

2019 ROW Workshop: Brown County

Mark Renz, Extension Weed Specialist
Leo Roth, Research Specialist
Jamie Patton, Outreach Specialist
UW Madison – Division of Extension



Figure 1: Boomless sprayer applying herbicide to a ROW infested with invasive species



Figure 2: Field day participants view a presentation on teasel management

Objective:

1. Demonstrate techniques for effective control of teasel (*Dipsacus spp.*) in Brown County rights-of-way (ROW).
2. Demonstrate the ability of imazapic + metsulfuron to reduce grass height allowing for reduced mowing frequency.

Summary:

Results demonstrated that effective control from several methods are feasible. While broadcast applications of Opensight, TerraVue, and Escort provided >90% control, spot treatment with glyphosate was also effective. Mowing and hand removal were effective at reducing populations and preventing viable seed formation. Results suggest that proactive action can effectively control this common roadside invasive plant in a cost-effective manner.

As teasel population densities were low and variable among plots, we encourage readers to also view results on teasel from Kenosha County ([see link](#)) as populations were more consistent throughout the experiment.

Small-Scale Experiment Results:

Research Plot Information:

Plot Dimensions: 10 feet by 15 feet

Design: Randomized Complete Block, 3 blocks

Soil Type: 88% Waymore silt loam, 2 to 6 percent slopes, 12% Bellevue silty clay loam

Notes:

All plots (small and large-scale) mowed in error between July 12th and August 9th, 2019, and therefore data could not be collected.

Herbicide & Mechanical Treatments:

Treatment Number	Treatment	Application Equipment	Rate/Timing	Cost ¹
1	Opensight Methylated Seed Oil (MSO)	Boom Sprayer	2 ounces/acre (oz/A) 1% volume/volume (v/v)	\$\$
2	TerraVue MSO	Boom Sprayer	2.85 oz/A 1% v/v	\$\$
4	Escort Non-Ionic Surfactant (NIS)	Boom Sprayer	0.5 oz/A 0.25% v/v	\$
5	Method MSO	Boom Sprayer	8 fl oz/A 1% v/v	\$\$\$
6	2,4-D Dicamba	Boom Sprayer	16 fl oz/A 8 fl oz/A	\$
7	Esplanade	Boom Sprayer	3 oz/A	\$\$\$\$
8	Glyphosate NIS	Spot Sprayer	1 pound active ingredient/acre (lb AI/A) 0.25% v/v	\$
9	2,4-D Dicamba	Spot Sprayer	0.5% v/v 0.5% v/v	\$
11	Mow On-Time	Rotary Mower	When plants began flowering	\$\$\$\$\$
14	Hand (volunteer) Removal	Sharpened Shovel	When plants began flowering	\$
15	Untreated Control (UTC)	-	-	-

¹ Key to treatment costs

Code	Cost per Acre
\$	\$1 - \$10
\$\$	\$11 - \$20
\$\$\$	\$21 - \$30
\$\$\$\$	\$31 - \$40
\$\$\$\$\$	\$41+

Application Equipment	
Boom Sprayer	10-foot boom, 8 TeeJet XR 11002VS nozzles on 15-inch spacing calibrated to deliver 20 gallons per acre
Spot Sprayer	Single TeeJet XR 11001 brass nozzle
Rotary Mower	DR Brush mower with 6-inch deck height
Sharpened Shovel	Parsnip Predator modified shovel

Treatment Application Phenology & Weather Data:

Weather Station	KWIREEDS7	
Application Date	May 29 th , 2019	June 24 th , 2019
Application Type	Herbicide	Mow On-Time
Teasel Phenology	Rosettes to early bolting	Flowering
Temperature	66°F	67°F
Wind Speed and Direction	1mph W	2mph SSW
Relative Humidity	61%	92%
Previous Rain Event Within 48 Hours	May 27 th , 2019 – 1.12 inches	June 16 th , 2019 – 0.17 inches
When ≥ 0.25 inches of precipitation occurred after treatment	June 1 st , 2019 – 0.28 inches	June 24 th , 2019 – 0.51 inches

