

Turf Colorants for Aesthetics or as an Alternative to Overseeding



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Objectives:

Evaluate how new turf colorants perform throughout the winter months in the southeastern region of the United States.

Turf managers in the southern United States have traditionally overseeded warm season turfgrasses during the fall in order to maintain aesthetically pleasing playing surfaces as well as playability throughout the period of dormancy. During the spring and early summer, overseeded grass will begin to decline, leading to a number of challenges for the transition of warm season grasses.

In recent years, turf colorants have served as the standard alternative to overseeding warm-season grasses and as a result, a number of new products have been introduced to the market. In order to better understand how these products look and persist over time a product evaluation study was initiated at North Carolina State University Turfgrass research facility in Raleigh, NC in November of 2011.

Products were applied at two application rates (80 and 120 GPA) in November 2011 and 2012 according to the recommended label dilution rates on an ultradwarf bermudagrass putting green and on a bermudagrass mowed to a

fairway height-of-cut. Data collection during this two-year project includes visual quality and percent coverage ratings along with digital image analysis to document change in color over time.

After two years of evaluating twenty-seven turfgrass colorants, it was apparent that certain colorants performed more similarly compared to others (Figure 1).

Miniverde bermudagrass during winter 2011, fifteen days after treating with turf colorants.



The products were grouped based on a similar combination of color (hue value), color saturation, and colorant coverage. Groups 2 and 3 are characterized with varying levels of these three variables. So, even though Group 1 colorants retained more color over time, colorants within other groups may have had a different combination of coverage and hue values. As an example, some colorants in Group 1 had hue values that would classify them as bluish or lime in color, but had high coverage and color saturation values. Figure 4 provides a good indication each product's relative color (i.e., hue).

A preliminary drag test screening was conducted to determine which products have the highest tendency to "rub-off." The top quarter with the most "rub-off" along with Ultradwarf Super (UDS), which rubs off the least, was chosen to monitor rub-off over time (Figure 3). The higher amounts of rub-off in 2012 suggest that rub-off is temperature dependent due to enhanced rub

off at lower temperatures. A follow up study confirmed colorants should be applied in warmer temperatures to decrease rub-off. A measurement of colorant viscosity indicated the significant variability among products prior to mixing (Figure 4).

Summary

- Although twenty-seven products were tested, many products proved to perform similarly.
- Products can be clustered based on a combination of color (hue), color saturation, and colorant coverage, illustrating their value over a season of use.
- Independent trials indicated certain colorants have a higher aptitude to rub-off than others. Concurrently, colorant rub-off was found to be heavily influenced by low temperatures.
- Viscosities varied among products prior to mixing.

Figure 1. Multidimensional scaling analysis scatterplot showing the clustering of turfgrass colorants applied to Miniverde bermudagrass clustered based on colorant coverage, saturation, and hue using two years of data.

