Report explains relationship between turf grass, water quality

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Lawn fertilizer misuse is one of many factors degrading water quality in Florida and summertime fertilizer bans may not be a quick-fix solution, according to an updated report released this week by University of Florida scientists.

Numerous published, peer-reviewed studies confirm that turf grass is healthiest and absorbs the most fertilizer nutrients during the active growing months of summer. Research also shows that nutrient leaching and run-off are greatest during other times of the year.

These findings are highlighted in the updated report, "Urban Water Quality and Fertilizer Ordinances: Avoiding Unintended Consequences," available online at edis.ifas.ufl.edu/ss496 . The report is a literature review of more than 100 scientific papers published nationally in the past 40 years. Together, these papers provide a clearer picture of the relationships between fertilization, leaching, run-off and water quality, researchers said.

Pollution in Florida's lakes, rivers and coastal areas is a critical concern and many cities and counties have begun to consider regulatory measures to help protect water quality. As the report shows, nutrients can enter groundwater and surface water from a variety of sources including fertilizer, pet waste, septic tank waste, leaf litter, combustion products and atmospheric deposition.

The updated report, issued by UF's Institute of Food and Agricultural

Sciences, was developed to provide additional information to regulatory agencies as well as industry, community and government leaders and environmental organizations as they engage in these important discussions, said Terril Nell, chairman of UF's environmental horticulture department and a co-author of the updated report.

"Water quality is vital to the future of our state, and it is critically important that we understand the complexity of the nutrient problem we are dealing with," Nell said. "This information could help us develop solutions that provide us with lasting and measurable results."

Some other key points cited in the report:

- Properly maintained lawns and landscapes provide excellent soil erosion control, enhance entrapment and uptake of the nutrients nitrogen and phosphorus, and improve aquifer recharge.

- Healthy turf grass loses almost zero nutrients when it's fertilized and irrigated according to science-based best management practices, or BMPs.

- Maintaining healthy turf grass requires the addition of nutrients during summer months, when grasses have the greatest ability to absorb nutrients due to more active root and shoot growth.

- Nutrient run-off and leaching will increase when lawns are overfertilized, and when fertilizer is applied to unhealthy turf.

- Science-based BMPs should be combined with education programs, for maximum improvement of nutrient management and its impact on water quality.

- Wintertime fertilizer bans are part of a comprehensive approach to water pollution problems in Wisconsin, Minnesota and Michigan. They have banned fertilizer applications during cooler months when grass is dormant, but not in the summer or other warm months considered active growing periods.

Plant nutritionist George Hochmuth, a professor in the UF soil and water science department and senior author of the report, said the research helps shed light on the relationship between urban nutrient sources and excessive algae growth, which can occur in water bodies with elevated concentrations of nitrogen and phosphorus.

“Controlling nutrients at the source is a sound approach to reducing what gets moved downstream into our water systems,” Hochmuth said. “Unfortunately, there are no data pinpointing a single source as the largest factor.”

For homeowners, the updated report underscores not only the importance of reading and following fertilizer label instructions, but also the importance of following proper irrigation practices, said Chris Martinez, an assistant professor with UF’s agricultural and biological engineering department and a co-author of the new report.

Bryan Unruh, an environmental horticulture professor at UF’s West Florida Research and Education Center in Jay and report co-author, said the updated report is an ideal one-stop information source for any Florida resident who wants to understand the issues surrounding urban nutrient sources and water quality.

“The body of scientific literature that’s out there is robust, and the reader should come away well-informed,” Unruh said.

The first version of the report was published in 2009.

Provided by University of Florida