Turfgrass Research
2014

K-STATE TURFGRASS RESEARCH

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Evaluation of Colorants on 'Meyer' Zoysiagrass

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Summary. Turf colorants effectively enhanced green color of dormant zoysiagrass. Using a higher application rate or adding a midwinter application helped color persistence. Colorants increased canopy temperatures more than soil temperatures, which may encourage earlier spring greenup.

Rationale. In the transition zone, zoysiagrass provides a number of agronomic and economic benefits compared with cool-season turfgrass, including reduced water, pesticide, and fertilizer requirements and simplified weed control. However, brown zoysiagrass color during dormancy prevents its more widespread use among turf managers. Although colorants are used routinely in the South, more information is needed about the use of colorants on zoysiagrass in the transition zone where a longer winter dormancy period occurs.

Objectives. Determine the effects of colorants along with recommended number of applications and application volumes on 'Meyer' zoysiagrass in the transition zone.

Study Description. Field studies were conducted at the Rocky Ford Turfgrass Research Center and Colbert Hills Golf Course in Manhattan, KS, from October 2013 through May 2014 on 'Meyer' zoysiagrass maintained at fairway height (0.5 in.). Thirteen treatments, including an untreated control, consisted of the colorants Green Lawnger, Endurant, and Wintergreen Plus applied once in October at 100 or 160 gal/a or at the same rates in October and February (18

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weeks after the initial application). Turf color was visually rated on a biweekly schedule, and spring soil and canopy temperatures were monitored biweekly starting in March. Data were subjected to a threefold nested analysis of variance, and Fisher's protected LSD ($P \leq 0.05$) was used to detect differences.

Results. Results from the two locations were similar; data from Rocky Ford are presented in Table 1. A single application of each colorant at 100 gal/a on October 17 resulted in acceptable color for about 8 weeks (through December 11). Single applications at 160 gal/a resulted in acceptable color for at least 12 weeks (through January 10). Supplementing the autumn application with a sequential application on February 17 resulted in acceptable turf color throughout the remainder of dormancy with all colorants regardless of application volume. Green Lawnger and Endurant provided a dark-green turf color, whereas color after Wintergreen Plus application was more of a pine green (Figure 1). All three colorants at both application volumes and both application timings resulted in higher spring canopy temperatures on some spring evaluation dates, which may serve to speed spring greenup.

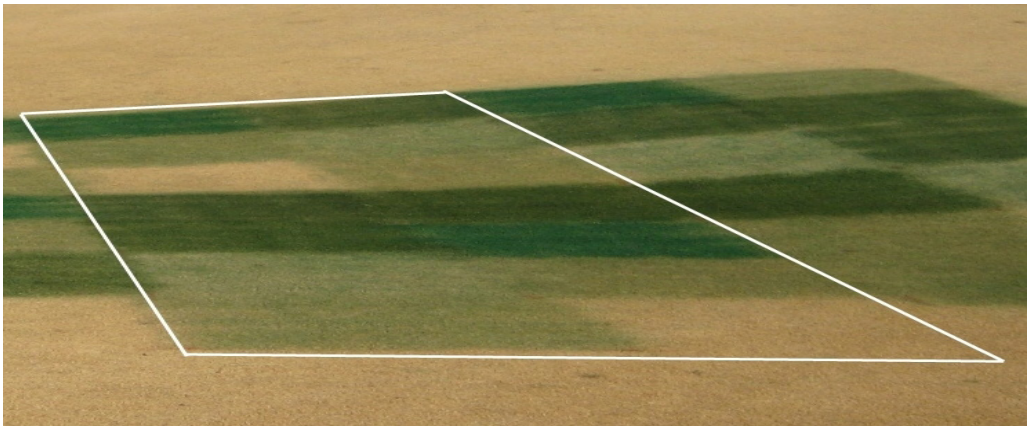

Figure 1. Study area after the second application timing treatments on 'Meyer' zoysiagrass at the Colbert Hills Golf Course on February 24, 2014 (18 weeks after treatment). White box: Top (furthest) row, from left to right in each row: Wintergreen Plus (100 gal/a, two applications), Green Lawnger (100 gal/a, two application), Endurant (160 gal/a, one application), Wintergreen Plus (100 gal/a, one application), Untreated, Green Lawnger (100 gal/a, one application), Green Lawnger (160 gal/a, two applications), Endurant (160 gal/a, two applications), Endurant (100 gal/a, two applications), Wintergreen Plus (160 gal/a, two applications), Wintergreen Plus (160 gal/a, one application), Green Lawnger (160 gal/a, one application), Endurant (100 gal/a, one application), Untreated.

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Table 1. Effect of colorant, application volume, and application timing on color of 'Meyer' zoysiagrass at the Rocky Ford Turfgrass Research Center, Manhattan, KS, 2013–2014

		Turf color[1]					
		Oct. 17[2]	Dec. 11	Jan. 10	Feb. 21	Mar. 17	May 1
Treatment	Application date[3]	0 WAT[4]	8 WAT	12 WAT	18 WAT	22 WAT	28 WAT
Green Lawnger							
100 gal/a	Oct. 17	9.0	7.1 b[5]	5.9 b	4.5 c[7]	3.0 fg	7.3 c
	Oct. 17 + Feb. 18	--[6]	--	--	9.0 a	8.5 ab	9.0 a
160 gal/a	Oct. 17	8.8	7.8 a	7.0 a	5.3 b	3.3 efg	6.8 c
	Oct. 17 + Feb. 18	--	--	--	9.0 a	8.5 ab	9.0 a
Endurant							
100 gal/a	Oct. 17	8.5	6.3 c	5.4 c	3.8 d	2.5 g	6.8 c
	Oct. 17 + Feb. 18	--	--	--	8.8 a	8.0 bc	8.8 a
160 gal/a	Oct. 17	8.9	7.5 ab	6.6 a	4.3 cd	3.5 def	7.5 bc
	Oct. 17 + Feb. 18	--	--	--	9.0 a	9.0 a	8.8 a
Wintergreen Plus							
100 gal/a	Oct. 17	8.9	7.5 ab	5.8 bc	5.5 b	4.0 de	7.0 c
	Oct. 17 + Feb. 18	--	--	--	8.5 a	7.3 c	8.5 ab
160 gal/a	Oct. 17	8.9	7.8 a	6.6 a	5.3 b	4.3 d	7.3 c
	Oct. 17 + Feb. 18	--	--	--	9.0 a	8.8 ab	9.0 a
Untreated		5.0	1.0 d	1.0 d	1.0 e	1.0 h	5.3 d

[1] Turf color was rated on a 1 to 9 scale, where 1 = straw brown; 6 = acceptable green color (light green); and 9 = dark green.
[2] No significant difference ($P \geq 0.05$) for date.
[3] Colorants at a dilution of 1:6 (colorant:water) were applied using a three-nozzle, CO_2-pressurized sprayer with 8002VS nozzles at 20 psi calibrated to deliver spray solution at half of the total gal/a application volume in two directions.
[4] Weeks after treatment (weeks after first colorant application).
[5] Means in a column followed by the same letter are not significantly different according Fisher's protected least significant difference test, $P \leq 0.05$.
[6] No significant difference ($P \geq 0.05$) for application timing for date. Therefore, application volume means are the average of 8 observations for the 100 and 160 gal/a treatments before February 21, regardless of application timing.
[7] Means for application timing effect on colorant and application volume beginning on February 21; based on $n = 4$.

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