Scaling up Brazilian peppertree (*Schinus terebinthifolia*) novel management techniques: Lessons from South Florida





CENTER FOR AQUATIC AND INVASIVE PLANTS



Brazilian Peppertree

- Introduced early 1800s
- Long lag time before noted as an invasive
- Northward expansion of distribution
- Also found in TX, HI, CA, and GA
 - Dioecious
 - Woody shrub-like tree
 - Anacardiaceae (poison ivy/cashew family)



Current Approaches

Basal bark application with Triclopyr ester (Garlon 4) (20% v/v)

Current Approaches



Cut Stump treatment with triclopyr amine (50%) or glyphosate (50%)

Aminocyclopyrachlor

6-amino-5-chloro-2cyclopropylpyrimidine-4-carboxylic acid

Aminopyralid

4-amino-3,6-dichloropicolinic acid 4-amino-3,6-dichloropyridine-2-carboxylic acid

Triclopyr acid

3,5,6-trichloro-2pyridinyloxyacetic acid



Method[®] 240SL



All three have been very effective in UF small scale Individual plant treatment trials



Operational Research BP Contractor Study





Objectives: (1) Examine reduced hack and squirt performance compared to basal bark (2)Evaluate the performance of a new triclopyr acid formulation for basal bark



Herbicide applied



Methods: Field plot set up



- West of Miami, South Florida Water Management District C9
- 24 plots, each ~0.2 ha (0.5 acre)
- Two contractor crews of 6 members each treated 12 plots
 - Crew 1- June 6-8, 2018
 - Crew 2- June 18-20, 2018
- Four treatments replicated over three plots, CRD design

Contractor study treatments

Trt #	Common name	% v/v	Application Type	Amount of product in formulation		Max label rate
				g/L	Lbs/gal	(kg/ha)
1	Aminocyclopyrachlor (ACP)	50.0	Reduced HS	240.0	2.00	0.31
2	Aminopyralid (AP)	50.0	Reduced HS	240.0	2.00	0.25
3	Nontreated – Water	-				
4a	Triclopyr acid (TA)	10.0	Basal – Crew 1	343.5	2.87	10.00
4b	Triclopyr ester (TE)	22.5	Basal – Crew 2	478.7	4.00	8.95



Reduced hack and squirt approach



1 hack every 1-4 inches (1 bottle cap – 1 2L soda bottle width)

3 4 5

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Machete height for hacks (~2ft)

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Data collection and analysis

- Volume of herbicide and carrier applied
- Time to treat each plot
 - Time included cutting into (creating access tunnels) and treating plots

- Post-treatment defoliation and basal sprouting at 60 to 540 days after treatment
- 10 random trees sampled throughout each plot
- ANOVA in statistical package R, Tukey HSD comparison $\alpha = 0.05$



ew 2



60 DAT



Application time pooled across treatments



Volume applied (L/ha) Crew x Treatment



Kilograms ai applied per hectare Crew x Treatment





% Defoliation 365 DAT



% Defoliation 540 DAT



Frequency of 100% Defoliation (out of 10) 540 DAT





Discussion

- Application time
- Volume/ herbicide active ingredient reduction
- Defoliation
- Large scale lessons
- Label rates

Number of plots within label rate:

Basal: Triclopyr ester	Basal: Triclopyr acid	Reduced HS: ACP	Reduced HS: AP
1/2 plats	2/2 plats	1/6 plats	1/6 plots

Future directions

Apply these tools and techniques on other invasive woody species

Provide training for novel reduced hack and squirt technique

 Additional work on possible herbicide flashback issues (quantify herbicide, test with species specific to area, and across Florida soil types)



Acknowledgements

Thank you! Questions?

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Cost of treatments (herbicide applied) per hectare

