



**Fertilizer Regime Effect on Creeping Bentgrass  
Re-establishment Following Winterkill 2007  
Erica N. Bogle, Kevin W. Frank, Jeff Bryan  
Department of Crop and Soil Sciences**

## **Objectives**

To compare the effects of eight different fertilizer programs on the re-establishment of Creeping Bentgrass putting greens.

## **Materials and Methods**

This study was conducted on a creeping bentgrass putting green located at the Hancock Turfgrass Research Center on the campus of Michigan State University. To simulate winterkill injury, a creeping bentgrass putting green was sprayed with glyphosate in the late autumn of 2006 and again the last week of March 2007 to ensure complete kill. The area was prepared for re-seeding using the job-saver attachment on a greens aerifier, which dimpled the surface of the putting green to create a seed bed. A-4 Creeping bentgrass was seeded on May 1<sup>st</sup> at 2lbs./1000ft.<sup>2</sup> and topdressing was applied at 115 lbs./1000ft.<sup>2</sup> after seeding. The eight treatments were then applied according to their respective protocols. The experimental design was a randomized complete block design with 3 replications. Plots were 4 x 6 ft., and were mowed at a height of 0.145 inches starting one week after establishment. Granular fertilizer applications were applied with a hand shaker and liquid applications were applied with a backpack sprayer. Plots were rated for turfgrass quality on a scale of 1 to 9 (1= poor, 6= acceptable, 9 = excellent). Rates of percent cover were also taken (1% = poor/no cover, 60% = acceptable cover, 100% = fully established). Spectrum Technologies Field Scout CM-1000 Chlorophyll Meter gun was used to quantify turfgrass color throughout the trial. Rating of turf color, quality and % cover were taken weekly (every 7 days) after emergence on May 15<sup>th</sup> for 12 weeks. The complete list of treatments is available below:

- 1) SuperBio SoilLife (Advanced Microbial Solutions); was applied at 6 oz./1000ft.<sup>2</sup> tank mixed with 1.0 lb. N/1000ft.<sup>2</sup>, with urea (46-0-0), as the nitrogen source at seeding. The SuperBio SoilLife was then applied only monthly at a 3 oz./1000ft.<sup>2</sup> tank mixed with 1.0 lb. N/1000ft.<sup>2</sup>, with urea (46-0-0), as the nitrogen source.

- 2) SuperBio Microbes (Advanced Microbial Solutions); was applied at 6 oz./1000ft.<sup>2</sup> tank mixed with 1.0 lb. N/1000ft.<sup>2</sup>, with urea (46-0-0), as the nitrogen source at seeding. The SuperBio Microbes was then applied only monthly at a 3 oz./1000ft.<sup>2</sup> tank mixed with 1.0 lb. N/1000ft.<sup>2</sup>, with urea (46-0-0), as the nitrogen source.
- 3) GroWin (Emerald Isle/ Milliken); was applied at 10 lbs./1000ft.<sup>2</sup> of product, equaling 0.5 lbs. N/1000ft.<sup>2</sup>, at seeding.
- 4) GroWin (Emerald Isle/ Milliken); was applied at 20 lbs./1000ft.<sup>2</sup> of product, equaling 1.0 lbs. N/1000ft.<sup>2</sup>, at seeding.
- 5) The Anderson's #1; Contec Starter Fertilizer (19-25-5) was applied at 4lbs. product/1000ft.<sup>2</sup>, equaling 0.76 lbs. N/1000ft.<sup>2</sup>, at seeding. Compass G fungicide was applied every two weeks after seedling emergence. Contec Db (13-2-13) was applied at two and four weeks after emergence at 0.5 lbs. N/1000ft.<sup>2</sup>. Contec DG (18-9-18) was applied at six and eight weeks after emergence at 0.5 lbs. N/1000ft.<sup>2</sup>.
- 6) The Anderson's #2; Contec Starter Fertilizer (19-25-5) was applied at 4lbs. product/1000ft.<sup>2</sup>, equaling 0.76 lbs. N/1000ft.<sup>2</sup>, at seeding. Compass G fungicide was applied every two weeks after seedling emergence. Compass Db (13-2-13) was applied at two and four weeks after emergence at 1.0 lbs. N/1000ft.<sup>2</sup>. Contec DG (18-9-18) was applied at six and eight weeks after emergence at 0.5 lbs. N/1000ft.<sup>2</sup>.
- 7) Progressive Turf's Turf Foundation (10-3-5); Contec Starter Fertilizer (19-25-5) was applied at 4lbs. product/1000ft.<sup>2</sup>, equaling 0.76 lbs. N/1000ft.<sup>2</sup>, at seeding. At emergence 16 oz./1000ft.<sup>2</sup> of Turf Foundation (10-3-5), was applied and then continued at the 16 oz. rate weekly for 5 weeks. Starting at 6 weeks after emergence Turf Foundation (10-3-5), was applied at 6 oz./1000ft.<sup>2</sup> every 7 days.
- 8) Grigg Bros. NuBlade (2-5-2); At seeding a (7-7-7) Granular fertilizer was applied at 0.75 lbs. N/1000ft.<sup>2</sup>. Seven days later 12 oz. /1000ft.<sup>2</sup> of NuBlade (2-5-2), was applied before seedling emergence. Once emergence was seen then applied 4 oz./1000ft.<sup>2</sup> of NuBlade was applied for the first two weeks. For the following three weeks 4oz./1000ft.<sup>2</sup> of Gary's Green (18-3-4), and 4 oz./1000ft.<sup>2</sup> of P-K-Plus (3-21-18), were mixed and applied.

