

Emergent Plant Management – Arkansas Edition

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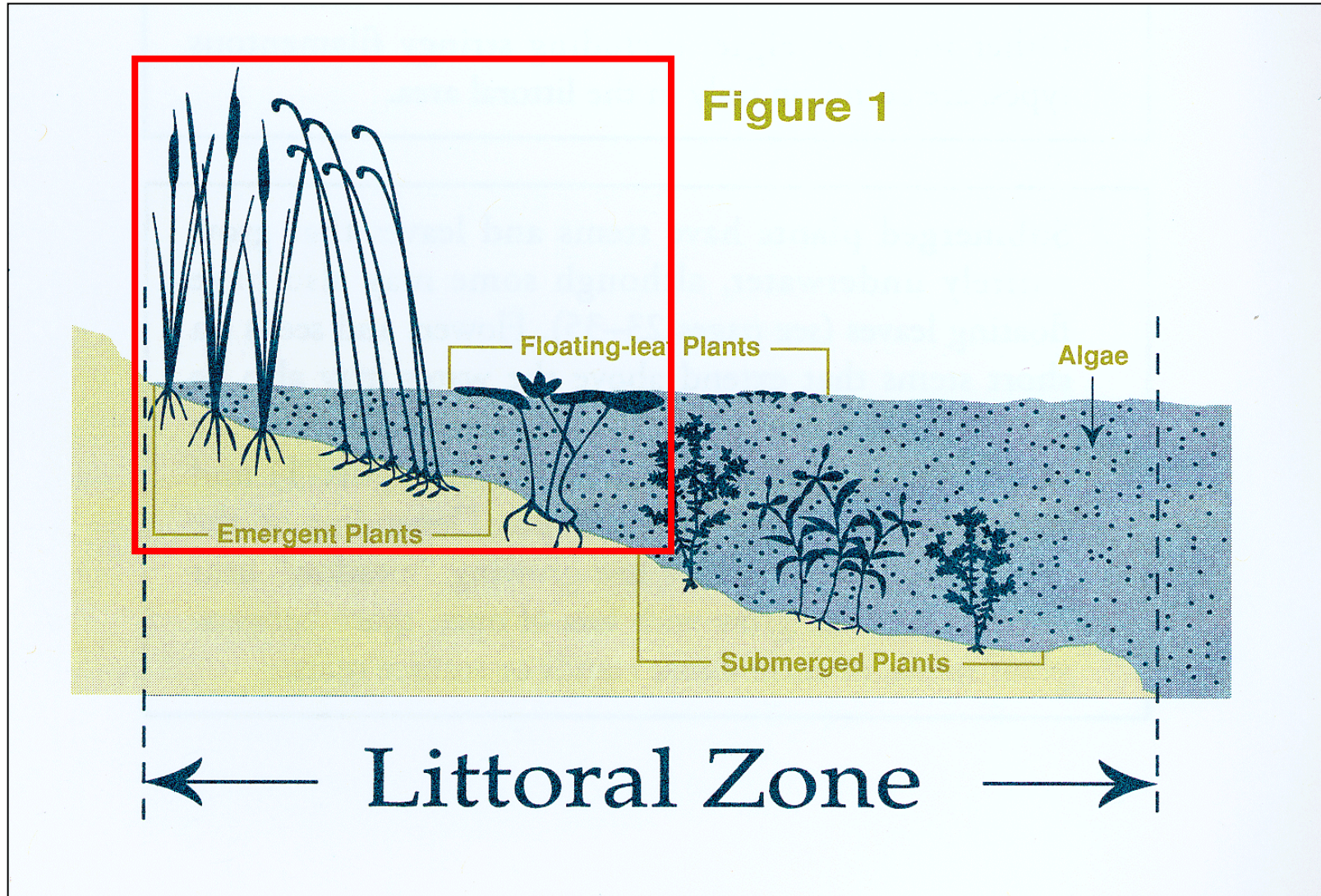


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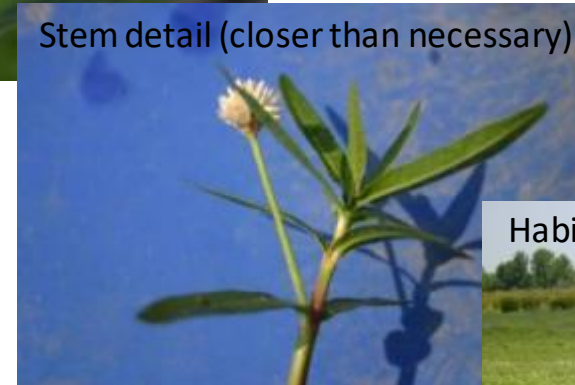


