Growth and Nutrient Content of Creeping Bentgrass on Coal Combustion By-product-Amended Putting Greens. (C05-schlossberg092043-Oral)

Authors:

- M.J.Schlossberg* - *Univ. of Georgia*
- W.P.Miller - *Univ. of Georgia*

Abstract:

Coal combustion by-products (CCBP) have been successfully applied in horticultural and land reclamation endeavors. This study determined the suitability of sand-sized bottom ash (BA) and silt-sized fly ash (FA) as substitute aggregate in putting green root mixes. Columns were sodded with creeping bentgrass (Agrostis stolonifera) and mowed, irrigated, and forcefully compacted to simulate conditions typical of putting green usage. Over the 1.5-y study, leachate was collected by pore volume (PV) and analyzed for nutrient and metal concentrations. Bentgrass leaf clippings were also collected and analyzed. Concentrations of some regulated metals measured in the first PV of leachate from FA-amended root mixes exceeding drinking water standards. Metal concentrations in percolate diminished to levels equal to the control at >4 PV. Micronutrient concentration in leachate was high but not phytotoxic to bentgrass. Nutrient and trace metal levels in leaf tissue varied with mix and time with some interactions. Root growth was not inhibited by CCBP inclusion. Further research is required to determine CCBP-inclusive root mix formulations that best foster turfgrass health and environmental stewardship under intensive use.

Corresponding Author Information:

Maxim Schlossberg
Univ. of Georgia
3111 Miller Plant Sci.
Athens, GA 30602-7272

phone: 7065422953
e-mail: turfboy@usa.com

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