

ceramic extraction cups embedded in diatomaceous earth and backfilled 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 were then seeded with either 'NuMex Sahara' bermudagrass or 'Monarch' tall fescue at the rates discussed above. Establishment and growth has been rapid in the greenhouse for both species, and a dense sward has developed. Columns are fertilized once each month with ammonium nitrate (NH_4NO_3) at a rate of 45 lbs. N/acre. Supplemental iron (Fe-EDDHA) has been added regularly to correct some incipient chlorosis in the young bermudagrass. Salinity by leaching fraction treatments were started in January and samples will be collected weekly and analyzed for nitrate and ammonium.

In addition to setting up the column experiment, an experiment was conducted in nutrient solution culture to examine the effects of salinity on nitrogen uptake. Briefly, two cultivars of tall fescue were grown in solution culture for four months. 'Monarch' was chosen as a relatively salt tolerant and 'Finelawn' as a salt sensitive cultivar. Nitrogen treatments were imposed to produce N-replete turf (no N stress) and moderately N-deficient turf (daily additions of nitrate at suboptimal rates to mimic the more typical turf condition). Rootzone salinity was imposed incrementally over four weeks to final salt concentrations of 0, 20, 40, and 80 mM using a combination of NaCl and CaCl_2 at a molar ratio of 8:1. Nitrogen uptake was measured for either nitrate and ammonium nitrogen over a 24 hour period and these results are currently being analyzed.

Dr. Daniel Bowman
Dr. Dave Devitt
Dr. Wally Miller

University of Florida, IFAS

Mobility and Persistence of Turfgrass Pesticides in a USGA Green

The first-year project objectives were to construct, install, and test lysimeters for collecting percolate water in a USGA-specification green; evaluate various methodology practices for pesticide analysis; develop a quality assurance and

control (QA/QC) program; and to engage in preliminary data collection. These objectives have been completed.

Stainless-steel lysimeters were installed in a USGA-specification green at the University of Florida, IFAS, Ft. Lauderdale Research and Education Center. They were fitted with stainless-steel lines for off-site collection of percolate water. Lysimeter performance was tested in three ways to determine the completeness of sample recovery and to investigate the effect of sample residency time. It was determined that recovery equaled or exceeded 97 percent. The concentration of fenamiphos remained virtually unchanged after 4 days residency in the collection reservoir, whereas after 1 and 4 days residency, diazinon was only 94 and 0 percent, respectively, of that injected.

A 19-section, 33-page quality assurance/quality control plan was developed to delineate field and laboratory protocols for such items as sampling, calibration, error determinations, chemical analyses, data reduction and validation, corrective actions, and reporting.

Methods were validated for determining certain organo-phosphate pesticides in percolate water, thatch, soil, and grass clippings.

In a preliminary field study, fenamiphos applied to bermudagrass (*Cynodon* spp.) turf was observed primarily in thatch over a 7-day period. Fenamiphos in the underlying soil generally was only 10 percent of the amount found in the thatch, and seven days after application, fenamiphos in thatch was only 10 percent of the amount observed two days after application.

Dr. George H. Snyder
Dr. John L. Cisar

Pennsylvania State University

Surface Runoff of Pesticides and Nutrients Applied to Golf Turf

This year was dedicated to the establishment and characterization of the runoff plots. Plots were established with creeping bentgrass and perennial ryegrass. Shortly after germination, irrigation was used to produce steady-state runoff, and hydrographs were generated from the runoff data.