Renz Weed Science
COLLEGE OF AGRICULTURAL & LIFE SCIENCES
UNIVERSITY OF WISCONSIN-MADISON

Extension
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ID #18-3

UW – Madison Weed Science Renz Lab

2018 Evaluation of Japanese Barberry Control with Method – 2020 Update

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Objective:

Evaluate effectiveness of Method at controlling Japanese barberry (*Berberis thunbergii*) as compared to other herbicides labelled for foliar control of invasive shrubs.

Summary:

At 44 Days After Treatment (DAT), Japanese barberry defoliation from herbicide treatment was highest in treatments containing Method (95-99%), Milestone (99%), Roundup Powermax (93%) and Garlon (72%). By 252 DAT, all treatments provided high levels of Japanese barberry control (98 – 100%) except for Garlon 4 (66% control). Cover of all other types of vegetation, including shrubs, herbaceous species, and ferns, was the same across all treatments.

By one year after treatment (YAT), all treatments continued to provide >99% control except Garlon 4 (74%). Resprouting was observed with Milestone, Garlon 4, and the low rate of Method (0.1-0.6 resprouts/shrub), suggesting all plants may not have been killed with these treatments.

By 2 YAT, control remained poor with Garlon 4 (66%), although resprouting was no longer observed. The low rate of Method was the only treatment that continued to resprout (0.3 resprouts/shrub). All other treatments continued to provide excellent (>99%) control.

Results suggest that Method at rates of 0.375% volume/volume (v/v) and above provide excellent Japanese barberry control and no resprouting that is similar to Milestone, Arsenal, Escort, and Roundup.

Research Plot Information:

Plot Dimensions: Individual Shrub

Design: Randomized Complete Block, 7 blocks

Soil Type: 100% Gaphill-Rockbluff complex, 30 to 60% slopes

Notes:

Applications were made in the fall prior to leaf drop. Minor leaf senescence (1-2%) was observed at the time of application

Herbicide Treatments:

Treatment Number	Treatment	Rate
1	Untreated Control (UTC)	-
2	Method 240 SL Methylated Seed Oil (MSO)	0.25% volume/volume (v/v) 1% v/v
3	Method 240 SL MSO	0.375% v/v 1% v/v
4	Method 240 SL MSO	0.5% v/v 1% v/v
5	Milestone MSO	0.33% v/v 1% v/v
6	Arsenal MSO	3% v/v 1% v/v
7	Garlon 4 MSO	1% v/v 1% v/v
8	Escort MSO	1.5 ounces dry weight per 100 gallons (oz wt/100 gal) 1% v/v
9	Roundup Powermax MSO Ammonium Sulfate (AMS)	1.5% v/v 1% v/v 15 pounds per 100 gallons (lb/100 gal)

Herbicide Application:

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

Method: Individual plant treatment (spot) sprayed to wet

Equipment: Backpack sprayer (50 GPA)

Nozzles: One Flat Tip XR TeeJet 11002 VS

Plants Present/Stage of Development:

Red Maple (*Acer rubrum*) Red Oak (*Quercus rubra*), White Pine (*Pinus strobus*)

Weather Data:

Weather Station	KWIARENA4
Temperature	75°F
Wind Speed and Direction	4 mph S
Relative Humidity	69%
Previous Rain Event Within 48 Hours	09.11.2018, 0.01 inches
When $\geq$ 0.25 inches of precipitation occurred after treatment	09.18.2018, 0.81 inches

