2018 Johnsongrass Control Trial in Bowling Green

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 is a continuation of the evaluation of a range of johnsongrass control/suppression options.

Materials and Methods

The plan was to establish trials early and later in the season at the site in Bowling Green, KY at the Natcher Parkway and Hwy 68 (Russellville Rd.) interchange. However, there was only enough area with a good stand of johnsongrass for one application timing. The area was mowed May 24, 2018 and the regrowth was treated June 8, 2018. The trial had 18 treatments with 3 replications arranged in a randomized complete block design with 7 ft by 20 ft plots. Application was at 30 gallons /acre. The johnsongrass canopy was 32 inches tall with flowering plants (5% flowering) 43 inches tall. Johnsongrass control was assessed 25 (7/3/2018), 66 (8/13/2018), 103 (9/19/2018), and 130 (10/16/2018) days after treatment (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 labeled Fusilade II rates are 16 to 24 oz/A (Treatments 3 and 4). The Acclaim Extra label lists 20 oz/A per acre to control seedling johnsongrass 12 – 24 inches tall (Treatment 5); 39 oz/A to control rhizome johnsongrass 24 to 60 inches tall (Trt. 6); 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 7). The Outrider label rates for selective johnsongrass control in tall fescue turf are 0.75 to 1 oz/A (Treatments 8 and 9). Treatment 10 is MSMA applied alone and Treatment 11 is MSMA applied in combination with Outrider at 0.75 oz/A. Clearcast (Treatment 12) has an aquatic label and may be used close to waterways. The high rate of Plateau used in Treatment 13 will severely damage tall fescue. Detail + Plateau was suggested as a combination (Treatment 14) with enhanced control of johnsongrass. The combination of Method + Detail + Plateau (Treatment 15) was one suggested to suppress johnsongrass growth, in areas such as behind guardrails. Roundup ProMax (Treatment 16) and Journey (Treatment 17) are non-selective.

Results and Discussion

By the time of the first rating 25 DAT some of the dead foliage had been dry for a while and there was already considerable regrowth on some of the plots (Table 2). If earlier ratings had been taken the % control for the MSMA plots would have been higher than 12% as the foliar damage is evident relatively quickly before the regrowth starts. The most effective group of treatments had 68 to 90% control. They included the high rate of Fusion (Treatment 2), both Fusilade rates (Treatments 3 and 4), the Acclaim + Fusilade combination (Treatment 7), both rates of Outrider (Treatments 8 and 9), Clearcast (Treatment 12), both Plateau treatments (numbers 13 and 14), Roundup (Treatment 16) and Journey (Treatment 17).

Control was 78% with Roundup ProMax (Treatment 16) 25 DAT while it was 0% at subsequent assessments (Table 2). The regrowth was thicker and taller than the untreated control. There may not have been much glyphosate translocated to rhizome buds and dormant buds started growing after the existing culms were killed (McWhorter, 1972).

At 68 DAT the top group of treatments had 68 to 88% control and included the high rates of Fusion (Treatment 2) and Fusilade (Treatment 4), the Acclaim + Fusilade combination (Treatment 7), both rates of Outrider (Treatments 8 and 9), both Plateau treatments (numbers 13 and 14), and Journey (Treatment 17).

By 103 DAT some treatments had more regrowth and lower control ratings while some were slower acting and had higher % control (Table 2). The top group of treatments had 50 to 82% control and were the same as at 68 DAT but added the low rate of Fusion (Treatment 1), both rates of Acclaim (Treatments 5 and 6), and the Outrider + MSMA combination (Treatment 11).

The last rating of the season 130 DAT had 45 to 83% control for the top group of treatments which were the same as at 103 DAT except that the low rate of Acclaim (Treatment 5) was not high enough to be included.

The Method + Detail + Plateau combination (Treatment 15) did not have high control ratings but did reduce the growth of johnsongrass and might have utility in controlling growth in areas such as behind guardrails early in the season. The treatments showing aboveground control more quickly may not necessarily be the ones with the best long term control. Ratings will be taken in spring 2019.

Literature Cited:

McWhorter, C.G. 1972. Factors affecting johnsongrass rhizome production and germination. Weed Sci. 20: 41-45.

