

Aeration Timing and Topdressing Color to Enhance Creeping Bentgrass Green Recovery

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Objectives:

1. Determine the effect of date of aeration on recovery time.
2. Establish if black sand topdressing can enhance recovery.
3. Quantify green quality, soil temperature, and recovery parameters following aeration.

Start Date: 2008

Project Duration: two years

Total Funding: \$6,000

In the Intermountain Pacific Northwest, cool-season turfgrasses are typically growing from April through September. With such a short growing season, timing of disruptive aeration practices, which reduce golf green playability, can be difficult.

Twelve aeration dates (every two weeks from April 15 to July 1 and August 15 to November 1, 2008) and two sand treatments: (black sand, BS; and tan sand, TS) were applied at each date in a randomized complete block split-plot design with 4 replications. One week prior to each aeration date, each corresponding sand treatment received 293 kg ha⁻¹ fertilizer (10-4-16).

Aeration was accomplished with a core cultivator (GreensAire 24) with 1.27-cm diameter, side-eject hollow tines at a tine depth of 7.62 cm on 5-cm centers. Cores were removed and topdressing sand was applied. Tan sand topdressing treatments were applied at 40,000 kg ha⁻¹. Black sand topdressing treatments received tan sand at 20,000 kg ha⁻¹ brushed in followed by black sand at 20,000 kg ha⁻¹ to duplicate how black sand

is commonly used by golf course superintendents.

Data collected was days to recovery (DTR) from aeration, turfgrass quality, and soil temperature. Aeration recovery was rated semi-weekly until full recovery on a scale of 1 to 9; 9 was no detectable damage from cultivation and 1 was no recovery from treatment. Turfgrass quality was visually rated semi-weekly until full recovery on a scale of 1 to 9; 9 was ideal, dark green uniform turf, 6 was minimum acceptable quality, and 1 was dead turf.

Soil temperature was recorded semi-weekly until full recovery. Soil temperature was measured at 7.5 cm depth with a digital thermometer. Full recovery was determined when no visible damage from cultivation was observed in 95% of the plot area.

The most days to recovery occurred in the spring. There was a decrease in the number of days to recovery from the May 1 aeration to the May 15 aeration. Sand types did not differ except at June and September aeration when black sand, had fewer days to recovery than tan sand. In 2008, days to recovery steadily decreased from the May 15 to August 15 aeration. Following the August 15 aeration, the days to recovery increase, but the black sand treatments increased at a slower rate than the tan sand treatments.

There was an increase in soil temperature between the May 1 and May 15 aeration. Soil temperatures were highest in the summer months, as expected, and decreased by the September 15 aeration. Sand type resulted in soil temperature differences, with black sand being higher than tan sand. This was especially noticeable September 15 when the black sand treatments recovered faster than the tan sand treatments.

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Black sand had as much as a 25% increase in quality over tan sand. In addition, a decrease in turfgrass quality was noted during the summer. There was a 25% increase in turfgrass color ratings due to black sand at the April 15 aeration. This was the largest difference in color between the two sand types.

Within each rating date, black sand, had a higher color rating than tan sand. The improvement in turfgrass color from the use of black sand was the most dramatic effect seen from the use of black sand. Initially it was thought that there may be a fertility response from the black sand, but a nutrient analysis showed an insignificant amount of plant available nutrients in both sand types.

Summary Points

- The best time to aerate in the Intermountain Pacific Northwest would be about May 15 and August 15.
- Black sand was able to reduce the number of days to recovery in the late fall.
- Black sand resulted in increased quality and color in the spring and fall.



Tan sand topdressing treatments (A) were applied at 40,000 kg ha⁻¹. Black sand topdressing treatments (B) received tan sand at 20,000 kg ha⁻¹ brushed in followed by black sand at 20,000 kg ha⁻¹.