

Impact of Sand Size and Topdressing Rate on Surface Firmness and Turf Quality of Velvet Bentgrass

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Objectives:

Determine the short-term effects (within the 2011 season) of sand particle size distribution and application rate on turfgrass quality and surface firmness using coarse-medium and medium-fine sands on putting green turf exhibiting a lack of firmness.

Start Date: 2011

Project Duration: 2 years

Total Funding: \$6,000

Sand topdressing is expected to increase surface firmness through the bridging of sand particles within the turf canopy and surface layer of accumulating thatch. Research on fairway turf indicates that using finer sands for topdressing can provide greater firmness compared to coarse sands. However, topdressing with fine sands has been reputed to negatively affect drainage properties.

A field trial was initiated in 2010 on 'Greenwich' velvet bentgrass putting green turf and included four topdressing treatments; a coarse-medium (310) and medium-fine sand (Drier 50) were applied biweekly at 0.5 and 1 ft³ 1,000 ft⁻². The experimental design was a random complete block with three replications. Data collection included turf quality (9 = highest rating), turf color (9 = highest rating), sand presence (9 = no sand present), digital image analysis, post-topdressing clipping collection, volumetric water content (Field Scout TDR 300), and surface hardness [Clegg Impact Soil Tester (2.25 and 0.5 kg) and USGA TruFrim].

Substantial differences in firmness or quality were not apparent during 2010. However, all topdressing treatments



All topdressing treatments displayed better turfgrass quality than the non-topdressed check by early June 2011.

displayed better turfgrass quality than the non-topdressed check by early June 2011. By the end of June 2011 and on 10 of the following 14 rating dates, a topdressing rate effect was observed. Plots topdressed at 1 ft³ 1,000 ft⁻² exhibited better turfgrass quality than plots topdressed at 0.5 ft³ 1,000 ft⁻².

On 3 of the 20 rating dates in 2011, the medium-fine sand provided better turf quality than the coarse-medium sand. A significant treatment interaction on these dates indicated that topdressing needed to be applied at the higher rate to observe a difference in turf quality between the sand sizes.

There were obvious differences both years in the amount of sand remaining above the turf canopy after topdressing events. As expected, the 1 ft³ 1,000 ft⁻² rate of topdressing and the coarse-medium sand both required more time for the sand on the turf surface to dissipate after topdressing compared to the 0.5 ft³ 1,000 ft⁻² rate of topdressing and the medium-fine sand, respectively.

Clippings were collected on 2 dates after topdressing was applied. We are developing a method to accurately separate sand from clippings to quantify the amount of sand collected during the mowing of topdressed plots. Image analysis of digital images is also being used to document differences in the incorporation of sand into the canopy.

A second field trial was initiated in late June 2011 on annual bluegrass putting green turf. The topdressings treatments used in this trial were a non-topdressed check and three sand sizes: a medium-coarse sand (310), a medium sand [the medium-coarse sand sieved with a #35 sieve (500- μ m screen) to remove coarse sand], and a medium-fine sand (Drier 50). Topdressing was applied at 0.5 ft³ 1,000 ft⁻² every 14 days during the summer months. The experimental design was a



Data collection included surface hardness [Clegg Impact Soil Tester (2.25 and 0.5 kg) and USGA TruFrim].

random complete block with four replications. Data collection in this trial was similar to the velvet bentgrass trial. Additionally, anthracnose severity was evaluated every 7 to 10 days.

All topdressing treatments exhibited better turfgrass quality ratings than the non-topdressed check on 5 of 8 rating dates. The non-topdressed treatment also had greater anthracnose disease severity on 2 rating dates compared to all sand topdressing treatments. No differences among sand sizes were observed in this trial during 2011.

Summary Points

- On velvet bentgrass turf, biweekly sand topdressing, particularly at 1 ft³ 1000-ft⁻², provided better turf quality compared to the non-topdressed check. On a few rating dates, plots topdressed with a medium-fine sand had better turf quality than plots topdressed with medium-coarse sand.
- Regardless of sand size, biweekly topdressing on annual bluegrass improved turf quality compared to the non-topdressed check. In addition, anthracnose disease symptoms were less severe in all topdressed plots by late summer.
- To date, we have not observed any negative effects of topdressing with finer sand on either velvet bentgrass or annual bluegrass maintained as putting green turf.