

2016 Cable Barrier Trial in Louisville

Introduction

Median cable barriers are designed to protect drivers from crossover accidents on interstates and highways. However, the vegetation under and adjacent to them must be managed for safety and aesthetics. Usually, this means using herbicides to maintain a vegetation free (bare ground) zone underneath the barriers. Broad-spectrum soil applied preemergence residual herbicides, in combination with a broad-spectrum post emergence herbicide like glyphosate, are the mainstay for maintaining these bare ground zones. However, there may be turf adjacent to the bare ground zone that should be maintained. In other cases, there may be desirable turf under the cable barriers that also is desirable to retain. Ideally, the residual herbicides will last all season long and not move off-site by leaching or erosion (movement of soil particles with adsorbed herbicide).

Recently, a number of new products (Perspective, Viewpoint, Esplanade, and Cleantraxx) have become available for bare ground vegetation management. Perspective is a combination of aminocyclopyrachlor and chlorsulfuron. Viewpoint is a combination of aminocyclopyrachlor, imazapyr and metsulfuron. Esplanade is indaziflam. Cleantraxx is a combination of penoxsulam and oxyfluorfen. The objective of this trial was to evaluate the vegetation control efficacy and desirable turf damage potential of these and other herbicides when used for vegetation management under cable barriers.

Materials and Methods

The trial was established under and beside cable barrier with a mixed species turf underneath in the median of I-265 in Louisville, KY. The 24 treatments and 3 replications were arranged in a randomized complete block design. Treatments were applied at 25 gallons / acre onto 6.5 ft wide by 20 ft long plots on June 8, 2016. All herbicide treatments, except Roundup ProMax alone (Treatment 1) and Control Duo (Treatment 2), included Activator 90 at 0.25% v/v (Tables 1a and 1b). Roundup ProMax (glyphosate) has no residual activity so other herbicides were included in the combinations with it to provide residual and pre-emergent control for the bare ground treatments (Treatments 1-18). The selective treatments (Treatments 19-23) represented some options to control broadleaf weeds in rough turf.

The Louisville weather station reported 0.48 inches of rain on June 12 which would have activated the soil applied preemergence herbicide treatments. Additional rainfall was recorded on June 14 (1.09 inches) and on June 15 (0.22 inches). These rainfall events may have contributed to the movement of some of the herbicides from where they were applied and damaged adjacent turf (Figure 1). Species present at application included Buckhorn plantain, which was flowering, plus tall fescue and Kentucky bluegrass which had mature seed heads.

Ratings of the proportion (%) of bare ground, perennial grasses, annual grasses, and broadleaf weeds were taken 33 (7/11/2016), 65 (8/12/2016), 103 (9/19/2016), and 138 (10/24/2016) days after treatment (DAT). The plot area had been mowed recently before the 33 DAT rating. Data were analyzed using ARM software and treatment means were compared using Fisher's LSD at $p = 0.05$.

Results and Discussion

All the bare ground treatments with soil active herbicides (Treatments 3-18) had more bare ground than the control 33 DAT (Tables 2a and 2b). The treatments with only Roundup ProMax (Treatments 1 and 2) had less bare ground than these treatments. We noted turf damage beyond the sprayed area on some plots indicating movement of the herbicide after application (Figure 1). The extent of this was greatest with the Hyvar treatment (Treatment 4) but was also evident with the Sahara and Oust treatments (Treatments 3 and 5). The selective treatments had the same proportion of bare ground except for Perspective (Treatment 22) which had more. The selective treatments had similar perennial grass cover compared to the control. One of the treatments with only Roundup ProMax (Treatment 1) had the same annual grass cover as the control while many of the selective treatments had less but not zero. The Perspective (Treatment 22) and Streamline (Treatment 23) had less annual grasses than the other selective treatments. The bare ground treatments with soil active herbicides (Treatments 3-18) had less broadleaf cover than the control (Treatment 24), treatments with only Roundup ProMax (Treatments 1 and 2), and the selective treatments (Treatments 19-23).

