

GLOBAL PARTNERSHIP ON NUTRIENT MANAGEMENT

BMP Case Study

Overview

Name: Detecting Effects of Best Management Practices (BMPs) on Rain Events Generating Nonpoint Source Pollution (NPSP) in Agricultural Watersheds using a Physically-Based Stratagem

Location/Terrain: Conesus Lake, NY, USA

Crop(s): Livestock, cover crops and others

Nutrient(s): Nonpoint source pollution (NPSP)

Rationale: This research documents a methodology for confirming reductions in NPSP resulting from implementation of agricultural BMPs. It employs that methodology to confirm the success of BMPs implemented.

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Issue(s) of Concern/Challenges:

Nonpoint source pollution (NPSP) is the export to receiving waters of nutrients originating from diffuse sources. This research was performed to determine if implementing BMPs resulted in reductions in NPSP.

Practice Description:

By using the Thorniness-Mather procedure, which uses the parameter APWL (accumulate potential water loss) to model the response of soil moisture to evaporative forces, it was possible to remove the major source of variability in modeling soil moisture status in addition to event rainfall, essentially reducing the number of experimental variables to the BMP itself. The main BMP implemented was the reduction of fertilizer and seasonal application.

Practice Objectives:

To determine if implementing BMPs resulted in reductions in NPSP.

Outcomes:

Application of this method revealed that BMPs can greatly reduce export of NPSP generated pollutants in receiving waters. Estimates of NPSP reduction range from 53% for soluble reactive phosphorus to 89% for nitrate.

Significance:

This confirms the use of BMPs can reduce NPSP.



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