



Soil Loss Reduced From Agricultural Fields After Installation of Gully Plugs



Conesus Lake Watershed Project SUNY Brockport, SUNY Geneseo, Cornell Cooperative Extension

Problem:

As much as 133 tons of soil per year are lost from the steep slopes of Cottonwood Gully watershed each year and is deposited into Conesus Lake. The problem of soil erosion from watersheds is a national concern because of its potentially negative impact on agriculture because of the physical loss of fertile soil and the resultant reductions in agricultural crop yields. With soil loss, there is also a loss of nutrients that cause blooms of algae and enhance growth of unwanted weeds in lakes.

Management Practices Implemented:

A “cash crop” agricultural operation in the Cottonwood Gully watershed underwent comprehensive nutrient management planning under the Agricultural Environmental Management Program (AEM) in 2002 as part of our USDA sponsored research program. Water And Sediment COntrol Basins (WASCOB or ‘gully plugs’) were installed in 2003. Gully plugs are basically small dams built into the slope of a hill. These small dams intercept water runoff carrying soil and contain the water and soil into a ponding basin allowing the soil to sediment out while the water is discharged via subsurface drainage to the stream.

Resolution:

In one year, benefits of the Best Management Practices implemented were evident in Cottonwood Gully, where Gully plugs were installed. No reduction in soil loss was evident from “reference” watersheds where gully plugs were not installed. In fact, soil erosion from the watershed (total suspended solids, TSS) was reduced 94% from the previous year (Figure 1). Similarly, more organic nitrogen and phosphorus were retained in the Cottonwood watershed by a factor of 36% and 38%, respectively, within one year of implementation of management plans.

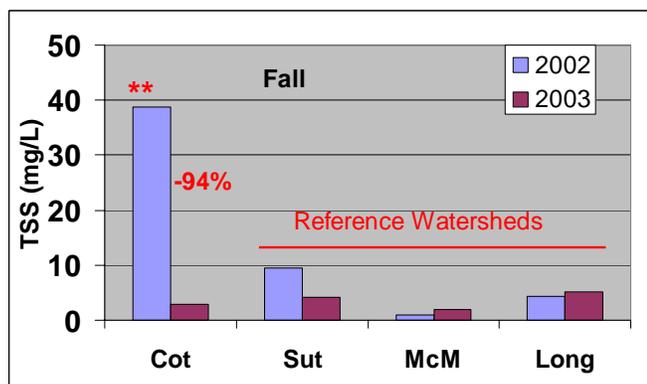


Figure 1. Total suspended solid concentration comparisons from the Fall of 2002 to the Fall of 2003 after implementation of Best Management Practices to Cottonwood Gully (Cot). A significant reduction in soil loss is evident in Cottonwood Gully, but not in the Reference Watersheds of Sutton Point (Sut), North McMillan (McM) and Long Point Gully (Long).

Background:

In the Conesus Lake watershed, several research projects testing various management plans to maintain soil and nutrients on farmland and thus reduce impacts on Conesus Lake have been implemented. Funding was to the State University of New York (SUNY) at Brockport, SUNY Geneseo and Cornell Cooperative Extension from the Cooperative State Research, Education, and Extension Service of the United States Department of Agriculture. With the voluntary cooperation of several farmers within the Conesus Lake watershed, several “Best Management Practices” have been implemented since 2002. These practices include reduction of manure spreading during the winter on steep sided slopes, construction of gully plugs, nutrient reduction, etc. Results on bacteria levels, shore algae and water chemistry are available at the project’s web site [http://www.envsci.brockport.edu/Conesus Project](http://www.envsci.brockport.edu/Conesus_Project)