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COLLEGE OF AGRICULTURAL & LIFE SCIENCES
UNIVERSITY OF WISCONSIN-MADISON

Extension
UNIVERSITY OF WISCONSIN-MADISON

ID #17-1

UW – Madison Weed Science Renz Lab

Evaluation of Esplanade to Suppress Annual Weeds in Establishing Prairies

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Objective:

Evaluate the effectiveness of indaziflam (IAF) and/or rimsulfuron (RIS) for maintaining bareground weed control in areas planted with native forbs and grasses as compared to other recommended bareground herbicides.

Summary:

We observed antagonism between Roundup Pro and Esplanade. We believe this was because we added Roundup Pro to the tank mixture prior to Esplanade, **which was not in accordance with the label** for Esplanade. Because of this, residual control was likely negatively impacted and strongly influenced results of any treatments that included glyphosate and esplanade.

At 0 Days After Treatment (DAT), all treatments had identical grass and broadleaf cover. At 15 DAT, all treatments resulted in bareground cover of ≥95% except for the Esplanade alone treatment (48%). At 34 DAT, highest bareground cover was in the medium concentration Esplanade treatment (88%), high concentration Esplanade treatment (88%), low concentration IAF + RIS treatment (92%), medium concentration IAF + RIS treatment (90%), high concentration IAF + RIS treatment (94%), and CleanTraxx treatment (93%). At 69 DAT, highest bareground cover was in the low concentration IAF + RIS treatment (48%) and high concentration IAF + RIS treatment (60%). At 112 DAT, highest bareground cover was found in the low concentration IAF + RIS treatments (23-30%). Native forb cover was reduced at 15 DAT in all treatments but forbs recovered and cover was not different throughout the rest of the season. Native Grass cover was reduced with all treatments that included glyphosate throughout the season (Virginia wildrye), but was either greater (69 DAT) or similar with the

esplanade alone treatment. Individual grass and forb density will be estimated in spring 2019 to determine impacts to individual species.

Research Plot Information:

Plot Dimensions: 10 feet x 25 feet

Design: Randomized Complete Block: 4 blocks

Soil Type: 95% Huntsville silt loam, 0-3 % slope, 5% Dodgeville silt loam, 12-20% slope

Herbicide Treatments:

Treatment Number	Treatment	Rate
1	UTC	-
2	Roundup Pro Induce	1.5 quart/acre (qt/A) 0.25% volume/volume (v/v)
3	Esplanade	2 ounces/acre (oz/A)
4	Esplanade Roundup Pro Induce	2 oz/A 1.5 qt/A 0.25% v/v
5	Esplanade Roundup Pro Induce	3 oz/A 1.5 qt/A 0.25% v/v
6	Esplanade Roundup Pro Induce	5 oz/A 1.5 qt/A 0.25% v/v
7	indaziflam + rimsulfuron (IAF + RIS) Roundup Pro Induce	3 ounces dry product/acre (oz wt/A) 1.5 qt/A 0.25% v/v
8	IAF + RIS Roundup Pro Induce	4.5 oz wt/A 1.5 qt/A 0.25% v/v

9	IAF + RIS Roundup Pro Induce	6 oz wt/A 1.5 qt/A 0.25% v/v
10	CleanTraxx Roundup Pro Induce	3 pints/acre (pt/A) 1.5 qt/A 0.25% v/v
11	Prowl H20 Roundup Pro Induce	3 pt/A 1.5 qt/A 0.25% v/v

Herbicide Application:

Date: April 25th, 2018, 5:00pm – 5:30pm

Equipment: Backpack sprayer (20 gallons per acre), 10-foot boom

Nozzles: Eight Flat Tip XR TeeJet 11002 VS, 15in nozzle spacing

Regulator PSI: 38

Boom PSI: 26

Plants Present/Stage of Development:

April 25th, 2018:

- Grasses: 1 -2 inches tall, average 10.2% cover
- Broadleafs: average 8.8% cover
- Dandelions, Clovers: emerging

August 15th, 2018:

