Conversion of a Hybrid Bermudagrass Fairway to Zoysiagrass



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Introduction

Golf courses throughout the southern U.S. have begun converting fairways from hybrid bermudagrass (Cynodon dactylon × C. transvaalensis Burtt Davy) to new zoysiagrass (Zoysia matrella L. Merr.) cultivars. Historically, superintendents have sprayed glyphosate and fluazifop to eradicate hybrid bermudagrass prior to sprigging zoysiagrass. Recognition[®], trifloxysulfuron + metcamifen, can be tank-mixed with fluazifop to gradually remove hybrid bermudagrass during the conversion process. This eliminates the need for glyphosate applications prior to sprigging and reduces

Figure 2. Percent zoysiagrass cover 22, 67, and 93 DAS. Means with the same letter within the same rating date are not considered significantly different at α =0.05.



Table 1. Herbicide Treatments				
Trt	Trade Name	A.I.	Rate	Apps
1	Non-treated Check			
2	Roundup Powermax	glyphosate	3910 g ae ha⁻¹	AB
	Fusilade II	fluazifop	421 g ai ha⁻¹	
3*	Fusilade II	fluazifop	210 g ai ha -1	BDF
	Recognition	trifloxysulfuron + metcamifen	28 g ai ha ⁻¹	
4	Fusilade II	fluazifop	421 g ai ha -1	BDF
	Recognition	trifloxysulfuron + metcamifen	28 g ai ha -1	
5	Fusilade II	fluazifop	210 g ai ha -1	CDF
	Recognition	trifloxysulfuron + metcamifen	28g ai ha ⁻¹	
6	Fusilade II	fluazifop	421 g ai ha -1	CDF
	Recognition	trifloxysulfuron + metcamifen	28 g ai ha⁻¹	
7	Fusilade II	fluazifop	210 g ai ha -1	CE
	Recognition	trifloxysulfuron + metcamifen	28 g ai ha ⁻¹	
8	Fusilade II	fluazifop	120 g ai ha ⁻¹	CE
	Recognition	trifloxysulfuron + metcamifen	28 g ai ha ⁻¹	
*Trts 3 – 8 contained a non-ionic surfacatant (0.25% v/v)				

disruption of play due to surface imperfections.

Objective

Evaluate the effect of fluazifop + trifloxysulfuron + metcamifen rates and application timings on zoysiagrass establishment and hybrid bermudagrass eradication compared to a traditional conversion program.

Materials and Methods

Experiments

- Conducted from May to October, 2022
- Athens Turfgrass Research and Education Center (ATREC) in Athens, GA
- 3952 bushels ha⁻¹ of 'Zorro' zoysiagrass sprigs spread onto an existing 'Tiftuf' hybrid bermudagrass fairway on June 21, 2022
- 79 metric tons of topdressing sand ha⁻¹ applied immediately following sprigging Plots were maintained at 2.5 cm and irrigated as
- **Percent Reduction of Hybrid Bermudagrass Cover***



Figure 3. Non-treated (A), traditional program (trt 2; B), and new program (trt 4; C) plots 39 (a), 67 (b), and 94 (c) DAS.



- needed throughout the study
- Ronstar[®] G (oxadiazon) applied broadcast 4 days before sprigging (DBS) and 24.5 kg N ha⁻¹ (39-0-0) fertilizer applied 73 and 87 days after sprigging (DAS) **Experimental Design**
- herbicide treatments (trts; Table 1) within a randomized complete block design with 4 replications
- Herbicide treatments applied using a CO₂-powered backpack sprayer calibrated to deliver 374 L ha⁻¹
- Applications made 25 DBS (A), 6 DBS (B), 8 DAS (C), 39 DAS (D), 50 DAS (E), 72 DAS (F), and 100 DAS (G) **Measurements and Analysis**
- Response variables were measured 22, 67, and 93 DAS
 - Percent visual zoysiagrass cover
 - Percent reduction of visual bermudagrass cover compared to the non-treated
- Means were separated using Fisher's Protected Least Significant Difference (LSD) in R[®] version 4.1.1

Results, Discussion, and Future Research



- All fluazifop + trifloxysulfuron + metcamifen treatments other than the 120 g ai ha⁻¹ rate of fluazifop (trt 8) provided
- similar zoysiagrass cover and bermudagrass suppression as the traditional program when rated 93 DAS.
- \star No significant differences were detected between low and high rates of fluazifop + trifloxysulfuron + metcamifen when first applied before or after sprigging (trts 3-6).
- \star The high rate of fluazifop + trifloxysulfuron + metcamifen applied before sprigging (6 DBS) provided the best results of all fluazifop + trifloxysulfuron + metcamifen treatments across all rating dates.
- ★ The 120 g ai ha⁻¹ rate of fluazifop + trifloxysulfuron + metcamifen (trt 8) did not achieve adequate zoysiagrass cover or bermudagrass removal.



 \star Plots were maintained at 2.5 cm to allow for proper rating of visual estimates of zoysiagrass and bermudagrass

cover. Maintaining research at a lower mowing height (1.3 cm) may have resulted in a different outcome. Equipment failure prevented mechanical planting of sprigs combined with heavy topdressing rates may have

affected zoysiagrass establishment.

Future research should evaluate fluazifop + trifloxysulfuron + metcamifen applications on weed control during

