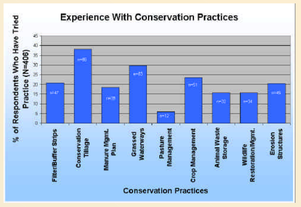
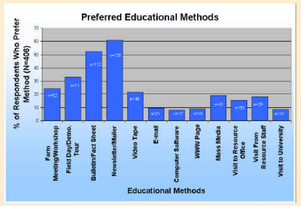
Information Exchange, Citizen Water Monitoring and Agricultural Best Management Practices

Communication Strategies

Surveys

A survey was mailed to 900 landowners in four agricultural watersheds to obtain information about landowner information needs regarding watershed conservation. Approximately 45 percent returned the form. A few of the results are presented. The outcome of the study provides feedback to develop extension and outreach programs that better serve the needs of agricultural landowners.





- Traditional methods of communication such as newsletters and printed fact sheets were preferred more than innovative methods of communication such as E-mail, computer software and web pages by all farmer types.
- Audiences that were responsive to more innovative forms of communication were younger (less than the average age of 57, more educated landowners (with college or advanced degrees with higher gross incomes (greater than $50,000 per year). No significant difference was found between part-time and full-time farmers.

Interactive Sessions/Field Days

Water quality field days and watershed tours help residents discuss issues and view problems as well as potential solutions. Land-owners applying best management practices have the opportunity to share their experiences with others. Residents also are encouraged to keep track of conservation progress over time.

One demonstration involved a grassy filter strip as part of stream bank stabilization activities. The effectiveness of these demonstrations and interactive sessions are being evaluated.

PROJECT GOAL

Determine more effective extension communication and agricultural best management practices (BMPs) for improving water quality in agricultural watersheds

OBJECTIVES

Determine the effectiveness of water quality communication strategies

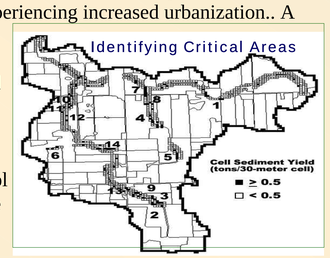
Determine the variability of volunteer water quality monitoring

Develop spatially explicit models to evaluate effectiveness of agricultural BMPs

Research Efforts

Identifying Buffer Effectiveness

To determine the effectiveness of buffer strips on watershed water quality, a paired watershed study is being performed within the Stony Creek, a 114,647-acre agricultural watershed that is experiencing increased urbanization.. A comparison is being made on the sediment and nutrient load coming from each watershed and will be used to infer the benefit of buffer strips on watershed scale water quality. The modeling portion of this study consists of developing a computer tool to analyze the watershed to determine where installing buffer strips will get the most "bang for the buck" in improving water quality. For each stream segment in the watershed, a computer model is analyzing the topography, land cover, and soil type and determining the reduction in peak flow rate, sediment, and nutrients that would be achieved by installing a buffer strip. A geographic information system (GIS) is being used to assemble data and present results. Some preliminary results of the computer model are shown. Twelve fields were identified as critical areas of buffer efficacy. Therefore, instead of installing buffers along the entire stream reach, 89 acres will be buffered, which will result in a 68% reduction in sediment entering the stream. Developing, testing, and validating this computer and GIS tool in Stony Creek will allow it to be used to improve water quality in other agricultural watersheds in Michigan.



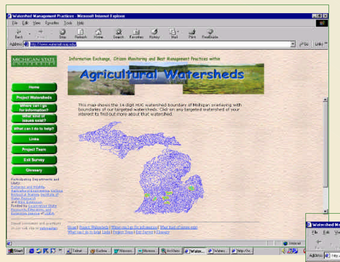
Volunteer Monitoring Variability

Four high school classes are participating in the volunteer monitoring portion of the study. In year one, water was tested for phosphate, nitrate, dissolved oxygen and pH and compared with results from the researchers. Differences or similarities between researchers and volunteers were dependent on the parameter selected and the detection limit of the test kit used by the volunteers. Variability among the volunteers was also dependent on the parameter. Follow up monitoring will incorporate more replications, more information on sampling dates, controls, and a decrease in the number of parameters being tested.

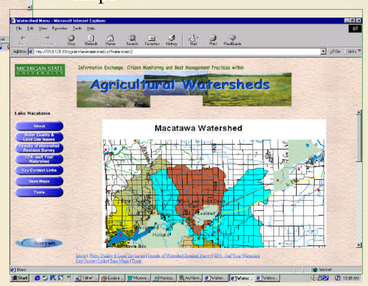
Web Development

Major Objectives

- Focus on the four watersheds of the study
- Provide key links to current and valuable information



- Incorporate project research results and survey information into the system
- Utilize input from focus groups to update and revise the system
- Incorporate web-based GIS to create maps



- Provide relevant contact information within each subwatershed
- Offer easy maneuverability through site via text and/or graphics
- Access the site at: www.waternet.msu.edu

Applicability of Study

- Extension educators will be more effective in communicating to agricultural landowners about water quality issues because they will have information on which communication strategies are generally preferred by agricultural landowners.
- They will be able to allocate their resources more wisely by focusing efforts on the communication methods that are most effective for the targeted audience.
- Water quality can be improved within select agricultural watersheds in Michigan by increasing the effectiveness of Extension educators to inform landowners about water quality issues such as excess nutrients and soil erosion into streams and by increasing agricultural landowners' awareness about the ecological implications of their farming practices.

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Funding for this project was provided by a USDA-CSREES 406 Water Quality Grant