- Annual Broadleafs: 80% Horseweed (*Conyza canadensis*), 10% Prickly Lettuce (*Lactuca canadensis*), 10% Common Ragweed (*Ambrosia artemisiifolia*) and Giant Ragweed (*Ambrosia trifida*)
- Annual Grasses: 80% Giant Foxtail (*Setaria faberi*), 20% Yellow Foxtail (*Setaria pumila*)
- Perennial Broadleafs: 70% Crown Vetch (*Coronilla varia*), 15% Common Dandelion (*Taraxacum officinale*), 5% Canada Thistle (*Cirsium arvense*), 10% White Clover (*Trifolium repens*)

Weather Data:

Weather Station	KWIMOUNT18
Temperature	61.3°F
Wind Speed and Direction	4.8 MPH NNE
Relative Humidity	40%
Cloud Cover	0%
Previous Rain Event Within 48 Hours	-
When ≥ 0.25 inches of precipitation occurred after treatment	05.02.18: 1.24 inches

Index of Ratings and Results

Results:

0 DAT – April 25th, 2018

Trt. No.	Treatment	Rate	Broadleaf Cover (%)	Grass Cover (%)
1	UTC	-	8.8 -	10.0 -
2	Roundup Pro Induce	1.5 qt/A 0.25% v/v	12.5 -	7.5 -
3	Esplanade	2 oz/A	7.5 -	11.3 -
4	Esplanade Roundup Pro Induce	2 oz/A 1.5 qt/A 0.25% v/v	8.8 -	12.5 -
5	Esplanade Roundup Pro Induce	3 oz/A 1.5 qt/A 0.25% v/v	6.3 -	10.0 -
6	Esplanade Roundup Pro Induce	5 oz/A 1.5 qt/A 0.25% v/v	8.8 -	10.0 -
7	IAF + RIS Roundup Pro Induce	3 oz wt/A 1.5 qt/A 0.25% v/v	7.5 -	16.3 -
8	IAF + RIS Roundup Pro Induce	4.5 oz wt/A 1.5 qt/A 0.25% v/v	11.3 -	6.3 -
9	IAF + RIS Roundup Pro Induce	6 oz wt/A 1.5 qt/A 0.25% v/v	8.8 -	8.8 -
10	CleanTraxx Roundup Pro Induce	3 pt/A 1.5 qt/A 0.25% v/v	7.5 -	11.3 -
11	Prowl H20 Roundup Pro Induce	3 pt/A 1.5 qt/A 0.25% v/v	10.0 -	8.8 -
Statistics[1]				
Least Significant Difference (LSD) P=.05			5.22	6.37
Standard Deviation			3.61	4.41
Coefficient of Variation (CV)			40.78	43.1
Treatment Prob(F)			0.4654	0.2000

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

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

15 DAT – May 10th, 2018

Trt. No.	Treatment	Rate	Vegetation Cover (%)	Native Broadleaf Cover (%)	Native Grass Cover (%)	Bareground Cover
1	UTC	-	57.5a	3.8a	18.8a	42.5b
2	Roundup Pro Induce	1.5 qt/A 0.25% v/v	5.3b	1.0b	0.0b	94.8a
3	Esplanade	2 oz/A	52.5a	2.3b	18.8a	47.5b
4	Esplanade Roundup Pro Induce	2 oz/A 1.5 qt/A 0.25% v/v	5.3b	0.5b	0.8b	94.8a
5	Esplanade Roundup Pro Induce	3 oz/A 1.5 qt/A 0.25% v/v	4.5b	0.5b	1.3b	95.5a
6	Esplanade Roundup Pro Induce	5 oz/A 1.5 qt/A 0.25% v/v	3.5b	0.3b	0.8b	96.5a
7	IAF + RIS Roundup Pro Induce	3 oz wt/A 1.5 qt/A 0.25% v/v	4.5b	1.0b	1.5b	95.5a
8	IAF + RIS Roundup Pro Induce	4.5 oz wt/A 1.5 qt/A 0.25% v/v	4.5b	0.8b	0.5b	95.5a
9	IAF + RIS Roundup Pro Induce	6 oz wt/A 1.5 qt/A 0.25% v/v	3.5b	0.5b	0.8b	96.8a
10	CleanTraxx Roundup Pro Induce	3 pt/A 1.5 qt/A 0.25% v/v	2.8b	0.3b	0.8b	97.3a
11	Prowl H20 Roundup Pro Induce	3 pt/A 1.5 qt/A 0.25% v/v	6.8b	1.3b	1.3b	93.3a
Statistics						
LSD P=.05			6.56	1.40	1.61	6.57
Standard Deviation			4.54	0.97	1.12	4.55
CV			33.21	88.63	27.31	5.27
Treatment Prob(F)			0.0001	0.0004	0.0001	0.0001

