Effectiveness of Herbicides when Controlling Golden Creeper (*Thladiantha dubia)*

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Golden Creeper **Identification** (1/3)

- **Habit**: herbaceous vine
- **Leaves**: simple, alternate, heart-shaped, hairy-sticky, minutely toothed, petioles ~2 ½” long
- **Tendrils:** opposite from leaves, unbranched

Golden Creeper **Identification** (2/3)

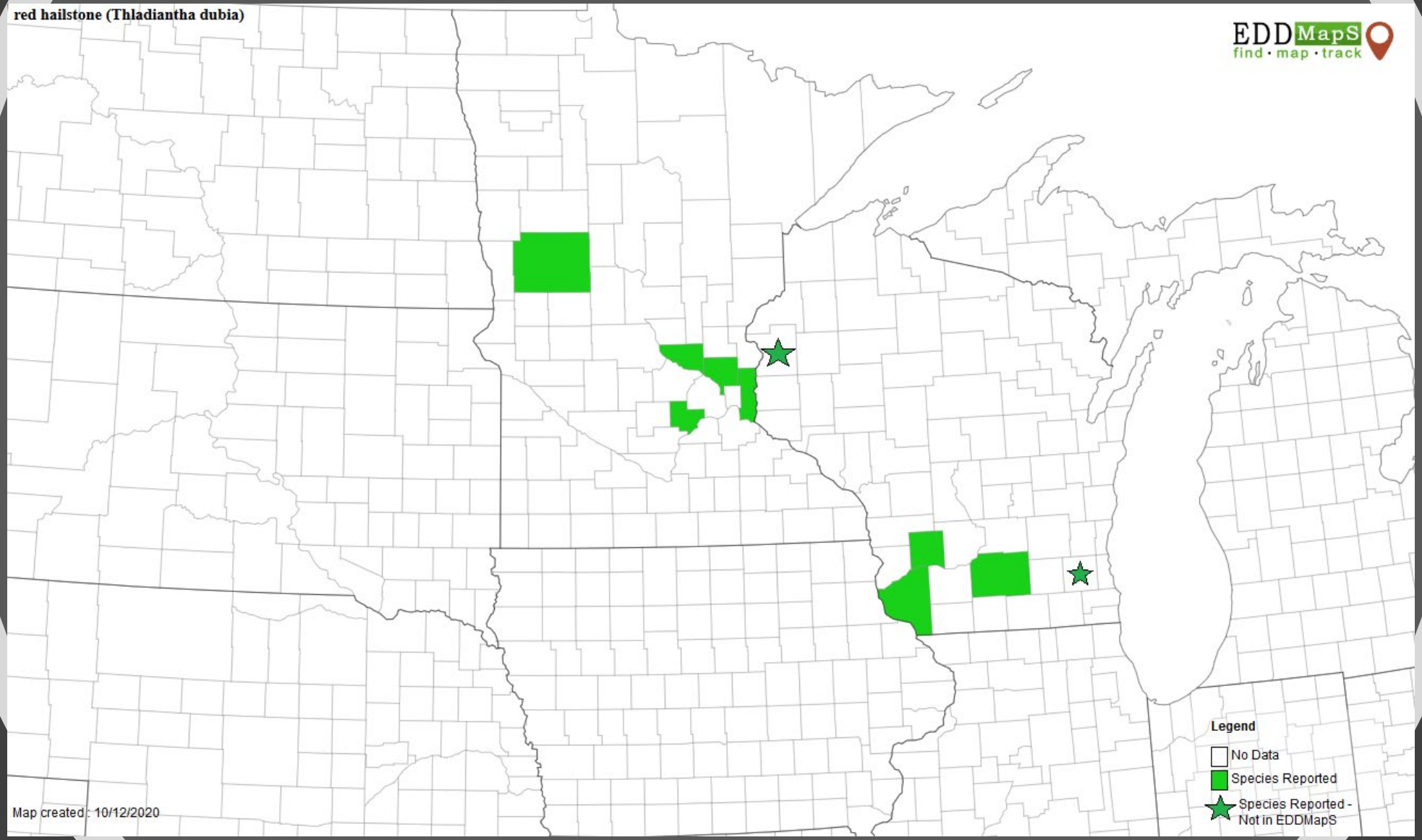
- **Stems:** densely hairy, sticky
- **Flowers**: 1” long, bell-shaped, 5-parted, yellow, located at leaf axils, dioecious (male OR female)
- **Phenology**: germinates in May, flowers in late June