Emergent/Floating Leaf Plants



Getting a Good Plant ID:

- Live Plant
 - Wrap in damp paper towel
 - Place in Ziploc bag
 - Ship on ice overnight to MSU
- Ask an Expert
- Send good quality photos
 - Flower
 - Close-Up
 - Habitat



AR Target Species

- Emergent/Floating Leaf:

- Alligatorweed

- Smartweed
- Water Willow
- Water Primrose



- Yellow Floating Heart

- Crested Floating Heart
- Water Primrose
- Immature American Frogbit



Alligatorweed



Water Primrose Waterwillow Alligatorweed



Smartweed

Alligatorweed



Alligatorweed



Water Primrose



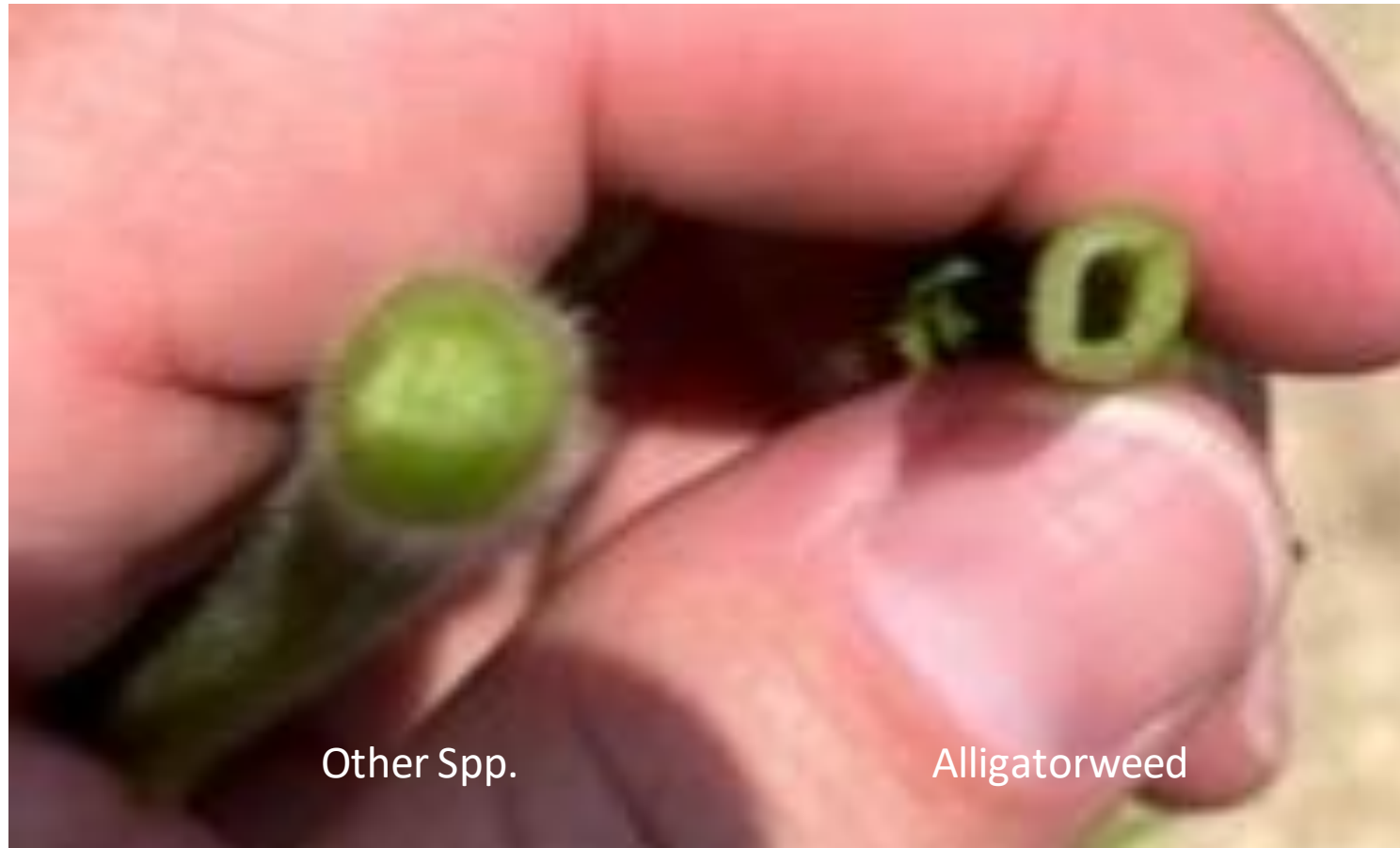
Waterwillow



Smartweed



Alligatorweed



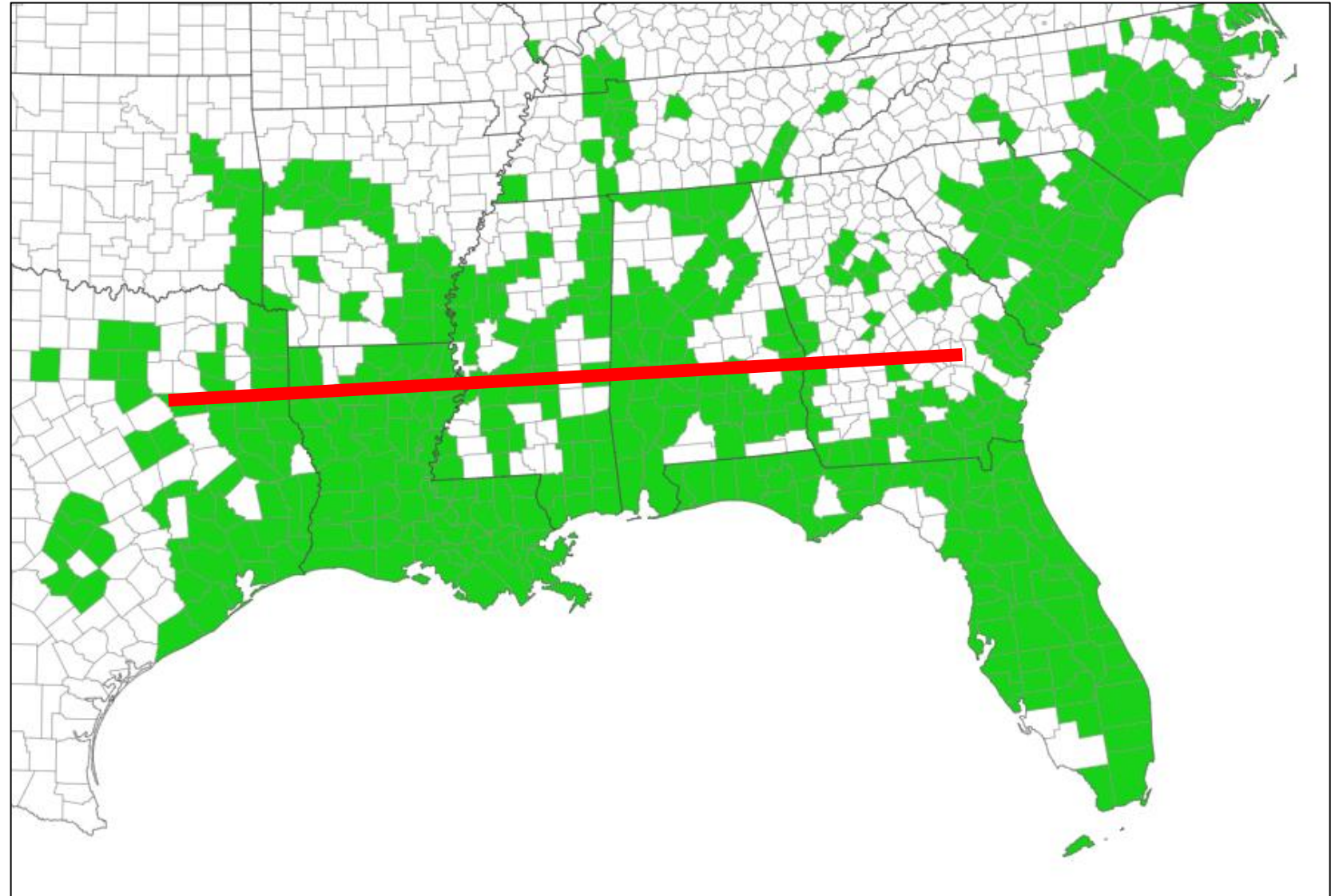
Other Spp.

