
Pesticide and Nutrient Fate

fertilized once each month with ammonium nitrate at a rate of 50 kg N ha⁻¹ (45 lbs. per A). Supplemental iron was added regularly to correct some incipient chlorosis in the young bermudagrass. The leaching fraction treatments were started in January, 1991, and samples were collected weekly and analyzed for nitrate and ammonium.

Pennsylvania State University

Surface Runoff of Pesticides and Nutrients Applied to Golf Turf - Dr. Thomas L. Watschke

Research plots were established with creeping bentgrass and perennial ryegrass on a sloped area to evaluate pesticide and nutrient runoff. Shortly after germination, irrigation was used to produce steady-state runoff, and hydrographs were generated from the runoff data. In 1992, leachate and runoff samples were evaluated for nitrogen and phosphorous levels. Currently, pesticide concentrations in runoff and leachate are being analyzed.

University of Massachusetts

Volatilization and Dislodgeable Residues of Pesticides and Nutrients Applied to Golf Turf - Dr. Richard J. Cooper and Dr. John M. Clark

The objective of this study is to determine the gaseous losses (volatilization) and dislodgeable foliar residues of pesticides applied to golf course turf. To date, limited work has shown that volatile loss of some pesticides applied to turf approaches 15 to 25 percent of the total applied.

Airborne pesticide residues were assessed using the high-volume/theoretical profile shape method (i.e., high volume suction fan sampling air above the turfgrass area). Dislodgeable residue samples are determined by vigorously wiping cheese cloth over several one-square-foot areas. During the last two years, volatile and dislodgeable samples for pesticides were collected over a two week sampling period. Samples were extracted and stored for future analysis.

University of Florida, IFAS

Mobility and Persistence of Turfgrass Pesticides in a USGA Green - Dr. George H. Snyder and Dr. John L. Cisar

The purpose of this project is to evaluate

percolate water from a USGA-specification green and evaluate various methodology practices for pesticide analysis.

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.

Methods were validated for determining certain organo-phosphate pesticides in percolate water, thatch, soil, and grass clippings. In 1992, the fate of six pesticides were evaluated and the methods were developed for determining dislodgeable residues.

University of Georgia

Evaluation of the Potential Movement of Pesticides Following Application to a Golf Course - Dr. Albert E. Smith and Dr. David C. Bridges

The objectives of this project are to: 1) determine the potential movement of pesticides from treated bermudagrass and bentgrass greens into surface runoff and groundwater, and 2) determine the potential movement of pesticides from treated bermudagrass fairways into surface runoff and groundwater.

The greenhouse lysimeter facility has been constructed to simulate golf course greens with 'Pennecross' bentgrass and 'Tifgreen' bermudagrass turf. Thirty-six individual lysimeters were constructed by mounting a turfgrass growth-box on a PVC column containing a soil profile developed according to USGA specifications. An automatic track-irrigation system was developed for controlling the rates and time for irrigation. The daily irrigation of 0.63 cm (0.25 inches) of water and a weekly rain event of 2.54 cm (1 inch) are controlled by an automatic timer. Pesticide treatments began for this project in October, 1991.

The field lysimeter facility consists of small bermudagrass and bentgrass greens established on 56 cm (22 inches) diameter lysimeters installed below the sod. The 20 lysimeters have drainage lines installed at the bottom of the lysimeter for collection of leachate from the soil profile developed according to USGA specifications.