

2015 Guardrail Trial in Paintsville

Introduction

For highway safety, guardrails need to be kept clear of visual obstructions. Usually, that means maintaining a vegetation free zone underneath them. Applications of broad-spectrum pre-emergent residual herbicides, in combination with a broad-spectrum post-emergent herbicide like glyphosate, are the mainstay for bare ground maintenance operations. Ideally, the pre-emergent herbicides will all last season long. The guardrails in District 12 were looking good early in the 2014 season but later in the season had unacceptable amounts of grasses, such as yellow foxtail, present and flowering under the guardrails. We established this trial to answer the following questions. Would higher rates of residual herbicides extend late season foxtail control? Would some other herbicide combinations provide reliable season long foxtail control?

Materials and Methods

The trial was established under and beside guardrail, that had not been sprayed in 2015, near and along KY 321 near Paintsville, KY with 9 treatments and 3 replications arranged in a randomized complete block design. On June 29, 2015, treatments were applied at 25 gallons/acre with a spray swath on either side of the guardrail for a plot width of 6.5 ft and length of 12 ft (two areas between guardrail posts per plot). All herbicide treatments, except Roundup ProMax alone (Trt. 1), included Activator 90 at 0.25% v/v (Table 1).

The treatment list (Table 1) was chosen to answer some of the questions posed. The Roundup ProMax by itself (Trt. 1) has no residual control. The Roundup + Esplanade + Oust combination (Trt. 2) is one that has performed well in our trials. The first Roundup + Esplanade + Perspective combination (Trt 3) is what was used in 2014 and resulted in poor late season foxtail control. The other Roundup + Esplanade + Perspective combinations had more Esplanade (Trt 4) or more Perspective (Trt 5). The first Roundup + Esplanade + Streamline + Plateau combination (Trt 6) was used for the 2016 season. The addition of Plateau was recommended to extend foxtail control. The remaining Roundup + Esplanade + Streamline + Plateau combinations had more Esplanade (Trt 7), more Streamline (Trt 8), or more Plateau (Trt 9).

The weeds present at application included perennial grasses (tall fescue), large crabgrass, ragweed, marehail, wild carrot, and black medic. Visual % bare ground and % vegetation ratings were taken 46 (8/14/2015), 99 (10/6/2015), 141 (11/17/2015), and 331 (05/25/2016) days after treatment (DAT). The site was mowed and sprayed by others sometime after the last rating so another rating was not possible. Data were analyzed using ARM software and treatment means were compared using Fisher's LSD at $p = 0.05$.

Results and Discussion

At the first assessment, 46 DAT, all the treatments had similar bare ground and perennial grass cover ratings (Table 1). At 99 DAT, all the treatments had more bare ground and less grass and broadleaf cover than the Roundup alone treatment. It was the same story 141 DAT except that

the Roundup + Esplanade + Oust combination (Trt 2) was not in the top group for bare ground. There were not many yellow foxtail plants in the plots or along nearby roadsides in 2015. At the final assessment (Table 3), the Roundup by itself (Trt. 1) had the least bare ground and the most grass cover. All the residual treatments (Trt. 2-9) had good control into the start of the next season.

We were not able to answer the original questions as heavy yellow foxtail populations were not present in 2015.. However, we did find that many of the residual herbicide combinations gave us good extended control under guardrails.

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Table 1. Treatments and Active Ingredients for Guardrail Trial in Paintsville

