UW – Madison Weed Science Renz Lab

2018 Evaluation of Crown Vetch Control with Method – 2019 Update

Lead Investigator: Dr. Mark Renz

Contact: mrenz@wisc.edu – 357 Moore Hall, 1575 Linden Drive, Madison, WI, 53706

Study Directors: Christopher Bloomingdale, Anne Pearce, Leo Roth

Contact: nlroth2@wisc.edu – 236 Moore Hall, 1575 Linden Drive, Madison, WI, 53706

Objective:

Evaluate the effectiveness of aminocyclopyrachlor compared to other recommended herbicides in providing long-term control of crown vetch (*Coronilla varia*) in grass-dominated habitats.

Summary:

All treatments caused crown vetch injury (necrosis and chlorosis) of 90% or more by the fall of 2018. Initial grass injury was highest with Oust (95%) and substantial with Remedy (52%) and Method at 12 fluid ounces per acre (30%) and 16 fluid ounces per acre (fl oz/A) (36%). Grass injury resulted in reduced grass cover only with Oust the following year.

While control remained >95% with all treatments except for the 4 fl oz/A rate of Method the following spring (265 days after treatment (DAT)), by the fall (399 DAT), crown vetch cover began to increase in all treatments. Milestone treated areas continued to have low cover as did some treatments with Method. Results confirm that Milestone and Method are effective herbicide for controlling crown vetch. Rate of method should be at least 8 fl oz/A to obtain consistent control, but even these rates may necessitate retreatments after 1.5-2 years.

Research Plot Information:

Plot Dimensions: 10 feet x 25 feet

Design: Randomized Complete Block, 4 Blocks

Soil Type: 96.9% Kewaunee silty clay loam, 2-6% slope, 3.1% Kewaunee silt loam, 2-6% slope

Notes:

August 31st, 2018: Average Crown Vetch cover was 85% in every plot

September 14th, 2018: Common Milkweed 10-20% senesced

Herbicide Treatments:

Treatment Number	Treatment	Rate
1	Untreated Control (UTC)	-
2	Method 240SL Non-Ionic Surfactant (NIS)	4 fl oz/A 0.25% volume/volume (v/v)
3	Method 240SL NIS	8 fl oz/A 0.25% v/v
4	Method 240SL NIS	12 fl oz/A 0.25% v/v
5	Method 240SL NIS	16 fl oz/A 0.25% v/v
6	Milestone NIS	7 fl oz/A 0.25% v/v
7	Milestone NIS	5 fl oz/A 0.25% v/v
8	Oust NIS	4 ounces dry product/acre (oz wt/A) 0.25% v/v
9	Remedy NIS	32 fl oz/A 0.25% v/v

Herbicide Application:

Date: September 14th, 2018, 10:00am – 12:00pm

Equipment: Backpack sprayer (20 GPA); 10-foot boom

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

Regulator PSI: 38

Boom PSI: 26

Plants Present/Stage of Development at Application:

Crown Vetch:

- Dominant species (85% cover), vegetative

Smooth Brome (*Bromus sp.*):

- Dominant grass species, vegetative (post flower)

Common Milkweed (*Asclepias syriaca*):

- Sporadically present in select plots. Fruit present.

Weather Data:

Weather Station	KWICEDAR9
Temperature	79°F
Wind Speed and Direction	0 MPH
Relative Humidity	30%
Previous Rain Event Within 48 Hours	-
When ≥ 0.25" of precip. occurred after trt.	09.20.18: 0.31 inches

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Results:

-14 DAT – October 23rd, 2018 (PRE TREATMENT RATING):

Trt. No.	Treatment	Rate	Crown Vetch Cover (%)
1	UTC	-	82.0 -
2	Method 240SL NIS	4 fl oz/A 0.25% v/v	86.5 -
3	Method 240SL NIS	8 fl oz/A 0.25% v/v	88.3 -
4	Method 240SL NIS	12 fl oz/A 0.25% v/v	87.5 -
5	Method 240SL NIS	16 fl oz/A 0.25% v/v	87.0 -
6	Milestone NIS	7 fl oz/A 0.25% v/v	86.3 -
7	Milestone NIS	5 fl oz/A 0.25% v/v	88.0 -
8	Oust NIS	4 oz wt/A 0.25% v/v	80.0 -
9	Remedy NIS	32 fl oz/A 0.25% v/v	71.8 -
Statistics[1]			
Least Significant Difference (LSD) P=.05			17.50
Standard Deviation			11.99
Coefficient of Variation (CV)			14.25
Treatment Prob(F)			0.5909

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.