Later in the season (65 DAT), all the bare ground treatments had more bare ground than the selective treatments which had a similar amount of bare ground as the control (Tables 3a and 3b). The treatments with only Roundup ProMax (Treatments 1 and 2) had less bare ground than these treatments (20-22%). The best group of bare ground treatments with soil residual had 88 to 99% while the next group had 82 to 87%. This group included Hyvar (Treatment 4), Pendulum + Milestone (Treatment 7), Journey + Milestone (Treatment 8), Perspective + Endurance (Treatment 11), and Cleantraxx (Treatment 18). Among the selective treatments the Pyresta + Proclipse (Treatment 19), Perspective (Treatment 22), and Streamline (Treatment 23) had more perennial grass cover than the control (Table 3b). The predominant annual grass was yellow foxtail and the Roundup ProMax only treatments (Treatments 1-2) were similar to control in this parameter. Among the selective treatments, the Milestone treatment (Treatment 20) had more than control while the Perspective (Treatment 22) and Streamline (Treatment 23) had less annual grass cover. The plots where the perennial grasses had been killed, but without a soil residual herbicide, had the most broadleaf cover (Treatments 1 and 2).

A month later (103 DAT), the bare ground treatments with the most residual activity against the weed spectrum at this site are sorting to the top (Tables 4a and 4b). The top treatments still had 88-94 % bare ground and included all the Esplanade treatments (Treatments 9, 10, 13, 15, and 16). All the selective treatments had more perennial grass cover than the control (Table 4b). All the plots had increasing cover from annual grasses; however, the Roundup ProMax alone (Treatments 1 and 2) and the control had the most. Similarly, most of the plots had more broadleaf weed cover but the most was in the Payload (Treatment 6) and Cleantraxx (Treatment 18) treatments.

By the end of the season (138 DAT), the top treatments still had 88 to 93% bare ground and still included all the Esplanade treatments (Treatments 9, 10, 13, 15, and 16) (Tables 5a and 5b). All the selective treatments still had more perennial grass cover than control (Table 5b). All the plots had increasing cover from annual grasses; however, the Roundup ProMax by itself (Treatments 1 and 2) and the control still had the most. Among the selective treatments,

Perspective (Treatment 22) and Streamline (Treatment 23) had less annual grass cover, which was predominantly yellow foxtail, than the control (Table 5b). Plots with the most broadleaf weed cover included Roundup ProMax alone (Treatment 1), Sahara (Treatment 3), Payload (Treatment 6), Viewpoint (Treatment 12), Polaris AC Complete (Treatment 14), Cleantraxx + Milestone (Treatment 17) and Cleantraxx (Treatment 18).

The vegetation under the cable barrier in this location gave a good test of how well some of these bare ground herbicides can perform as well as some turf management herbicide mixes. These trials will continue to provide information for roadside managers.

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Table 1a. Herbicide Treatments, Active Ingredients and Application Rates. (part 1)

Trt. No.	Product Name	Rate	Rate Unit	Active Ingredient(s)	ai Application per Acre
1	Roundup ProMax	1.3	QT/A	glyphosate	1.5 LB ae
2	Roundup ProMax Control Duo	1.3 0.5	QT/A % V/V	glyphosate	1.5 LB ae
3	Roundup ProMax Sahara	1.3 10	QT/A LB/A	glyphosate diuron + imazapyr	1.5 LB ae 6.2 LB + 12.4 OZ
4	Roundup ProMax Hyvar	1.3 10	QT/A LB/A	glyphosate bromacil	1.5 LB ae 8 LB
5	Roundup ProMax Oust XP	1.3 3	QT/A OZ/A	glyphosate sulfometuron	1.5 LB ae 2.3 OZ
6	Roundup ProMax Payload	1.3 12	QT/A OZ/A	glyphosate flumioxazin	1.5 LB ae 6.1 OZ
7	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
8	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
9	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
10	Razor Pro Perspective Esplanade	2 5 4	QT/A OZ/A FL OZ/A	glyphosate aminocyclopyrachlor + chlorsulfuron indaziflam	1.5 LB AE 2 OZ + 0.8 OZ 0.8 OZ
11	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
12	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
13	Roundup ProMax Viewpoint Esplanade	1.3 18 3.5	QT/A OZ/A FL OZ/A	glyphosate aminocyclopyrachlor + imazapyr + metsulfuron indaziflam	1.5 LB AE 4.1 OZ + 5.7 OZ + 1.3 OZ 0.7 OZ
14	Roundup ProMax Polaris AC Complete	1.3 2	QT/A PT/A	glyphosate imazapyr	1.5 LB AE 16 OZ AE
15	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