Alligatorweed



Alligatorweed

- Control Methods:
 - Biological
 - I-20 corridor
 - AR too far north
 - Mechanical
 - Not likely to work
 - Fragments
 - Physical
 - Not likely to work
 - Plant has terrestrial form



Alligatorweed

- Chemical Control:
 - 15 Herbicides for general aquatic use
 - Foliar applications
 - Few Effective on alligatorweed
 - Cox and Madsen 2011
 - Turnage et al. (In prep)
 - Turnage and Thompson (ongoing)

HERBICIDES		
2,4-D	Systemic	Auxin Mimic
Bispyribac-sodium	Systemic	ALS Inhibition
Carfentrazone-ethyl	Contact	PPO Inhibition
Copper	Contact	??PS Inhibition??
Diquat	Contact	PS 1 Inhibition
Endothall	??Contact??	??STP Inhibition??
Florpyrauxifen-benzyl	Systemic	Auxin Mimic
Flumioxazin	Contact	PPO Inhibition
Fluridone	Systemic	PDS Inhibition
Glyphosate	Systemic	EPSP Inhibition
Imazamox	Systemic	ALS Inhibition
Imazapyr	Systemic	ALS Inhibition
Penoxsulam	Systemic	ALS Inhibition
Topramezone	Systemic	HPPD Inhibition
Triclopyr	Systemic	Auxin Mimic



Alligatorweed

- Cox and Madsen 2011 (12 WAT)
 - ALS inhibitors:
 - Imazamox (0.5 gal/ac) – 96%
 - Imazapyr (0.25 gal/ac) – 99%
 - Penoxsulam (5.7oz/ac) – 87%
 - Auxin mimic:
 - 2,4-D (0.5 gal/ac) – 94%
 - Triclopyr (0.5 gal/ac) – 95%
 - EPSP inhibitor:
 - Glyphosate (0.75 gal/ac) – 95%

HERBICIDES		
2,4-D	\$41/gal	\$20.5/ac
Bispyribac-sodium	Systemic	ALS Inhibition
Carfentrazone-ethyl	Contact	PPO Inhibition
Copper	Contact	??PS Inhibition??
Diquat	Contact	PS 1 Inhibition
Endothall	??Contact??	??STP Inhibition??
Florpyrauxifen-benzyl	Systemic	Auxin Mimic
Flumioxazin	Contact	PPO Inhibition
Fluridone	Systemic	PDS Inhibition
Glyphosate	\$60/gal	\$45/ac
Imazamox	\$340/gal	\$170/ac
Imazapyr	\$100/gal	\$25/ac
Penoxsulam	\$2,900/gal	\$130/ac
Topramezone	Systemic	HPPD Inhibition
Triclopyr	\$60/gal	\$30/ac