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

34 DAT – May 29th, 2018

Trt. No.	Treatment	Rate	Grass Cover (%)	Broadleaf Cover (%)	Bareground Cover
1	UTC	-	35.0b	62.5a	2.5e
2	Roundup Pro Induce	1.5 qt/A 0.25% v/v	72.5a	7.5c	20.0d
3	Esplanade	2 oz/A	37.5b	47.5b	15.0d
4	Esplanade Roundup Pro Induce	2 oz/A 1.5 qt/A 0.25% v/v	8.3c	16.3c	75.5b
5	Esplanade Roundup Pro Induce	3 oz/A 1.5 qt/A 0.25% v/v	5.3c	7.0c	87.8a
6	Esplanade Roundup Pro Induce	5 oz/A 1.5 qt/A 0.25% v/v	7.8c	3.8c	88.5a
7	IAF + RIS Roundup Pro Induce	3 oz wt/A 1.5 qt/A 0.25% v/v	5.3c	2.5c	92.3a
8	IAF + RIS Roundup Pro Induce	4.5 oz wt/A 1.5 qt/A 0.25% v/v	6.8c	3.8c	89.5a
9	IAF + RIS Roundup Pro Induce	6 oz wt/A 1.5 qt/A 0.25% v/v	3.5c	2.3c	94.3a
10	CleanTraxx Roundup Pro Induce	3 pt/A 1.5 qt/A 0.25% v/v	4.8c	2.3c	93.0a
11	Prowl H20 Roundup Pro Induce	3 pt/A 1.5 qt/A 0.25% v/v	26.3b	11.3c	62.5c
Statistics					
LSD P=.05			11.36	9.19	10.10
Standard Deviation			7.87	6.36	6.99
CV			40.68	42.04	10.67
Treatment Prob(F)			0.0001	0.0001	0.0001

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

69 DAT – July 3rd, 2018

Trt. No.	Treatment	Rate	Annual Broadleaf Cover (%)	Perennial Broadleaf Cover (%)	Annual Grass Cover (%)	Perennial Grass Cover (%)	Native Broadleaf Cover(%)	Native Grass Cover (%)	Bareground Cover
1	UTC	-	27.50ab	23.5 -	0.8b	0.0 -	1.0 -	36.3b	3.8fg
2	Roundup Pro Induce	1.5 qt/A 0.25% v/v	27.25ab	7.5 -	46.0a	0.0 -	1.5 -	7.5c	0.3g
3	Esplanade	2 oz/A	28.50ab	27.5 -	5.3b	0.0 -	2.0 -	43.8a	5.5fg
4	Esplanade Roundup Pro Induce	2 oz/A 1.5 qt/A 0.25% v/v	48.75a	22.5 -	3.3b	0.0 -	3.0 -	12.5c	10.0d-g
5	Esplanade Roundup Pro Induce	3 oz/A 1.5 qt/A 0.25% v/v	47.75a	21.3 -	3.8b	0.0 -	1.8 -	10.0c	15.5c-f
6	Esplanade Roundup Pro Induce	5 oz/A 1.5 qt/A 0.25% v/v	44.50a	18.8 -	1.3b	0.0 -	3.0 -	11.3c	21.3cd
7	IAF + RIS Roundup Pro Induce	3 oz wt/A 1.5 qt/A 0.25% v/v	18.75b	20.0 -	1.5b	0.0 -	3.5 -	11.3c	47.5b
8	IAF + RIS Roundup Pro Induce	4.5 oz wt/A 1.5 qt/A 0.25% v/v	44.50a	9.0 -	3.8b	0.0 -	2.5 -	11.3c	23.8c
9	IAF + RIS Roundup Pro Induce	6 oz wt/A 1.5 qt/A 0.25% v/v	15.00b	15.0 -	0.3b	0.0 -	2.3 -	7.5c	60.0a
10	CleanTraxx Roundup Pro Induce	3 pt/A 1.5 qt/A 0.25% v/v	25.63ab	17.5 -	15.8b	0.0 -	0.8 -	14.8c	18.8cde
11	Prowl H20 Roundup Pro Induce	3 pt/A 1.5 qt/A 0.25% v/v	51.75a	16.3 -	9.3b	0.0 -	1.5 -	13.8c	7.5efg
Statistics									
LSD P=.05			16.517	12.02	14.92	.	2.37	6.34	8.98
Standard Deviation			11.437	8.32	10.33	0.00	1.64	4.39	6.22
CV			33.12	46.07	125.33	0.0	79.41	26.87	32.01
Treatment Prob(F)			0.0001	0.0599	0.0001	1.0000	0.3719	0.0001	0.0001