Courtesy of Abbie Lehman

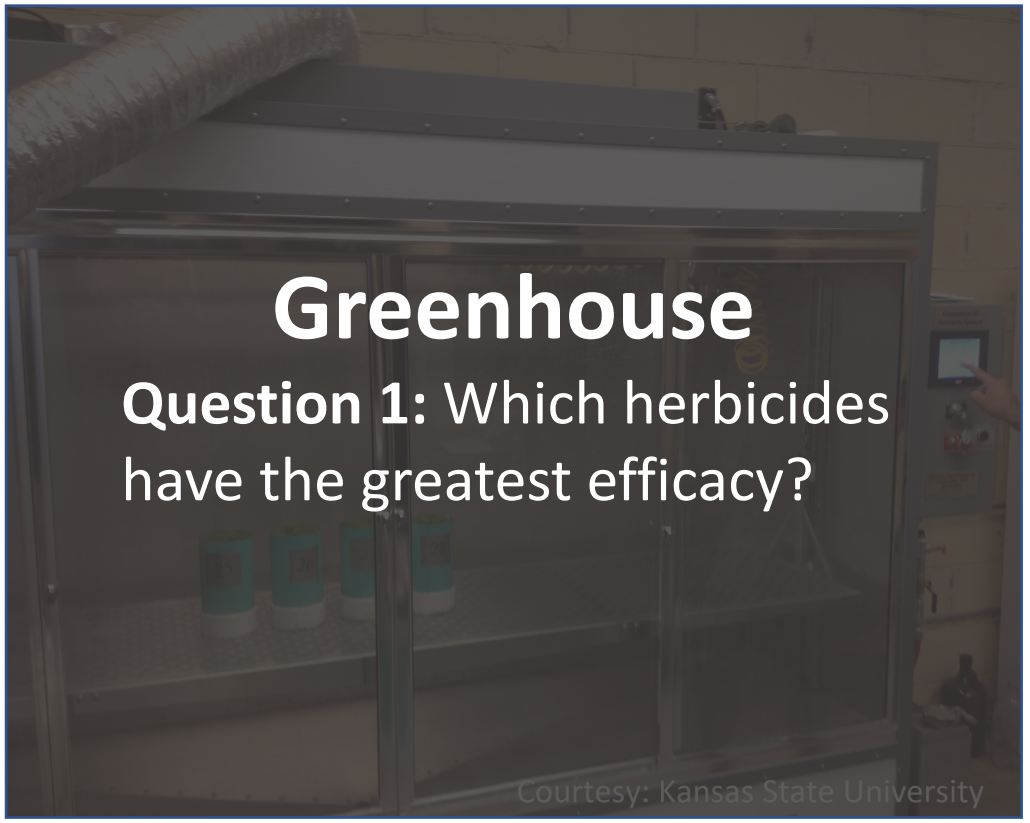
Golden Creeper **Identification** (3/3)