**2021 Price estimates from online vendors



Alligatorweed

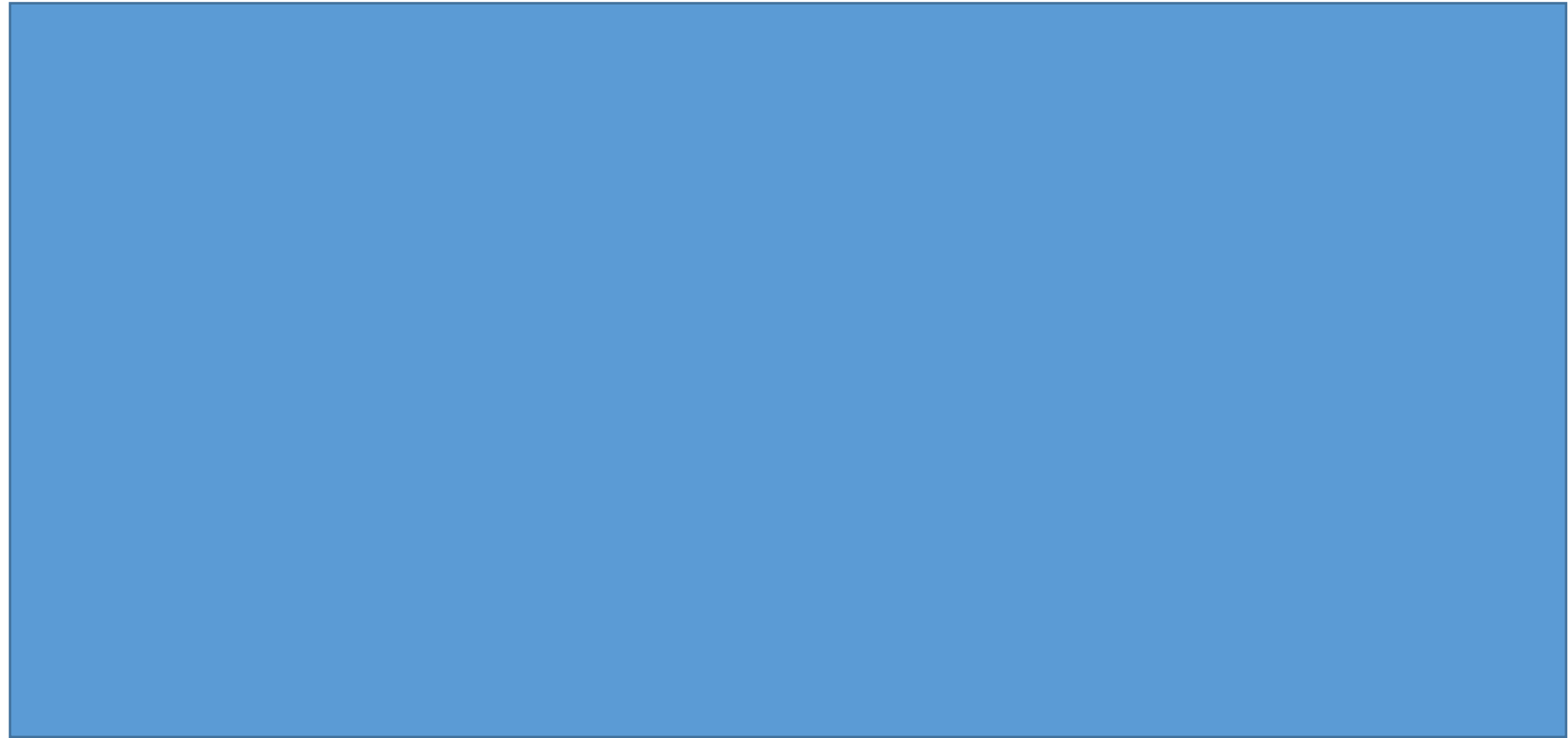
- Turnage et al. (*In prep*)
 - Mesocosm trial (16 WAIT) found no diff in timing of repeat apps (4 vs. 8 WAT re-app), except Glyphosate
 - Imazapyr not used in field
 - Field data (52 WAT)
 - Tri x 2 (0.75 gal/ac): 53-67% red (\$60/ac)
 - Gly x 2 (0.37 gal/ac): 69-89% red (\$90/ac)
 - Tri + Gly: 91-92% red (\$75/ac)

TRT. TIME	TREATMENT	RUN 1	RUN 2
NA	Reference	2952.7 (73.8) ^A	1528.5 (249.3) ^A
0 WAIT	Triclopyr	90.3 ^{CDE}	97.0 ^C
	Glyphosate	47.6 ^B	79.5 ^B
	Imazapyr	94.4 ^{CDE}	99.5 ^C
	Tri + Gly	100 ^E	100 ^C
	Tri + Ima	78.6 ^C	100 ^C
	Gly + Ima	98.4 ^{DE}	89.6 ^{BC}
	Tri + Gly + Ima	100 ^E	100 ^C
0, 4 WAIT	Triclopyr	100 ^E	100 ^C
	Glyphosate	78.6 ^C	86.7 ^{BC}
	Imazapyr	97.3 ^{CDE}	99.1 ^C
	Tri + Gly	100 ^E	100 ^C
	Tri + Ima	99.8 ^E	100 ^C
	Gly + Ima	97.9 ^{DE}	99.5 ^C
	Tri + Gly + Ima	100 ^E	100 ^C
0, 8 WAIT	Triclopyr	100 ^E	100 ^C
	Glyphosate	50.7 ^B	75.7 ^B
	Imazapyr	79.9 ^{CD}	91.0 ^{BC}
	Tri + Gly	86.4 ^{CDE}	100 ^C
	Tri + Ima	100 ^E	100 ^C
	Gly + Ima	97.3 ^{CDE}	99.2 ^C
	Tri + Gly + Ima	100 ^E	100 ^C



Alligatorweed

- Turnage and Thompson (*In prep*)
 - 12 WAT Biomass:
 - IMR (1X) = 87%
 - BIS = 88 to 94%
 - TOP (1X) = 76%
 - FPB (1X) = 85%
 - FLUR = 76 to 93%
 - MSM + TRI = 79%
 - 52 WAT Biomass:
 - IMR = 75 to 78%
 - BIS (1X) = 78%
 - TOP (½ X) = 84%
 - FPB (1X) = 81%