Index of Ratings and Results

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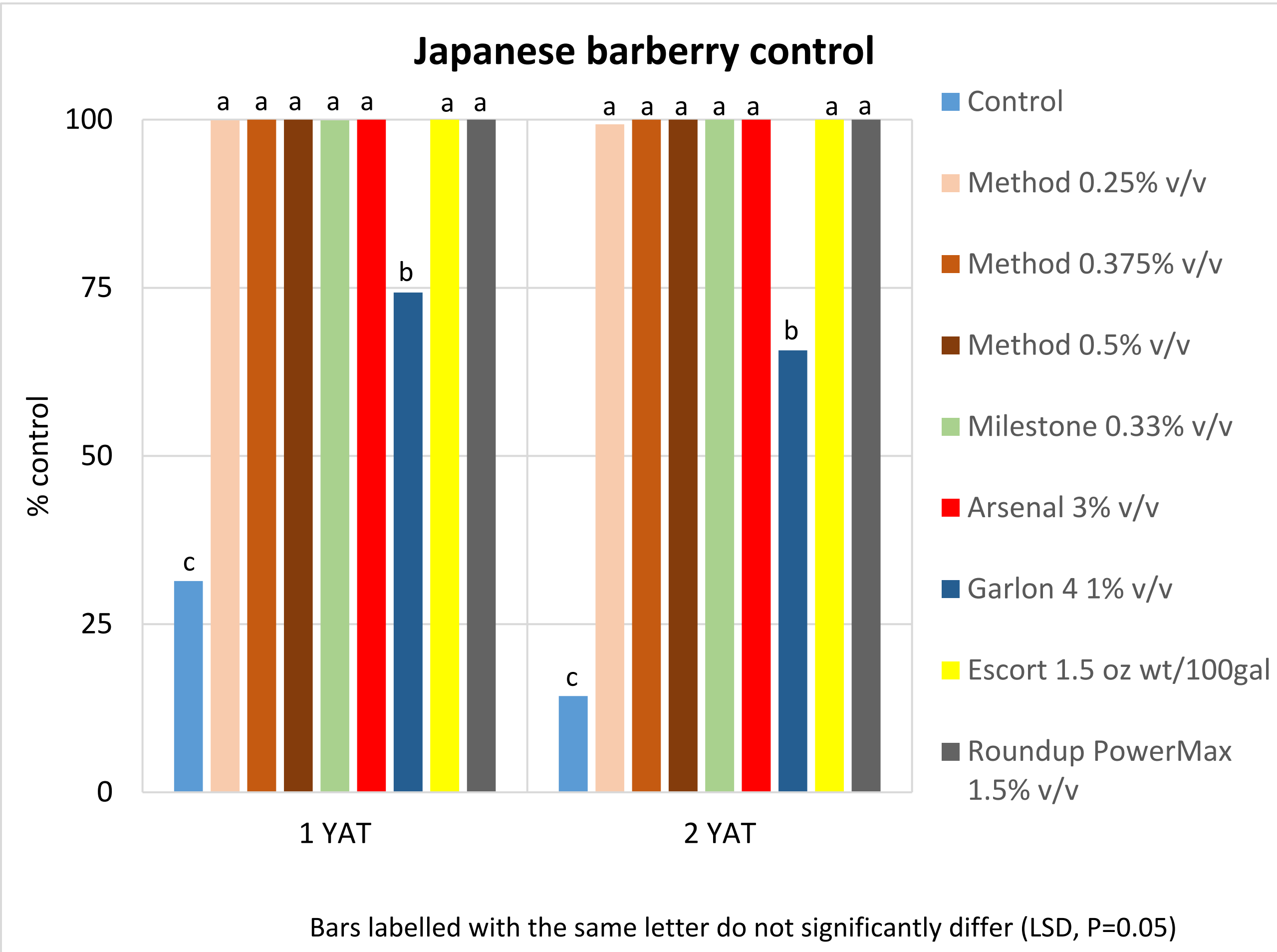
Results:


Japanese barberry control
% control
100
75
50
25
0
c
a
a
a
a
a
b
a
a
1 YAT
2 YAT
Control
Method 0.25% v/v
Method 0.375% v/v
Method 0.5% v/v
Milestone 0.33% v/v
Arsenal 3% v/v
Garlon 4 1% v/v
Escort 1.5 oz wt/100gal
Roundup PowerMax 1.5% v/v
Bars labelled with the same letter do not significantly differ (LSD, P=0.05)

-6 DAT – September 6th, 2018 (PRE APPLICATION DATA)

