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UNIVERSITY OF WISCONSIN-MADISON

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UNIVERSITY OF WISCONSIN-MADISON

ID #18-5

UW – Madison Weed Science Renz Lab

Evaluation of Wild Parsnip Control with Florpyrauxifen

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Objective:

Evaluate the effectiveness of florpyrauxifen (GF-3886) in controlling Wild Parsnip (*Pastinaca sativa*) and if adding other herbicides to the spray tank (chlorsulfuron, metsulfuron) improve control for control compared to standards.

Summary:

While injury to Wild Parsnip was seen within 8 days of treatment, reductions in cover were not observed until 25 Days After Treatment (DAT). At this timing any treatment containing GF-3886 provided similar reductions in cover. This trend continued throughout the year and by fall (125 DAT) Wild Parsnip cover was zero in all treatments containing GF-3886 compared to Milestone treatments and the untreated control. Grass cover was not affected by GF-3886 while minor reductions in cover were observed with during the year with Milestone. Results will continue to be evaluated in 2019 to assess long-term control.

Research Plot Information:

Plot Dimensions: 10 feet x 25 feet

Design: Randomized Complete Block, 4 blocks

Soil Type: Richwood silt loam, 0-2% slopes

Notes:

Applications made on the edge of a road with dense populations of Wild Parsnip, Canada Thistle, and Virginia Creeper. Grass species were a combination of Tall Fescue, Smooth Brome, and Kentucky Bluegrass.

Herbicide Treatments:

Treatment Number	Treatment	Rate
1	Untreated Control (UTC)	-
2	Milestone Methylated Seed Oil (MSO)	5 ounces/acre (oz/A) 0.5% volume/volume (v/v)
3	Milestone MSO	7 oz/A 0.5% v/v
4	GF-3886 MSO	2 ounces dry weight/acre (oz wt/A) 0.5% v/v
5	GF-3886 MSO	2.85 oz wt/A 0.5% v/v
6	GF-3886 Telar MSO	2.85 oz wt/A 0.5 oz wt/A 0.5% v/v
7	GF-3886 Escort MSO	2.85 oz wt/A 0.5 oz wt/A 0.5% v/v

Herbicide Application:

Date: May 31st, 2018 – 1:15pm

Equipment: Backpack sprayer (20 GPA); 10ft boom

Nozzles: Eight (8) Flat Tip XR TeeJet 11002 VS; 15in nozzle spacing

Regulator PSI: 38

Boom PSI: 26

Plants Present:

May 31st, 2018:

- Wild Carrot (*Daucus carota*)
- Wild Grape (*Vitis riparia*)
- Common Milkweed (*Asclepias syriaca*)
- Spotted Knapweed (*Centaurea biebersteinii* / *Centaurea stoebe*)
- Solomon's Seal (*Polygonatum biflorum*)
- Kentucky Bluegrass (*Poa sp.*)
- Smooth Brome (*Bromus sp.*)
- Timothy (*Phleum sp.*)

Weather Data:

Weather Station	KWIPRAIR10
Temperature	84.7°F
Wind Speed and Direction	2.5 mph W
Relative Humidity	61.8%
Cloud Cover	20%
Previous Rain Event Within 48 Hours	05.30.18 – 1.18 inches
When ≥ 0.25 inches of precipitation occurred after treatment	06.02.18 – 0.4 inches

Index of Ratings and Results

Results:

0 DAT – May 31st, 2018

Trt No	Treatment	Rate	Wild Parsnip Cover (%)	Grass Cover (%)	Canada Thistle Cover (%)	Other Broadleaf Cover (%)	Virginia Creeper Cover (%)	Bareground Cover (%)
1	UTC	-	12.5 -	63.8 -	2.5 -	10.0 -	8.8 -	2.5 -
2	Milestone MSO	5 oz/A 0.5% v/v	10.0 -	62.5 -	6.3 -	5.0 -	12.5 -	3.8 -
3	Milestone MSO	7 oz/A 0.5% v/v	12.5 -	60.0 -	8.8 -	6.3 -	10.0 -	2.5 -
4	GF-3886 MSO	2 oz wt/A 0.5% v/v	12.5 -	65.0 -	3.8 -	3.8 -	11.3 -	3.8 -
5	GF-3886 MSO	2.85 oz wt/A 0.5% v/v	12.5 -	62.5 -	6.3 -	6.3 -	8.8 -	3.8 -
6	GF-3886 Telar MSO	2.85 oz wt/A 0.5 oz wt/A 0.5% v/v	10.0 -	57.5 -	5.0 -	8.8 -	15.0 -	3.8 -
7	GF-3886 Escort MSO	2.85 oz wt/A 0.5 oz wt/A 0.5% v/v	15.0 -	58.8 -	5.0 -	7.5 -	12.5 -	1.3 -
Statistics[1]								
LSD P=.05			6.55	11.30	5.42	6.72	6.65	3.47
Standard Deviation			4.41	7.61	3.65	4.52	4.48	2.34
CV			36.31	12.38	68.06	66.62	39.79	76.95
Treatment Prob(F)			0.7177	0.7859	0.3465	0.5143	0.4327	0.6467

Note: Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).

