

**Research Topic: Creeping Bentgrass response to Various Soluble Organic Nitrogen and Phosphorus Fertilizers Derived from Bone, Blood Meal and Soy Protein on a Sand-based Green (2007). C.A. Bigalow and G.A. Hardebeck, Purdue University**

Creeping bentgrass (*Agrostis stoloniferous*) maintenance on putting greens requires intensive management practices including the application of slow release fertilizer materials to maintain superior turfgrass color and quality for an extended period of time. Cool-season turfgrasses respond differentially to N sources depending on their release characteristics, soil texture, and organic matter composition. **The objective of this experiment was to evaluate creeping bentgrass response after treatment with various fertilizers containing differing percentages of soluble organic nitrogen (N), including natural organics containing soy and food grade protein (Green Spec), dried poultry manure (Earthworks), and a traditional synthetic slow release source like methylene urea (Nutralene) on a sand-based creeping bentgrass green.**

Five N sources including Green Spec 16-4-8 and 7-7-7, Earthworks 5-4-5, Nutralene 38-0-0, and urea 46-0-0 were applied at 1.0 lbs N/1000 sq ft/45 days to 'Pennlinks' creeping bentgrass. Plots (5 by 10 ft) were arranged in a randomized complete design and replicated 3 times. Treatments were initiated on 21 May. Plots receiving urea only were applied 4x on 14 day intervals with subsequent applications occurring on 4 and 18 June and 2 July, 2007. Visual ratings and chlorophyll meter readings were taken weekly.

In general, the natural organic fertilizers provided significantly better creeping bentgrass color and quality than the methylene urea and untreated control (Figure 1). Among the natural organics and early in the study period, the soy and protein N source (Green Spec) trended towards providing the best quality and color. The Green Spec (7-7-7) provided significantly better color and quality than the composted manure (Earthworks) and urea (46-0-0) on two rating dates, June 1 and June 15 (Figure 1). This can likely be attributed to the small amount (2%) of soluble N  $[(\text{NH}_4)_3\text{PO}_4]$  in the formulation. From June 22 and until the end of the experiment no significant difference in creeping bentgrass quality and color occurred, although turf receiving the urea treatment improved in the latter half of the experiment because it was being re-applied on 2 week intervals. Mean turfgrass quality and color were similar for all natural organic fertilizers although the Green Spec 7-7-7 trended as the highest. In addition, mean clipping yields were significantly higher for the Green Spec 7-7-7 suggesting that the product is likely best applied at rates less than 1 lb N/M. This increase in clipping yield did not have an effect on green speed, however.

Chlorophyll meter readings were taken as a means to quantify creeping bentgrass color. Mean canopy greenness (chlorophyll meter readings) were significantly higher for the Green Spec (7-7-7) than Green Spec 10-2-4, Earthworks (5-4-5), Nutralene (38-0-0), urea (46-0-0) and the untreated control (Figure 2).

**Creeping bentgrass color and quality response to natural organic fertilizers was better than from methylene urea on a sand-based putting green. These results indicate an initial (2-3 week) improved creeping bentgrass color and quality response to the Green Spec (7-7-7 and 16-4-8) fertilizers compared to Earthworks (5-6-5), Nutralene (38-0-0), and urea (46-0-0). All slow release fertilizers treatments provided 7 weeks of acceptable turfgrass overall quality. When applying Green Spec (7-7-7) to creeping bentgrass and sand based putting greens, rates < 1 lb N/M and specifically 0.3-0.5 lb N/M are recommended.**