- **Spread**: rhizomatous
- **Root system:** tuberous, 1” + long

Golden Creeper **Distribution**



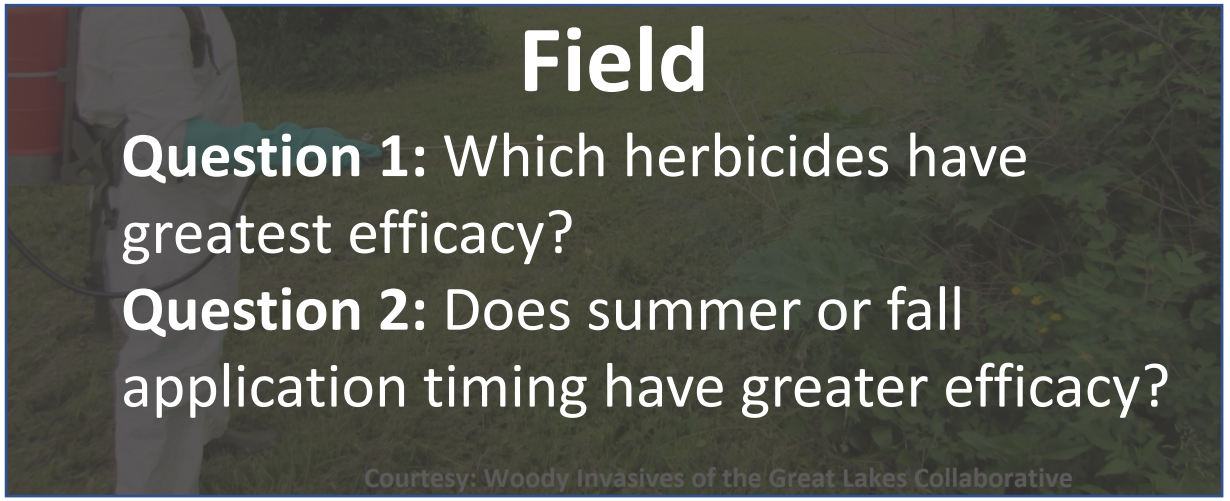
Golden Creeper **Experiments**: Greenhouse & Field



Greenhouse

Question 1: Which herbicides have the greatest efficacy?

Courtesy: Kansas State University



Field

Question 1: Which herbicides have greatest efficacy?

Question 2: Does summer or fall application timing have greater efficacy?

Courtesy: Woody Invasives of the Great Lakes Collaborative

Greenhouse Experiment

Treatment	Chemical Name	Rate	
		(g ai ha-1)	(oz product/a)
1. Roundup PowerMax®	glyphosate	2054	5.3
2. Arsenal Powerline™	imazapyr	299	16
3. Arsenal Powerline™	imazapyr	598	32
4. Escort XP®	metsulfuron	126	3
note: all treatments included non-ionic surfactant at 0.25-0.5% v/v			

Material & Methods	
Replications:	seven blocks with single plants as plot
Application Timing:	plants 1-2 feet tall, vegetative

Greenhouse Experiment

- **Q1:** Which herbicides have the greatest efficacy?

Treatment	Rate (oz product/a)	2 MAT necrosis (%)
1. Roundup PowerMax®	5.3	38 b
2. Arsenal Powerline™	16	25 b
3. Arsenal Powerline™	32	100 a
4. Escort XP®	3	100 a
Statistics		
P-value		0.0001
Note: means followed by the same letter do not significantly differ (P= 0.05, Student-Newman-Keuls)		

Greenhouse Experiment

- **Q1:** Which herbicides have the greatest efficacy?

Treatment	Rate	4 MAT	
	(oz product/a)	resprouts (#)	control (%)
1. Roundup PowerMax®	5.3	1.7 a	31 b
2. Arsenal Powerline™	16	0.7 ab	64 ab
3. Arsenal Powerline™	32	0.0 b	100 a
4. Escort XP®	3	0.0 b	100 a
Statistics			
P-value		0.0081	0.0054
Note: means followed by the same letter do not significantly differ (P= 0.05, Student-Newman-Keuls)			

Field Experiment

- **Question 1:** Which herbicides have greatest efficacy?
- **Question 2:** Does summer or fall application timing have greater efficacy?

Field Experiment

Treatment	Chemical Name	Rate
1. Untreated Control	-	-
2. Roundup Powermax®	glyphosate	2 % v/v
3. Roundup Powermax®	glyphosate	3 % v/v
4. Arsenal Powerline™	imazapyr	0.5 % v/v
5. Escort XP®	metsulfuron	1 g/gal
6. Garlon 4®	triclopyr	1 % v/v
7. Method 240SL®	aminocyclopyrachlor	0.5 % v/v
8. Milestone®	aminopyralid	0.33 % v/v
Note 1: Trts 2 - 3 contained ammonium sulfate at 1.36 oz/gal		
Note 2: Trts 2 - 5 contained non-ionic surfactant at 0.25% v/v		
Note 3: Trts 6 - 8 contained methylated seed oil at 1% v/v		

Material & Methods	
Plot Design:	randomized complete block with 4 replications
Spray Equipment:	single-nozzle boom @ 50GPA
Summer Application:	Aug. 20th, 2019 - flower petals dehiscing from golden creeper
Fall Application:	Oct. 7th, 2019 - golden creeper vegetative, not yet senesced

Field Experiment (**Summer**)

- **Q1:** Which herbicides have greatest efficacy?
- **Q2:** Does summer or fall application timing have greater efficacy?

