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Reducing impact of lawn fertilization on groundwater

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In this greenhouse experiment, researchers evaluated more than 80 combinations of N sources, rates, and application frequencies on three soil types in order to identify the best treatments resulting in high quality turf and low nitrate-N losses. Photo by Guillaume

Grégoire.

Lawns occupy a significant portion of land in urban and peri-urban environments. Thus, inputs used for lawn maintenance, such as fertilizers, can have a significant impact on the environment. For example, nitrogen can be leached as nitrate (NO_3^-) from lawn-applied fertilizer and eventually cause problems for aquatic life as well as human health. These losses are influenced by the type of soil underneath the turf and can be mitigated by modifying different fertilization practices.

In a new *Journal of Environmental Quality* study, researchers present results from a series of greenhouse experiments where they measured nitrate-N losses from several fertilizer sources applied at different rates and frequencies on turfgrass grown in three different soils: a sand/peat moss mix, a schist loam, and a clay loam.

Results show that using polymer-coated fertilizers at an annual rate ≤150 kg N ha^{-1} results in an acceptable turfgrass quality while maintaining low nitrate-N leaching losses. However, in clay and loam, N mineralization from soil organic matter resulting from soil disturbance had a stronger impact on nitrate-N losses than fertilization practices. These results will help lawn managers implement better fertilization practices, resulting in both adequate lawn quality and reduced environmental impact.

Dig Deeper

Côté, L., & Grégoire, G. (2021). Reducing nitrate leaching losses from turfgrass fertilization of residential lawns. *Journal of Environmental Quality*.

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