



# Missisquoi

# Water Quality

A summary of the Lower Missisquoi Water Quality Project in Franklin County, Vermont. 1990-1997.

**Background:** The Lower Missisquoi River Hydrologic Unit Area (HUA) Project is in the northwestern corner of Vermont and part of the Lake Champlain watershed. Lake Champlain has been recognized as a critical resource to the region, but has experienced declining water quality due to non-point sources of pollution. The HUA has a high concentration of dairy farms and very little urban or suburban development. The Project is offering an interagency cooperative effort to increase education, technical assistance, and cost-share moneys to farmers within the HUA to reduce agricultural non-point source pollution.

**Objectives:** The primary objective of the project is to reduce non-point source pollution to the Missisquoi Bay of Lake Champlain. Pollutants of concern include sediment, phosphorus and nitrogen. Most originate from agricultural sources such as barnyards and manured or fertilized fields.

**Start Date:** 1990

**Project Size:** 247,000 acres, 350 farms (dairy, beef, vegetable, etc.)

**Land Use:** 20% cropland or hayland, 8% pasture, 71% forested, 1% urban or residential

**Production:** Dairy farming is the principal agricultural activity. Many farms grow corn for silage, and legumes and grass for haylage or hay. A small percent of the HUA farms use intensively managed pasture systems.



## Project Accomplishments:

- C The Missisquoi Crop Management Services was formed at the beginning of the project to provide farms with services and technical assistance in whole farm nutrient management, pest management, and crop recordkeeping.
- C The 19 Missisquoi Crop Management Service farms adopted whole farm nutrient management plans and, based on a study of seven farms, reduced total phosphorus fertilizer application by an average of 40%.
- C The seven study farms in the Missisquoi Crop Management Service saved an average of \$2,800 per farm over three years on fertilizer costs.
- C Participants in the Missisquoi Crop Management Services formed the Missisquoi Crop Management Association to ensure the continuation of quality services for whole farm nutrient management planning and integrated crop management.
- C In the whole HUA project area, over 3,000 routine soil tests were run during the eight years of the project to determine need for phosphorus, potassium, lime, and other nutrients on individual fields.
- C 1100 Presidedress Nitrogen Soil Tests (PSNT) for corn were done to determine nitrogen contributions from manure and other organic sources and to predict any additional nitrogen needs.
- C 190 manure samples were taken and analyzed to determine the nutrient content in the manure.
- C 104 waste storage structures were built to enable better management of animal wastes.
- C 98 livestock concentration areas were built to eliminate runoff from these areas.
- C 63 milkhouse waste treatment systems were constructed to eliminate milkhouse wastes from entering surface waters.
- C 119 rural water supplies were sampled for the presence of nitrates and pesticides.
- C Nutrient management systems for about 1000 acres in 1996 and 1997 (EQUIP/WQIP)
- C Intensive water quality protection plans were developed for 59 HUA farms in 1996 and 1997 (EQUIP/WQIP).



## Educational Activities:

- C Numerous field trials have been conducted to demonstrate and evaluate Best Management Practices for manure and fertilizer use on corn and hay crops. These have included PSNT for corn, cover crops, manure timing and application methods, and N, P, and K use for grass and legume hay.
- C Tours and information exchange have been coordinated with nearby Canadian farmers.
- C Workshops and educational programs, including the popular T.O.A.D.S. (Teachers of Aquatic Discovery) program have been developed for area public school teachers.
- C Displays and demonstrations have been regularly held at the county fair and other local functions and gatherings.
- C Nearly 60 farm, industry and agency people have taken courses in Integrated Crop Management in the last 5 years of the project and close to 50 are using the computerized VT Crop Record System as a result.
- C Over 300 farmers have participated in pest management and pesticide applicator training, which has been offered in or near the HUA since the beginning of the project.

## Project Implications:

Results of this project show that farmers are willing to carry out best management practices to reduce non-point source pollution and protect the environment. To increase implementation, outside help by an Extension specialist, ag industry representative, or private consultant is needed to provide adequate information along with education and technical assistance. Financial assistance has also been shown to increase participation.

## Regional Perspective:

In 1991 Congress passed the Lake Champlain Special Designation Act to restore and conserve the resources of the Lake Champlain Basin. The Lake Champlain Basin has also been designated an International Biosphere Reserve by the United Nations. Basin-wide efforts are currently underway to address the many resource



concerns including non-point source pollution. The Lower Missisquoi HUA has served as an example of how agricultural non-point source pollution can be reduced on a field, farm, and watershed scale.

## Project Coordinators:

The Lower Missisquoi Water Quality Project is a cooperative effort among, the following participants:

- C Missisquoi Watershed Project Area Farmers
- C UVM Extension/USDA-CSREES
- C USDA Farm Services Agency
- C USDA Natural Resource Conservation Service
- C Vermont Department of Agriculture, Food and Markets
- C Franklin County Natural Resource Conservation District

## For More Information:

This factsheet is number one in a series on the Lower Missisquoi Water Quality Project. For information on obtaining other factsheets or for more information on the project, contact:

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