Effects of Nitrogen and Potassium on Turf Performance: Exploiting N X K Interactions. (C05-ebdon141600-Poster)

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Abstract:

Potassium (K) interaction with nitrogen (N) is not well understood and K rates vary widely among turfgrass managers. Three rate levels of K (49, 245, and 441 kg ha-1) applied in combination with 5 rate levels of N (49, 147, 245, 343, and 441 kg ha-1) were evaluated for their interactive effects. Soil K prior to N-K treatment was high (205 mg kg-1), so no additional K was recommended based on soil test. Turfgrass quality (TQ), shoot growth (clipping yield), root growth by soil depth (0 to 10, 10 to 25, 25 to 45, and 45 to 65 cm), disease, and tissue K were assessed over 2 years. Fertilizer N (urea) and K (KSO4) were applied monthly (49 kg ha-1) depending on the N-K rate to 'Palmer II' perennial ryegrass turf growing on a silt loam soil. Partitioning of the N x K term identified interactions between N and K, indicating K responses were N dependent. Shoot growth and tissue K increased with added K at 343 and 441 kg ha-1 of N. Shoot growth increased by as much as 55%, root growth (10 to 25 cm depth) increased by as much as 50%, and TQ increased significantly with added K at 343 kg ha-1 of N. Rhizoctonia blight was not altered by K while typhula blight severity increased with K at 441 kg ha-1 of N. Wear and drought evaluations are planned.

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