

Nutrient and Pesticide Runoff from Home Lawns and Golf Courses

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The University of Minnesota turfgrass science program strives to define solutions that are more sustainable, requiring fewer inputs of water, fertilizer, pesticides and labor. Environmental stewardship includes looking for new approaches to reduce adverse environmental impacts of current practices. One strategy is to replace traditional turfgrass with low-maintenance turfgrass species. Fine fescue grasses have been shown to provide characteristics desirable for golf course fairways and home lawns. However, we observed greater volumes of runoff from a low-maintenance fine fescue mixture (FFM) compared to traditional creeping bentgrass (CBG) turf managed as a golf course fairway, suggesting greater off-site transport of applied fertilizer may occur with the fine fescue. Thus side-by-side studies comparing runoff from plots planted in CBG or FFM, similarly managed as a golf course fairway, were conducted to measure runoff volumes and the amount of ammonium nitrogen ($\text{NH}_4\text{-N}$) and nitrate nitrogen ($\text{NO}_3\text{-N}$) transported off-site with runoff. Greater runoff volumes and mass of applied nutrients were measured in the runoff from the FFM, representing a 38% and 56% median increase in the off-site mass transport of $\text{NH}_4\text{-N}$ and $\text{NO}_3\text{-N}$ with surface flow. Results of this research will be useful to grounds superintendents and researchers for selecting and developing management strategies to improve environmental stewardship of managed turf while providing desired turf quality and function.