Treatment	Product Names	Rate	Rate Unit	Active Ingredient(s)	ai Rate (per acre)
1	Roundup ProMax	25	FL OZ/A	glyphosate	14 oz ae
2	Roundup ProMax	25	FL OZ/A	glyphosate	14 oz ae
	Esplanade	3.5	FL OZ/A	indaziflam	0.7 oz
	Oust XP	3	OZ/A	sulfometuron	2.3 oz
3	Roundup ProMax	25	FL OZ/A	glyphosate	14 oz ae
	Esplanade	4	FL OZ/A	indaziflam	0.8 oz
	Perspective	8	OZ/A	aminocyclopyrachlor + chlorsulfuron	3.2 oz + 1 oz
4	Roundup ProMax	25	FL OZ/A	glyphosate	14 oz ae
	Esplanade	6	FL OZ/A	indaziflam	1.3 oz
	Perspective	8	OZ/A	aminocyclopyrachlor + chlorsulfuron	3.2 oz + 1 oz
5	Roundup ProMax	25	FL OZ/A	glyphosate	14 oz ae
	Esplanade	4	FL OZ/A	indaziflam	0.8 oz
	Perspective	10	OZ/A	aminocyclopyrachlor + chlorsulfuron	4 oz + 1.3 oz
6	Roundup ProMax	25	FL OZ/A	glyphosate	14 oz ae
	Esplanade	5	FL OZ/A	indaziflam	1 oz
	Streamline	8	OZ/A	aminocyclopyrachlor + metsulfuron	3.2 oz + 1 oz
	Plateau	5	FL OZ/A	imazapic	1.3 oz ae
7	Roundup ProMax	25	FL OZ/A	glyphosate	14 oz ae
	Esplanade	7	FL OZ/A	indaziflam	1.5 oz
	Streamline	8	OZ/A	aminocyclopyrachlor + metsulfuron	3.2 oz + 1 oz
	Plateau	5	FL OZ/A	imazapic	1.3 oz ae
8	Roundup ProMax	25	FL OZ/A	glyphosate	14 oz ae
	Esplanade	5	FL OZ/A	indaziflam	1 oz
	Streamline	10	OZ/A	aminocyclopyrachlor + metsulfuron	4 oz + 1.3 oz
	Plateau	5	FL OZ/A	imazapic	1.3 oz ae
9	Roundup ProMax	25	FL OZ/A	glyphosate	14 oz ae
	Esplanade	5	FL OZ/A	indaziflam	1 oz
	Streamline	8	OZ/A	aminocyclopyrachlor + metsulfuron	3.2 oz + 1 oz
	Plateau	7	FL OZ/A	imazapic	1.8 oz ae

All herbicide treatments (except trt. #1) contained the adjuvant, Activator 90 at 0.25% v/v.

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Table 2: Results for Guardrail Trial in Paintsville (2015)

	Product Name	Rate	Rate Unit	% Bare Ground ²	% Per. Grass ²	% Broadleaves ²	% Bare Ground	% Grass	% Broadleaves	% Bare Ground	% Grass	% Broadleaves
				46 DAT			99 DAT			141 DAT		
1	Roundup ProMax	25	FL OZ/A	93 <i>ab</i> ¹	3 <i>ab</i>	4 <i>a</i>	48 <i>b</i>	20 <i>a</i>	32 <i>a</i>	17 <i>c</i>	28 <i>a</i>	55 <i>a</i>
2	Roundup ProMax	25	FL OZ/A	95 <i>ab</i>	2 <i>b</i>	3 <i>ab</i>	95 <i>a</i>	3 <i>b</i>	2 <i>b</i>	82 <i>b</i>	6 <i>b</i>	12 <i>b</i>
	Esplanade	3.5	FL OZ/A									
	Oust XP	3	OZ/A									
3	Roundup ProMax	25	FL OZ/A	96 <i>ab</i>	3 <i>ab</i>	1 <i>bc</i>	96 <i>a</i>	3 <i>b</i>	1 <i>b</i>	91 <i>ab</i>	2 <i>b</i>	8 <i>b</i>
	Esplanade	4	FL OZ/A									
	Perspective	8	OZ/A									
4	Roundup ProMax	25	FL OZ/A	91 <i>b</i>	8 <i>a</i>	1 <i>abc</i>	98 <i>a</i>	2 <i>b</i>	1 <i>b</i>	93 <i>a</i>	1 <i>b</i>	6 <i>b</i>
	Esplanade	6	FL OZ/A									
	Perspective	8	OZ/A									
5	Roundup ProMax	25	FL OZ/A	94 <i>ab</i>	6 <i>ab</i>	0 <i>c</i>	97 <i>a</i>	2 <i>b</i>	1 <i>b</i>	98 <i>a</i>	1 <i>b</i>	4 <i>b</i>
	Esplanade	4	FL OZ/A									
	Perspective	10	OZ/A									
6	Roundup ProMax	25	FL OZ/A	95 <i>ab</i>	5 <i>ab</i>	0 <i>c</i>	97 <i>a</i>	4 <i>b</i>	1 <i>b</i>	91 <i>ab</i>	1 <i>b</i>	8 <i>b</i>
	Esplanade	5	FL OZ/A									
	Streamline	8	OZ/A									
	Plateau	5	FL OZ/A									
7	Roundup ProMax	25	FL OZ/A	94 <i>ab</i>	6 <i>ab</i>	0 <i>c</i>	98 <i>a</i>	2 <i>b</i>	0 <i>b</i>	97 <i>a</i>	0 <i>b</i>	3 <i>b</i>
	Esplanade	7	FL OZ/A									
	Streamline	8	OZ/A									
	Plateau	5	FL OZ/A									
8	Roundup ProMax	25	FL OZ/A	97 <i>a</i>	3 <i>ab</i>	0 <i>c</i>	96 <i>a</i>	2 <i>b</i>	1 <i>b</i>	89 <i>ab</i>	1 <i>b</i>	10 <i>b</i>
	Esplanade	5	FL OZ/A									
	Streamline	10	OZ/A									
	Plateau	5	FL OZ/A									
9	Roundup ProMax	25	FL OZ/A	97 <i>a</i>	3 <i>ab</i>	0 <i>c</i>	97 <i>a</i>	2 <i>b</i>	1 <i>b</i>	94 <i>a</i>	1 <i>b</i>	5 <i>b</i>
	Esplanade	5	FL OZ/A									
	Streamline	8	OZ/A									
	Plateau	7	FL OZ/A									

