

2017 Fescue Damage by Johnsongrass Control Options (including 2018 Assessments)

Introduction

Johnsongrass (*Sorghum halepense*) is a perennial warm-season grass, listed as a noxious weed in Kentucky, that is a common problem on right-of-ways. There are a number of herbicides labeled and available to control johnsongrass on right-of-ways. However, some of these are nonselective or are selective for johnsongrass but can still damage desirable cool-season turf, such as tall fescue. One of the safer johnsongrass control herbicides to use on tall fescue is Fusion but a label change in 2012 made it unavailable for use on right-of-way sites. This trial evaluates the damage and recovery of tall fescue after application of some of these herbicide control options.

Materials and Methods

The trial was established August 26, 2017 at Spindletop Research Farm on a tall fescue field when the plants were 10 inches high. The trial had 20 treatments with 3 replications arranged in a randomized complete block design with 3.5 ft by 10 ft plots and 1.5 ft wide unsprayed buffers between each of the plots. Application was at 30 gallons per acre. Tall fescue color was assessed every two weeks by comparison to the running check strips. The color rating ranges from 0 (dead) to 9 (full green). The color of the check strips was set at 8. Plots were assessed 14 (9/9/2017), 29 (9/24/2017), 45 (10/10/2017), 57 (10/22/2017), and 75 (11/9/2017) days after treatment (DAT). In the spring tall fescue stand density was assessed visually from 0 (none) to 10 (full stand) 262 (5/15/2018) and 276 (5/29/2018) DAT. Data were analyzed using ARM software and treatment means were compared using Fisher's LSD at $p = 0.05$.

Table 1 lists the treatments, active ingredients and application rates. The 2011 Fusion label rates for selective control of johnsongrass were 7 to 9 oz/A (Treatments 1 and 2). The rates on the label for Envoy are 16 and 32 fl oz/A (Treatments 3 and 4). Previous trials had used 13, 15, and 17 fl oz/A to find the best selective rate with less fescue damage. The labeled Fusilade II rates are 16 to 24 oz/A (Treatments 5 and 6). The Acclaim Extra label lists 20 oz/A per acre to control seedling johnsongrass 12 – 24 inches tall (Treatment 7); 39 oz/A to control rhizome johnsongrass 24 to 60 inches tall (Trt. 8); and a combination of Acclaim Extra plus Fusilade (0.5 plus 3.5 oz/A), for improved turfgrass tolerance and to control rhizome johnsongrass 10 to 25 inches tall (Treatment 9). The Outrider label rates for selective johnsongrass control in tall fescue turf are 0.75 to 1 oz/A (Treatments 10 and 11). Treatment 12 is MSMA applied alone and Treatment 13 is MSMA applied in combination with Outrider at 0.75 oz/A. Clearcast (Treatment 14) has an aquatic label and may be used close to waterways. The high rate of Plateau used in Treatment 15 will severely damage tall fescue. Poast Plus is a herbicide option we have not tested recently and has control of rhizome johnsongrass up to 25 inches tall on the label for this region of the U.S. (Treatments 16 and 17). Roundup (Treatment 18) and Journey (Treatment 19) are non-selective.

Results and Discussion

Some treatments showed good safety on tall fescue with color ratings that were consistently not different from the nontreated check over all the ratings while others showed recovery by the end of the season (Table 2). Treatments with color ratings consistently not different from control included both rates of Fusion (Treatments 1 and 2), both rates of Acclaim Extra (Treatments 7 and 8), MSMA by itself (Treatment 12) and in combination with Outrider (Treatment 13). Treatments that recovered by 75 DAT included the low rate of Envoy (Treatment 3), both rates of Fusilade (Treatments 5 and 6), the combination of Acclaim + Fusilade (Treatment 9), both rates of Outrider (Treatments 10 and 11), both rates of Poast (Treatments 16 and 17), and Roundup (Treatment 18). The high rate of Envoy (Treatment 4), Clearcast (Treatment 14), Plateau (Treatment 15), and Journey (Treatment 19) did not recover before the end of the season.

In the spring the tall fescue stand density improved for many treatments between the two rating dates in 2018 (Table 3). By late May (276 DAT) the top group of treatments had density ratings from 6.8 to 9.0 while the sparsest treatments ranged from 1.2 to 5. The latter group included the high rate of Envoy (Treatment 4), Clearcast (Treatment 14), Plateau (Treatment 15), both rates of Poast (Treatments 16 and 17), Roundup (Treatment 18), and Journey (Treatment 19). These would not be recommended if one wants to preserve existing fescue in the application area

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Table 1. Herbicide Treatments, Active Ingredients and Application Rates.

