



## **Phosphorus transport by monitoring groundwater and interflow discharge in hydrologically sensitive areas**

**F. Flores-Lopez**, L. D. Geohring, S. K. Giri and T. S. Steenhuis

Cornell University, Biological and Environmental Engineering, B30 Riley-Robb Hall Ithaca, NY 14850-5701. USA (e-mail: ff35@cornell.edu).

The role of the groundwater component in the phosphorus pollution process is not well studied yet. Mainly the studies that have been developed are focused on the problem of phosphorus pollution in the context of superficial runoff. Infiltration of phosphorus into groundwater may be an important mechanism of pollution as well. In this study we examined soluble phosphorus concentration in groundwater and soluble phosphorus losses from hydrologically sensitive areas and upland areas located in valley soils in the Catskill Mountains in central New York State, USA.

We assumed that phosphorus from spreading manure on fields would be flushed into groundwater. Also when the groundwater table rises, it interacts with the phosphorus in the manure, and it produces runoff, which increases the concentration of soluble phosphorus in runoff. Phosphorus concentrations as low as 0.01 – 0.02 mg/L in water increase the algal bloom in lakes and reservoirs and the Cannosville basin, in which the research area is located, and which is currently restricted to 0.02mg/L. We measured grab groundwater samples taken in piezometers installed in areas where the groundwater table is shallow. Also we measured grab surface water samples taken along the creeks to study the phosphorus concentration in the sub-superficial runoff that drains water from the surrounding hills. Sampling has been done twice per month since October 2003.

We generally found low phosphorus concentration in the groundwater samples and grab surface water samples with some peaks in both. Sampling during the highest creek flow has resulted in the highest concentrations, generally near 0.05 mg/L of dissolved reactive phosphorus. These concentrations were slightly higher than the concentrations in most of the wells, which were around 0.03 mg/L. Sampling is ongoing

to determine the effects of snow melt contributions. Results will be presented to show the seasonal effects of phosphorus in the hydrologically sensitive areas, as well as the relationships with other parameters such as nitrate-N and dissolved oxygen.