

Stop 2. Civitas and Lightweight Rolling Study

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A Civitas/ lightweight rolling study was initiated in the spring of 2012 on a Pennlinks creeping bentgrass research green at the Hancock Turfgrass Research Center. It is well documented that both Civitas and lightweight rolling decrease dollar spot but neither one alone eliminates the disease. Therefore, a main objective behind this study is to determine if the combination of both practices could completely eliminate the need for fungicide applications for dollar spot.

Mowing takes place on the research plots six days per week throughout the summer at a mowing height of 0.135-inch. With the exception of Civitas no pesticides have been applied on the plots. Furthermore, to investigate the impact that Civitas and lightweight rolling have on wear tolerance traffic was initiated on August 1 with Black Window Spikes inserted into the soles of Foot-Joy shoes and trafficked in a manner consistent with actual rounds of golf on a golf course putting surface.

Treatments included in the study are:

1. Never rolled and no Civitas applied (Check I)
2. Rolled 5 times per week with no Civitas applied (Check II)
3. Not rolled Civitas applied weekly (8 ounces / 1000 sq. ft.).
4. Rolled 5 times per week and treated with Civitas weekly (8 ounces / 1000 sq. ft.).
5. Rolled 5 times per week and treated with Civitas every 2 weeks (8 ounces / 1000 sq. ft.).
6. Rolled 5 times per week and treated with Civitas every 3 weeks (8 ounces / 1000 sq. ft.).

There are three replications of each treatment with plots set up in a randomized complete block design.

Data collection includes:

- 1. Treatment effect on plant/soil response under water stress.** Weekly soil moisture measurements will be obtained with a TDR from 1.5 and 3.0 inch depth. Additionally, plots will be allowed to dry down several times during the season for visual localized dry spot data collection (qualitative measure). At seasons end ¼-inch diameter soil cores to a 1-inch depth will be collected for water drop penetration tests.
- 2. Turfgrass wear ratings.** Qualitative measure of turfgrass wear among treatments will take place weekly one month following the initiation of traffic or prior to that time if differences are observed.
- 3. Turfgrass color and quality ratings.** Ratings will be obtained weekly on a 1-9 quantitative scale.
- 4. Soil chemical and plant tissue nutrient concentration tests.** Samples will be obtained in late August or early September for soil and plant nutrient concentration tests. All samples will be

obtained the same day. Analysis will include soil pH, and soil and plant tissue nutrients including nitrogen, phosphorous, and potassium.

5. Pest population observations (disease, weeds, and insects) will be recorded when applicable. In all cases counts will be determined with quantitative measure.

6. Ball roll measurement. Weekly measurement of ball roll (green speed) will be obtained with a Pelzometer. A likelihood exist that disease incidence will become so severe on some plots that green speed measurements will become meaningless. If that is the case green speed measurements will cease.

7. Soil microbial counts. Samples will be collected in late August/early September to quantify differences among treatments in soil microbial populations. The chloroform fumigation method will be used which determined total soil microbial biomass per microgram per gram of soil.

Stop 3. Frequency of Clip Study

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A “rule of thumb” states the ideal quality of cut is achieved when the frequency of clip matches the mowing height (HOC). While it is possible that this “rule of thumb” may be true at some mowing heights it has not been researched at HOC’s commonly used on today’s golf course putting greens. The objective of this frequency of clip putting green study is to determine if a linear relationship does exist between the frequency of clip and the ideal quality of cut.

To determine the linearity of the problem three different HOC settings will be evaluated with the HOC set at:

1. 0.080-inch (2.03mm)
2. 0.110-inch (2.79mm)
3. 0.140-inch (3.56mm)

For each HOC treatment (above), three different clip settings will be evaluated:

1. 0.100 inches (2.54mm)
2. 0.126 inches (3.20mm)
3. 0.149 inches (3.78mm)

To perform this study nine (9) Toro Flex 2100 mowers are utilized. All nine mowers are equipped with fourteen (14) blade reels and EdgeMax microcut bedknives. The nine mowers all have the same behind center distance as a standard Flex 2100 DPA cutting unit set at .080 HOC (~.294”). At 1.10 and 1.40 HOC’s, shims were added to the rear roller to maintain the same behind center distance as the .080 HOC. Bedknife angle is constant at the three HOC settings.