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

112 DAT - August 15th, 2018

Trt. No.	Treatment	Rate	Annual Broadleaf Cover (%)	Perennial Broadleaf Cover (%)	Annual Grass Cover (%)	Perennial Grass Cover (%)	Native Broadleaf Cover (%)	Native Grass Cover (%)	Bareground Cover
1	UTC	-	31.0bc	16.3 -	2.5c	1.3 -	3.5 -	37.3a	8.8b
2	Roundup Pro Induce	1.5 qt/A 0.25% v/v	25.0c	8.8 -	39.3a	0.0 -	4.5 -	20.0b	2.5b
3	Esplanade	2 oz/A	27.5c	17.5 -	0.0c	0.0 -	4.5 -	38.0a	12.5b
4	Esplanade Roundup Pro Induce	2 oz/A 1.5 qt/A 0.25% v/v	56.7a	6.3 -	6.3c	0.0 -	4.5 -	21.3b	5.0b
5	Esplanade Roundup Pro Induce	3 oz/A 1.5 qt/A 0.25% v/v	52.3ab	8.8 -	5.0c	0.0 -	4.0 -	18.8b	11.3b
6	Esplanade Roundup Pro Induce	5 oz/A 1.5 qt/A 0.25% v/v	51.0ab	8.8 -	2.5c	0.0 -	4.0 -	23.8b	10.0b
7	IAF + RIS Roundup Pro Induce	3 oz wt/A 1.5 qt/A 0.25% v/v	35.5abc	13.8 -	1.3c	0.0 -	4.5 -	22.5b	22.5a
8	IAF + RIS Roundup Pro Induce	4.5 oz wt/A 1.5 qt/A 0.25% v/v	58.0a	10.0 -	5.0c	0.0 -	3.3 -	12.5b	11.3b
9	IAF + RIS Roundup Pro Induce	6 oz wt/A 1.5 qt/A 0.25% v/v	35.5abc	16.3 -	0.3c	0.0 -	4.5 -	11.3b	29.8a
10	CleanTraxx Roundup Pro Induce	3 pt/A 1.5 qt/A 0.25% v/v	31.8bc	7.5 -	21.3cb	0.0 -	4.5 -	25.0b	7.5b
11	Prowl H20 Roundup Pro Induce	3 pt/A 1.5 qt/A 0.25% v/v	51.8ab	8.8 -	3.8c	0.0 -	4.5 -	23.8b	7.5b
Statistics									
LSD P=.05			14.91	10.25	8.06	1.09	1.82	8.85	7.66
Standard Deviation			10.32	7.10	5.58	0.75	1.26	6.13	5.30
CV			24.9	63.74	70.6	663.33	30.01	26.55	45.41
Treatment Prob(F)			5.860	1.277	18.233	1.000	0.528	7.576	8.813

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