FINE FESCUE TOLERANCE TO APPLICATIONS OF VELOCITY, 2008

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J.E. Kaminski

Department of Plant Science
University of Connecticut, Storrs, CT

INTRODUCTION

Annual bluegrass (*Poa annua* L.) and roughstalk bluegrass (*Poa trivialis* L.) are common weeds in various turfgrass situations. Velocity™ (bispyribac-sodium) is a relatively new herbicide that can selectively remove these weeds from creeping bentgrass and perennial ryegrass. Although Velocity has been shown to be effective on these species, applications may elicit an undesired discoloration to desirable turf species known as the "yellow flash". Although extensive product testing has been conducted on perennial ryegrass and creeping bentgrass, its safety on other turfgrass species such as fine leaf fescues (*Festuca spp.*) is relatively unknown. The primary objective of this study was to determine the safety of Velocity on fine leaf fescue when applied at varying rates and application intervals.

MATERIALS & METHODS

This study was conducted at the University of Connecticut Plant Science Research and Education Facility located in Storrs, CT. A three year old stand of 'Jasper' creeping red fescue (*Festuca rubra* ssp. *rubra*) was used for the study and the area received a total of 0.5 lbs N per 1000 ft^2 in the spring prior to initiation of the study. Turf was mowed approximately once per week to a height of 4.0 inches.

Velocity was applied two, three or four times every 1 to 2 weeks at 10 or 30 g ai per acre. All treatments were applied in 1.0 gal water per 1000 sq ft using a CO_2 backpack sprayer equipped with a single 9504E flat fan nozzle. The study area was not irrigated, but was subject to natural rainfall. All treatments and application dates are listed in the data table.

Plots measured 3 ft x 6 ft, and were arranged in a randomized complete block with four replications. The fine leaf fescue was rated visually for overall quality and injury. Injury to the fine leaf fescue from the herbicide treatments was rated on a 0 to 5 scale where 0 = no turfgrass injury; 2.5 = minimum level of acceptable injury for a fine leaf fescue home lawn; and 5 = turfgrass brown or dead. Turfgrass quality was rated visually on a 1 to 9 scale where 1 = brown or dead turf; 6.0 = minimum acceptable quality for a home lawn; and 9 = optimum color and density. In addition, percent of the plot area covered with a natural infestation of clover or crabgrass was rated on a percent scale where 0 = no clover present and 100 = entire plot area covered with clover.

RESULTS & DISCUSSION

Quality and Injury. Differences in overall turf quality were only observed on the 1 Aug (Table 1). Although no differences among treatments were observed prior to this period, plots treated with 30 g ai/a of Velocity exhibited unacceptable quality (<6.0) on 2 or 4 of the 9 rating dates. For reasons unknown, plots receiving multiple applications of the high Velocity rate did not have a reduction in quality from the additional application. Plots treated with 10 g ai/a of Velocity generally had acceptable quality ratings on all dates. Despite the generally acceptable quality of plots treated with Velocity, injury to the fine leaf fescue was observed on several rating dates. Slight injury was observed within 2 days of the initial application on 18 Jun (Table 2). Although no differences in injury were observed until 1 Aug, plots treated with 30 g ai/a generally exhibited the greatest level of injury when compared to plots receiving 10 g ai/a. Only on 1 Aug did plots receiving multiple applications of 30 g ai/a of Velocity reach a level of injury that was considered unacceptable for a fine leaf fescue home lawn (≥ 2.5).

Clover and crabgrass. A natural infestation of white clover was observed within the plots during the course of the study. All plots receiving Velocity, regardless of rate or number of total applications, resulted in a reduction in percent white clover by 1 Aug (Table 3). At this time, plots treated with Velocity had between 0 and 2% clover as compared to 16% within the untreated control plots. Due to escapes of a clover in a select number of individual plots, variance within the

study was high and no statistical differences in clover were observed in mid-Aug or on the final rating date in Sep. No differences in crabgrass control were observed on any rating date (Table 3).

Injury to the turf generally presented itself as a discoloration and thinning of the turf stand, rather than the typical yellow flash observed when Velocity is applied to perennial ryegrass or creeping bentgrass. For this reason, the injury sustained from the application of Velocity to creeping red fescue is likely to be less noticeable or negligible. Although few differences in quality and injury were observed throughout the duration of this study, slight reductions in turf quality may occur. Variation in quality and injury also may vary by cultivar and species. Therefore, future research on the impact of Velocity on more species and additional cultivars within each species is warranted. It should also be pointed out that while multiple applications of Velocity did not appear to reduce the overall quality of the fine leaf fescue, applications early in the season might result in more injury to desirable species when compared to treatments applied during the middle of the summer.

Table 1. Quality of a fine leaf fescue home lawn following applications of Velocity at various rates and intervals, 2008.