Treatment	Rate	Control (%) Summer Application	
		1.5 MAT	12 MAT
1. Untreated Control	-	0 c	0 b
2. Roundup Powermax®	2 % v/v	96 a	44 ab
3. Roundup Powermax®	3 % v/v	88 a	38 ab
4. Arsenal Powerline™	0.5 % v/v	68 b	45 ab
5. Escort XP®	1 g/3.78 l	100 a	60 ab
6. Garlon 4®	1 % v/v	98 a	85 a
7. Method 240SL®	0.5 % v/v	85 a	40 ab
8. Milestone®	0.33 % v/v	62 b	50 ab
Statistics			
P-value		0.0001	0.0554
Note: means followed by the same letter do not significantly differ (P= 0.10, Student-Newman-Keuls)			

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Field Experiment (**Fall**)

- **Q1:** Which herbicides have greatest efficacy?
- **Q2:** Does summer or fall application timing have greater efficacy?

Treatment	Rate	Control (%) Fall Application
		12 MAT
1. Untreated Control	-	0 b
2. Roundup Powermax®	2 % v/v	58 ab
3. Roundup Powermax®	3 % v/v	44 ab
4. Arsenal Powerline™	0.5 % v/v	58 ab
5. Escort XP®	1 g/3.78 l	91 a
6. Garlon 4®	1 % v/v	90 a
7. Method 240SL®	0.5 % v/v	63 ab
8. Milestone®	0.33 % v/v	60 ab
Statistics		
P-value		0.0621
Note: means followed by the same letter do not significantly differ (P= 0.10, Student-Newman-Keuls)		

Field Experiment (**Fall**)

- **Q1:** Which herbicides have greatest efficacy?
- **Q2:** Does summer or fall application timing have greater efficacy?

Treatment	Rate	Control (%) Fall Application
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1. Untreated Control	-	0 b
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Statistics		
P-value		0.0621
Note: means followed by the same letter do not significantly differ (P= 0.10, Student-Newman-Keuls)		

Garlon 4A (summer) @ 1 YAT

Conclusions

- **Garlon in summer and fall (Field)**
- **Escort in Greenhouse and fall (Field)**
- **Arsenal mixed results**
  - Good in Greenhouse, poor in Field

Future Directions

- **Optimize Applications**
  - Confirm efficacy of Garlon, Escort, and Arsenal

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WE RESEARCH WEEDS AND [illegible]ANTS IN THESE SETTINGS:

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PASTURES

NATURA

18-14	Invasive Plant Control	phragmites (*Phragmites australis*)	Herbicides (fluazifop-p-butyl)	PDF
19-1	Invasive Plant Control	garlic mustard (*Alliaria petiolata*)	Herbicides (Esplanade, glyphosate)	PDF
19-10	Invasive Plant Control	Manchu tubergourd / golden creeper (*Thladiantha dubia*)	Herbicides (glyphosate, Arsenal, Escort)	PDF
19-11	Invasive Plant Control	Manchu tubergourd / golden creeper (*Thladiantha dubia*)	Herbicides (glyphosate, Arsenal, Escort, Garlon 4, Method, Milestone)	PDF
19-12	[illegible]sive Plant Control	Reed manna grass (*glyceria* [illegible])	Herbicides (fluazifop, glyphosate)	[illegible]
19-13	Invasive Plant Control	phragmites (*Phragmites australis*)	Herbicides (fluazifop, glyphosate)	PDF