Trt. No.	Product Name	Rate	Rate Unit	Active Ingredient(s)	ai Rate (per acre)
1	Fusion Activator 90	7 0.25	FL OZ/A % V/V	fluazifop + fenoxaprop	1.75 oz + 0.49 oz
2	Fusion Activator 90	9 0.25	FL OZ/A % V/V	fluazifop + fenoxaprop	2.25 oz + 0.63 oz
3	Envoy COC	16 1	FL OZ/A % V/V	clethodim	1.9 oz
4	Envoy COC	32 1	FL OZ/A % V/V	clethodim	3.9 oz
5	Fusilade II Activator 90	16 0.25	FL OZ/A % V/V	fluazifop	4 oz
6	Fusilade II Activator 90	24 0.25	FL OZ/A % V/V	fluazifop	6 oz
7	Acclaim Extra Activator 90	20 0.25	FL OZ/A % V/V	fenoxaprop	1.4 oz
8	Acclaim Extra Activator 90	39 0.25	FL OZ/A % V/V	fenoxaprop	2.78 oz
9	Acclaim Extra Fusilade II COC	7 14 1	FL OZ/A FL OZ/A % V/V	fenoxaprop fluazifop	0.5 oz 3.5 oz
10	Outrider Activator 90	0.75 0.25	OZ/A % V/V	sulfosulfuron	0.563 oz
11	Outrider Activator 90	1 0.25	OZ/A % V/V	sulfosulfuron	0.75 oz
12	MSMA	32	FL OZ/A	monosodium acid methanearsonate	24 oz
13	Outrider MSMA	0.75 32	OZ/A FL OZ/A	sulfosulfuron monosodium acid methanearsonate	0.563 oz 24 oz
14	Clearcast MSO	32 1	FL OZ/A % V/V	imazamox	4 oz ae
15	Plateau MSO	8 1	FL OZ/A % V/V	imazapic	2 oz ae
16	Poast Plus MSO	2.25 1	PT/A % V/V	sethoxydim	4.5 oz
17	Poast Plus MSO	3.75 1	PT/A % V/V	sethoxydim	7.5 oz
18	Roundup ProMax	22	FL OZ/A	glyphosate	12.4 oz ae
19	Journey MSO	21.3 1	FL OZ/A % V/V	imazapic + glyphosate	2 oz ae + 4 oz ae
20	Nontreated Check				

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Table 2. Herbicide Treatments and Fescue Color (0-9) 14, 29, 45, 57, and 75 Days After Treatment (DAT)

