences and presents our developing philosophy on delivery of watershed education.

# Watershed Education in Arkansas

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## Youth Education



Funding for watershed education efforts has often included youth education. Through its watershed projects, Extension offers a variety of water quality opportunities for youth through 4-H and school enhancement programs. Youth education has been particularly important in watersheds where issues and sources are not well defined or necessarily considered a local problem.

For example, in the Lower Little watershed in Southwest Arkansas, water quality concerns over an expanding livestock industry exist, but efforts are geared to prevention rather than correction. In this case youth education has become a important component of the project. Extension programs include "Save Our Streams" (SOS), Project WET and WILD activities, and "At the Water's Edge" as school enhancement efforts.

## Livestock Projects

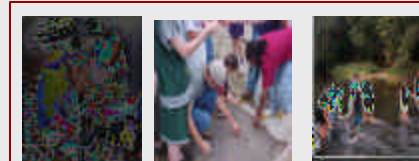
Our most extensive experience with watershed education has been dealing with nutrient runoff from confined animal operations and pastures amended with animal manure. Our very first project was the Muddy Fork HUA funded by USDA. It has been our most successful to date for several reasons:

- It provided for a full time county agent dedicated to water quality
- Well-defined issues: excessive N and P losses to Illinois River so that solutions (BMPs) were relevant to problem
- USDA partners NRCS and FSA also funded by project
- Provided combo of educational, technical and financial assistance
- Long-term funding (9 years) provide sufficient time to show water quality improvement
- Existing Extension programs such as soil testing, grazing and pasture management were easily adapted to water quality issues
- Landowner and community involvement in project.

All of these projects have focused on reducing Phosphorus losses in runoff to land-applied animal manures. Existing Extension programs such as soil testing, manure spreader calibration as elements of nutrient management planning have all been utilized in these watershed projects.



*The Millwood Water Carnival is a reward for the students who participate in the "The Water's Edge Program". It combines outdoor educational workshops with lots of fun. It is attended by more than 400 students annually.*



*Extension has partnered with the Arkansas Game and Fish Commission to develop 4-H Stream teams. These 4-H clubs adopt stream segments to monitor water quality, aquatic wildlife, and maintain scenic beauty*

## Urban Projects

While most of our watershed projects focus on agricultural NPSP, rapid population growth in Northwest Arkansas has prompted concerns over urban NPSP. Through EPA 319h and CSREES grants, we have been able to develop and deliver education in urban areas. Our focus has been on: 1) general watershed awareness, 2) proper lawn care (using pesticide labels and soil testing), and household chemical disposal.

A couple lessons learned from these projects is that: 1) partnerships with local government and community/civic organizations is critically important, and 2) Repeated contact with urban adults is challenging. Urban projects such as these offer high visibility and opportunities for partnership with groups outside of Extension's traditional realm.



We have utilized Home\*A\*Syst as a tool for reaching urban audiences about water quality issues

After the City of Fayetteville's waste water treatment plant violated discharge standards for commonly used household insecticides, Extension partnered with the city and others to develop an educational program focused on proper disposal of household chemicals.



To bring attention to the project and watershed issues, Extension worked with the City of Fayetteville to erect signs at various locations within the City. Extension utilized local 4-H clubs to paint manhole covers to also bring attention to urban NPSP.

## Row Crop Projects

Watershed projects focused on row crop farms have been more challenging in Arkansas than in projects focused on animal operations. Several obstacles may be responsible for this:

- water quality issues with row crops have received little publicity in Arkansas as compared to the livestock industry.
- issues are identified with larger, multi-county watersheds
- Greater diversity in farming and cropping practices
- Sediment reduction solutions often require a fundamental change in farming practices (i.e. changes in equipment, weed control, crop varieties, etc.)

Project delivery has included field demonstrations, public meetings, three editions of the newsletter "On the Bayou" (Below), and an annual field tour which drew close to 100 people in 2000. Field demonstrations included no-till soybeans, conservation tillage for cotton, border irrigation for soybeans, multiple inlet flooding of rice, and wheat cover crop / cattle grazing system in the winter for cotton



## Lessons Learned

### Project Philosophy

- All of our watershed projects promote voluntary, locally-led approaches to well-defined issues.
- We structure our project by adapting existing Extension programs to focus on local issues.
- We develop new programs to fill educational gaps, if necessary.
- We seek and cultivate partnerships so as not to duplicate other's efforts.
- We form watershed stakeholder steering committees to facilitate input in project planning and implementation and to ultimately transfer project ownership to clientele

### Key Project Elements

- Dedicated, local staff member who resides in the watershed with full time water quality responsibility
- Partnerships: Critical Mass of people and Organizations
- Financial and Technical Assistance for stakeholders
- Well defined issue and solutions
- Public Pressure / Critical Timing
- Ownership of Local Leaders

### Educational Thrusts

- Create Public awareness among stakeholders
- Water quality training for landowners/homeowners
- Youth Education
- Develop impact
  - Change understanding of stakeholders
  - Change attitudes of stakeholders
  - Change management of stakeholders
  - Document accomplishments and evaluate impact

### Summary

Through experience with our many watershed projects, we have developed a philosophy that we feel gives us greater potential to have impact on our clientele as well as the natural resources that projects of these type are trying to protect. While not all of these key elements may be available for individual projects, we have found that they are important to keep in mind when planning water quality educational projects.