Trt. No.	Treatment	Rate	Japanese Barberry Plants treated (count)	Japanese Barberry Plant Height (cm)	Japanese Barberry Plant Width (cm)
1	UTC	-	1.3 -	110.7 -	135.7 -
2	Method 240 SL MSO	0.25% v/v 1% v/v	1.4 -	92.9 -	111.4 -
3	Method 240 SL MSO	0.375% v/v 1% v/v	1.6 -	117.1 -	145.7 -
4	Method 240 SL MSO	0.5% v/v 1% v/v	1.6 -	116.4 -	145.7 -
5	Milestone MSO	0.33% v/v 1% v/v	1.9 -	97.9 -	148.6 -
6	Arsenal MSO	3% v/v 1% v/v	1.1 -	105 -	127.1 -
7	Garlon 4 MSO	1% v/v 1% v/v	1.4 -	100 -	152.9 -
8	Escort MSO	1.5 oz wt/100 gal 1% v/v	1.6 -	111.4 -	152.9 -
9	Roundup Powermax MSO AMS	1.5% v/v 1% v/v 15 lb/100 gal	1.6 -	105.7 -	130 -
Statistics[1]					
Least Significant Difference (LSD) P=.05			0.87	32.71	56.21
Standard Deviation			0.81	30.44	52.3
Coefficient of Variation (CV)			54.26	28.62	37.66
Treatment Prob(F)			0.8897	0.8291	0.8512

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.

44 DAT – October 25th, 2018

Trt. No.	Treatment	Rate	Japanese Barberry Defoliation (%)
1	UTC	-	5.7d
2	Method 240 SL MSO	0.25% v/v 1% v/v	95.1a
3	Method 240 SL MSO	0.375% v/v 1% v/v	99a
4	Method 240 SL MSO	0.5% v/v 1% v/v	98.3a
5	Milestone MSO	0.33% v/v 1% v/v	98.7a
6	Arsenal MSO	3% v/v 1% v/v	50.3bc
7	Garlon 4 MSO	1% v/v 1% v/v	72.3ab
8	Escort MSO	1.5 oz wt/100 gal 1% v/v	33.4c
9	Roundup Powermax MSO AMS	1.5% v/v 1% v/v 15 lb/100 gal	92.9a
Statistics			
LSD P=.05			24.35
Standard Deviation			22.66
CV			31.53
Treatment Prob(F)			0.0001

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

252 DAT – May 22nd, 2019

Trt. No.	Treatment	Rate	J. Barberry Control (%)	J. Barberry Resprouts (#)	J. Barberry Cover (%)
1	UTC	-	23.6 c	0.0 -	56.4 a
2	Method 240 SL MSO	0.25% v/v 1% v/v	98.6 a	0.0 -	0.0 c
3	Method 240 SL MSO	0.375% v/v 1% v/v	100.0 a	0.0 -	0.0 c
4	Method 240 SL MSO	0.5% v/v 1% v/v	100.0 a	0.0 -	0.0 c
5	Milestone MSO	0.33% v/v 1% v/v	99.3 a	0.0 -	0.7 c
6	Arsenal MSO	3% v/v 1% v/v	100.0 a	0.0 -	0.0 c
7	Garlon 4 MSO	1% v/v 1% v/v	66.3 b	0.0 -	24.3 b
8	Escort MSO	1.5 oz wt/100 gal 1% v/v	100.0 a	0.0 -	0.0 c
9	Roundup Powermax MSO AMS	1.5% v/v 1% v/v 15 lb/100 gal	99.7 a	0.0 -	0.1 c
Statistics					
LSD P=.05			13.48	-	12.23
Standard Deviation			12.54	. 0.00	11.38
CV			14.34	0.0	125.51
Treatment Prob(F)			0.0001	1.0000	0.0001

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

252 DAT, Continued – May 22nd, 2019

Trt. No.	Treatment	Rate	Shrub Cover (%)	Herbaceous Vegetation Cover (%)	Fern Cover (%)	Bareground/Litter Cover (%)
1	UTC	-	16.4 -	4.3 -	0.0 -	22.9c
2	Method 240 SL MSO	0.25% v/v 1% v/v	4.4 -	9.3 -	0.7 -	85.6a
3	Method 240 SL MSO	0.375% v/v 1% v/v	10.0 -	7.1 -	1.4 -	81.4a
4	Method 240 SL MSO	0.5% v/v 1% v/v	7.3 -	7.9 -	1.4 -	83.4a
5	Milestone MSO	0.33% v/v 1% v/v	12.1 -	7.1 -	1.4 -	78.6a
6	Arsenal MSO	3% v/v 1% v/v	6.6 -	6.4 -	5.7 -	81.3a
7	Garlon 4 MSO	1% v/v 1% v/v	8.0 -	7.1 -	0.0 -	60.6b
8	Escort MSO	1.5 oz wt/100 gal 1% v/v	9.3 -	11.4 -	2.1 -	77.1a
9	Roundup Powermax MSO AMS	1.5% v/v 1% v/v 15 lb/100 gal	7.1 -	9.4 -	0.0 -	83.3a
Statistics						
LSD P=.05			8.19	5.29	4.72	14.19
Standard Deviation			7.62	4.92	4.39	13.20
CV			84.37	63.15	307.62	18.16
Treatment Prob(F)			0.1781	0.3123	0.3450	0.0001

