
Pesticide and Nutrient Fate

pyrifos insecticides, and the fungicide metalaxyl.

Twenty centimeter diameter turf-soil cores were excavated to a depth of 61 cm from local field environments and transported to the laboratory one week prior to application and approximately 1, 14, 30, 60 and 120 days after application. Four cores were removed on each sampling date at each location. The cores were sectioned into verdure, thatch, mat and multiple soil depths, and then prepared for residue analysis.

Experiments addressing the fate of nitrogen and phosphorus were conducted at Iowa State University. Fourteen soil columns were encased in cement, extracted from the field, and transported to the greenhouse. Nitrogen and phosphorus were applied to the columns and two watering regimes of 2.54 cm (1 inch) immediately following nutrient application and four 0.63 cm (0.25 inches) applications during a one-week period were used to determine the effects of irrigation rates on nitrogen volatilization and movement through the turf/soil profile.

Washington State University

Quantification and Fate of Nitrogen from Amended Sand Putting Green Profiles - Dr. Stanton E. Brauen and Dr. Gwen K. Stahnke

The Pacific Northwest has a history of constructing sand greens from pure sand, some with coarse particle sizes and without amendment, to reduce the cost of construction. A major concern is whether nitrate nitrogen leaching from putting green profiles constructed of sand alone, or peat/soil amended sand, can be prevented through efficient irrigation practices, efficient nitrogen fertilizer application, reduction in total nitrogen fertilization rate, or use of deeper sand profiles. This research project will evaluate the susceptibility of these systems to nitrate nitrogen leaching and provide guidance for its correction, reduction or elimination.

Lysimeters were constructed during 1991 from local funds and labor. Thirty-six of the 1.2 m x 2.5 m (4 ft. x 8 ft.) lysimeters were seeded to creeping bentgrass in early October and were overseeded to local ecotypes of annual bluegrass in the spring of 1992. The turf is managed as a putting green and traffic is applied with a Brinkman traffic simulator equipped with golf cleats.

The growing medium consists of 30 cm (12 inches) of USGA specification sand, either alone or

amended with ten percent sphagnum peat and two percent fine sandy loam soil. The three annual nitrogen application rates are 195, 390, and 585 kg ha⁻¹ yr⁻¹ (174, 348, and 526 lbs. per A respectively) and two application methods (granular slow release/soluble N fertilizer in four-week applications and biweekly granular slow release N with liquid ammonium sulfate).

Leachate data collection began the last week of October, 1991, with the beginning of fall rains. Soil-water percolate from each lysimeter is monitored and quantified on 24 hour intervals during leachate production periods. Leachate samples are analyzed by nitrate and ammonium ion sensitive electrodes and ion analyzer.

University of Nevada, Reno

The Effect of Salinity on Nitrate Leaching from Turfgrass - Dr. Daniel C. Bowman, Dr. Dale A. Devitt, and Dr. Wally W. Miller

This project was initiated in March of 1991, and has a field (Las Vegas) and greenhouse (Reno) component to examine the effects of saline irrigation water on nitrate leaching from a soil root zone and on nitrogen uptake by turfgrasses.

Las Vegas: The irrigation system and sampling hardware (lysimeters, tensiometers, neutron probe access tubes, ceramic extraction cups, and associated plumbing) were installed at Horseman's Park in southeast Las Vegas during the spring and summer. Plots were then seeded with either 'NuMex Sahara' bermudagrass or 'Monarch' tall fescue at rates of 50 and 393 kg ha⁻¹ (45 and 350 lbs. per A), respectively. Each turf was established under typical fairway management conditions. Bermudagrass plots were overseeded with Palmer/Prelude perennial ryegrass in October. The saline irrigation treatments were initiated in January 1992, after which data collection began.

Reno: Seventy-two 15 cm (6 inches) diameter by 61 cm (24 inches) deep soil columns were equipped with ceramic extraction cups embedded in diatomaceous earth and back filled with a loamy sand. Each extraction cup is connected by tubing to individual collection bottles, which are in turn connected to a common vacuum line. The 36 columns then were seeded with either 'NuMex Sahara' bermudagrass or 'Monarch' tall fescue at the rates discussed above. Establishment and growth was rapid in the greenhouse for both species, and a dense sward has developed. Columns were