

# Effects of Micro–Blaze on Creeping Bentgrass and Bermudagrass Putting Greens

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## Objectives:

*Evaluate the effects of repeated applications of Micro–Blaze Turf Care to creeping bentgrass and bermudagrass putting green turf quality, root growth, and soil moisture on both newly constructed and well–established sand–based greens.*

Maintenance of sand–based rooting zones is important for the proper growth and health of golf course putting greens. There are many new microbial based “supplemental” products available to golf course superintendents. However, the effectiveness of many of these products is suspect and little research data is available for superintendents to make informed decision concerning the use of such products. Verde Environmental, Inc. is currently marketing a microbial enhancement product called “Micro–Blaze Turf Care” to golf course superintendents across Oklahoma, Texas, and the southern United States. The objective of this project was to evaluate the effects of repeated applications of Micro–Blaze Turf Care to creeping bentgrass (*Agrostis stolonifera*) and hybrid bermudagrass (*Cynodon dactylon* x *Cynodon transvaalensis*) putting green turf quality, root growth, and soil moisture on both newly constructed (< 5 years old) and well–established (> 10 years old) sand–based greens.

This research was conducted on creeping bentgrass putting greens in Oklahoma and bermudagrass putting greens in Texas. In Oklahoma, the work was conducted at the Oklahoma State University Turfgrass Research Center in Stillwater, OK on relatively old ‘Penncross’ creeping bentgrass and relatively young ‘Penn A–4’ creeping bentgrass greens. In Ft. Worth, TX, plots were established at the Diamond Oaks Country Club to relatively old

‘Champion’ bermudagrass greens and at the Waterchase Golf Club/Jim McLean Golf Center to relatively young ‘Champion’ bermudagrass golf greens. Plots were arranged in a randomized complete block design with three replications. Plot area was 4 x 15 ft. All plots were maintained as typical golf course putting greens according to species and golf course site

**Figure 1. Representative effectiveness of a herbicide safener (Treated on the left and Control on the right).**

Location	Treatment	TQ	NDVI	VWC
Waterchase	MB + 2 wks <sup>1</sup>	6.7 a <sup>2</sup>	0.794 a	15.3 a
	MB + 4 wks	6.0 b	0.789 a	15.0 ab
	MB – 2 wks	6.7 a	0.783 a	15.7 a
	MB – 4 wks	6.0 b	0.776 a	15.1 ab
	Control	5.9 b	0.755 a	14.1 b
Diamond Oaks	MB + 2 wks	6.1 ab	0.760 a	11.5 a
	MB + 4 wks	5.7 abc	0.742 a	11.1 a
	MB – 2 wks	6.2 a	0.750 a	11.3 a
	MB – 4 wks	5.6 bc	0.749 a	11.1 a
	Control	5.5 c	0.747 a	11.5 a

<sup>1</sup> MB = Micro–Blaze Turf Care; ‘+’ = formulation with microbes; ‘–’ = formulation without microbes; 2 wks = applied every two weeks during the growing season; 4 wks = applied every four weeks during the growing season.

<sup>2</sup> Means followed by the same letter within a row are not different at the 0.05 significance level.

**Figure 1. MicroBlaze Turf Care formulated with microbes applied every 2 weeks. Photos take on April 2012 (left) and October 2012 (right).**



bermudagrass results indicate that Micro-Blaze Turf Care applied every 2 weeks had higher mean turf quality compared to the Micro-Blaze Turf Care applied every 4 weeks and control plots (Table 1). At Diamond Oaks, results indicate that Micro-Blaze Turf Care applied every 2 weeks had higher mean turf quality compared to control regardless of formulation. There was no statistical difference in NDVI readings among treatments at both

conditions. Treatments were: 1) Untreated Control; 2) Micro-Blaze Turf Care (as formulated) at 16 oz product/1,000 sq. ft. every 14 days; 3) Micro-Blaze Turf Care (as formulated) at 32 oz product/1,000 sq. ft. every 28 days; 4) Micro-Blaze Turf Care (formulation without microbes) at 16 oz product/1,000 sq. ft. every 14 days; 5) Micro-Blaze Turf Care (formulation without microbes) at 32 oz product/1,000 sq. ft. every 28 days. In addition, the creeping bentgrass sites included: 6) Industry comparison microbial product at labeled rate every 14 days; and 7) Industry comparison microbial product at labeled rate every 28 days. The following data was collected from each site 1) Turf quality on the subjective 1–9 rating scale where 1 = lowest turf quality, 6 = acceptable turf quality, and 9 = best turf quality. This is the turf quality scale used by the National Turfgrass Evaluation Program (NTEP); 2) Turf color using an objective NDVI (normalized difference vegetative index) meter.; 3) Volumetric soil water content using a TDR soil probe with meter; and 4) Ball roll distance with a stimp meter. In addition, root growth data was collected using the Win-Rhizo root scanning software and dry oven root mass will be determined after scanning. Root samples were collected in the Spring prior to summer stress and the Fall following summer stress during 2012. Root samples will also be collected during summer stress in 2013.

For the 2012 bermudagrass results, there was a significant location effect and treatment means are presented separately for each location. Preliminary

golf courses. While there was no treatment effect on VWC at Diamond Oaks, Micro-Blaze Turf Care applied every 2 weeks had higher VWC compared to control plots. Root sample and ball roll data will be reported in 2013. Preliminary results for two creeping bentgrass greens in Stillwater, OK did indicate statistical differences among treatments (data not shown). However, at the time of the writing of this publication, data collection was not completed for the 2012 creeping bentgrass growing season. For all locations, the root sampling data and ball roll data will be reported in 2013.

### Summary

- Micro-Blaze Turf Care treatments applied every 2 weeks during the growing season increased average turf quality ratings compared to control plots on bermudagrass putting greens, regardless of formulation.
- Preliminary results indicate that there was no difference in NDVI readings among treatments on bermudagrass and creeping bentgrass putting greens.
- Micro-Blaze Turf Care applied every 2 weeks during the growing season increased average volumetric soil water content on relatively young ‘Champion’ bermudagrass greens, but not on relatively old ‘Champion’ bermudagrass greens.