All herbicide treatments (except trt. #1) contained the adjuvant, Activator 90 at 0.25% v/v.

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

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Table 3: Results for Guardrail Trial in Paintsville (2016)

Treatment	Product Name	Rate	Rate Unit	% Bare Ground	% Fescue	% Other Grass	% Medic	% Other Broadleaves
				331 DAT				
1	Roundup ProMax	25	FL OZ/A	17 <i>c</i> ¹	8	42 <i>a</i>	22 <i>a</i>	15
2	Roundup ProMax	25	FL OZ/A	53 <i>b</i>	5	7 <i>b</i>	17 <i>ab</i>	18
	Esplanade	3.5	FL OZ/A					
	Oust XP	3	OZ/A					
3	Roundup ProMax	25	FL OZ/A	72 <i>a</i>	1	6 <i>b</i>	5 <i>b</i>	17
	Esplanade	4	FL OZ/A					
	Perspective	8	OZ/A					
4	Roundup ProMax	25	FL OZ/A	67 <i>ab</i>	0	7 <i>b</i>	6 <i>b</i>	21
	Esplanade	6	FL OZ/A					
	Perspective	8	OZ/A					
5	Roundup ProMax	25	FL OZ/A	70 <i>ab</i>	0	10 <i>b</i>	12 <i>ab</i>	8
	Esplanade	4	FL OZ/A					
	Perspective	10	OZ/A					
6	Roundup ProMax	25	FL OZ/A	63 <i>ab</i>	2	8 <i>b</i>	15 <i>ab</i>	12
	Esplanade	5	FL OZ/A					
	Streamline	8	OZ/A					
	Plateau	5	FL OZ/A					
7	Roundup ProMax	25	FL OZ/A	72 <i>a</i>	0	7 <i>b</i>	7 <i>b</i>	15
	Esplanade	7	FL OZ/A					
	Streamline	8	OZ/A					
	Plateau	5	FL OZ/A					
8	Roundup ProMax	25	FL OZ/A	68 <i>ab</i>	0	5 <i>b</i>	14 <i>ab</i>	13
	Esplanade	5	FL OZ/A					
	Streamline	10	OZ/A					
	Plateau	5	FL OZ/A					
9	Roundup ProMax	25	FL OZ/A	70 <i>ab</i>	0	8 <i>b</i>	9 <i>b</i>	13
	Esplanade	5	FL OZ/A					
	Streamline	8	OZ/A					
	Plateau	7	FL OZ/A					

All herbicide treatments (except trt. #1) contained the adjuvant, Activator 90 at 0.25% v/v.

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