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

380 DAT – September 27th, 2019

Trt. No.	Treatment	Rate	J. Barberry Control (%)	J. Barberry Resprouts (%)	Woody Veg. Cover (%)	Herbaceous Veg. Cover (%)	Fern Cover (%)	J. Barberry Cover (%)	Bareground/ Litter Cover (%)
1	UTC	-	31.4 c	0.0 -	6.4 ab	3.6 -	0.7 -	71.4 a	17.9 b
2	Method 240 SL MSO	0.25% v/v 1% v/v	99.9 a	0.1 -	0.7 b	24.3 -	1.4 -	0.1 c	73.4 a
3	Method 240 SL MSO	0.375% v/v 1% v/v	100.0 a	0.0 -	0.7 b	21.0 -	0.7 -	0.0 c	77.6 a
4	Method 240 SL MSO	0.5% v/v 1% v/v	100.0 a	0.0 -	5.0 ab	19.3 -	0.7 -	0.0 c	75.0 a
5	Milestone MSO	0.33% v/v 1% v/v	99.9 a	0.4 -	15.7 a	15.0 -	2.1 -	0.3 c	66.9 a
6	Arsenal MSO	3% v/v 1% v/v	100.0 a	0.0 -	2.1 b	17.4 -	0.0 -	0.0 c	80.4 a
7	Garlon 4 MSO	1% v/v 1% v/v	74.3 b	0.6 -	5.0 ab	9.3 -	0.0 -	31.6 b	54.1 a
8	Escort MSO	1.5 oz wt/100 gal 1% v/v	100.0 a	0.0 -	7.9 ab	22.1 -	0.7 -	0.0 c	69.3 a
9	Roundup Powermax MSO AMS	1.5% v/v 1% v/v 15 lb/100 gal	100.0 a	0.0 -	5.7 ab	20.7 -	0.0 -	0.0 c	73.6 a
Statistics									
Least Significant Difference (LSD) P=.05			10.55	0.69	8.16	16.54	2.22	13.11	23.44
Standard Deviation			9.82	0.64	7.59	15.39	2.07	12.20	21.81
Coefficient of Variation (CV)			10.97	505.09	138.62	90.72	289.16	106.13	33.37
Treatment Prob(F)			0.0001	0.5889	0.0208	0.2547	0.5747	0.0001	0.0001

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

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664 DAT – July 7th, 2020

Trt. No.	Treatment	Rate	Japanese Barberry Control (%)	Japanese Barberry Resprouts (#)
1	UTC	-	14.3 c	2.9 -
2	Method 240 SL MSO	0.25% v/v 1% v/v	99.3 a	0.3 -
3	Method 240 SL MSO	0.375% v/v 1% v/v	100 a	0 -
4	Method 240 SL MSO	0.5% v/v 1% v/v	100 a	0 -
5	Milestone MSO	0.33% v/v 1% v/v	100 a	0 -
6	Arsenal MSO	3% v/v 1% v/v	100 a	0 -
7	Garlon 4 MSO	1% v/v 1% v/v	65.7 b	0 -
8	Escort MSO	1.5 oz wt/100 gal 1% v/v	100 a	0 -
9	Roundup Powermax MSO AMS	1.5% v/v 1% v/v 15 lb/100 gal	100 a	0 -
Statistics				
LSD P=.05			15.83	2.73
Standard Deviation			14.73	2.54
CV			17.01	726.66
Treatment Prob(F)			0.0001	0.4695

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