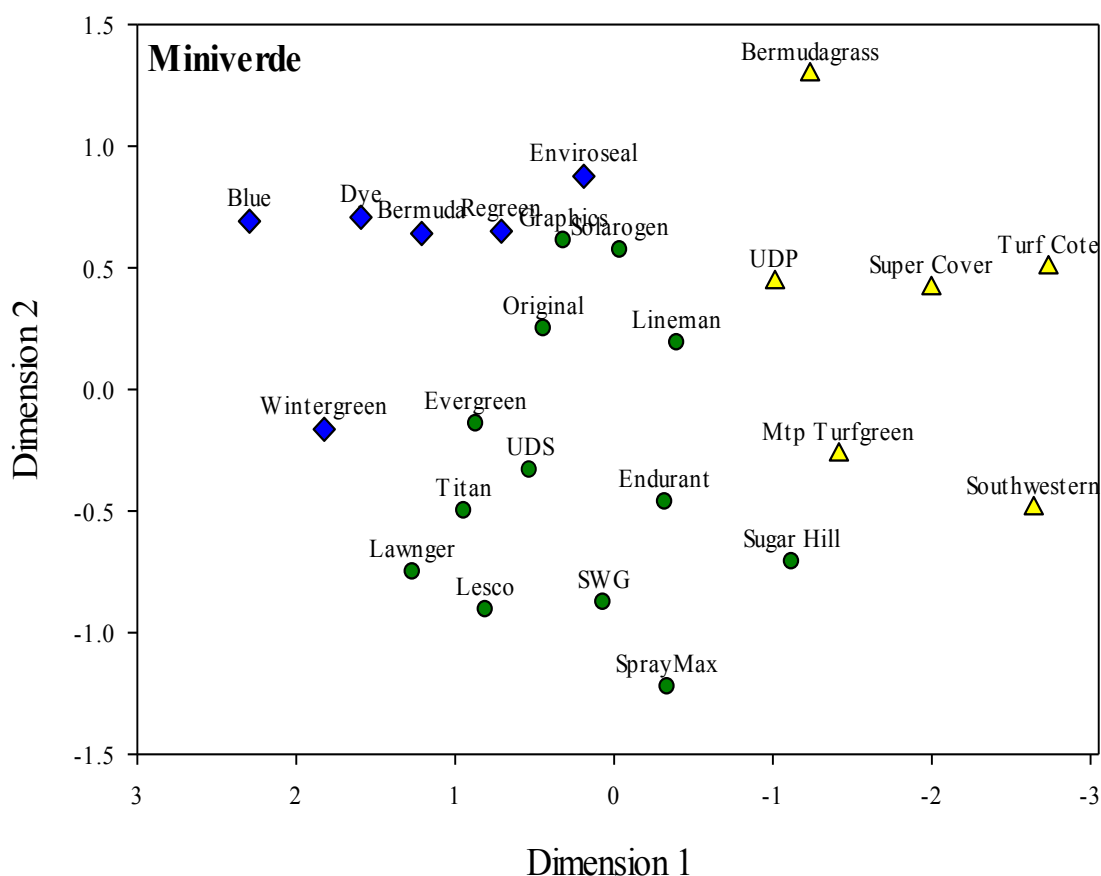


Figure 2. Colorant color five days after application following treatment application on a dormant Miniverde bermudagrass putting green at a rate of 120 GPA.



Figure 4. Viscosities of non-diluted turfgrass colorants.

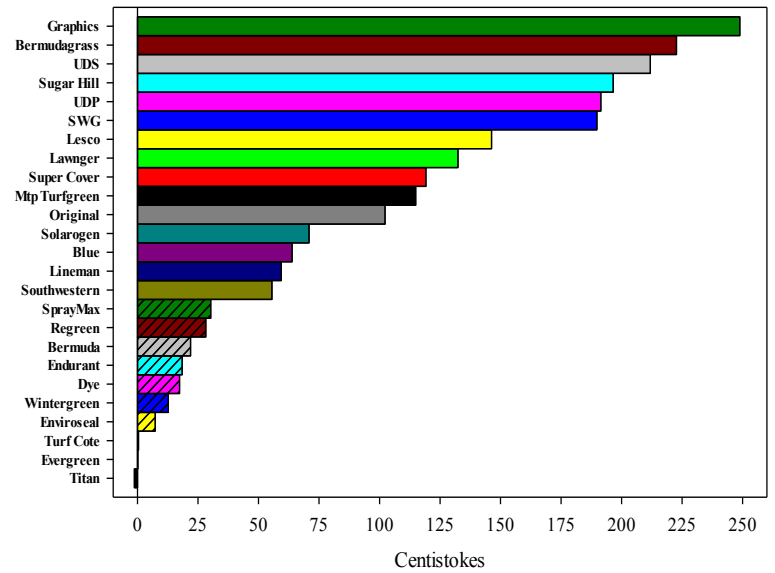


Figure 3. Turfgrass colorant "rub-off" measured by normalized difference vegetation index (NDVI) readings during February–March 2012 and 2013 at Lake Wheeler Field Laboratory in Raleigh, NC.