44 DAT Rating – July 12th, 2019

Trt. No.	Treatment	Equipment	Rate/Timing	Teasel Control (%)
1	Opensight MSO	Boom Sprayer	2 oz/A 1% v/v	100.0 a
2	TerraVue MSO	Boom Sprayer	2.85 oz/A 1% v/v	100.0 a
4	Escort NIS	Boom Sprayer	0.5 oz/A 0.25% v/v	94.4 a
5	Method MSO	Boom Sprayer	8 fl oz/A 1% v/v	52.8 ab
6	2,4-D Dicamba	Boom Sprayer	16 fl oz/A 8 fl oz/A	83.3 a
7	Esplanade	Boom Sprayer	3 oz/A	100.0 a
8	Glyphosate NIS	Spot Sprayer	1 lb AI/A 0.25% v/v	100.0 a
9	2,4-D Dicamba	Spot Sprayer	0.5% v/v 0.5% v/v	52.8 ab
11	Mow On-Time	Rotary Mower	Flowering	77.8 a
14	Hand (volunteer) Removal	Sharpened Shovel	Flowering	52.8 ab
15	UTC	-	-	0.0 b
LSD P=.05				30.32
Standard Deviation				16.67
CV				23.23
Treatment Prob(F)				0.0007

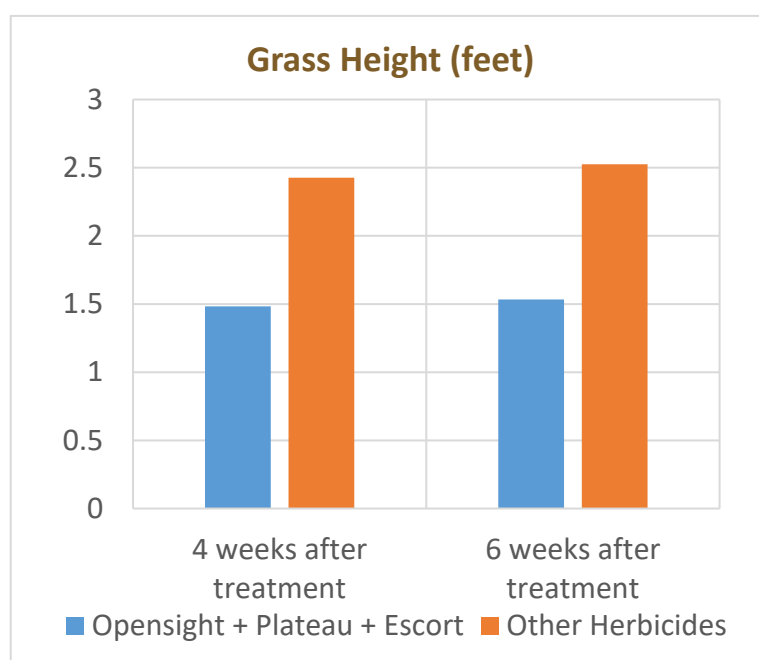
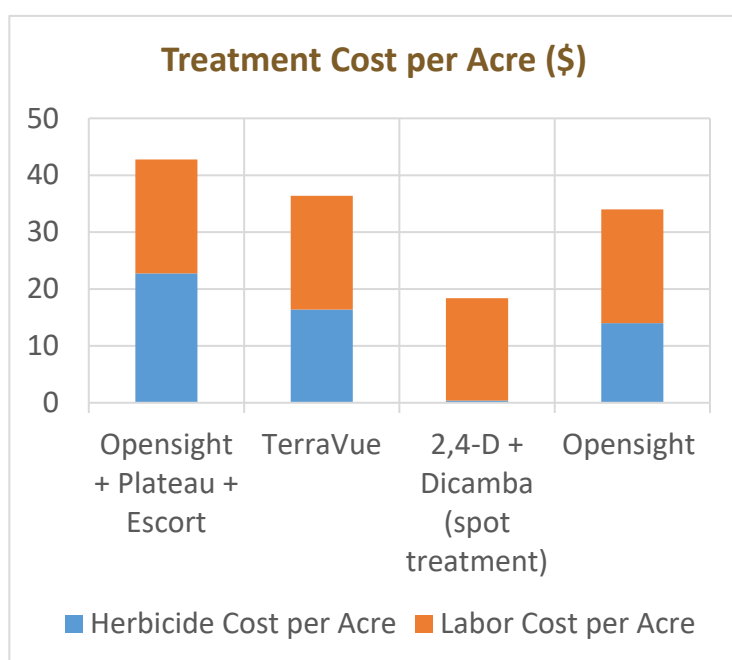
Note: Means followed by same letter or symbol do not significantly differ (P=.05, Student-Newman-Keuls).

