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UNIVERSITY OF WISCONSIN–MADISON

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Impact of Wild Parsnip on Native Forbs

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Objective:

Evaluate the effect of invasive wild parsnips on native forbs in Wisconsin prairies.

Summary:

Wild parsnip is an invasive perennial invading and displacing native forb within Wisconsin prairie. However, it is not known at what threshold of wild parsnip begins to impact native forbs, how intensive the impact is and if management can alleviate this impact. We designed an experiment to measure this response by burning a prairie in spring then controlling emerging wild parsnip after the burn with a non-selective herbicide. The herbicide was applied after the wild parsnip emerged but before native forbs had emerged. This approach was successful in controlling wild parsnip within the prairie as density was reduced three-fold and cover two-fold sixty-two days after treatment. Total native forb cover and density was not impacted by control. Density of developmental classes of native forbs (early, middle, or late season) or individuals also did not differ as a result of management. Current efforts are determining if a relationship exists between wild parsnip and native forbs. This experiment will be continued in 2024 to determine the long-term benefits of continued management on native forbs.

Notes

Trial was done in a prairie with 43 different forb species with inconsistency and patchiness throughout trial area. The most common native forb species being anise hyssop, bergamot, black-eyed Susan, golden alexander, stiff goldenrod, and various native aster species. The most common nonnative forb species being wild parsnip.

Herbicide Treatments

Treatment Number	Treatment	Rate
1	Non-Treated Control (NTC)	-
2	Roundup Powermax Non-ionic Surfactant Ammonium Sulfate	51 fl oz/a 0.25 % v/v 0.085 lb/gal

Herbicide Application

Date	May 10, 2023, 11:33am-12:15pm
Equipment	Single nozzle boom
Nozzles & spacing	One Teejet XR 11002 VS
Regulator PSI	25

Weather Data	
Weather Station	KMNSAINT545
Temperature	75°F – 80.1°F
Wind Speed and Direction	8 mph – 9 mph S
Relative Humidity	48% - 51%
Cloud Cover	65%
Previous Rain Event Within 48 Hours	May 8, 2023 – 0.15 inches
When ≥ 0.25 inches of precipitation occurred after treatment	June 2, 2023, 2:53 pm – 0.41 inches

Research Plot Information	
Plot Dimensions	$1m^2$
Design	Randomized Complete Block, 4 blocks
Soil Type	Sattre silt loam
Soil Characteristics	13.4% clay, 1.14% organic matter, 6.1 pH, 4% slope

Plants Present at Application – Developmental Stage		
Species	**Average Height (in)**	**Phenological Stage**
Wild Parsnip	3	Rosette

Index of Ratings and Results

Results:

0 Day After Treatment (DAT) – May 10, 2023		
Trt. No.	**Treatment**	**Initial Wild Stem Count Average**
1	Treated	1.7 -
2	Non-Treated	1.7 -
Statistics[1]		
Treatment Prob(F)		0.9879

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

62 DAT – July 11, 2023							
Trt. No.	**Treatment**	**Native Forb Cover (%)**	**Non-Native Forbs Cover (%)**	**Native Grass Cover (%)**	**Non-Native Grass Cover (%)**	**Parsnip Cover (%)**	**Bareground/ Litter Cover (%)**
1	Treated	26.3 -	4.7 -	17.5 -	20.1 -	1.1 b	30.3 a
2	Non-Treated	27.4 -	4.5 -	16.5 -	21.8 -	3.4 a	26.5 b
Statistics[2]							
Treatment Prob(F)		0.4629	0.4118	0.3792	0.2284	<0.0001	0.0131

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

62 DAT – July 11, 2023						
Trt. No.	**Treatment**	**Wild Parsnip Stem Count**	**Native Forb Stem Count**	**Early Flowering Stem Count**	**Mid Flowering Stem Count**	**Late Flowering Stem Count**
1	Treated	2.6 b	10.7 -	1.0 -	4.8 -	0.3 -
2	Non-Treated	5.5 a	10.2 -	0.7 -	5.9 -	0.3 -
Statistics						
Treatment Prob(F)		<0.0001	0.5098	0.2081	0.1377	0.5016

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

62 DAT – July 11, 2023							
Trt. No.	**Treatment**	**Anise Hyssop Stem Count**	**Aster Sp. Stem Count**	**Bergamot Stem Count**	**Black-eyed Susan Stem Count**	**Golden Alexander Stem Count**	**Stiff Goldenrod Stem Count**
1	Treated	0.3 -	0.1 -	0.9 -	0.5 -	0.7 -	1.8 -
2	Non-Treated	0.4 -	0.1 -	1.6 -	0.8 -	0.6 -	2.2 -
Statistics							
Treatment Prob(F)		0.4903	0.9409	0.1550	0.0592	0.4231	0.4554

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