

## **ASSESSING ROOT-ZONE MIXTURES FOR PUTTING GREENS UNDER TWO MICRO-ENVIRONMENTS**

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This project is designed to i) improve recommendations for sand particle size distribution and the depth of the root zone by consideration of the microenvironment, ii) evaluate composts as organic additives and inorganic products for root zone mixes compared to peat sources, iii) assess the potential of various root zone mixes to reduce management and resource inputs, and iv) monitor the physical, chemical, and biological changes that occur in root zones as greens mature for understanding factors that contribute to the success or failure of greens.

### **Field Research**

The primary objective of the 1998 growing season was to evaluate the establishment of creeping bentgrass as affected by the sand size distribution and amendment used in root zone mixes. The 37 root zone treatments constructed in either one or two microenvironments of the field research facility at North Brunswick, NJ were seeded to 'L-93' creeping bentgrass turf on 31 May 1998.

#### *Location Effect*

- Environment (location) did affect establishment ratings for a few observation dates, however, there was not a strong influence on the establishment of creeping bentgrass in these two studies.
- No significant interaction between location and root zone treatment was observed during the 60 days evaluation period of bentgrass establishment.
- It is expected that environment will have a greater effect on performance of turf maintained at a lower cutting height ( $< \frac{5}{32}$ -inch) and receiving compaction treatment during 1999.

#### *Sand Size Distribution Study*

- Two finer sand size distributions (not meeting USGA guidelines) had a better rate of establishment than coarser sands. This was likely due to better moisture retention and subsequently better nutrient availability in those finer sands.
- The coarsest sand size established well, however, after 60 days, the performance of the plots declined. This may be an initial indication of the limitations of coarser sands.

#### *Amendment Study*

- A greater affect on the establishment of bentgrass was observed in the amendment study compared to sand size distribution study.
- Generally, increasing the rate of amendment with soil and peats enhanced establishment. This was likely due to increased fertility and/or moisture retention in these mixes. However, establishment ratings for the 20% soil and 20% peat treatments after 40 DAS became similar to respective lower amendment rate plots. This may indicate the development of stresses associated with low air-filled porosity in the root zone.
- As expected, the greater fertility of ZeoPro plots enhanced establishment. Both ZeoPro and Profile (inorganic) amendments enhanced establishment up to 40 DAS compared to unamended sand.
- ZeoPro maintained high establishment ratings up to 60 DAS; whereas, Profile plots were more similar to the unamended sand after 40 DAS.
- Additional establishment data for all amendment treatments constructed in the enclosed environment are currently being summarized.

**Plan of Work for 1999**

- A preventative fungicide program will be employed during the winter of 1998/1999; however, a curative program will be used periodically during the 1999 growing season to assess differences in disease incidence.
- Mowing height will be reduce from the current 0.325-inch to 0.15-inch or lower.
- Compaction will be applied with a water-filled roller on a weekly basis.
- Plots will be routinely rated for performance (i.e., quality, density, color, and stress).
- Plots will be evaluated for biological, chemical and physical properties.