

Impact of lawns on nitrate contamination of ground water

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Abstract

Many local, regional and/or state agencies in the Northeast and New England have or are considering laws or land use regulations to limit or ban the use of nitrogen fertilizers on turfgrass sites like lawns, golf courses, parks, sports fields and sod farms. The nitrogen fertilizer restrictions are in response to the increasing level of nitrates in surface and/or ground water in urban and suburban watersheds where lawns in the broad sense make up a major part of the landscape. Land use regulations that limit the size of a lawn are based on estimating the loading rate on nitrate into groundwater by assuming an application rate and percent leaching (ranging as high of 25 to 50% of the amount of fertilizer nitrogen applied). Review of all the published scientific literature appropriate to the Northeast and New England on nitrate leaching from turfgrass sites revealed that the mean, median and range of per cent of the amount of fertilizer nitrogen that leached were 10.51%, 4.15% and 0 to 95%. The annual nitrate loading rate was generally below 24 kg of N/ha and only 8 % of the over 300 data points were above 49 kg of N/ha. The finding of these studies can be used to formulate best management practices as follows: limit irrigation to the amount lost by evapotranspiration; exclude nitrogen fertilization application at normal rates and with soluble sources from past November 1; and use a rate of nitrogen appropriate for the turfgrass species and use. Long term, slow release fertilizer sources had a similar amount of nitrate leaching as water soluble sources, however, under very rainy conditions, slow release sources had less nitrate leaching.