



Super Science

// UNDER THE SURFACE

EFFECT OF TURFGRASS MANAGEMENT ON WATER QUALITY IN THE CHESAPEAKE BAY WATERSHED

Chantel Wilson, Stephen Schoenholtz, Ph.D. and Erik Ervin, Ph.D.

High-quality turf on golf courses is maintained with fertilizer, irrigation and pesticide inputs. As a result, they are perceived as significant contributors to water pollution. Hundreds of courses are located in the Chesapeake Bay Watershed, where there is a history of nutrient pollution and eutrophication problems, resulting in major declines in fish and shellfish populations.



Chantel Wilson measuring velocity at one of the participating golf course research streams, January 2014.

No completed studies have investigated the connection between golf course turf management and nutrient deposition or attenuation in Virginia streams. The project goal is to quantify effects of turf management on water quality by comparing areas upstream (INs) and downstream (OUTs) of courses. Data will be compared to the Chesapeake Bay Total Maximum Daily Loads for nitrogen and phosphorus, clarifying if future regulation of water quality is warranted for golf course management.

Data for 11 seasons at six courses in the James River Basin within the Chesapeake Bay Watershed have been collected. No significant impairment trends of dissolved oxygen, conductivity, temperature or pH have been observed to date. Nitrate-N was always below the 10 mg L⁻¹ EPA drinking water standard. Phosphate-P in downstream waters was below

the 0.05 mg L⁻¹ EPA recommendation. There appears to be no significant differences between the IN and OUT locations at all sites for ammonium-N and phosphate-P.

A weak significant increase in nitrate-N was observed at one stream, but is at a low level. Overall, no significant degradation of local water quality appears from the six golf courses studied.

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Chantel Wilson, Stephen Schoenholtz, Ph.D. and Erik Ervin, Ph.D., Virginia Tech. Contact Chantel at cwilson5@vt.edu for more information.

ON THE MOVE

PAUL KOCH JOINS UNIVERSITY OF WISCONSIN-MADISON DEPARTMENT OF PLANT PATHOLOGY

Paul Koch was recently hired as an assistant professor in the Department of Plant Pathology at the University of Wisconsin – Madison. The position has a 70 percent extension appointment, 20 percent teaching and 10 percent research. His research will likely focus on the impact of environmental conditions on fungicide persistence on turfgrass, snow mold diseases and root-infecting diseases.



Koch received his Ph.D. in Plant Pathology from the University of Wisconsin – Madison in 2012, with a minor in Molecular and Environmental Toxicology.

Before joining the faculty, Koch managed the Turfgrass Diagnostic Lab (TDL) for the University of Wisconsin from 2005 to 2013. The TDL is a non-profit diagnostic facility specializing in fast, accurate diagnoses from both professional and do-it-yourself turfgrass managers across the country. Koch will continue to oversee both the TDL and the fungicide testing program.

Koch can be reached via email at pikoch@wisc.edu, by phone at 608-576-2673, or via Twitter at @uwpaul.

“IF NICKEL LEVELS CAN BE INCREASED VIA GRANULAR FERTILIZER APPLICATION, FERTIGATION OR INJECTION TECHNIQUES... FOLIAR-APPLIED UREA MAY BE MORE EFFICIENTLY ABSORBED.”

Richard J. Hull, Ph.D.

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