ROOT ZONE pH AND PENN A-4 CREEPING BENTGRASS SHOOT/ROOT GROWTH

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Root zone pH influences nutrient availability, disease susceptibility and growth during both establishment and maintenance of Penn A-4 creeping bentgrass putting greens. While the optimal pH range for creeping bentgrass is considered to be 5.5 to 6.5, sand putting greens constructed in the Mid-Atlantic and Midwest containing slight to moderate (1 percent to 5 percent) calcite inclusions are buffered to higher pH values. Further alkalization via topdressing sand or irrigation water inputs offsets natural acidification processes at the root zone surface. These issues beg a common question among superintendents: Is nutrient availability to Penn A-4 roots the primary limitation of supraoptimal soil pH levels, or are additional physiological/biochemical processes compromised?

To answer this question, Penn A-4 shoot and root growth response to an array of imposed sand root zone pH levels (5.0 to 7.5) was evaluated under conditions of frequent and ample macronutrient and chelated micronutrient (EDTA) fertilization in the greenhouse.

The resulting observations strictly adhered to reference literature. In sands maintained at pH levels from 5.5 to 6.5, Penn A-4 showed 100 percent to 150 percent greater shoot and root growth (3- to 9-inch depth) relative to growth rates observed at the 5.0, 7.0 or 7.5 soil pH levels. Field experiments evaluating acidifying treatments of alkaline Penn A-4 sand putting greens are currently under way in University Park.

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