

Black Sand Topdressing to Enhance Establishment of Late Fall Seeded Bentgrass

C.T. Golob, W.J. Johnston, C.A. Proctor, and M.W. Williams

Department of Crop and Soil Sciences, Washington State University, Pullman, WA

INTRODUCTION

In the intermountain region of the Pacific Northwest, USA, seeding of newly constructed golf greens often occurs later in the fall than the optimum planting date. Therefore, ways to enhance late season seed germination and emergence would promote turfgrass establishment and mitigate soil erosion.

OBJECTIVE

Determine the effectiveness of a black topdressing sand to accelerate creeping bentgrass (*Agrostis stolonifera* L.) late season germination and emergence.

MATERIALS AND METHODS

During the late fall of 2007 and 2009, a field study was conducted on newly constructed sand-based golf greens at Pullman, WA (Fig. 1). Creeping bentgrass cv. 'T-1' was seeded at 9 kg ha⁻¹ on 28 Sept. 2007 and 2009. On 5 Oct. 2007 and 2 Oct. 2009, a black sand, BLACK SAND® (Grass Roots Agronomics, Inc., Emmett, ID), or a tan sand (Atlas Sand and Rock, Lewiston, ID) topdressing treatment was applied at 9,800 or 19,600 kg ha⁻¹ using a drop spreader (Fig. 2). An additional treatment was a 'Reemay' (DuPont, Wilmington, DE) white, spun bonded polyester (50 g m⁻²) turf cover. The experimental design was a randomized complete block with four replications. Each experimental unit was 9.3 m². Hourly soil temperature at 1.3 cm was recorded with a Hobo U12 data logger (Onset®, Bourne, MA); data only presented for 2009. At 35 d after treatment, three random digital pictures were taken of each experimental unit and seedlings were counted in 161 cm² subsamples (Fig. 3).



Fig. 1. Turf cover and sand topdressing on a newly seeded golf green at Palouse Ridge GC at Pullman, WA, October 2007.



Fig. 2. Applying black sand topdressing to a newly seeded golf green at Pullman, WA, October 2007.



Fig. 3. Digital picture taken for seedling emergence counts at Pullman, WA, October 2007.

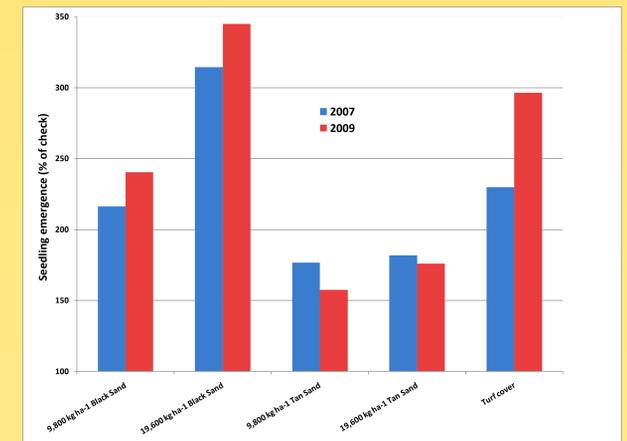


Fig. 4. Seedling emergence (% of check) 35 d after seeding of a golf green at Pullman, WA.

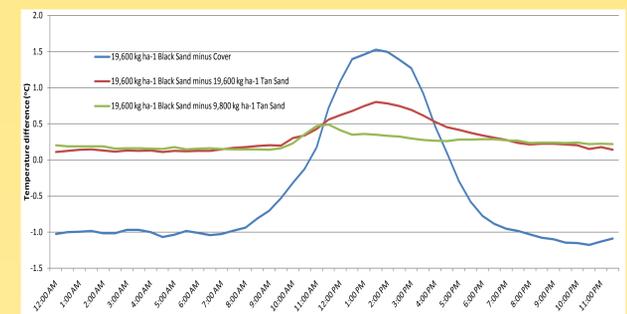


Fig. 5. Hourly mean temperature differences at Pullman, WA, October 2009.

RESULTS

Seedling counts were highest in the 19,600 kg ha⁻¹ black sand treatment (approximately 3.0 or 3.5 times > the conventionally seeded check in 2007 or 2009, respectively), all other treatments were intermediate (Fig. 4).

All treatments had their maximum daily temperature at 1400 h (2 PM). At this time, the 19,600 kg ha⁻¹ black sand treatment was 1.5°C > the turf cover and 0.4 to 0.8°C > the tan sand, but at night the soil temperature was as much as 1.2°C higher under the turf cover (Fig. 5).

Topdressing with 19,600 kg ha⁻¹ of black sand after seeding greatly enhanced late fall emergence of creeping bentgrass at Pullman, WA.