Yellow Floating Heart



Yellow Floating Heart



Water Primrose



Crested Floating Heart

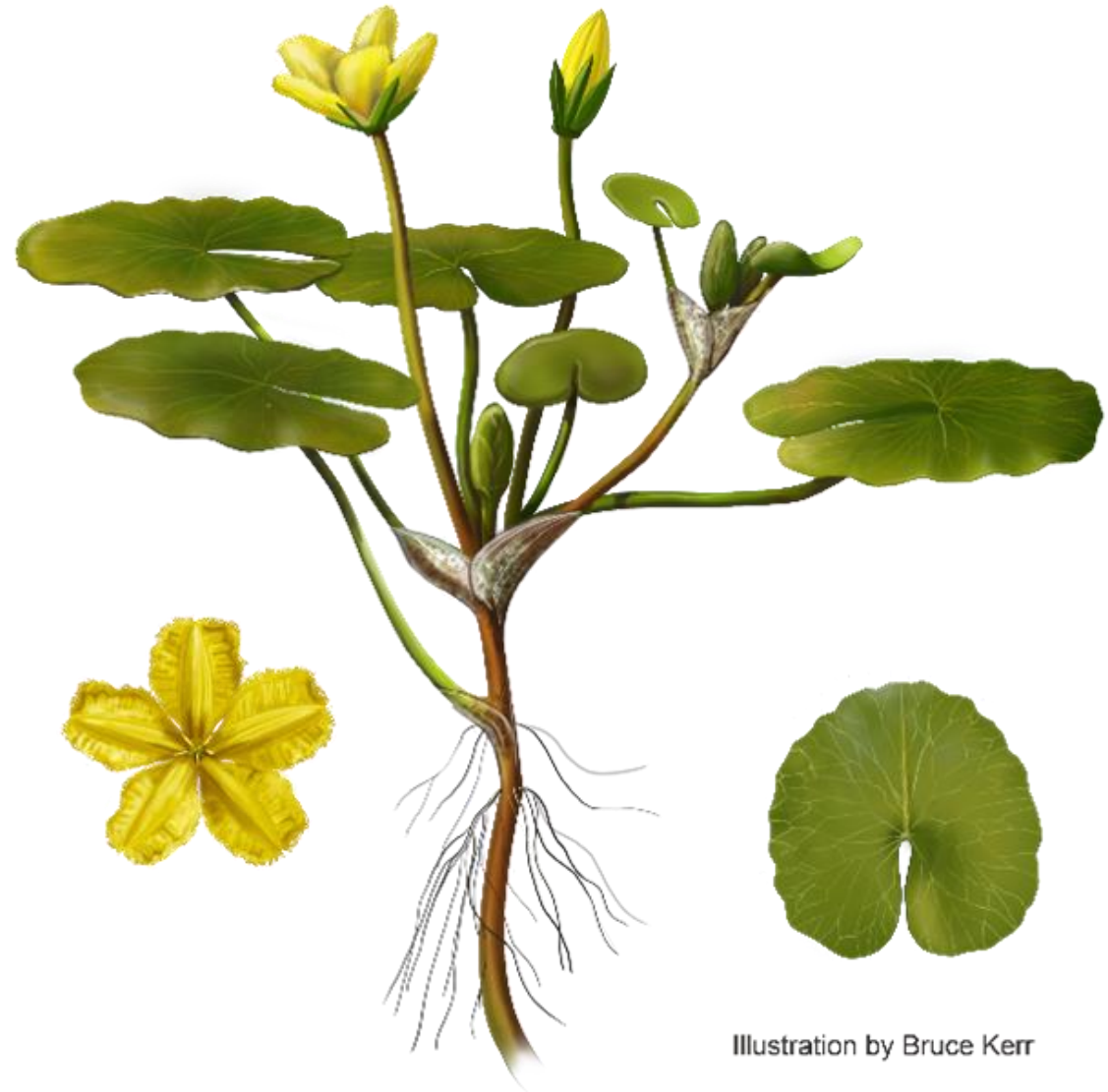


American Frogbit (Immature)



Yellow Floating Heart

- Control Methods:
 - Biological
 - None
 - Mechanical
 - Not likely to work
 - Fragments
 - Physical
 - Not likely to work
 - Chemical
 - Florpyrauxifen-benzyl
 - 2 PDU = 80-99% reduction 6 WAT



Final Thoughts

- Correct plant ID is first step in solving problems
- Photos
 - Flower
 - Foliage and Stem
 - Habitat
- Growth Form
- Calculate size of infestation



Questions

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