CONSERVATION PARTNERSHIPS

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Breaking ground

A cooperative approach to collecting information on conservation practices from an initially uncooperative population

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The project team was successful in gaining voluntary stakeholder participation in the effort to evaluate the effectiveness of best management practices at reducing sediment and nutrient runoff and the factors that influence the adoption of best management practices by farmers. The Lincoln Lake watershed, a primarily agricultural subbasin of the politically embattled Illinois River watershed, lies within a designated nutrient surplus area of the state of Arkansas. The team initially faced a watershed population whose trust needed to be gained before any progress could be made. Successful stakeholder participation was fostered through the use of techniques taught to and used by extension agents of the University of Arkansas Division of Agriculture Cooperative Extension Service. The results of this stakeholder-guided collaborative approach allowed the collection of high-quality farm data, perceptions of stakeholders regarding water quality, and reasons why farmers adopt or refuse to adopt best management practices.

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The cooperation of stakeholders is crucial in watershed evaluations where the necessary and accurate data for scientific analysis are obtainable only through voluntary participation. Furthermore, voluntary stakeholder participation is required for successful post-study adoption of scientific recommendations. To achieve this goal, a collaborative approach must be used, and the mechanism that serves as the intermediary between the stakeholders and the scientists must be efficient, conducive to the smooth exchange of information, and above all properly in place. Although such a collaborative approach may be very time consuming for all involved, it is often necessary to build trust for successful project completion (Sabatier et al. 2005).

This article summarizes the process used and successes achieved by the University of Arkansas Division of Agriculture Cooperative Extension Service (UACES) in establishing stakeholder participation and collaborative information exchange as part of a Conservation Effects Assessment Project (CEAP) team effort in the Lincoln Lake watershed, Arkansas, a watershed where stakeholders were often leery of participating and sharing information. Such an effort was required for the success of the ongoing evaluation of best management practice (BMP) effectiveness in improving water quality, as well as for factors that influence the adoption of BMPs by farmers.

The multidisciplinary CEAP project team is composed of environmental engineers, ecologists, agricultural economists, and statisticians, as well as UACES agents and specialists. The team is working collaboratively with stakeholders of the Lincoln Lake watershed, as well as county and

state officials, to successfully complete the project. The stakeholders included farmers, residents, and business owners in the Lincoln Lake watershed.

This overall CEAP project entails four tasks: (1) collection of farm-specific land-use, farm management, and water quality survey data; (2) Soil and Water Assessment Tool (SWAT) modeling to evaluate effectiveness of BMPs in improving water quality in the watershed; (3) economic analysis for BMPs; and (4) BMP education and outreach for farmers and nonfarmers. Paramount to the success of these tasks was the establishment of trusting relationships with the stakeholders, which fostered a high level of stakeholder participation. It is this aspect—the development of a trusting collaborative approach—that is discussed in this article.

WATERSHED DESCRIPTION

The Lincoln Lake watershed is a 32 km^2 (7,680 ac) subwatershed of the embattled 445,032 km^2 (1,024,000 ac) Illinois River basin located within Washington County in northwestern Arkansas. It is composed of pasture, forest, and cityscape. Poultry and beef production is the economic mainstay within the watershed.

The Illinois River watershed has a history of legal controversy concerning nutrient enrichment (Soerens et al. 2003). These concerns prompted the 2003 Arkansas General Assembly to establish laws regulating the application of nutrients in nutrient-sensitive agricultural and residential areas. These areas have been designated nutrient surplus areas, and the regulations pertaining to nutrient surplus areas were designed to preserve water quality in Arkansas without crippling agricultural interests (Goodwin et al. 2006). Consequently, legal developments have followed (Killman 2006b, 2006c; Oklahoma 2003; Smith 2006a, 2007b; Stafford 2006; US Environmental Protection Agency 2003), some negatively impacting farmers in the Illinois River basin (Smith 2005, 2006b; Killman 2006a; Smith 2007b). Therefore, despite a long history of working successfully with stakeholders in the area, the CEAP project team faced a watershed population whose trust needed to be regained before any progress could be made.

THE CEAP TEAM APPROACH

We used a collaborative approach in which stakeholders were involved from the initiation of the project. Voluntary assistance from stakeholders was essential to obtain the necessary survey and farm data needed for economic analysis and watershed modeling.

Survey development by our CEAP team was guided by a steering committee composed of a county official, a conservation district board member, five farmers, two local residents, and three UACES personnel. The purpose of the committee was to ensure that our CEAP team considered input of all parties concerned with, and affected by, the project and BMP adoption.