All herbicide treatments (except trt. #1 and 2) contained the adjuvant, Activator 90 at 0.25% v/v.

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Table 1b. Herbicide Treatments, Active Ingredients and Application Rates. (part 2)

Trt. No.	Product Name	Rate	Rate Unit	Active Ingredient(s)	ai Application per Acre
16	Roundup ProMax	1.3	QT/A	glyphosate	1.5 LB AE
	Streamline	8	OZ/A	aminocyclopyrachlor + metsulfuron	3.2 OZ + 1 OZ
	Esplanade	5	FL OZ/A	indaziflam	1 OZ
	Plateau	5	FL OZ/A	imazapic	1.3 OZ AE
17	Rodeo	1.5	QT/A	glyphosate	1.5 LB AE
	Cleantraxx	3	PT/A	penoxsulam + oxyfluorfen	0.5 OZ + 23.6 OZ
	Milestone VM	7	FL OZ/A	aminopyralid	1.8 OZ AE
18	Rodeo	1.5	QT/A	glyphosate	1.5 LB AE
	Cleantraxx	4.5	PT/A	penoxsulam + oxyfluorfen	0.7 OZ + 35.4 OZ
19	Pyresta	24	FL OZ/A	2,4-D + pyraflufen-ethyl	0.66 LB AE + 0.05 OZ
	Proclipse	2	LB/A	prodiamine	1.3 LB
20	Milestone VM	7	FL OZ/A	aminopyralid	1.8 OZ AE
21	Opensight	3.3	OZ/A	aminopyralid + metsulfuron	1.7 OZ AE + 0.3 OZ
22	Perspective	4.5	OZ/A	aminocyclopyrachlor + chlorsulfuron	1.8 OZ + 0.7 OZ
23	Streamline	4.5	OZ/A	aminocyclopyrachlor + metsulfuron	1.8 OZ + 0.6 OZ
24	Nontreated Check				

All herbicide treatments (except trt. #1 and 2) contained the adjuvant, Activator 90 at 0.25% v/v.

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Table 2a: Results for Cable Barrier Trial 33 DAT¹ (July 11, 2016)(part 1)

