

UCRTRAC Accumulative Research Summary
Section B: Impact of Turfgrass Chemicals and Fertilizers on the Environment
Project 2

Title: Nitrogen Leaching and Best Management Practices for Overseeded Bermudagrass Fairways.

Objective: To investigate the effect of soil type (sandy loam or loamy sand), annual nitrogen-fertility program (6.0 and 3.0 lb N/1000 ft² or 5.0 and 5.0 lb N/1000 ft² for a 24- to 27-week cool season and a 22- to 23-week warm season, respectively), and irrigation amount (100% or 130% ET crop/distribution uniformity) on NO₃⁻-N leaching.

Location: A specially constructed lysimeter facility located at the UCR Turfgrass Field Research Facility. The plots were maintained similar to fairway conditions.

Duration: 3 years

Funding Source: Coachella Valley Water District
Hi-Lo Desert GCSA

Findings:

- Soil type significantly affected the mass of NO₃⁻-N leached and the NO₃⁻-N concentration of the leachate, while soil type and (irrigation plus rain) amount significantly affected leachate volume.
- The sand had no harmful leaching for the last 2.5 years of the study and actually the leachate from the sand had a lower seasonal flow-weighted concentration of NO₃⁻-N than the irrigation water: 0.1 to 0.2 ppm NO₃⁻-N for the leachate vs. 3.9 to 5.1 ppm NO₃⁻-N for the irrigation water. Note that the EPA threshold level is 10.0 ppm NO₃⁻-N. During the cool-season of the first year, the leachate from the sand had a flow-weighted concentration of 4.3 ppm NO₃⁻-N.
- During the last 2.5 years of the study, the leachate from the loam had a flow-weighted concentration of NO₃⁻-N that ranged from 3.1 to 6.3 ppm. During the cool-season of the first year, the flow-weighted concentration of NO₃⁻-N was 11.8 ppm.
- Going into this study, we expected the sand to leach more NO₃⁻-N than the loam. In 1999, we determined that the bermudagrass possessed more and deeper roots in the sand than the loam. We believe that the increased rooting in the sand resulted in increased N uptake, and would explain the minimal NO₃⁻-N leaching from the sand, relative to the loam.

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Status: A 3-year study was completed. Information associated with this study was presented at a UCR Turfgrass Research Conference and Field Day, at a CGCSA annual meeting, and at an American Society of Agronomy annual meeting. Information associated with this study was published in abstracts from presentations, *Better Turf Thru Agronomics*, and *Turf Tales Magazine*. We plan to prepare a technical article for a scientific journal.
