Grow-In and Cultural Practice Inputs on USGA and Their Microbial Communities

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Purpose:

1. Evaluate grow-in procedure effects on putting green establishment and performance and develop criteria and rec ommendations for new putting green readiness for play.
2. Determine grow-in procedure impacts on root zone physical and chemical properties.
3. Evaluate post grow-in cultural practice effects on putting green long-term performance.
4. Determine temporal and spatial (by depth) patterns of rhizosphere community development in golf greens during accelerated and controlled grow-in of selected root zone mixes and during long-term maintenance.

Start Date: 1996
Project Duration: 5 years
Total Funding:$100,000
(Co-funded with GCSAA)

Golf course superintendents of newly constructed golf courses are under increased pressure to grow in turfgrasses as quickly as possible in order to open the course as soon as possible. Rapid grow-in requires the use of high rates of fertilizer and other cultural practices designed to enhance establishment.

The long-range effects of accelerated grow-in are not fully known. Moreover, clear, objective quantitative measures that evaluate a golf course as “ready to play” are not fully established. These measurements may include important physical, chemical and biological parameters that affect the performance and playability of the putting green.

The overall goal of this project is to develop a better understanding of the impact of grow-in procedures on putting green establishment and performance. Impacts on the physical, chemical, and microbiological factors associated with the USGA root zones and rhizosphere are emphasized in the project.

New putting greens were built at the Seaton Turfgrass Research Center to provide statistical repitition.

The five year project is composed of three phases: (1) construction and grow-in, (2) microbial community assessments, and (3) grow-in procedure impacts on the long-term performance of the putting green. Phases 1 and 2 span three-year periods, while Phase 3 will involve experiments repeated over the five years of the project.

Two separate USGA-specification root zone mixtures - one composed of sand and peat (80/20 ratio) and one a combination of sand, peat, and soil (80/15/5 ratio) were developed in 1996. Materials used for construction complied with USGA putting greens recommendations for physical characteristics and organic matter content.

First year greens (1997) were constructed in late summer of 1996, allowed to settle. ‘Providence’ creeping bentgrass was seeded (1.5 lbs./1000 ft^2) in the spring (May 30) of 1997. Second year greens (1998) were constructed in the summer of 1997, allowed to settle over the winter, and seeded with ‘Providence’ creeping bentgrass (1.5 lbs./1000 ft^2) in the spring (May 27) of 1998.

Third year greens (1999) were constructed in the fall of 1998 and allowed to settle over the winter. They were seeded with ‘Providence’ creeping bentgrass (1.5 lbs./1000 ft^2) in spring (May 26) of 1999. The fourth year greens (2000) have been constructed and were allowed to settle over the winter. They were seeded with ‘Providence’ creeping bentgrass in the spring of 2000.

Establishment results were similar in greens established in 1997, 1998, 1999 or 2000. For four consecutive years, it was found that higher inputs would initially increase cover during grow-in. This increase may not translate to earlier opening for play if environmental stress conditions occur that result in damage to lush, immature turf.

Proper grow-in will lead to a healthy root system that will endure summer stress.

Comprehensive multi-year analysis of establishment and agronomic data as well as soil chemical, physical and microbial is pending. Anticipated date of completion of these data is July, 2001.

Summary Points

- Turfgrass quality and color were unaffected by rootzone mix.
- Soil-containing rootzone mix had higher surface hardness than the soil mix without soil.
- Infiltration rates were not significantly different between rootzone mixes
- Fairy ring infestation was suppressed by the rootzone containing soil.
- Higher inputs initially increase cover during grow-in, but did not necessarily translate to earlier opening for play.