



USDA-CSREES 2006 National Water Quality Conference

Experimental Manipulation of Entire Watersheds through BMPs

Mitigation of soil and nutrient loss from watersheds in agriculture in the Finger Lakes Region of New York State and within the country continues to be a concern. Because of the loss of soil from their land and the effects this may be having on downstream environments, local agricultural agencies with participation of local farmers joined with scientists to form the "Conesus Lake Watershed Group" (CLWG) to focus attention on watershed issues, to foster their sense of stewardship and to assist and coordinate collaboration between academic researchers, governing bodies, and the agricultural community. This study represents an integrated approach to conduct hypothesis-based research at the watershed level that has and continues to test the impact of Best Management Practices on mitigation of non-point sources of nutrient and soil loss. Small experimental subwatersheds (<325 ha), predominantly in agriculture (>70%) and owned by one farm, were selected to ensure that effects on downstream systems would not be confounded by other land use practices often observed in large watershed approaches. The goal of the project is to demonstrate, through the experimental watershed approach, that implementation of BMPs in agriculturally dominated watersheds will preserve soil and reduce nutrient loss from a series of subwatersheds. A second goal is to evaluate the impact of instituted BMPs by considering the impacts on the downstream lake community. A third goal is to evaluate fate and transport of nutrients over space and time. Specifically, we hypothesize not only reductions in nutrient and soil losses from watersheds but also a resultant decrease in metaphyton, coliform bacteria and macrophyte populations at stream mouths. A valuable data set with a good experimental design now exists that is just beginning to produce results. As suggested in the initial study, watersheds do not instantly react to a manipulation. Through extension and education, our work will demonstrate to the NYS farming community, the utility and effectiveness of the implemented BMPs allowing regional policy makers and managers to develop strategies for improving land usage in watersheds while improving water quality and decreasing abundance of nuisance plant species in downstream ecosystems. Ultimately, our work expands the basic understanding of the effects of BMPs to control non-point source pollution while contributing toward the goal of improving water quality of downstream systems. The diverse nature of the Conesus Lake Watershed Group allows for dissemination of information to a wide audience at the local, regional and national level.

Author: Joseph Makarewicz

Coauthor(s): Isidro Bosch Robert Simon Theodore Lewis