39 DAT – October 23rd, 2018:

Trt. No.	Treatment	Rate	Grass Injury (%)	Crown Vetch Injury (%)	Crown Vetch Cover (%)	Grass Cover (%)	Broadleaf Cover (%)	Bareground Cover (%)
1	UTC	-	5.0c	26.3b	44.0a	53.5ab	0.0 -	2.5d
2	Method 240SL NIS	4 fl oz/A 0.25% v/v	5.0c	93.8a	4.0b	74.8ab	1.3 -	20.0cd
3	Method 240SL NIS	8 fl oz/A 0.25% v/v	10.0c	99.8a	0.3b	91.0a	1.3 -	7.5d
4	Method 240SL NIS	12 fl oz/A 0.25% v/v	30.0bc	100.0a	0.0b	81.3ab	0.0 -	18.8cd
5	Method 240SL NIS	16 fl oz/A 0.25% v/v	36.3bc	100.0a	0.0b	51.3ab	0.0 -	48.8bc
6	Milestone NIS	7 fl oz/A 0.25% v/v	7.5c	100.0a	0.0b	90.0a	1.3 -	8.8d
7	Milestone NIS	5 fl oz/A 0.25% v/v	7.5c	100.0a	0.0b	76.3ab	1.3 -	22.5cd
8	Oust NIS	4 oz wt/A 0.25% v/v	94.8a	98.8a	0.3b	1.8c	1.3 -	97.0a
9	Remedy NIS	32 fl oz/A 0.25% v/v	52.5b	100.0a	0.0b	37.5b	0.0 -	62.5b
Statistics								
LSD P=.05			20.89	20.84	15.47	30.98	2.67	25.42
Standard Deviation			14.32	14.28	10.60	21.23	1.83	17.42
CV			51.85	15.7	196.71	34.28	263.82	54.39
Treatment Prob(F)			0.0001	0.0001	0.0001	0.0001	0.8316	0.0001

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

257 DAT – May 29th, 2019:

Trt. No.	Treatment	Rate	C. Vetch Cover (%)	Grass Cover (%)	Perennial Broadleaf Cover (%)	Annual / Biennial Broadleaf Cover (%)	Bareground / Litter Cover (%)
1	UTC	-	20.8a	73.3a	0.5 -	1.0 -	4.5c
2	Method 240SL NIS	4 fl oz/A 0.25% v/v	8.0b	70.8a	0.3 -	0.0 -	21.0c
3	Method 240SL NIS	8 fl oz/A 0.25% v/v	1.3b	68.8a	0.0 -	0.3 -	29.8c
4	Method 240SL NIS	12 fl oz/A 0.25% v/v	1.0b	43.8b	0.3 -	0.0 -	55.0b
5	Method 240SL NIS	16 fl oz/A 0.25% v/v	0.0b	21.3c	0.3 -	0.3 -	78.3a
6	Milestone NIS	7 fl oz/A 0.25% v/v	0.0b	84.0a	0.3 -	0.5 -	15.3c
7	Milestone NIS	5 fl oz/A 0.25% v/v	0.3b	82.8a	0.8 -	0.3 -	16.0c
8	Oust NIS	4 oz wt/A 0.25% v/v	0.0b	5.8c	0.0 -	0.0 -	94.3a
9	Remedy NIS	32 fl oz/A 0.25% v/v	0.3b	80.0a	4.5 -	0.0 -	15.3c
Statistics							
LSD P=.05			8.04	21.39	4.42	0.66	20.77
Standard Deviation			5.51	14.66	3.03	0.45	14.23
CV			157.41	24.88	403.38	181.56	38.9
Treatment Prob(F)			0.0002	0.0001	0.5412	0.0735	0.0001

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

399 DAT – October 18th, 2019:

Trt. No.	Treatment	Rate	Crown Vetch Cover (%)	Grasses Cover (%)	Perennial Broadleaf Cover (%)	Annual/Biennial Cover (%)	Bareground /Litter Cover (%)
1	UTC	-	42.1 -	59.3 ab	0.0 -	0.6 b	0.0 b
2	Method 240SL NIS	4 fl oz/A 0.25% v/v	6.3 -	91.0 a	2.0 -	0.8 b	0.0 b
3	Method 240SL NIS	8 fl oz/A 0.25% v/v	1.8 -	96.8 a	1.0 -	0.5 b	0.0 b
4	Method 240SL NIS	12 fl oz/A 0.25% v/v	10.0 -	84.5 a	3.0 -	2.5 b	0.0 b
5	Method 240SL NIS	16 fl oz/A 0.25% v/v	12.8 -	83.3 a	3.8 -	0.3 b	0.0 b
6	Milestone NIS	7 fl oz/A 0.25% v/v	3.0 -	97.0 a	0.0 -	0.0 b	0.0 b
7	Milestone NIS	5 fl oz/A 0.25% v/v	2.8 -	94.8 a	1.8 -	0.8 b	0.0 b
8	Oust NIS	4 oz wt/A 0.25% v/v	22.5 -	25.0 b	22.5 -	8.8 a	21.3 a
9	Remedy NIS	32 fl oz/A 0.25% v/v	16.8 -	58.3 ab	21.8 -	3.3 b	0.0 b
Statistics							
LSD P=.05			25.18	29.58	19.49	4.94	10.02
Standard Deviation			17.22	20.23	13.32	3.38	6.85
CV			139.16	26.34	207.23	171.32	281.96
Treatment Prob(F)			0.0947	0.0004	0.1229	0.0306	0.0029

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