Trt. No.	Product Name	Rate	Rate Unit	14 DAT	29 DAT	45 DAT	57 DAT	75 DAT
1	Fusion Activator 90	7 0.25	FL OZ/A % V/V	7.8 ab ¹	7.9 a	7.7 ab	8.0 a	7.9 a
2	Fusion Activator 90	9 0.25	FL OZ/A % V/V	7.6 abc	7.5 ab	7.2 ab	7.5 abc	8.0 a
3	Envoy COC	16 1	FL OZ/A % V/V	6.2 e	2.7 fg	3.3 fg	5.2 e	7.0 ab
4	Envoy COC	32 1	FL OZ/A % V/V	6.3 e	1.3 h	0.8 i	3.2 f	3.8 d
5	Fusilade II Activator 90	16 0.25	FL OZ/A % V/V	7.5 abcd	6.3 bcd	6.5 bc	7.2 abc	7.9 a
6	Fusilade II Activator 90	24 0.25	FL OZ/A % V/V	7.0 d	4.7 e	3.8 ef	5.7 de	7.3 a
7	Acclaim Extra Activator 90	20 0.25	FL OZ/A % V/V	8.0 a	8.0 a	8.0 a	8.0 a	8.0 a
8	Acclaim Extra Activator 90	39 0.25	FL OZ/A % V/V	7.9 a	8.0 a	8.0 a	8.0 a	8.0 a
9	Acclaim Extra Fusilade II COC	7 14 1	FL OZ/A FL OZ/A % V/V	7.6 abc	6.2 cd	6.7 bc	7.3 abc	8.0 a
10	Outrider Activator 90	0.75 0.25	OZ/A % V/V	7.0 d	5.7 de	5.5 cd	6.7 bcd	7.8 a
11	Outrider Activator 90	1 0.25	OZ/A % V/V	7.2 cd	6.2 cd	4.7 de	6.3 cde	7.9 a
12	MSMA	32	FL OZ/A	8.0 a	8.0 a	8.0 a	8.0 a	8.0 a
13	Outrider MSMA	0.75 32	OZ/A FL OZ/A	7.8 a	7.3 abc	7.2 ab	7.7 ab	8.0 a
14	Clearcast MSO	32 1	FL OZ/A % V/V	7.0 d	3.3 f	0.5 i	1.5 g	2.8 d
15	Plateau MSO	8 1	FL OZ/A % V/V	7.2 bcd	5.5 de	1.0 i	2.7 fg	5.7 bc
16	Poast Plus MSO	2.25 1	PT/A % V/V	7.2 cd	3.2 f	4.5 def	5.3 e	6.7 ab
17	Poast Plus MSO	3.75 1	PT/A % V/V	6.3 e	2.5 fgh	1.5 hi	3.7 f	6.8 ab
18	Roundup ProMax	22	FL OZ/A	5.3 f	3.0 f	2.5 gh	5.7 de	7.2 ab
19	Journey MSO	21.3 1	FL OZ/A % V/V	6.2 e	1.7 gh	1.2 i	2.5 fg	4.2 cd
20	Nontreated Check			8.0 a	8.0 a	8.0 a	8.0 a	8.0 a

¹ Means within a column followed by the same letter are not different according to Fisher's LSD at $P < 0.05$.

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Table 3. Herbicide Treatments and Stand Density (0-10) 262 and 276 Days After Treatment (DAT)

Trt. No.	Product Name	Rate	Rate Unit	262 DAT	276 DAT
1	Fusion Activator 90	7 0.25	FL OZ/A % V/V	8.0 a ¹	8.3 a
2	Fusion Activator 90	9 0.25	FL OZ/A % V/V	6.0 ab	9.0 a
3	Envoy COC	16 1	FL OZ/A % V/V	6.3 ab	6.8 ab
4	Envoy COC	32 1	FL OZ/A % V/V	3.2 cd	5.0 bc
5	Fusilade II Activator 90	16 0.25	FL OZ/A % V/V	4.8 bc	7.0 ab
6	Fusilade II Activator 90	24 0.25	FL OZ/A % V/V	6.3 ab	8.0 a
7	Acclaim Extra Activator 90	20 0.25	FL OZ/A % V/V	7.0 ab	9.0 a
8	Acclaim Extra Activator 90	39 0.25	FL OZ/A % V/V	7.0 ab	8.3 a
9	Acclaim Extra Fusilade II COC	7 14 1	FL OZ/A FL OZ/A % V/V	6.0 ab	9.0 a
10	Outrider Activator 90	0.75 0.25	OZ/A % V/V	6.0 ab	8.7 a
11	Outrider Activator 90	1 0.25	OZ/A % V/V	5.3 abc	7.3 ab
12	MSMA	32	FL OZ/A	7.0 ab	7.7 a
13	Outrider MSMA	0.75 32	OZ/A FL OZ/A	6.7 ab	8.7 a
14	Clearcast MSO	32 1	FL OZ/A % V/V	1.5 d	1.2 e
15	Plateau MSO	8 1	FL OZ/A % V/V	2.7 cd	4.0 cd
16	Poast Plus MSO	2.25 1	PT/A % V/V	3.0 cd	3.0 cde
17	Poast Plus MSO	3.75 1	PT/A % V/V	1.8 d	2.3 de
18	Roundup ProMax	22	FL OZ/A	1.7 d	2.7 cde
19	Journey MSO	21.3 1	FL OZ/A % V/V	3.0 cd	2.7 cde
20	Nontreated Check			6.8 ab	9.0 a

¹ Means within a column followed by the same letter are not different according to Fisher's LSD at $P < 0.05$.

Figure 1: Overall View of the Plots 45 DAT (Oct. 6, 2017)

The plots in the foreground were treated with Fusion (Treatments 1 and 2) and one can see the damaged fescue from other treatments as well as the unsprayed borders between plots.