In June 2006, the CEAP team held two public meetings for watershed stakeholders. These meetings were held on the same day but at different times and locations within the watershed so as many people as possible could attend. All 318 stakeholder families received mailed invitations, with one-third receiving invitations by phone as well.

The purpose of these meetings was to explain the CEAP project and its similarity to previous area projects in BMP adoption and study (Nelson et al. 2000). Relating the current project to previous education, outreach, technical and cost-share assistance efforts involving the UACES, Arkansas Natural Resource Commission, USDA Natural Resource Conservation Service, and Washington County Conservation District lent the project credibility among stakeholders. Ongoing water quality monitoring and investigation of BMPs associated with this CEAP project and other projects conducted in the watershed since 1991 made stakeholders feel they could contribute to water quality protection through participation in the current project. However, as the sociopolitical nature of the watershed had changed since previous projects were carried out in the same area, it was critical that stakeholders be allowed to ask questions and be reassured of the security of their personal farm records and practices.

Only 20 stakeholders attended these meetings. Despite low attendance, the meetings and several following news releases and stories in the *Lincoln Leader* (the local newspaper), the *Arkansas Democrat-Gazette*, *Ozark Farm & News*, and *Farm Talk* about the project helped the CEAP team to gain partial acceptance among the stakeholders, and awareness of the project began to grow throughout the watershed.

After the meetings, personal interviews with watershed farmers were conducted to collect farm-level data and to assess their perceptions on watershed water quality, potential sources of water quality degradation, effectiveness of BMPs to reduce nutrient and sediment runoff from agricultural operations, and factors influencing BMP adoption.

The CEAP team also wanted to collect the same information from nonfarmer residents and business owners. Instead of meeting with the nonfarming families, we sent mail-out surveys. Mail out surveys were preferred to in-person surveys due to financial and time constraints associated with in-person interviews for the larger nonfarmer population.

FARMER INTERVIEWS

Meeting with farmers face-to-face was a key to successful data collection in our survey process. Our practical approach utilized an experienced local UACES agent who was well known by stakeholders. This experienced agent took the new county extension agent who was to conduct the surveys on a tour of the watershed. In addition to familiarizing the new agent with the watershed, the tour served to introduce him to influential farmers. This technique, described by Rogers (1995), is taught to new UACES agents and has been used in past extension projects that were successful

in the same area years before where community support was crucial.

Meeting farmers for the first time also required us to establish a few rules of conduct for the new agent to be successful. First, the interviewer needed to be congenial and fit in with the farming community. In addition, it was important to accommodate farmers' ideas and preferences regarding place, time, or other arrangement for taking the survey.

Second, it was necessary to determine if the farmers needed technical assistance with their farming operations before going on to the survey. This was a good way to get the farmers attention and to show that service can be provided regardless of their participation, which often prompted the farmer to take the survey.

Third, it was important to minimize small talk, unless the farmer initiated it. In such cases, the topic would be discussed only if both parties were in agreement on the particular issue in order to avoid unintentionally upsetting farmers by disagreements resulting from passing conversation.

Fourth, it was important not to leave immediately after the survey was filled out, unless time restrictions demanded so. It was often in the post-survey conversation that teachable moments occurred and when most of the relationship building would take place. It was also in those moments that most farmers may have decided to cooperate in other aspects of the project.

Finally, it was important to respect the stakeholders' decision whether or not to participate.

OVERCOMING THE CHALLENGES

Even in an ideally cooperative watershed climate, there is a host of challenges (e.g., language barriers, cultural barriers, and stakeholder apathy) that extension agents must overcome in order to be effective in their job (Connick and Innes 2003; O'Neill 2005). However, being a new extension agent and working with stakeholders in a watershed with a recent history of controversial environmental issues presented even greater challenges. The stakeholder meeting and surveying process were especially difficult in this situation because farmers in the project area perceived they were being harassed by outsiders (Smith 2005) and therefore were wary of unfamiliar faces on their farms. In such situations, cooperation from stakeholders is not guaranteed (Aderman and Berkowitz 1983). The CEAP team realized early that the ability to garner trust from the farmers in the watershed would be the key to unlocking the ideas, opinions, and cooperation of those farmers that might have otherwise been withheld.