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	7	FL OZ/A	fluazifop + fenoxaprop	1.75 oz + 0.49 oz
	Activator 90	0.25	% V/V		
2	Fusion	9	FL OZ/A	fluazifop + fenoxaprop	2.25 oz + 0.63 oz
	Activator 90	0.25	% V/V		
3	Fusilade II	16	FL OZ/A	fluazifop	4 oz
	Activator 90	0.25	% V/V		
4	Fusilade II	24	FL OZ/A	fluazifop	6 oz
	Activator 90	0.25	% V/V		
5	Acclaim Extra	20	FL OZ/A	fenoxaprop	1.4 oz
	Activator 90	0.25	% V/V		
6	Acclaim Extra	39	FL OZ/A	fenoxaprop	2.78 oz
	Activator 90	0.25	% V/V		
7	Acclaim Extra	7	FL OZ/A	fenoxaprop	0.5 oz
	Fusilade II	14	FL OZ/A	fluazifop	3.5 oz
	COC	1	% V/V		
8	Outrider	0.75	OZ/A	sulfosulfuron	0.563 oz
	Activator 90	0.25	% V/V		
9	Outrider	1	OZ/A	sulfosulfuron	0.75 oz
	Activator 90	0.25	% V/V		
10	MSMA	32	FL OZ/A	monosodium acid methanearsonate	24 oz
11	Outrider	0.75	OZ/A	sulfosulfuron	0.563 oz
	MSMA	32	FL OZ/A	monosodium acid methanearsonate	24 oz
12	Clearcast	32	FL OZ/A	imazamox	4 oz ae
	MSO	1	% V/V		
13	Plateau	8	FL OZ/A	imazapic	2 oz ae
	MSO	1	% V/V		
14	Detail	1	FL OZ/A	saflufenacil	0.36 oz
	Plateau	8	FL OZ/A	imazapic	2 oz ae
	MSO	1	% V/V		
15	Method	6	FL OZ/A	aminocyclopyrachlor	1.5 oz ae
	Detail	1	FL OZ/A	saflufenacil	0.36 oz
	Plateau	3	FL OZ/A	imazapic	0.75 oz ae
	MSO	1	% V/V		
16	Roundup ProMax	22	FL OZ/A	glyphosate	12.4 oz ae
17	Journey	21.3	FL OZ/A	imazapic + glyphosate	2 oz ae + 4 oz ae
	MSO	1	% V/V		
18	Nontreated Check				

Table 2. Herbicide Treatments and % Control 25, 66, 103, and 130 Days After Treatment (DAT)

Trt. No.	Product Name	Rate	Rate Unit	25 DAT	66 DAT	103 DAT	130 DAT
1	Fusion Activator 90	7 0.25	FL OZ/A % V/V	37 efg[1]	50 bcde	72 a	62 abc
2	Fusion Activator 90	9 0.25	FL OZ/A % V/V	72 abc	72 abcd	77 a	70 ab
3	Fusilade II Activator 90	16 0.25	FL OZ/A % V/V	68 abcd	27 ef	32 bcd	47 abcd
4	Fusilade II Activator 90	24 0.25	FL OZ/A % V/V	87 a	73 abcd	78 a	80 ab
5	Acclaim Extra Activator 90	20 0.25	FL OZ/A % V/V	47 cdef	45 cde	52 abc	42 bcd
6	Acclaim Extra Activator 90	39 0.25	FL OZ/A % V/V	58 bcde	50 bcde	78 a	65 ab
7	Acclaim Extra Fusilade II COC	7 14 1	FL OZ/A FL OZ/A % V/V	83 ab	68 abcd	82 a	82 ab
8	Outrider Activator 90	0.75 0.25	OZ/A % V/V	87 a	72 abcd	80 a	75 ab
9	Outrider Activator 90	1 0.25	OZ/A % V/V	85 ab	83 ab	82 a	83 a
10	MSMA	32	FL OZ/A	12 gh	18 ef	22 cd	42 bcd
11	Outrider MSMA	0.75 32	OZ/A FL OZ/A	30 fg	50 bcde	50 abc	45 abcd
12	Clearcast MSO	32 1	FL OZ/A % V/V	88 a	38 de	18 cd	17 de
13	Plateau MSO	8 1	FL OZ/A % V/V	85 ab	72 abcd	53 abc	60 abc
14	Detail Plateau MSO	1 8 1	FL OZ/A FL OZ/A % V/V	90 a	78 abc	63 ab	55 abcd
15	Method Detail Plateau MSO	6 1 3 1	FL OZ/A FL OZ/A FL OZ/A % V/V	40 def	20 ef	30 bcd	22 cde
16	Roundup ProMax	22	FL OZ/A	78 ab	0 f	0 d	0 e
17	Journey MSO	21.3 1	FL OZ/A % V/V	86 a	88 a	73 a	63 ab
18	Nontreated Check			0 h	0 f	0 d	0 e

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