## Results

### Turfgrass Color

Turfgrass color was assessed with the Spectrum Technologies Field Scout CM-1000 Chlorophyll Meter gun every week for 12 weeks. There were significant differences in chlorophyll content on 9 of 12 rating dates. For week 1, treatments 4-7 (Progressive Turf #7) had significantly higher chlorophyll content rates. Weeks 4 and 5 have differences throughout the treatments with numbers 5 and 7 (Progressive Turf #7) with the highest rates, followed by treatments 6 and 8, then 1 and 4, and 2 and 3 respectively. Starting at week 6 and running through the end of the trial treatments 5 and 6 had the highest chlorophyll content rates among

the treatments. It should be noted that the CM-1000 readings were not always recorded on the same dates as the turfgrass quality ratings. The reason is that on some dates we do not have enough ambient light, due to cloud cover, to record accurate data from the CM-1000; therefore we may take this data on another day.

### **Turfgrass Quality**

The statistical analysis of the turfgrass quality ratings produced similar results to the turfgrass color ratings. It is common in our turfgrass fertilizer trials that the turfgrass color and quality ratings have similar results because turfgrass color has such a strong influence on the evaluation of turfgrass quality. There were significant differences in turfgrass quality among treatments from week 4 through the end of the trial. Treatments 5, 6, 7, and 8 ( Progressive Turf #7) had the satisfactory rating of 6 on week 4 and maintained a rating above this level for the remainder of the treatments and ideal rates, of 6 or higher, were achieved by week 7. Treatments 1, 2, 3, and 4 did not achieve satisfactory rates of 6 or higher until week 5 and ideal rates until week 10.

### **Turfgrass % Cover**

The analysis of percent coverage was achieved by using a unique system of photo analysis software. Pictures were taken of each plot on the respective rating dates and then run through Sigma Scan software where a pixel by pixel count was taken to derive the percentage of green pixels versus total pixels in the picture. This results in the percentage of turfgrass cover in each plot. Percent cover rates are independent of turfgrass color rates. There were only 2 rating dates where significance of percent cover occurred. On both weeks 7 and 8 only treatments 5-8 (Progressive Turf #7) had reached a level of complete percent cover. Treatments 1-4 did not reach a level of complete percent cover until week 9.

### **Overview**

Throughout the experiment treatments 5-8 (Progressive Turf #7) performed consistently higher than treatments 1-4. Treatments 5-8 (Progressive Turf #7) resulted in quicker establishment, higher quality, and better turfgrass color overall.