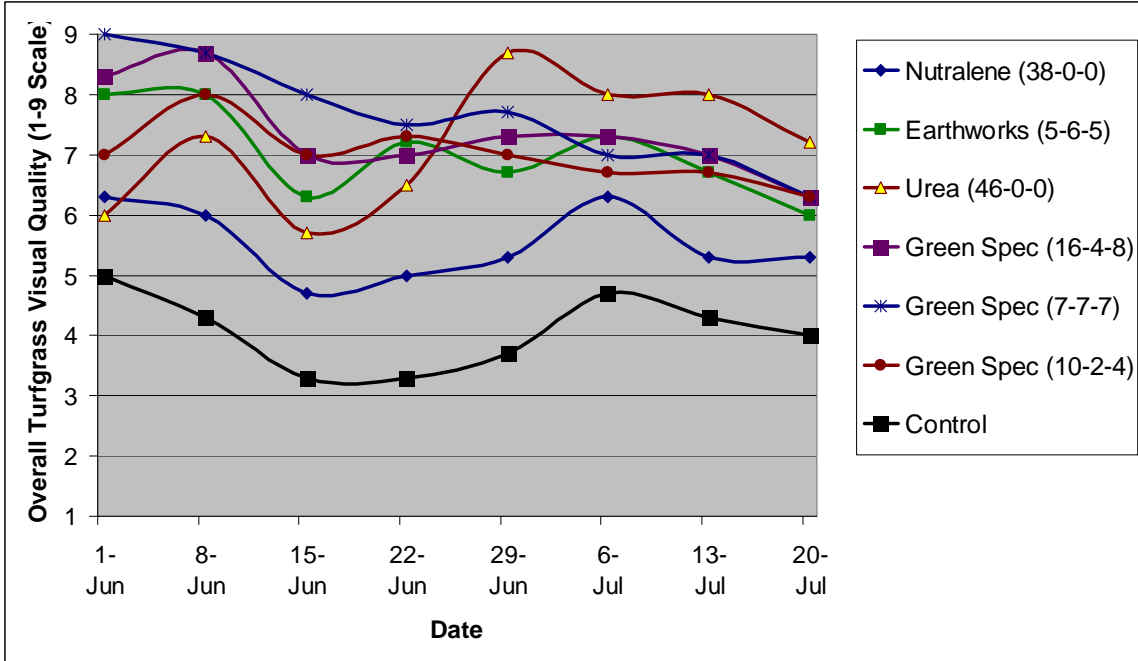


Figure 1. Overall creeping bentgrass quality as effected by various N sources containing differing percentages of soluble organic nitrogen (N), including natural organics containing soy and food grade protein (Green Spec), dried poultry manure (Earthworks), traditional synthetic slow release source like methylene urea (Nutralene), and urea (46-0-0) on a sand-based green.

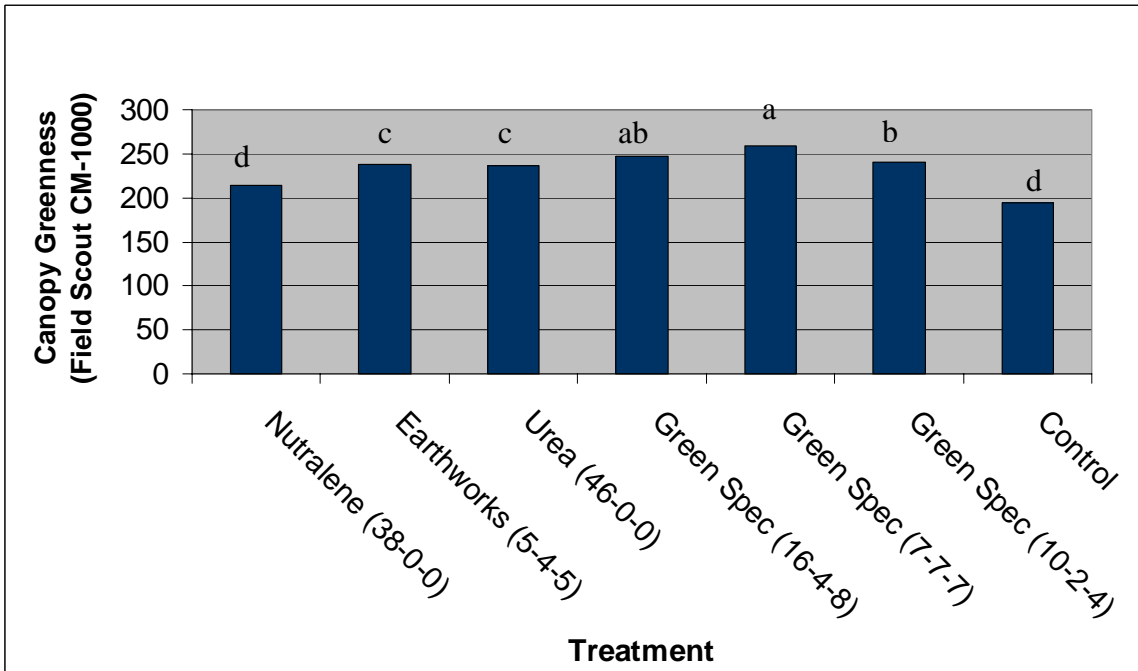


Figure 2. Mean canopy greenness as measured by a chlorophyll meter and as effected by various N sources including fertilizers containing differing percentages of soluble organic nitrogen (N), including natural organics containing soy and food grade protein (Green Spec), dried poultry manure (Earthworks), traditional synthetic slow release source like methylene urea (Nutralene), and urea (46-0-0) on a sand-based creeping bentgrass green.