

2013 Guardrail Trial in Elizabethtown

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 bareground maintenance operations. Ideally, the pre-emergent herbicides will last season long and not move off-site, by leaching or erosion (movement of soil particles with adsorbed herbicide). A number of new products (Perspective, Viewpoint, Esplanade) have recently been introduced to this market. Perspective is a combination of aminocyclopyrachlor and chlorsulfuron. Viewpoint is a combination of aminocyclopyrachlor and imazapyr plus metsulfuron. Esplanade is indaziflam. Evaluating the efficacy of these products and product combinations in comparison with older products is an ongoing effort.

Materials and Methods

The trial was established under and beside guardrail near and along KY 1136 near Elizabethtown, KY with 13 treatments and 3 replications arranged in a randomized complete block design. On May 23, 2013, 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 treatments were the same as for the 2012 trial in Paintsville. Roundup ProMax (glyphosate) has no residual activity so other herbicides were included in the combinations with it to provide residual and pre-emergent control. The Louisville weather station reported 0.32 inches of rain on May 31, which would have activated the pre-emerge herbicide treatments. The weeds present at application included perennial grasses (flowering tall fescue), cheat grass, flowering musk thistle, flowering poison hemlock, spotted knapweed, yellow sweet clover, and vetch. Visual % bareground ratings were taken 56 (7/18/2013), 98 (8/29/2013), and 138 (10/8/2013) days after treatment (DAT). Weeds present in many of the plots 138 DAT included johnsongrass, tall fescue, large crabgrass, thistles, poison hemlock, spotted knapweed, morning glory, vetch, buckhorn plantain, and spurge. Data were analyzed using ARM software and treatment means were compared using Fisher's Protected LSD at $p = 0.05$.

Results and Discussion

All treatments had more bareground than the control at all assessments (Table 2). Roundup ProMax alone (Trt. 1) had less bareground than the top group of treatments at all assessments. At the 98 and 138 DAT assessments, the Pendulum AquaCap + Milestone VM combination treatment (Trt. 6) was not among the top group of treatments. By the 138 DAT assessment, the treatment with Payload as the residual herbicide (Trt. 5) "dropped out" of the top group of treatments. Treatments with new lower use rate products (Perspective, Viewpoint, Esplanade) by themselves or in combination with other residual herbicides performed well.

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Table 1: Herbicide Treatments, Active Ingredients, and Application Rates for the 2013 Guardrail Trial.

Trt. No.	Product Name	Rate	Rate Unit	Active Ingredient(s)	ai Rate (per acre)
1	Roundup ProMax	1.3	QT/A	glyphosate	1.5 LB AE
2	Roundup ProMax Sahara	1.3 10	QT/A LB/A	glyphosate diuron + imazapyr	1.5 LB AE 6.2 LB + 12.4 OZ
3	Roundup ProMax Hyvar	1.3 10	QT/A LB/A	glyphosate bromacil	1.5 LB AE 8 LB
4	Roundup ProMax Oust XP	1.3 3	QT/A OZ/A	glyphosate sulfometuron	1.5 LB AE 2.3 OZ
5	Roundup ProMax Payload	1.3 12	QT/A OZ/A	glyphosate flumioxazin	1.5 LB AE 6.1 OZ
6	Roundup ProMax Pendulum AquaCap Milestone VM	1.3 4 7	QT/A QT/A FL OZ/A	glyphosate pendimethalin aminopyralid	1.5 LB AE 3.8 LB 1.8 OZ AE
7	Roundup ProMax Journey Milestone VM	1 1 7	QT/A QT/A FL OZ/A	glyphosate glyphosate + imazapic aminopyralid	1.1 LB AE 0.4 LB AE + 3 OZ AE 1.8 OZ AE
8	Roundup ProMax Perspective Esplanade	1.3 9 3.5	QT/A OZ/A FL OZ/A	glyphosate aminocyclopyrachlor + chlorsulfuron indaziflam	1.5 LB AE 3.6 OZ + 1.4 OZ 0.7 OZ
9	Roundup ProMax Perspective Endurance	1.3 9 2.3	QT/A OZ/A LB/A	glyphosate aminocyclopyrachlor + chlorsulfuron prodiamine	1.5 LB AE 3.6 OZ + 1.4 OZ 1.5 LB
10	Roundup ProMax Viewpoint	1.3 18	QT/A OZ/A	glyphosate aminocyclopyrachlor + imazapyr + metsulfuron	1.5 LB AE 4.1 OZ + 5.7 OZ + 1.3 OZ
11	Roundup ProMax Arsenal	1.3 4	QT/A PT/A	glyphosate imazapyr	1.5 LB AE 16 OZ AE
12	Roundup ProMax Esplanade Oust XP	1.3 3.5 3	QT/A FL OZ/A OZ/A	glyphosate indaziflam sulfometuron	1.5 LB AE 0.7 OZ 2.3 OZ
13	Nontreated Check				

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

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Table 2: Treatments and Results from 2013 Elizabethtown Guardrail Trial

Trt. No.	Product Name	Rate	Rate Unit	% Bareground		
				56 DAT	98 DAT	138 DAT
1	Roundup ProMax	1.3	QT/A	78 <i>b</i>	67 <i>b</i>	70 <i>bcd</i>
2	Roundup ProMax Sahara	1.3 10	QT/A LB/A	100 <i>a</i>	97 <i>a</i>	83 <i>abc</i>
3	Roundup ProMax Hyvar	1.3 10	QT/A LB/A	91 <i>ab</i>	91 <i>a</i>	89 <i>abc</i>
4	Roundup ProMax Oust XP	1.3 3	QT/A OZ/A	100 <i>a</i>	99 <i>a</i>	92 <i>ab</i>
5	Roundup ProMax Payload	1.3 12	QT/A OZ/A	88 <i>ab</i>	76 <i>ab</i>	65 <i>bc</i>
6	Roundup ProMax Pendulum AquaCap Milestone VM	1.3 4 7	QT/A QT/A FL OZ/A	95 <i>ab</i>	67 <i>b</i>	56 <i>de</i>
7	Roundup ProMax Journey Milestone VM	1 1 7	QT/A QT/A FL OZ/A	98 <i>ab</i>	96 <i>a</i>	77 <i>abcd</i>
8	Roundup ProMax Perspective Esplanade	1.3 9 3.5	QT/A OZ/A FL OZ/A	100 <i>a</i>	98 <i>a</i>	95 <i>ab</i>
9	Roundup ProMax Perspective Endurance	1.3 9 2.3	QT/A OZ/A LB/A	100 <i>a</i>	89 <i>ab</i>	81 <i>abcd</i>
10	Roundup ProMax Viewpoint	1.3 18	QT/A OZ/A	100 <i>a</i>	91 <i>a</i>	86 <i>abc</i>
11	Roundup ProMax Arsenal	1.3 4	QT/A PT/A	100 <i>a</i>	95 <i>a</i>	80 <i>abcd</i>
12	Roundup ProMax Esplanade Oust XP	1.3 3.5 3	QT/A FL OZ/A OZ/A	100 <i>a</i>	99 <i>a</i>	96 <i>a</i>
13	Nontreated Check			38 <i>c</i>	30 <i>c</i>	32 <i>e</i>

Means within a column followed by the same letter are not different according to Fisher's Protected LSD at $P < 0.05$.
All herbicide treatments (except Trt. #1) contained the adjuvant, Activator 90 at 0.25% v/v.