	App[z]	Quality[y]								
Treatment and rate in ai/a	timing	20 Jun	25 Jun	2 Jul	9 Jul	16 Jul	20 Jul	1 Aug	15 Aug	9 Sep
Velocity 30 g.....	A	5.5 a[x]	6.3 a	5.5 a	6.8 a	6.5 a	5.8 a	5.8 c	6.8 a	7.8 a
Velocity 30 g.....	ACE	5.8 a	6.0 a	5.5 a	6.8 a	6.8 a	6.0 a	6.0 bc	7.3 a	7.8 a
Velocity 10 g.....	ABCD	6.8 a	6.5 a	5.5 a	7.8 a	6.5 a	6.3 a	6.5 abc	7.0 a	7.3 a
Velocity 10 g.....	ACEG	7.0 a	6.8 a	6.3 a	7.5 a	7.0 a	6.8 a	7.0 ab	7.3 a	8.0 a
Untreated	-	6.8 a	7.0 a	7.3 a	8.0 a	7.0 a	7.3 a	7.3 a	7.8 a	8.0 a
Days after last treatment	A	2	7	14	21	28	32	44	58	83
	ACE	2	7	14	7	1	5	17	31	56
	ABCD	2	7	7	7	7	11	23	37	51
	ACEG	2	7	14	7	14	18	1	15	29

[z] Treatments were applied as follows: A = 18 Jun, B = 25 Jun, C = 02 Jul, D = 09 Jul, E = 15 Jul, and G = 31 Jul

[y] Quality was rated visually on 0 to 9 scale where 0 = entire plot area brown or dead; 6 = minimum acceptable quality for a fine leaf fescue lawn; and 9 = optimum density and color.

[x] Means in a column followed by the same letter are not significantly different at $P \leq 0.05$ according to Fisher's protected least significant difference test

Table 2. Fine fescue Injury following applications of Velocity at various rates and intervals, 2008.

	Application[z]	Injury[y]						
Treatment and rate in ai/a	timing	20 Jun	25 Jun	2 Jul	9 Jul	16 Jul	20 Jul	1Aug
Velocity 30 g.....	A	1.0 ax	1.3 a	2.0 a	1.3 a	1.5 a	2.3 a	2.3 a
Velocity 30 g.....	ACE	1.0 a	1.5 a	2.0 a	1.3 a	1.3 a	2.0 a	2.5 a
Velocity 10 g.....	ABCD	0.3 a	0.5 a	2.0 a	1.0 a	1.3 a	1.8 a	1.8 ab
Velocity 10 g.....	ACEG	0.3 a	0.5 a	1.5 a	0.5 a	1.0 a	1.3 a	1.5 ab
Untreated.....	-	0.0 a	0.3 a	0.8 a	0.3 a	0.8 a	0.8 a	0.8 b

[z] Treatments were applied as follows: A = 18 Jun, B = 25 Jun, C = 02 Jul, D = 09 Jul, E = 15 Jul, and G = 31 Jul

[y] Turfgrass injury was rated on a 0 to 5 scale where 0 = no injury visible and 5 = entire plot brown or dead.

[x] Means in a column followed by the same letter are not significantly different at $P \leq 0.05$ according to Fisher's protected least significant difference test.

Table 3. Percent clover and Phytotoxicity on Fine fescue following applications of Velocity at various rates and intervals, 2008.

	App[z]	Percent clover[y]					% crabgrass[x]	
Treatment and rate in ai/a	Timing	16 Jul	20 Jul	1 Aug	15 Aug	8 Sept	15 Aug	8 Sep
Velocity 30 g.....	A	0 a[w]	0 a	1 b	1 a	3 a	9 a	18 a
Velocity 30 g.....	ACE	5 a	3 a	0 b	0 a	3 a	7 a	15 a
Velocity 10 g.....	ABCD	2 a	2 a	0 b	0 a	0 a	10 a	14 a
Velocity 10 g.....	ACEG	5 a	3 a	2 b	0 a	0 a	7 a	13 a
Untreated.....	-	19 a	17 a	16 a	20 a	20 a	15 a	20 a

[z] Treatments were applied as follows: A = 18 Jun, B = 25 Jun, C = 02 Jul, D = 09 Jul, E = 15 Jul, and G = 31 Jul

[y] Percent of the plot area infested by clover was visually rated on a 0 to 100 percent scale where 0 = no clover is present or 100 = entire plot is covered with clover.

[x] Percent of the plot area infested with crabgrass was visually rated on a 0 to 100 percent scale where 0 = no crabgrass present or 100 = entire plot covered with crabgrass.

[w] Means in a column followed by the same letter are not significantly different at $P \leq 0.05$ according to Fisher's protected least significant difference test.