

Tour Stop #3: Nitrogen Carrier Effects on Creeping Bentgrass Grown on Three Rootzones

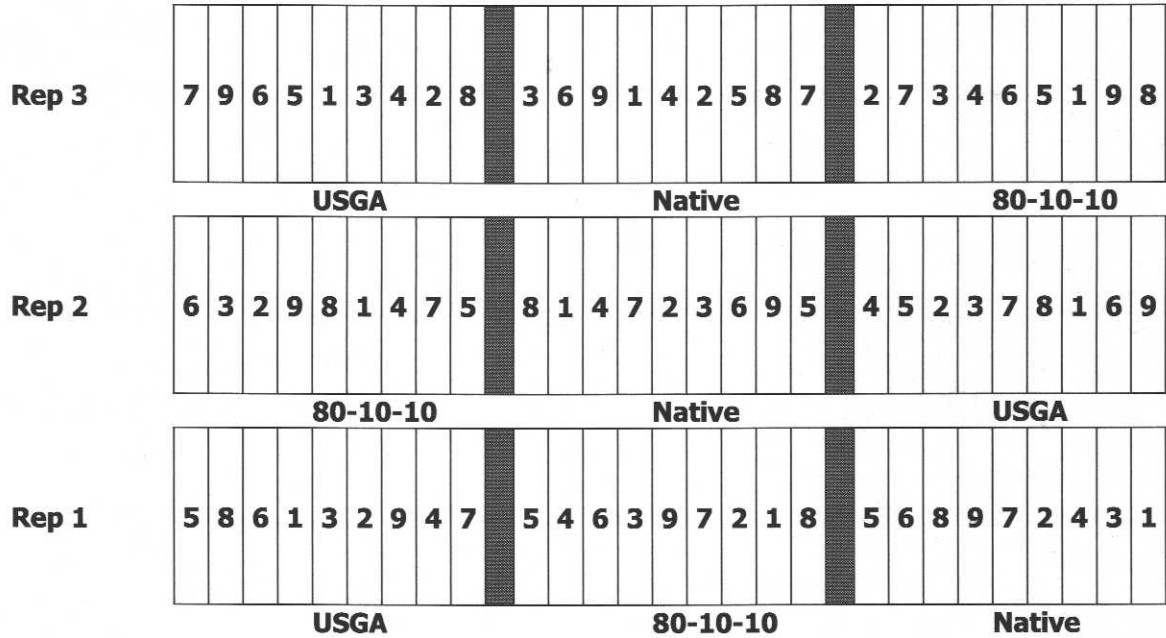
Miyuan Xiao, Kevin Frank, Ph.D., Thom Nikolai, Ph.D.
Department of Crop and Soil Sciences
Michigan State University

Recently there has been great discussion in the turfgrass scientific community over the accuracy of using soil and tissue test data to determine fertilizer recommendations for putting greens. The research objective was to determine the effect of different nitrogen carriers on creeping bentgrass quality, soil test values, and tissue test values for three putting green rootzones.

Research was initiated in 2009 at the Hancock Turfgrass Research Center on the campus of Michigan State University. The nitrogen carrier treatments were urea, methylene urea, natural organic, foliar, and an untreated control. The urea, methylene urea, and natural organic were applied at 0.5 lb N/1000sq ft/month from June through November. The foliar treatment was applied at two rates, 0.25 lb N/1000sq ft/month and 0.5 lb N/1000sq ft / month from June through November. All treatments were applied to Penn A4 creeping bentgrass grown on three rootzones. The three rootzones were a United States Golf Association specification rootzone, sand/peat/soil rootzone (80-10-10) and a native soil sandy clay loam.

Turfgrass color, quality and chlorophyll ratings were measured weekly. Soil infiltration test was conducted using a double ring infiltrometer in October. Soil samples to a 4 inch depth and tissue samples were collected in October and analyzed for macro-nutrients levels. Results indicate that the urea and methylene urea treatments had the highest turfgrass color, quality, and chlorophyll ratings. All fertilizer treatments, regardless of rootzone, had higher color, quality, and chlorophyll ratings than the untreated control. Across all fertilizer treatments, the native soil and 80-10-10 rootzone had higher turfgrass color, quality, and chlorophyll ratings than the USGA rootzone. Following one year of fertilizer treatments, there was no effect of fertilizer treatment on soil test levels.

Plot map:



- 1 Untreated control
- 2 Grigg Bros. all natural organic (10-2-4)
- 3 Methylene urea (40-0-0)
- 4 Urea (46-0-0)
- 5 Urea+ CaHPO4
- 6 Urea + Pro Turf Super K (0-0-45)
- 7 Grigg Bros. Gary's green(1*) (18-3-4)
- 8 Grigg Bros. Gary's green(1*) + Grigg Bros. Turf Rally (16-4-8)
- 9 Grigg Bros. Gary's green(2*)