In most cases, the farmers believed that the new agent was who he said he was and wished to cooperate; sometimes the farmers had to be encouraged a bit to entice them into participating. In a few cases, however, farmers simply did not believe that the new agent was who he claimed to be and refused to participate. Uncooperative instances were few. However, when they did occur, no form of proof (e.g., business card, office number for employment verification) was acceptable to the farmer regardless of method or reasonable persistence. Thus, it seemed that the current sociopolitical climate precluded the application of any additional persuasion, no matter how congenial. Ultimately, the idea of respecting the feelings of suspicious parties and their reasons for initially refusing to participate could work to foster their participation at a later time (Messerschmidt 1981; Connick and Innes 2003). Consequently, in those cases where it was obvious that no reasonable act of persuasion would result in participation, the farmers concerned were left alone with the hope that they would change their minds; in many cases, later they did.

RESULTS

As a result of the nonpressure-oriented approach used to survey stakeholders, 63 of 75 farmers in the watershed participated in personal interviews (Popp et al. 2007). The hundreds of hours spent in this informal setting not only allowed extension personnel to become familiar with each farmer's operation but afforded an opportunity to encourage farmers to attend educational programs related to water quality and to adopt new BMPs. Ultimately, the relationships forged during the interview process led 14 farmers within the watershed to sign up for nutrient management plans, expedited the development of 29 nutrient management plans by providing technical assistance, and allowed the collection of 20 km^2 (4,940 ac) of soil samples within and adjacent to the watershed during the first two years of the project. Gaining thousands of acres of soil samples not only added to the historic database of watershed characteristics and water quality data but was also needed to accurately parameterize SWAT model used to evaluate BMP effectiveness as described by Gitau et al. (2007a, 2007b) and to optimize BMP placement in the watershed to maximize water quality improvement.

In addition to the soil sample data, we collected 37 of 45 known nutrient management plans in use within the watershed. The resulting impact of our collaborative approach including full project disclosure, personal interviews, and patience reestablished trust between UACES agents and farmers, without which collection of nutrient management plans and other information would not have been possible.

As mentioned earlier, the nonfarmer survey group was contacted through a mail survey. The response rate was 26% (Popp et al. 2007). This response rate was far less than that of the farmer surveys, likely due to the difference between the mail-out and face-to-face survey approach. This was expected by our CEAP team.

Regardless of the disparity between the response rates among stakeholder groups, this dual approach allowed the project team to identify key differences in water quality perspectives between the farmers and nonfarmers. This data set is unique because it is the only one of its kind in the region. Results suggest that while farmers point to new construction and industry as the largest contributors to potential water quality problems, nonfarmers believe that it is the farmers who contribute more to possible

water quality degradation than anyone else listed in the survey (Popp and Rodriguez 2007). However, nonfarmers were less likely to know what BMPs are, how BMPs work, and that farmers were using BMPs. These results were expected, but now they are substantiated for the first time. As a result, the needed outreach and education is currently being planned and delivered.

In addition, the project team was able to understand some of the factors that influence the use or nonuse of BMPs among farmers. Nearly half of those farmers responding said they used BMPs on their land. Of those farmers, most said they use BMPs because they feel BMPs are effective at reducing nitrogen, phosphorus, and sediment in runoff and because they were recommended by the University of Arkansas Division of Agriculture or government agency personnel. Half of those farmers also stated that they wish to be ahead of further environmental regulations. The factors identified by all farmers that inhibit BMP adoption include a lack of knowledge about BMPs (54%), a belief that BMP use increases the likelihood of further environmental regulation (32%), a lack of equipment (22%), a belief that the Environmental Quality Incentives Program doesn't fit their needs (22%), and a belief that the practice is too expensive (22%).

SUMMARY AND CONCLUSIONS

In watersheds where conflicts between rural and urban stakeholders related to water quality are increasing, a trust-based collaborative approach is needed. Even though development of such a collaborative framework can be time consuming, it is necessary to bring all stakeholders to the table. Without a stakeholder-guided process, the cooperation of stakeholders may be limited, and key information may not be obtainable. Any person, especially one who works for the government, must convincingly show that they are interested and that they are willing to work collaboratively with all the stakeholders. This is done by listening to stakeholders and keeping in mind that some problems can be fixed on the spot while larger problems need to be brought to the attention of a specialist or agency. It is very important to discuss the concerns of stakeholders before trying to solicit their participation in any project. Without finding a common denominator that all parties share, it may be next to impossible to entice an alienated or isolated group of people to voluntarily participate in any kind of government program that does not provide an immediate benefit.

Through the development of trusting relationships, our CEAP project team was successful in achieving a level of necessary trust with watershed stakeholders in order to accomplish project goals regardless of existing political constraints.

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REFERENCES

Aderman, D., and L. Berkowitz. 1983. Self-concern and the unwillingness to be helpful. Social Psychology Quarterly 46(4)293-301.