Trt. No.	Product Name	Rate	Rate Unit	% Bare Ground	% Perennial Grass	% Annual Grass	% Broadleaves
				33 DAT			
1	Roundup ProMax	1.3	QT/A	67 b ²	2 c	18 a	13 ab
2	Roundup ProMax Control Duo	1.3 0.5	QT/A % V/V	77 b	2 c	10 b	12 ab
3	Roundup ProMax Sahara	1.3 10	QT/A LB/A	100 a	0 c	0 d	0 c
4	Roundup ProMax Hyvar	1.3 10	QT/A LB/A	97 a	3 c	0 d	0 c
5	Roundup ProMax Oust XP	1.3 3	QT/A OZ/A	99 a	1 c	0 d	0 c
6	Roundup ProMax Payload	1.3 12	QT/A OZ/A	97 a	3 c	0 d	0 c
7	Roundup ProMax Pendulum AquaCap Milestone VM	1.3 4 7	QT/A QT/A FL OZ/A	92 a	8 c	0 d	0 c
8	Roundup ProMax Journey Milestone VM	1 1 7	QT/A QT/A FL OZ/A	97 a	3 c	0 d	0 c
9	Roundup ProMax Perspective Esplanade	1.3 9 3.5	QT/A OZ/A FL OZ/A	98 a	2 c	0 d	0 c
10	Razor Pro Perspective Esplanade	2 5 4	QT/A OZ/A FL OZ/A	98 a	2 c	0 d	0 c
11	Roundup ProMax Perspective Endurance	1.3 9 2.3	QT/A OZ/A LB/A	92 a	8 c	0 d	0 c
12	Roundup ProMax Viewpoint	1.3 18	QT/A OZ/A	98 a	2 c	0 d	0 c
13	Roundup ProMax Viewpoint Esplanade	1.3 18 3.5	QT/A OZ/A FL OZ/A	99 a	1 c	0 d	0 c
14	Roundup ProMax Polaris AC Complete	1.3 2	QT/A PT/A	100 a	0 c	0 d	0 c
15	Roundup ProMax Esplanade Oust XP	1.3 3.5 3	QT/A FL OZ/A OZ/A	98 a	2 c	0 d	0 c

All herbicide treatments (except trt. #1 and 2) contained the adjuvant, Activator 90 at 0.25% v/v.

¹ DAT = Days after treatment

² 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 2b: Results for Cable Barrier Trial 33 DAT¹ (July 11, 2016)(part 2)

Trt. No.	Product Name	Rate	Rate Unit	% Bare Ground	% Perennial Grass	% Annual Grass	% Broadleaves
				33 DAT			
16	Roundup ProMax	1.3	QT/A	96 a ²	4 c	0 d	0 c
	Streamline	8	OZ/A				
	Esplanade	5	FL OZ/A				
	Plateau	5	FL OZ/A				
17	Rodeo	1.5	QT/A	93 a	7 c	0 d	0 c
	Cleantraxx	3	PT/A				
	Milestone VM	7	FL OZ/A				
18	Rodeo	1.5	QT/A	97 a	3 c	0 d	0 c
	Cleantraxx	4.5	PT/A				
19	Pyresta	24	FL OZ/A	8 d	80 a	10 b	2 c
	Proclipse	2	LB/A				
20	Milestone VM	7	FL OZ/A	7 d	67 ab	12 b	15 a
21	Opensight	3.3	OZ/A	17 cd	69 ab	7 bc	7 abc
22	Perspective	4.5	OZ/A	23 c	70 ab	0 d	7 bc
23	Streamline	4.5	OZ/A	17 cd	77 a	3 cd	3 c
24	Nontreated Check			7 d	57 b	22 a	15 a

All herbicide treatments (except trt. #1 and 2) contained the adjuvant, Activator 90 at 0.25% v/v.

¹ DAT = Days after treatment

² 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 3a: Results for Cable Barrier Trial 65 DAT¹ (August 12, 2016)(part 1)