Large-Scale Experiment Results:

Objective:

1. Demonstrate additional methods for teasel control on a large scale to determine their cost and effectiveness.
2. Demonstrate grass height suppression using Opensight + Plateau + Escort on a large scale.

Summary:



Spot treatments of 2,4-D + Dicamba proved the most affordable option for teasel control in Brown County (\$18/acre versus \$35 - \$42/acre). However, spot treatment costs are highly variable because the time required for applications depends on teasel population density; since populations were low at this site, spot applications were inexpensive. Spot treatment control is also more variable than with broadcast applications, as applicators are more likely to miss individual plants. However, the spot application of 2,4-D + Dicamba provided nearly as good control of teasel (80% at 39 DAT, 90% at 57 DAT) as broadcasted herbicides (100% at 39 and 57 DAT).

Applications of Opensight + Plateau + Escort suppressed heights of grasses for at least six weeks after treatment, remaining at 1.5 feet tall as compared to 2.5 feet tall in areas not treated with Opensight + Plateau + Escort.

Research Plot Information:

Plot Dimensions: Greater than or equal to 11,500 square feet

Design: Not replicated

Soil Type: 68% Waymor silt loam 2 – 6 percent slopes, 10% Waymore silt loam, 6 – 12 percent slopes, 22% Alluvial land

Notes:

All plots (small and large-scale) accidentally mowed between July 12th and August 9th, 2019.

Herbicide Treatments:

Trt. No.	Large-Scale Treatments	Application Rate	Application Equipment
1	Opensight Plateau Escort MSO	2 oz/A 4 oz/A 0.75 oz/A	Truck-mounted boomless sprayer
2	TerraVue MSO	2.85 oz/A	Truck-mounted boomless sprayer
3	2,4-D Dicamba	0.5% v/v 0.5% v/v	Spot Sprayer
4	Opensight MSO	2 oz/A	Truck-mounted boomless sprayer

Herbicide Application Phenology & Weather Data:

Weather Station	KWIREEDS7
Application Date	May 10 th , 2019
Teasel Phenology	Rosettes
Temperature	44°F
Wind Speed and Direction	6.1mph NW
Relative Humidity	79%
Cloud Cover	-
Previous Rain Event Within 48 Hours	May 9 th , 2019 – 0.16 inches
When ≥ 0.25 inches of precipitation occurred after treatment	May 22 nd , 2019 – 0.50 inches

Results:

Trt. No.	Application Equipment	Large-Scale Treatments	Rate	Teasel Control at 39 DAT (%)	Teasel Control at 57 DAT (%)
1	Truck-mounted boomless sprayer	Opensight Plateau Escort MSO	2 oz/A 4 oz/A 0.75 oz/A 16 fl oz/A	100	100
2	Truck-mounted boomless sprayer	TerraVue MSO	2.85 oz/A 16 fl oz/A	100	100
3	Spot Sprayer	2,4-D Dicamba	0.5% v/v 0.5% v/v	80	90
4	Truck-mounted boomless sprayer	Opensight MSO	2 oz/A 16 fl oz/A	100	100

Large-scale plots not replicated, so statistical analysis was not possible