Connick, S., and J.E. Innes. 2003. Outcomes of collaborative water policy making: Applying complexity thinking to evaluation. Journal of Environmental Planning and Management 46(2):177-197.

Gitau, M.W., I. Chaubey, E. Gbur, J.H. Pennington, and B. Gorham. 2007a. Water quality impacts of land use change and BMPs in Northwest Arkansas. Journal of Soil and Water Conservation 63(6).

Gitau, M.W., I. Chaubey, M.A. Nelson, and J.H. Pennington. 2007b. Analysis of BMP and land use change effects in a Northwest Arkansas agricultural watershed. Paper presented at the American Society of Agricultural and Biological Engineers Annual International Meeting, St. Joseph, MI, June 17-20, 2007.

Goodwin, H.L., F.T. Jones, S.E. Watkins, and J.S. Hipp. 2006. New Arkansas laws regulate use and management of poultry litter and other nutrients. University of Arkansas Cooperative Extension Service Fact Sheet FSA29-5M-9-03N. Little Rock, AR: University of Arkansas.

Killman, C. 2006a. AG takes poultry dispute live. Tulsa World, October 27, 2006.

Killman, C. 2006b. Arkansas again seeks role in lawsuit. Tulsa World, May 3, 2006.

Killman, C. 2006c. Court allows testing of poultry farms. Tulsa World, March 24, 2006.

Messerschmidt, D.A. 1981. Constraints in government research: The anthropologist in a rural school district. *In* Anthropologists at Home in North America: Methods and Issues in the Study of One's Own Society, ed. D. Messershmidt. Cambridge: Cambridge University Press.

Nelson, M.A., W.L. Cash, and K.F. Steel. 2000. Determination of nutrient loads in upper Moores Creek. Arkansas Water Resources Center Publication MSC-290. Fayetteville, AR: Arkansas Water Resources Center.

O'Neill, K.M. 2005. Can watershed management unite a town and country? Society and Natural Resources 18:241-243.

Oklahoma Secretary of the Environment. 2003. Statement of Joint Principles and Actions. http://www.crossroads.odl.state.ok.us/u?/stgovpub,569.

Popp, J., and G. Rodriguez. 2007. The role of stakeholders' perceptions in addressing water quality disputes in an embattled watershed. Journal of Environmental Monitoring and Restoration 3:225-263.

Popp, J., G. Rodriguez, E. Gbur, and J.H. Pennington. 2007. How attitudes of important stakeholder groups can influence effective water quality management. American Agricultural Economics Association Annual Meeting, Portland, OR, July 29-August 1, 2007.

Rogers, E.M. 1995. Diffusion of Innovations. New York: Free Press.

Sabatier, P.A., W. Focht, M. Lubell, Z. Trachtenberg, A. Vedlitz, and M. Matlock. 2005. Swimming Upstream: Collaborative approaches to watershed management. Cambridge, MA: MIT Press.

Smith, R. 2005. Poultry farmers fret over pictures. Arkansas Democrat Gazette: Northwest Arkansas Edition, August 30, 2005. http://nwanews.com/adg/News/126941.

Smith, Robert. 2006a. Judge won't block suit to stop agency from sampling soil. Arkansas Democrat Gazette: Northwest Arkansas Edition, January 21, 2006. http://nwanews.com/adg/News/143242.

Smith, R. 2006b. Rivers panelist asks Oklahoma to drop lawsuit. ArkansasDemocrat Gazette: Northwest Arkansas Edition, August 24, 2006. http://nwanews.com/adg/News/164437.

Smith, R. 2007a. Farmers get right to results of tests. Arkansas Democrat Gazette: Northwest Arkansas Edition, January 6, 2007. http://nwanews.com/adg/News/177930.

Smith, R. 2007b. River project by neighbors still muddled. Arkansas Democrat Gazette: Northwest Arkansas Edition, May 20, 2007a. http://nwanews.com/adg/News/190668.

Soerens, T.S., E.H. Fite III, and J. Hipp. 2003. Water quality in the Illinois River: Conflict and cooperation between Oklahoma and Arkansas. Presented at Diffuse Pollution Conference, Dublin, Ireland.

Stafford, J. 2006. Poultry litter's environmental effect disputed. The Oklahoman, March 17, 2006. http://www.newsok.com/article/keyword/1789402/.

US Environmental Protection Agency. 2003. Water Quality Standard Approved. Dallas, TX: US Environmental Protection Agency. http://www.epa.gov/region6/press.