Trt. No.	Product Name	Rate	Rate Unit	% Bare Ground	% Perennial Grass	% Annual Grass	% Broadleaves
				65 DAT			
1	Roundup ProMax	1.3	QT/A	20 de ²	2 e	55 ab	23 a
2	Roundup ProMax Control Duo	1.3 0.5	QT/A % V/V	22 d	2 e	58 ab	16 ab
3	Roundup ProMax Sahara	1.3 10	QT/A LB/A	96 ab	1 e	1 d	2 cd
4	Roundup ProMax Hyvar	1.3 10	QT/A LB/A	87 bc	8 e	3 d	3 cd
5	Roundup ProMax Oust XP	1.3 3	QT/A OZ/A	95 ab	1 e	2 d	2 cd
6	Roundup ProMax Payload	1.3 12	QT/A OZ/A	90 abc	0 e	6 d	4 cd
7	Roundup ProMax Pendulum AquaCap Milestone VM	1.3 4 7	QT/A QT/A FL OZ/A	82 c	8 e	4 d	5 cd
8	Roundup ProMax Journey Milestone VM	1 1 7	QT/A QT/A FL OZ/A	82 c	8 e	6 d	4 cd
9	Roundup ProMax Perspective Esplanade	1.3 9 3.5	QT/A OZ/A FL OZ/A	98 ab	0 e	1 d	1 cd
10	Razor Pro Perspective Esplanade	2 5 4	QT/A OZ/A FL OZ/A	96 ab	3 e	1 d	0 d
11	Roundup ProMax Perspective Endurance	1.3 9 2.3	QT/A OZ/A LB/A	87 bc	3 e	5 d	5 cd
12	Roundup ProMax Viewpoint	1.3 18	QT/A OZ/A	90 abc	2 e	5 d	4 cd
13	Roundup ProMax Viewpoint Esplanade	1.3 18 3.5	QT/A OZ/A FL OZ/A	98 ab	0 e	2 d	0 d
14	Roundup ProMax Polaris AC Complete	1.3 2	QT/A PT/A	93 abc	0 e	3 d	4 cd
15	Roundup ProMax Esplanade Oust XP	1.3 3.5 3	QT/A FL OZ/A OZ/A	99 a	0 e	1 d	1 cd

All herbicide treatments (except trt. #1 and 2) contained the adjuvant, Activator 90 at 0.25% v/v.

¹ DAT = Days after treatment

² 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 3b: Results for Cable Barrier Trial 65 DAT¹ (August 12, 2016)(part 2)

Trt. No.	Product Name	Rate	Rate Unit	% Bare Ground	% Perennial Grass	% Annual Grass	% Broadleaves
				65 DAT			
16	Roundup ProMax	1.3	QT/A	99 a ²	1 e	0 d	0 d
	Streamline	8	OZ/A				
	Esplanade	5	FL OZ/A				
	Plateau	5	FL OZ/A				
17	Rodeo	1.5	QT/A	88 abc	2 e	7 d	4 cd
	Cleantraxx	3	PT/A				
	Milestone VM	7	FL OZ/A				
18	Rodeo	1.5	QT/A	87 bc	1 e	5 d	8 bcd
	Cleantraxx	4.5	PT/A				
19	Pyresta	24	FL OZ/A	8 ef	47 ab	48 b	0 d
	Proclipse	2	LB/A				
20	Milestone VM	7	FL OZ/A	7 f	23 d	68 a	8 bcd
21	Opensight	3.3	OZ/A	7 f	43 bc	48 b	2 cd
22	Perspective	4.5	OZ/A	12 def	57 ab	28 c	3 cd
23	Streamline	4.5	OZ/A	12 def	60 a	27 c	2 cd
24	Nontreated Check			7 f	30 cd	53 b	10 bc

All herbicide treatments (except trt. #1 and 2) contained the adjuvant, Activator 90 at 0.25% v/v.

¹ DAT = Days after treatment

² 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 4a: Results for Cable Barrier Trial 103 DAT¹ (September 19, 2016)(part 1)

