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Golf Course Fairway Organic Matter Management with Frazé Mowing

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Introduction

Golf course fairways often are kept at a height of less than one-inch of cut, and should have a turfgrass that will recover from a divot. Creeping bentgrass (*Agrostis stolonifera* L.) often is used on golf course fairways due to the ability of the turfgrass to tolerate a low height of cut and quick recovery from divots. However, these grasses grow aggressively by stolons and can produce a large amount of organic matter quickly. Slow drainage, a soft playing surface, unsightly mower scalp, and a home to many pests are all problems caused by excess organic matter.

Many golf course superintendents will try to manage fairway organic matter accumulation by limiting the amount of fertilizer and trying to regulate growth, but this doesn't always slow growth enough to stop the buildup of organic matter. Traditionally, the alternative has been to use hollow tine aerification and sand topdressing, or aggressive vertical mowing and sand topdressing to try to remove excessive amounts of organic matter from a fairway. Although these methods work, they are time consuming, expensive, and take several years to get the desired results.

Frazé mowing is a newly adapted technology to the United States golf industry that removes organic matter in one pass. An additional benefit is many weed seeds, like annual bluegrass (*Poa annua* L.), are in this layer as well and can be removed at the same time.

One of the drawbacks to Frazé mowing is the recovery time of the turfgrass.

The objectives of this study are to compare recovery times of plots that were Frazé mown and left to grow back to those subjected to Frazé mowing and reseeded at two different rates. This study was performed on two different cultivars to see if differences exist by cultivar. This is the first of a two-year study.

Materials and Methods

Research was conducted at the Iowa State University Horticulture Research Station on both Dominant Extreme creeping bentgrass and 007 creeping bentgrass, which were maintained as a golf course fairway at 0.4-in. height of cut.

The experimental design was a randomized split-block design with three seeding rates (0, 1, and 2 lb of seed 1,000 ft.⁻²). Three replications of every treatment were included and the study will be repeated over two years. Every plot had 100 percent green turfgrass cover at study initiation and had excessive levels of thatch for a golf course fairway. A treatment list with plot numbers is listed in Table 1.

Plots were Frazé mown September 9, 2016, at a depth of 10 mm. This removed all green tissue and excessive organic matter. Seeding treatments were applied to the plots with either 007 or Dominant Extreme creeping bentgrass September 12, 2016.

Three random locations on each plot were selected to capture digital images, so Digital Image Analysis (DIA) could be performed to track recovery of green tissue. These pictures will be collected weekly and the data will be

used to track weeks until 100 percent green cover.

Surface hardness will be collected with a TruFirm device and water infiltration will be collected once the plots have recovered to 100 percent green turfgrass cover. Soil cores will be tested one year after treatments to determine the change in organic matter.

Results and Discussion

Plots are still recovering from the Frazee mowing treatment, but those with the highest seeding rate appear to have recovered faster than the lower seeding rates. No differences seem to exist between cultivars based on early

visual observations, and all annual bluegrass seems to have been eliminated.

Acknowledgements

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Table 1. Treatment list and plot numbers for golf course fairway organic matter management trial with Frazee mowing.

Treatment description	Plot numbers
007 0 lb 1,000 ft ^{2a}	101, 204, 302
007 1 lb 1,000 ft ²	102, 206, 303
007 2 lb 1,000 ft ²	103, 205, 301
Dominant Extreme 0 lb 1,000 ft ²	104, 202, 306
Dominant Extreme 1 lb 1,000 ft ²	105, 201, 304
Dominant Extreme 2 lb 1,000 ft ²	106, 203, 305

^aAll treatments were seeded September 12, 2016, after all plots had been Frazee mown September 9, 2016.