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The ongoing research will identify nitrogen and phosphorus fate in a mature turfgrass system and will provide further data on whether or not fertilizer recommendations for “mature” turfgrass stands need to be altered after a certain period of time to eliminate the potential for excessive nitrate-nitrogen leaching and possible phosphorus leaching.

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Research conducted since 1998 investigated the amount of nitrate leaching from two nitrogen rates, 2 and 5 lbs. N/1000 ft.²/year. NO₃-N concentrations in leachate for the low N rate were typically below 5 ppm. For the high N rate, NO₃-N concentrations in leachate were typically greater than 20 ppm. Our research indicates that total yearly applications of 5 lbs. N/1000 ft.² in the form of urea to a mature Kentucky bluegrass stand may result in high levels of NO₃-N leaching from the soil profile.

This research is an ongoing project that has been funded through 2007 by the USGA at approximately \$13,000/year. In 2007, nitrogen and phosphorus fate will be measured in the lysimeters and the adjacent microplots. The high nitrogen rate was adjusted from 5 lbs. N to 4 lbs. N/1000 ft.²/year in 2004. The low nitrogen rate remains at 2 lbs. N/1000 ft.²/year. Phosphorus from triple superphosphate (20% P) will be applied at two rates, 1 and 2 lbs. P/1000 ft.²/year split over two applications in May and September. Results from 2003 indicated that the high N rate still resulted in very high levels of NO₃-N leaching. Results through mid-year 2006 now indicate that the amount of NO₃-N leaching from the high N rate plots has decreased from approximately 30-40 ppm to approximately 10-20 ppm NO₃-N. This result stresses the importance of investing in long-term research projects.

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- Publication of research results in *Crop Science*.
Frank, K.W., K. O'Reilly, J.R. Crum, and R.N. Calhoun. 2006. The fate of nitrogen applied to a mature Kentucky bluegrass turf. *Crop Sci.* 46:209-215.
- Presented results at American Chemical Society Symposium in Washington, D.C., August 2005.
- Submitted book chapter for review: Frank, K.W. 2006. Nutrient fate in a mature turfgrass stand. *In* A.M. Petrovic, B. Horgan, M. Carroll, and M. Nett (ed.) *The fate of turfgrass nutrients and plant protection chemicals in the urban environment*. ACS Books/Oxford University Press.

- Presented results at Tri-Society Annual Meetings in Salt Lake City, Utah, Nov. 2005.