The Fate of Nitrogenous Fertilizer Applied to Differing Turfgrass Systems

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Nitrate is a widespread contaminant of groundwater supplies at the local and national levels. Leaching of nitrogen from turf systems is of concern for environmental and economic reasons. Past studies have documented that nitrogenous fertilizer applied to a turfgrass system can pose a threat to groundwater quality. Nitrate levels in potable groundwater must remain below 10 mg/L and, in suburban environments, levels can be elevated by lawn fertilizers as well as sewage septic systems. Over-fertilization can be an unnecessary expense not only for the homeowner but for golf courses, municipal parks and others involved with turf management. The turfgrass system is complex and a complete study requires an examination of multiple variables.

This study initiates, a tension lysimeter system, in two study plots to assess the leaching of nitrate from fertilizer through a turf system. The observations from this installation will be continued as part of an ongoing study of sites on Long Island. The two sites, located at the State University of New York (SUNY) at Stony Brook and the Suffolk County Water Authority (SCWA) at Oakdale, differ in the nature of turfgrass cover and management. The turfgrass at the SUNY site is newly planted sod and the SCWA turfgrass is greater than ten years in age. The SUNY site is fertilized according to the suggestions from the sod company and the SCWA is fertilized and managed by an outside landscaping company. The tension lysimeter system allows for the collection of soil water in a manner that minimizes soil disturbance. Nitrate nitrogen concentrations, were on average below drinking water standards, but some of the samples were above the standard. At these levels, the turfgrass system poses a threat to groundwater quality, depending on the extent of fertilization.