Phosphorus and Nitrate-N in Runoff from Simulated Fairways. (C05-shuman105513-Poster)

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Abstract:

An experiment was designed to determine the transport of nitrate-N and P from simulated golfcourse fairways to determine the potential for transport of nutrients to surface water. Fertilizer treatments were10-10-10 granular at 3 rates and rainfall events were simulated at 4 intervals after treatment (hours after treatment, HAT). Runoff volume was directly related to simulated rainfall amounts and soil moisture at the time of the event and varied from 24.3 to 43.5 % of that added for the 5.0 cm events and 3.1 to 27.4 % for the 2.5 cm events. The highest concentration and mass of P in runoff was during the first simulated rainfall event at 4 HAT with a dramatic decrease at 24 HAT and subsequent events. Nitrate-N concentrations were low in the runoff water (about 0.5 mg L-1) for the first three runoff events and was highest (about 1-1.5 mg L-1) at 168 HAT due to the time elapsed for conversion of ammonia to nitrate. Nitrate-N mass was highest at the 4 and 24 HAT events and step-wise increases with rate were evident at 24 HAT. Total P transported for all events was 15.6 and 13.8 % of that added for the 2 non-zero rates, respectively. Total nitrate-N transported was 1.5 and 0.9 % of that added for the two rates, respectively. Results indicate that turfgrass management should include minimum amounts of irrigation after fertilizer application and avoiding application before intense rain or when soil is very moist.

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