[1] All statistical analyses were conducted in ARM software and assumptions of ANOVA were not evaluated.

8 DAT – June 8th, 2018

Trt No	Treatment	Rate	Wild Parsnip Cover (%)	Wild Parsnip Control (%)	Grass Cover (%)	Canada Thistle Cover (%)	Canada Thistle Control (%)	Broadleaf Cover (%)	Bareground Cover (%)
1	UTC	-	12.5 -	-	58.5 -	10.3 -	-	16.3 -	2.5 -
2	Milestone MSO	5 oz/A 0.5% v/v	12.5 -	25.0b	58.8 -	12.5 -	26.7 -	11.3 -	5.0 -
3	Milestone MSO	7 oz/A 0.5% v/v	10.0 -	32.5b	60.8 -	9.3 -	38.3 -	15.0 -	5.0 -
4	GF-3886 MSO	2 oz wt/A 0.5% v/v	16.3 -	27.5b	64.5 -	8.8 -	30.0 -	6.3 -	4.3 -
5	GF-3886 MSO	2.85 oz wt/A 0.5% v/v	12.5 -	43.8a	61.3 -	11.3 -	30.0 -	12.5 -	2.5 -
6	GF-3886 Telar MSO	2.85 oz wt/A 0.5 oz wt/A 0.5% v/v	10.0 -	45.0a	55.0 -	11.3 -	35.0 -	12.5 -	11.3 -
7	GF-3886 Escort MSO	2.85 oz wt/A 0.5 oz wt/A 0.5% v/v	15.0 -	48.8a	52.5 -	11.3 -	28.3	11.3 -	10.0 -
Statistics									
LSD P=.05			8.36	9.66	9.47	7.51	10.03	9.05	6.58
Standard Deviation			5.63	6.41	6.38	5.06	6.37	6.09	4.43
CV			44.37	17.29	10.85	47.52	20.34	50.16	76.61
Treatment Prob(F)			0.6631	0.0003	0.2093	0.9454	0.2909	0.3964	0.0639

Note: Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).

25 DAT – June 25th, 2018

Trt No	Treatment	Rate	Wild Parsnip Cover (%)	Wild Parsnip Control (%)	Grass Cover (%)	Virginia Creeper Cover (%)	Broadleaf Cover (%)	Brush Cover (%)	Bareground Cover (%)
1	UTC	-	20.0a	0.0c	55.0c	6.3a	13.8a	1.3 -	3.8 -
2	Milestone MSO	5 oz/A 0.5% v/v	13.8b	28.8b	71.0b	6.3a	5.0b	0.3 -	3.8 -
3	Milestone MSO	7 oz/A 0.5% v/v	8.5bc	36.3b	78.3ab	3.3ab	5.3b	1.3 -	3.5 -
4	GF-3886 MSO	2 oz wt/A 0.5% v/v	4.0c	90.0a	89.3a	0.0b	4.3b	0.0 -	2.5 -
5	GF-3886 MSO	2.85 oz wt/A 0.5% v/v	3.8c	93.8a	85.0a	0.3b	7.0b	0.0 -	4.0 -
6	GF-3886 Telar MSO	2.85 oz wt/A 0.5 oz wt/A 0.5% v/v	1.3c	97.5a	86.0a	0.0b	4.8b	0.0 -	8.0 -
7	GF-3886 Escort MSO	2.85 oz wt/A 0.5 oz wt/A 0.5% v/v	1.0c	95.0a	89.5a	0.3b	2.8b	0.3 -	6.3 -
Statistics									
LSD P=.05			5.50	18.58	9.17	3.75	5.11	2.04	4.01
Standard Deviation			3.71	12.50	6.17	2.53	3.44	1.37	2.70
CV			49.64	19.84	7.8	108.78	56.37	320.01	59.54
Treatment Prob(F)			0.0001	0.0001	0.0001	0.0025	0.0068	0.6560	0.1219

Note: Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).