Trt. No.	Product Name	Rate	Rate Unit	% Bare Ground	% Perennial Grass	% Annual Grass	% Broadleaves
				103 DAT			
1	Roundup ProMax	1.3	QT/A	25 f ²	2 d	58 a	15 cdef
2	Roundup ProMax	1.3	QT/A	20 fg	0 d	60 a	17 bcde
	Control Duo	0.5	% V/V				
3	Roundup ProMax	1.3	QT/A	70 b	2 d	12 fg	15 cdef
	Sahara	10	LB/A				
4	Roundup ProMax	1.3	QT/A	56 bcde	10 d	12 fg	22 bc
	Hyvar	10	LB/A				
5	Roundup ProMax	1.3	QT/A	68 bc	0 d	15 efg	15 cdef
	Oust XP	3	OZ/A				
6	Roundup ProMax	1.3	QT/A	50 de	0 d	20 cdefg	30 ab
	Payload	12	OZ/A				
7	Roundup ProMax	1.3	QT/A	52 cde	7 d	20 cdefg	20 bcd
	Pendulum AquaCap	4	QT/A				
	Milestone VM	7	FL OZ/A				
8	Roundup ProMax	1	QT/A	48 e	5 d	25 cdef	22 bc
	Journey	1	QT/A				
	Milestone VM	7	FL OZ/A				
9	Roundup ProMax	1.3	QT/A	89 a	2 d	4 g	4 efg
	Perspective	9	OZ/A				
	Esplanade	3.5	FL OZ/A				
10	Razor Pro	2	QT/A	88 a	3 d	5 g	3 efg
	Perspective	5	OZ/A				
	Esplanade	4	FL OZ/A				
11	Roundup ProMax	1.3	QT/A	53 bcde	5 d	22 cdefg	20 bcd
	Perspective	9	OZ/A				
	Endurance	2.3	LB/A				
12	Roundup ProMax	1.3	QT/A	67 bcd	3 d	15 efg	17 bcde
	Viewpoint	18	OZ/A				
13	Roundup ProMax	1.3	QT/A	94 a	0 d	4 g	2 fg
	Viewpoint	18	OZ/A				
	Esplanade	3.5	FL OZ/A				
14	Roundup ProMax	1.3	QT/A	62 bcde	0 d	20 cdefg	22 bc
	Polaris AC Complete	2	PT/A				
15	Roundup ProMax	1.3	QT/A	93 a	2 d	3 g	2 fg
	Esplanade	3.5	FL OZ/A				
	Oust XP	3	OZ/A				

All herbicide treatments (except trt. #1 and 2) contained the adjuvant, Activator 90 at 0.25% v/v.

¹ DAT = Days after treatment

² 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 4b: Results for Cable Barrier Trial 103 DAT¹ (September 19, 2016)(part 2)

Trt. No.	Product Name	Rate	Rate Unit	% Bare Ground	% Perennial Grass	% Annual Grass	% Broadleaves
				103 DAT			
16	Roundup ProMax	1.3	QT/A	94 a ²	0 d	3 g	2 fg
	Streamline	8	OZ/A				
	Esplanade	5	FL OZ/A				
	Plateau	5	FL OZ/A				
17	Rodeo	1.5	QT/A	61 bcde	1 d	17 defg	22 bc
	Cleantraxx	3	PT/A				
	Milestone VM	7	FL OZ/A				
18	Rodeo	1.5	QT/A	45 e	0 d	18 defg	37 a
	Cleantraxx	4.5	PT/A				
19	Pyresta	24	FL OZ/A	8 fg	53 ab	35 bcd	1 g
	Proclipse	2	LB/A				
20	Milestone VM	7	FL OZ/A	8 fg	43 bc	38 bc	11 cdefg
21	Opensight	3.3	OZ/A	0	48 b	38 bc	2 fg
22	Perspective	4.5	OZ/A	10 fg	52 ab	32 cde	7 defg
23	Streamline	4.5	OZ/A	5 g	62 a	35 bcd	2 fg
24	Nontreated Check			3 g	32 c	53 ab	12 cdefg

All herbicide treatments (except trt. #1 and 2) contained the adjuvant, Activator 90 at 0.25% v/v.

¹ DAT = Days after treatment

² 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 5a: Results for Cable Barrier Trial 138 DAT¹ (October 24, 2016)(part 1)

