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

Extension
UNIVERSITY OF WISCONSIN-MADISON

ID #18-1

UW – Madison Weed Science Renz Lab

Does Maleic Hydrazide Reduce Japanese Barberry Seed Production and Viability?

Lead Investigator: Dr. Mark Renz

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

Study Directors: Anne Pearce, Leo Roth

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

Objective:

Does Maleic Hydrazide applied during flowering result in injury and reduction of fruit and seed production/viability of Japanese Barberry (*Berberis thunbergii*)?

Summary:

Japanese Barberry shrubs treated with Maleic Hydrazide did not display a difference in leaf chlorosis or growth reduction compared to untreated shrubs. Japanese Barberry shrubs treated with Maleic Hydrazide when flowering also did not result in a difference in fruit or seed produced. Low seed production from cultivars as well as application timing and rate may have resulted in a lack of differences.

Research Plot Information:

Plot Dimensions: Individual Shrub

Design: Randomized Complete Block, 8 Shrubs

Soil Type: 100% Grays silt loam, 2 – 6% slope

Notes:

Plant Number	Treated/Control	Variety
101	Treated	Bonanza Gold
102	Treated	Bonanza Gold
103	Control	Bonanza Gold
104	Control	Bonanza Gold
201	Control	Concorde
202	Treated	Crimson Pigmy
203	Treated	Crimson Pigmy
204	Control	Crimson Pigmy

- Untreated control plant 204 produced no fruit or seed
- *Berberis thunbergii* var. 'Concorde' noted for minimal to no fruit set in "Manual of Woody Landscape Plants" by Dirr, M. A.
- 09.21.18: Shrubs 202-204 have stem tips that appear to have been browsed by deer

Herbicide Treatments:

Treatment Number	Treatment	Rate
1	Untreated Control (UTC)	-
2	Maleic Hydrazide	1.5 gallon per acre (gal/A)

Herbicide Application:

Date: May 29th, 2018

Equipment: Hand Held sprayer set to deliver 40-60 Gallons per Acre

Nozzles: Adjustable

Regulator PSI: NA

Plants Present/Stage of Development:

- No other plants present; Japanese Barberries growing in mulched landscaping beds with no immediately adjacent vegetation

Weather Data:

Weather Station	KWIMADIS52
Temperature	79°F
Wind Speed and Direction	8 mph ESE
Relative Humidity	57%
Previous Rain Event Within 48 Hours	-
When ≥ 0.25 inches of precipitation occurred after treatment	05.30.18 – 0.61"

Index of Ratings and Results

Results:

17 Days After Treatment (DAT) – June 15th, 2018

Trt. No.	Treatment	Rate	Leaf Burn (%)	Chlorosis (%)	Growth Reduction (%)
1	UTC	-	0.0 -	5.0 -	0.0 -
2	Maleic Hydrazide	1.5 gal/A	0.5 -	6.3 -	0.05 -
Statistics[1]					
Least Significant Difference (LSD) P=.05			0.92	3.98	.
Standard Deviation			0.41	1.77	0.00
Coefficient of Variation (CV)			163.3	31.43	0.0
Treatment Prob(F)			0.1817	0.3910	1.0000

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

30 DAT – June 28th, 2018

Trt. No.	Treatment	Rate	Leaf Burn (%)	Chlorosis (%)	Growth Reduction (%)
1	UTC	-	0.25 -	42.5 -	0.3 -
2	Maleic Hydrazide	1.5 gal/A	1.00 -	43.8 -	0.5 -
Statistics					
Least Significant Difference (LSD) P=.05			1.378	10.01	0.80
Standard Deviation			0.612	4.45	0.35
Coefficient of Variation (CV)			97.98	10.32	94.28
Treatment Prob(F)			0.1817	0.7177	0.3910

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.

58 DAT – July 26th, 2018

Trt. No.	Treatment	Rate	Leaf Burn (%)	Chlorosis (%)	Growth Reduction (%)
1	UTC	-	0.38 -	43.8 -	0.0 -
2	Maleic Hydrazide	1.5 gal/A	1.13 -	45.0 -	0.0 -
Statistics					
Least Significant Difference (LSD) P=.05			1.523	3.98	.
Standard Deviation			0.377	1.77	0.00
Coefficient of Variation (CV)			90.27	3.98	0.0
Treatment Prob(F)			0.2152	0.3910	1.0000

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

86 DAT – August 23rd, 2018

Trt. No.	Treatment	Rate	Leaf Burn (%)	Chlorosis (%)	Growth Reduction (%)
1	UTC	-	1.38 -	6.3 -	0.0 -
2	Maleic Hydrazide	1.5 gal/A	2.00 -	8.8 -	0.0 -
Statistics					
Least Significant Difference (LSD) P=.05			1.193	7.96	.
Standard Deviation			0.530	3.54	0.00
Coefficient of Variation (CV)			31.43	47.14	0.0
Treatment Prob(F)			0.1942	0.3910	1.0000

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

115 DAT – September 21st, 2018

Trt. No.	Treatment	Rate	Leaf Burn (%)	Chlorosis (%)	Growth Reduction (%)
1	UTC	-	1.0 -	0.8 -	0.0 -
2	Maleic Hydrazide	1.5 gal/A	1.0 -	1.8 -	0.0 -
Statistics					
Least Significant Difference (LSD) P=.05			1.30	1.84	.
Standard Deviation			0.58	0.82	0.00
Coefficient of Variation (CV)			57.74	65.32	0.0
Treatment Prob(F)			1.0000	0.1817	1.0000

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

181 DAT – November 26th, 2018

Trt. No.	Treatment	Rate	Fruit Count (#)	Seed Count (#)
1	UTC	-	61.3 -	21.8 -
2	Maleic Hydrazide	1.5 gal/A	35.8 -	26.5 -
Statistics				
Least Significant Difference (LSD) P=.05			104.34	36.92
Standard Deviation			46.37	16.41
Coefficient of Variation (CV)			95.6	68.0
Treatment Prob(F)			0.4934	0.7097

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

Seed Viability Assessment

Trt. No.	Treatment	Rate	Viable Barberry Seed (%)
1	UTC	-	55.50 -
2	Maleic Hydrazide	1.5 gal/A	76.23 -
Statistics			
Least Significant Difference (LSD) P=.05			53.771
Standard Deviation			23.895
Coefficient of Variation (CV)			36.28
Treatment Prob(F)			0.3075

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