Turfgrass Fertilization and Water Quality

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Pollution of surface and groundwater are environmental concerns with the use of nitrogen fertilizers on turfgrass. A recent University of Maryland study (Gross et al., 1990, J. Environ. Qual. 19:663-668) determined losses of nutrients and sediments via runoff and leaching from turfgrass. The study compared N fertilizer applied in a liquid and granular form and an unfertilized control. Nitrogen (as urea) was applied at a rate of 4.5 lbs. per 1000 sq. ft. per year according to appropriate spring and fall feeding schedules. Surface runoff was collected from plots with slopes of five to seven percent from significant rainfall events throughout the year. Groundwater samples taken monthly at 0.75 m depth were analyzed for nitrate.

Although nutrient losses via runoff were small, total N in runoff was approximately two-fold higher in the liquid and granular treatments when compared to the unfertilized control. There was no difference between liquid and granular treatments with respect to runoff. The concentrations of nitrate in percolate under the granular, liquid and unfertilized control treatments were 1.02, 0.85 and 0.33 ppm. The liquid and granular treatments were significantly higher than the control but not different from each other. These nitrate concentrations are lower than the Environmental Protection Agency drinking water standard of 10 ppm nitrate and are considerably lower than nitrate concentrations previously reported under corn. This study demonstrated that very low concentrations of nitrate were found below the root zone of fertilized and unfertilized turf and that nitrogen and phosphorus losses in runoff from established turfgrass were low. Sediment and nutrient losses via runoff from established turf are generally low because of the resistance to surface water movement provided by a dense turf stand. The study concludes "that properly managed and judiciously fertilized turf is not a significant source of nutrients or sediment in surface or groundwater."

Answers to Crossword

Across	Down
5. Mathias	1. Jensen
10. Cammarota	3. Watson
19. Zontek	10. Cominski
26. Fitts	33. Stagg
30. Neus	42. Rudinski
35. Ratcliff	52. Braun
41. Pryseski	53. Grau
56. Gerard	
66. Shields	
75. Haske	
86. Dernoeden	
94. Walker	

Map to USNAGC and Hubbard Hall