

## 8. Effect of Creeping Bentgrass Seeding Rates and Traffic on Establishment of Putting Greens during Renovation

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Cutting edge advancements in biotechnology and genetic engineering have allowed turf breeders to introduce species and varieties of grasses with outstanding germination rates and physiological characteristics. Depending upon the current demand and limited availability of these improved grasses, turf managers can expect to pay exorbitant prices for such seeds. Generally, renovation entails complete conversion yet very little data exists that identify a cost-effective, optimum creeping bentgrass (*Agrostis stolonifera*) seeding rate. Contrary to popular belief, in an effort to circumvent weed competition and minimize disruption of golf rounds played in the first season following renovation, using higher than recommended seeding rates negatively affects plant health. Although speedy establishment can offset costs and revenue loss, it is uncertain if high shoot density turf can withstand early season traffic. One method that could address these concerns is using improved creeping bentgrass varieties at, or near the lower range of the recommended seeding rates of 0.5 -1.0 lb/1000 ft<sup>2</sup>. The goal of the study was to evaluate the effects of various seeding rates and traffic initiations on the establishment of a sustainable putting surface following renovation. The site was a USGA putting green (0.125-in cut height, 5-d weekly), strip plot, factorial-design (6 x 4) with 8 blocks at Michigan State University. Main plot factor was 'V8' creeping bentgrass rate (0.125, 0.25, 0.5, 0.75, 1.0, and 2.0 lb/1000 ft<sup>2</sup>) and strip plot factor was traffic initiation (May, June, and July). Plots were seeded in August 2012 and replicated in 2013. Traffic treatments occurred 3x weekly (4 passes) using a Jacobsen® PGM 22 with 116-“Black Widow” Softspikes®. Turf density was rated qualitatively (visual percentage plot area of turf cover), and quantitatively (chlorophyll and NDVI meters, Spectrum Technology). Rooting strength data was collected using a shear vane tester from Turf Tec International. Preliminary results showed no significant difference (rooting strength, chlorophyll index) between 0.75 and 2.0 lb/1000 ft<sup>2</sup> seeding rates. Data garnered from this experiment will improve upon renovation techniques that both reduce costs without compromising turf quality.

## Stop 9. Establishment Studies for Creeping Bentgrass Greens

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New creeping bentgrass varieties, harsh winters, and a number of other environmental factors are forcing some superintendents to consider renovation of golf course putting greens. The purpose of this study is to find an ideal plan to establish a new creeping bentgrass putting green surface using four different factors. *Agrostis stolonifera* var. Pure Distinction was seeded into a sand-based profile (95/5 root-zone medium) in August of 2013. Two of the factors, mowing height and fertility rate, were started in the fall and the other two factors, verticutting and PRG regimes, were initiated the following summer.

Mowing heights were initially at 0.200” and 0.150” and were reduced by 0.010” and 0.005” each week, respectively, until a height of 0.125” was reached for both treatments. The nitrogen (46-0-0) fertility rates that were used were 0.05 lb N/1000 ft<sup>2</sup>, 0.10 lb N/1000 ft<sup>2</sup>, and 0.15 lb

N/1000 ft<sup>2</sup> per week. The verticutting regimen began on May 28, 2014. Plots were either assigned a bi-weekly treatment or no treatment. Primo treatments began on June 6, 2014. Plots either received the labeled rate of 0.125 fl oz/1000 ft<sup>2</sup> every other week or no treatment. The factors that seem to have the greatest impact on turf quality so far, based on visual observations, are nitrogen fertility rate and verticutting regimen. The data has not yet been subjected to statistical analysis, so all observations thus far are subjective.

This study is in its first year of existence and will be replicated for another year after this. Data are being collected based on NDVI Index, chlorophyll content, and visual percent cover. At the end of this year's study the data will be used to determine significant differences and interactions between treatments.

## **Stop 10. Lightweight Rolling and Topdressing Decrease Fungicide Inputs and Dollar Spot Severity on Fairways**

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Dollar spot (*Sclerotinia homoeocarpa* F.T. Bennett) is an extensive turfgrass disease in the upper Midwest that drastically diminishes turf quality and golf course playability—in many cases, results in great expenditures of fungicide products. Michigan State University scientists have observed reduced dollar spot infection in putting greens that were rolled several times weekly. Others have observed a reduction of disease in putting greens that were frequently sand topdressed. Therefore, we hypothesized that dollar spot infection on fairways would be decreased by sand topdressing and by rolling, hence reducing the need for frequent fungicide treatments. Our objective was to evaluate dollar spot severity responses on a mixed stand (*Agrostis stolonifera* L. and *Poa annua* L.) fairway to lightweight rolling and sand topdressing with and without fungicide applications. The study was a split block design with three-replications, and conducted from 2011 to 2014 at the Hancock Turfgrass Research Center at MSU. Treatments consisted of sand topdressing, three rolling frequencies (1x, 3x, and 5x weekly), and controls. In contrast, Emerald® fungicide applications (0.045, 0.09, and 0.180 oz/1000 ft<sup>2</sup>) at 15-d and 30-d intervals, rolling 3x weekly, sand topdressing, and controls were also started in 2013 and 2014. Infection was visually assessed, and preliminary data suggest that sand topdressing significantly ( $P<0.05$ ) reduced dollar spot by 40 to 50% at the peak of the disease cycle in 2011 and 2013. Furthermore, the 3x and 5x weekly rolled treatments exhibited 50% less dollar spot injury in 2013. First year data results revealed no interaction effects of sand topdressing and rolling on fungicide efficacy; however, initial results imply that sand topdressing and lightweight rolling could lessen the need for recurrent fungicide inputs for controlling dollar spot on fairways.