

Turfgrass Management, Soil and Water Quality Program



Program Update

The leaching potential of seed treated with fungicides versus a broadcast application of the same fungicide to bare sand will be evaluated along with fertilizer nitrate leaching. This is a joint project with Frank Rossi.

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CORNELL UNIVERSITY TURFGRASS TIMES

This is an important period for my three graduate students, as each is completing their Master's degree. James Wasura, completing his Masters of Professional Studies degree, has been studying the stability of natural zeolite soil amendments. We have reported on his results previously. He has taken a job with Family Golf Centers to manage one of their golf facilities.

Petri Anton of Italy, competing his Masters of Science degree this spring, has been evaluating the role that cation exchange capacity (CEC) of sand plays in the growth and nutrition of creeping bentgrass greens. By varying the amount of natural zeolite and reed-sedge peat to sand he was able to construct sand based root zones with CEC that range from 0.1 cmol/kg (sand) to 10 cmol/kg. He found that as the CEC increased that growth of creeping bentgrass also increased in a somewhat linear fashion. He is still analyzing the nutritional data.

Ruby Beil is finishing her Masters of Science degree this spring and will be staying on for her Ph.D. She has studying the use of perennial plants (tall fescue and red maple) in phytoremediation of lead contaminated soils. Phytoremediation is an inexpensive approach of using plants to cleanup industrial contamination such as heavy metals and toxic organic compounds. She has been comparing the ability of the two perennial plants to remove lead from soil as compared to the known lead hyper-accumulator, Indian mustard. Lead in soil is often not very mobile or likely to be taken up by plants. She added a chelate to make the lead more water-soluble so that the plants could take it up. She found that the Indian mustard was able to extract more lead from the soil than either of the other two plants in a short 3-month study in the greenhouse. Tall fescue was second and the red maple extracted very little lead. It appears that the amount of lead that these plants could extract from the soil was related to how much water they took up (more water uptake more lead uptake) and their ability to tolerate lead before it killed them. Ruby will be studying phosphorus and pesticide runoff as part of her Ph.D. program

What's planned for 1999? We will repeat a project started last summer to develop a better understanding of the impact that golf greens may have on water quality during establishment. The leaching potential of seed treated with fungicides versus a broadcast application of the same fungicide to bare sand will be evaluated along with fertilizer nitrate leaching. This is a joint project with Frank Rossi, Don Lisk and Pim Larsson-Kovach, funded in part by Match Funds

Program with NYSTA and Novartis. A new project will be initiated to determine if periodic saturation of a sand-based root zone with super-oxygenated water can increase soil oxygen levels and thus improve root growth. This technology was developed to remediate groundwater contamination from pesticides and other organics like gasoline by the Matrix Environmental Technologies Co. of Orchard Park, NY. We will be developing new test areas to study runoff from turf including research size plots, small scale actual field sites like several holes on a golf course to possible an entire small watershed containing a residential subdivision.

A. MARTIN PETROVIC
CORNELL UNIVERSITY TURFGRASS TEAM

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