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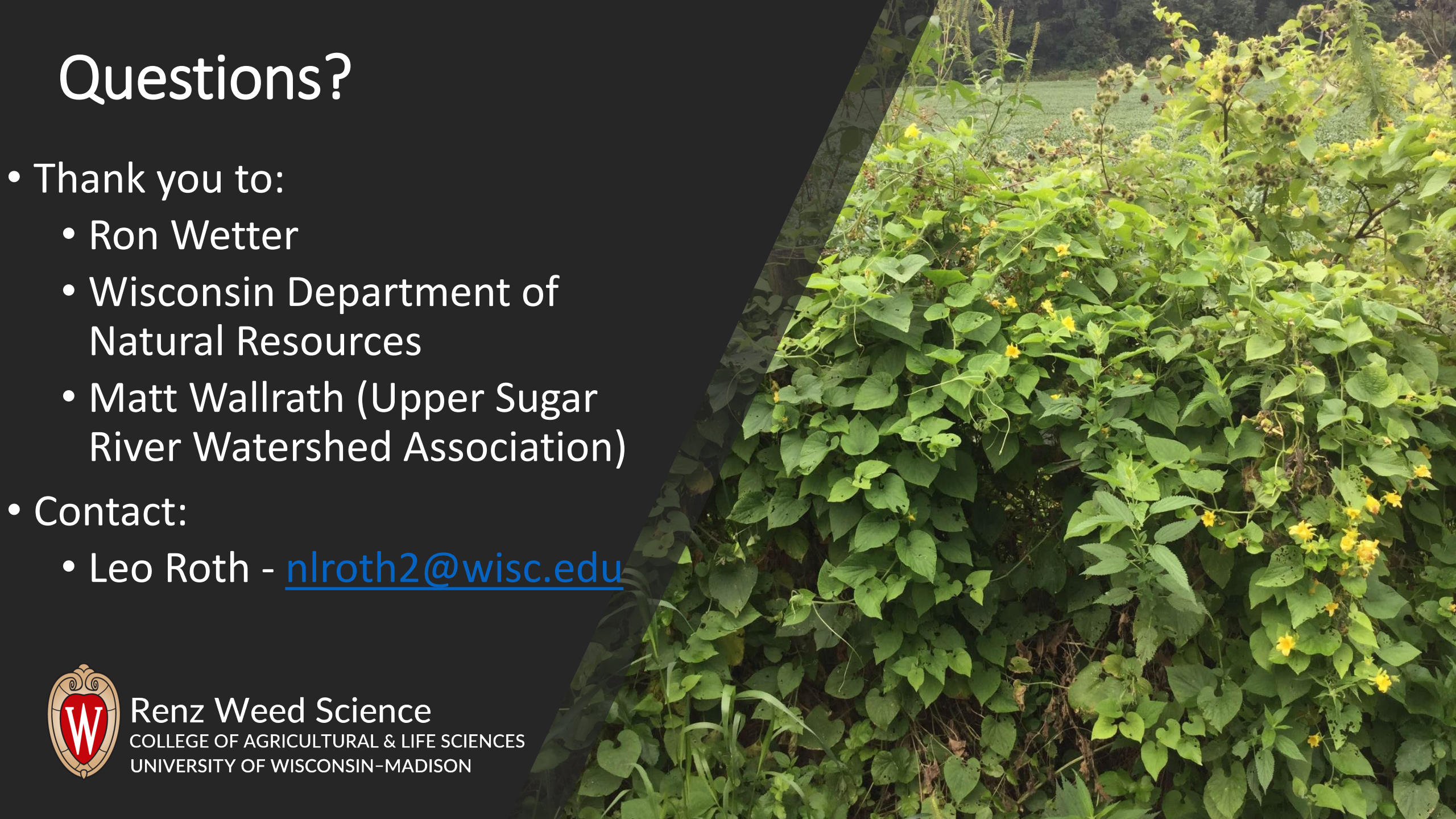
Questions?

- Thank you to:
  - Ron Wetter
  - Wisconsin Department of Natural Resources
  - Matt Wallrath (Upper Sugar River Watershed Association)
- Contact:
  - Leo Roth - nlroth2@wisc.edu



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