33 DAT – July 3rd, 2018

Trt No	Treatment	Rate	Wild Parsnip Cover (%)	Wild Parsnip Control (%)	Grass Cover (%)	Virginia Creeper Cover (%)	Broadleaf Cover (%)	Brush Cover (%)	Bareground Cover (%)
1	UTC	-	25.0a	0.0d	45.0c	6.3a	21.3a	1.3b	1.3b
2	Milestone MSO	5 oz/A 0.5% v/v	17.5b	20.0c	63.8b	7.5a	7.5b	0.0b	3.8ab
3	Milestone MSO	7 oz/A 0.5% v/v	12.5c	36.3b	66.8b	4.5ab	6.3b	3.8a	6.3a
4	GF-3886 MSO	2 oz wt/A 0.5% v/v	3.8d	88.8a	88.0a	0.8b	2.5b	0.0b	5.0ab
5	GF-3886 MSO	2.85 oz wt/A 0.5% v/v	1.3d	96.3a	85.3a	0.5b	5.5b	0.0b	7.5a
6	GF-3886 Telar MSO	2.85 oz wt/A 0.5 oz wt/A 0.5% v/v	0.0d	100.0a	87.5a	0.0b	3.8b	0.0b	8.8a
7	GF-3886 Escort MSO	2.85 oz wt/A 0.5 oz wt/A 0.5% v/v	0.3d	97.5a	79.3ab	0.0b	1.8b	0.0b	7.5a
Statistics									
LSD P=.05			3.92	10.59	14.59	3.29	7.33	1.93	3.31
Standard Deviation			2.64	7.13	9.82	2.21	4.93	1.30	2.23
CV			30.65	11.37	13.34	79.4	71.21	181.81	38.98
Treatment Prob(F)			0.0001	0.0001	0.0001	0.0002	0.0005	0.0045	0.0024

Note: Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).

125 DAT – October 3rd, 2018

Trt No	Treatment	Rate	Wild Parsnip Rosettes (count)	Wild Parsnip Cover (%)	Wild Parsnip Control (%)	Canada Thistle Cover (%)	Virginia Creeper Cover (%)
1	UTC	-	27.0a	21.3a	0.0d	6.3 -	2.5 -
2	Milestone MSO	5 oz/A 0.5% v/v	26.8a	22.5a	22.5c	6.3 -	0.0 -
3	Milestone MSO	7 oz/A 0.5% v/v	9.5b	10.5b	52.5b	3.8 -	0.3 -
4	GF-3886 MSO	2 oz wt/A 0.5% v/v	0.0b	0.0c	100.0a	5.0 -	0.5 -
5	GF-3886 MSO	2.85 oz wt/A 0.5% v/v	0.0b	0.0c	100.0a	6.3 -	0.0 -
6	GF-3886 Telar MSO	2.85 oz wt/A 0.5 oz wt/A 0.5% v/v	0.0b	0.0c	100.0a	8.8 -	0.0 -
7	GF-3886 Escort MSO	2.85 oz wt/A 0.5 oz wt/A 0.5% v/v	0.0b	0.0c	100.0a	6.5 -	0.5 -
Statistics							
Least Significant Difference (LSD) P=.05			9.36	7.26	12.24	4.83	1.78
Standard Deviation			6.30	4.89	8.24	3.25	1.20
Coefficient of Variation (CV)			69.7	63.07	12.14	53.29	224.04
Treatment Prob(F)			0.0001	0.0001	0.0001	0.5289	0.0883

Note: Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).

125 DAT – October 3rd, 2018 (Continued)

Trt No	Treatment	Rate	Other Broadleaf Cover (%)	Grass Cover (%)	Brush Cover (%)	Bareground Cover (%)	Milkweed Presence
1	UTC	-	10.0a	60.0b	2.5 -	0.0 -	0.8 -
2	Milestone MSO	5 oz/A 0.5% v/v	6.3ab	65.0b	0.0 -	0.0 -	0.5 -
3	Milestone MSO	7 oz/A 0.5% v/v	3.8b	81.8a	2.5 -	0.0 -	0.3 -
4	GF-3886 MSO	2 oz wt/A 0.5% v/v	2.5b	92.0a	0.0 -	0.0 -	0.3 -
5	GF-3886 MSO	2.85 oz wt/A 0.5% v/v	3.8b	90.0a	0.0 -	0.0 -	0.5 -
6	GF-3886 Telar MSO	2.85 oz wt/A 0.5 oz wt/A 0.5% v/v	2.5b	88.8a	0.0 -	0.0 -	0.8 -
7	GF-3886 Escort MSO	2.85 oz wt/A 0.5 oz wt/A 0.5% v/v	1.3b	91.8a	0.0 -	0.0 -	0.3 -
Statistics							
LSD P=.05			4.54	10.65	4.08	-	0.72
Standard Deviation			3.05	7.17	2.75	0.00	0.48
CV			71.25	8.81	384.42	0.0	104.22
Treatment Prob(F)			0.0132	0.0001	0.5897	1.000	0.5392

Note: Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).