Trt. No.	Product Name	Rate	Rate Unit	% Bare Ground	% Perennial Grass	% Annual Grass	% Broadleaves
				138 DAT			
1	Roundup ProMax	1.3	QT/A	15 f ²	2 d	55 ab	28 abcd
2	Roundup ProMax	1.3	QT/A	18 ef	2 d	70 a	10 defgh
	Control Duo	0.5	% V/V				
3	Roundup ProMax	1.3	QT/A	53 bcd	2 d	10 d	33 abc
	Sahara	10	LB/A				
4	Roundup ProMax	1.3	QT/A	58 bc	8 d	17 d	18 bcdefgh
	Hyvar	10	LB/A				
5	Roundup ProMax	1.3	QT/A	60 b	0 d	21 cd	20 bcdefgh
	Oust XP	3	OZ/A				
6	Roundup ProMax	1.3	QT/A	35 de	0 d	21 cd	43 a
	Payload	12	OZ/A				
7	Roundup ProMax	1.3	QT/A	46 bcd	12 d	20 cd	23 bcdef
	Pendulum AquaCap	4	QT/A				
	Milestone VM	7	FL OZ/A				
8	Roundup ProMax	1	QT/A	47 bcd	10 d	22 cd	22 bcdefg
	Journey	1	QT/A				
	Milestone VM	7	FL OZ/A				
9	Roundup ProMax	1.3	QT/A	88 a	1 d	2 d	10 defgh
	Perspective	9	OZ/A				
	Esplanade	3.5	FL OZ/A				
10	Razor Pro	2	QT/A	88 a	3 d	3 d	6 efgh
	Perspective	5	OZ/A				
	Esplanade	4	FL OZ/A				
11	Roundup ProMax	1.3	QT/A	57 bc	5 d	22 cd	20 bcdefgh
	Perspective	9	OZ/A				
	Endurance	2.3	LB/A				
12	Roundup ProMax	1.3	QT/A	57 bc	5 d	12 d	26 abcde
	Viewpoint	18	OZ/A				
13	Roundup ProMax	1.3	QT/A	92 a	0 d	3 d	5 fgh
	Viewpoint	18	OZ/A				
	Esplanade	3.5	FL OZ/A				
14	Roundup ProMax	1.3	QT/A	47 bcd	0 d	18 d	35 ab
	Polaris AC Complete	2	PT/A				
15	Roundup ProMax	1.3	QT/A	93 a	2 d	2 d	3 gh
	Esplanade	3.5	FL OZ/A				
	Oust XP	3	OZ/A				

All herbicide treatments (except trt. #1 and 2) contained the adjuvant, Activator 90 at 0.25% v/v.

¹ DAT = Days after treatment

² 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 5b: Results for Cable Barrier Trial 138 DAT¹ (October 24, 2016)(part 2)

Trt. No.	Product Name	Rate	Rate Unit	% Bare Ground	% Perennial Grass	% Annual Grass	% Broadleaves
				138 DAT			
16	Roundup ProMax	1.3	QT/A	93 a ²	1 d	2 d	4 fgh
	Streamline	8	OZ/A				
	Esplanade	5	FL OZ/A				
	Plateau	5	FL OZ/A				
17	Rodeo	1.5	QT/A	47 bcd	6 d	15 d	33 abc
	Cleantraxx	3	PT/A				
	Milestone VM	7	FL OZ/A				
18	Rodeo	1.5	QT/A	40 cd	0 d	17 d	45 a
	Cleantraxx	4.5	PT/A				
19	Pyresta	24	FL OZ/A	3 f	47 bc	48 b	2 h
	Proclipse	2	LB/A				
20	Milestone VM	7	FL OZ/A	3 f	45 bc	40 bc	12 defgh
21	Opensight	3.3	OZ/A	3 f	52 b	40 bc	5 fgh
22	Perspective	4.5	OZ/A	5 f	68 a	20 cd	7 efgh
23	Streamline	4.5	OZ/A	2 f	80 a	15 d	3 fgh
24	Nontreated Check			0 f	35 c	52 ab	14 cdefgh

All herbicide treatments (except trt. #1 and 2) contained the adjuvant, Activator 90 at 0.25% v/v.

¹ DAT = Days after treatment

² 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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Figure 1: Overall View of Cable Barrier Trial from Rep 1 on July 11, 2016

Note the turf damage beyond the sprayed area on some plots indicating movement of the herbicide after application.

