

Optimizing Turfgrass Establishment on Sand-Capped Tees and Fairways



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Objectives:

*Test the effects of sod establishment method, aerification, and sand topdressing on water infiltration, soil moisture, root mass, and divot resistance of Kentucky bluegrass (*Poa pratensis* L.) on sand-capped and native soil root zones.*

Native soils and sand-based systems are the basic rootzone types used to establish sport fields and golf courses. The use of sand-based systems is encouraged by the USGA, due to the higher water infiltration rates, drainage capacity, and compaction resistance of sand relative to native soils. These characteristics are crucial to sustain turfgrass performance on high-traffic areas on golf course greens, tees, and fairways. In these sand-based areas, time constraints often prevent the reestablishment of deteriorated turf with seed or sprigs, leading to the use of sod.

Sand-based sod is preferred for turf reestablishment on sand-based systems; however, soil-based sod (standard sod) is often used due to budget limitations or unavailability of locally produced sand-based sod. The use of standard sod to establish turf on sand-based root zones often leads to layering of contrasting soil textures within the root zone, causing adverse effects on soil drainage and moisture. These issues may be alleviated by alternative establishment methods and post-establishment cultural practices. The objectives of this study were to test the effects of sod establishment method, aerification, and sand topdressing on water infiltration, soil moisture, root mass, and divot resistance of Kentucky bluegrass (*Poa pratensis* L.) on sand-capped and native soil root zones.

In 2010, 'Midnight' Kentucky bluegrass was established in Fayetteville, AR, using standard (soil-based), washed, and pre-harvest, core-aerified sod on a sand-capped and a native silt loam root zone. After establishment, core aerification treatments (non-cultivated vs. 20% surface area affected annually) and topdressing treatments (0.25-inches sand applied one vs. four times yr⁻¹) were imposed. The washed sod resulted in lower volumetric water content (-3 to 4%)

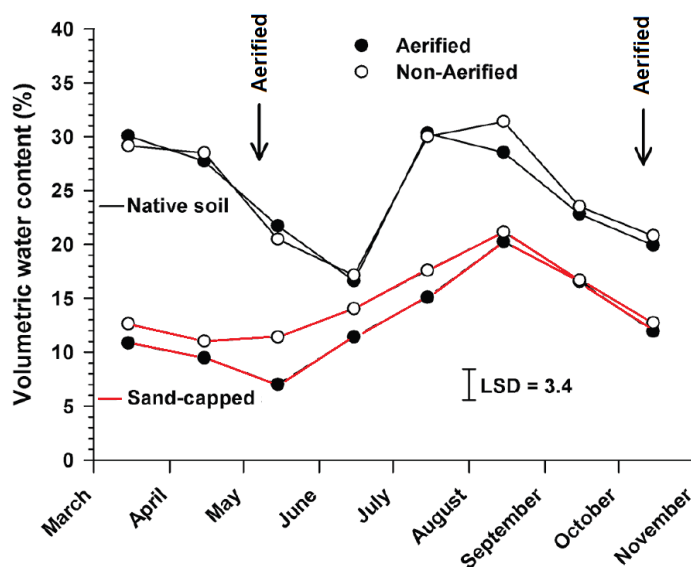


Figure 1. 2011 soil volumetric water content in top 1.4-inch (3.5 cm) root zone of 'Midnight' Kentucky bluegrass as affected by core aerification on sand-capped and native soil.

for both the root zones in 2010 and only for the sand-capped system in 2011. Core-aerification improved water infiltration rate (13% increase) and reduced the volumetric water content (-44% at end of study) of the sand-capped root zone. The effects of cultural practices on root mass density and divot resistance were of limited practical importance. Core-aerification and topdressing appeared effective for managing layered root zones and would likely improve the long-term quality of golf course turf in high traffic areas.

