Science Societies

Biosolids improve anthropogenically disturbed urban turfgrass system

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Aerial photo of a research site in Blacksburg, VA in July 2018 showing the effects of no irrigation during summer heat stress and irrigation at 80% evapotranspiration. Plot boundaries marked with orange paint define areas of differing fertility amendments: biosolid

based, synthetic fertilizer, or a combination of the two. Photo courtesy of Dr. David McCall.

Traditional urban turfgrass systems require inputs of synthetic fertilizer and irrigation to maintain turfgrass quality. The use of exceptional quality biosolids presents an opportunity to reduce synthetic fertilizer use and irrigation. However, the use of biosolids in turfgrass systems has not been well documented.

A recent article published in *Crop Science* reports on a five-year study of an urban turfgrass system. Tall fescue either received irrigation year-round or no irrigation during summer heat stress and received either biosolid-based fertility, synthetic fertilizer, or a combination of the two.

Biosolid amendments reduced soil bulk density and increased soil organic carbon and nitrogen stocks compared with synthetic fertilizer. No irrigation during summer stress resulted in greater soil organic carbon and nitrogen than irrigated treatments. Repeated applications of iron-enriched biosolids increased total phosphorus but did not increase water-soluble phosphorus compared with synthetic fertilizer. The synthetic fertilizer resulted in unacceptable quality turf 68% of the time while biosolids applied at the agronomic nitrogen rate maintained acceptable quality 86 to 92% of the time.

Biosolid application to turfgrass can assist in sustainably reusing biosolids and reduce synthetic fertilizer use. This study suggests biosolids are a better long-term turfgrass fertility approach while increasing soil organic carbon and nitrogen.

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Badzmierowski, M.J., Evanylo, G.K., & Ervin, E.H. (2020). Biosolids amendments improve an anthropogenically disturbed urban turfgrass system. *Crop Science*, *60*, 1666–1681. **https://doi.org/10.1002/csc2.20151**

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