

Woody Species Update from CAIP



Patrick Belk
Graduate Research
Assistant

Stephen F. Enloe
Professor and Extension
Specialist



UNIVERSITY of FLORIDA



CENTER FOR AQUATIC
AND INVASIVE PLANTS

CAIP is in an ongoing transition...

- Dr. Jay Ferrell (Center Director) now ALSO serving as Chair of the UF/IFAS Department of Agronomy
- Dr. Candice Prince resigned in December 2023
 - Currently advertising for Associate Director position to replace Dr. Prince's position
- Dr. Leary moved on to Lead Scientist with SFWMD Lake & River Ecosystems Group
- We recently hired Dr. Eli Russell as a new aquatic plant management specialist
- CAIP Communications:
 - Christine Krebs moved to UF Graduate School
 - Cayla Romano moved to SJRWMD



We still focus on hydrilla and floating plants!



Dr. Ben Sperry
USACE

Projects to Cover

- Reduced Hack and Squirt: Earleaf acacia, Java plum, Leadtree
- Melaleuca wedge versus girdle treatments
- Basal bark elevated band treatments
- New Extension Resources

REDUCED HACK AND SQUIRT ADVANCES



- Method: 1 ml (50% v/v)
- For each stem, 1 hack per 4 inches of stem diameter



Earleaf acacia (*Acacia auriculiformis*)



Java plum (*Syzygium cumini*)



Syzygium cumini
Photo by Asit K. Ghosh

Research Questions

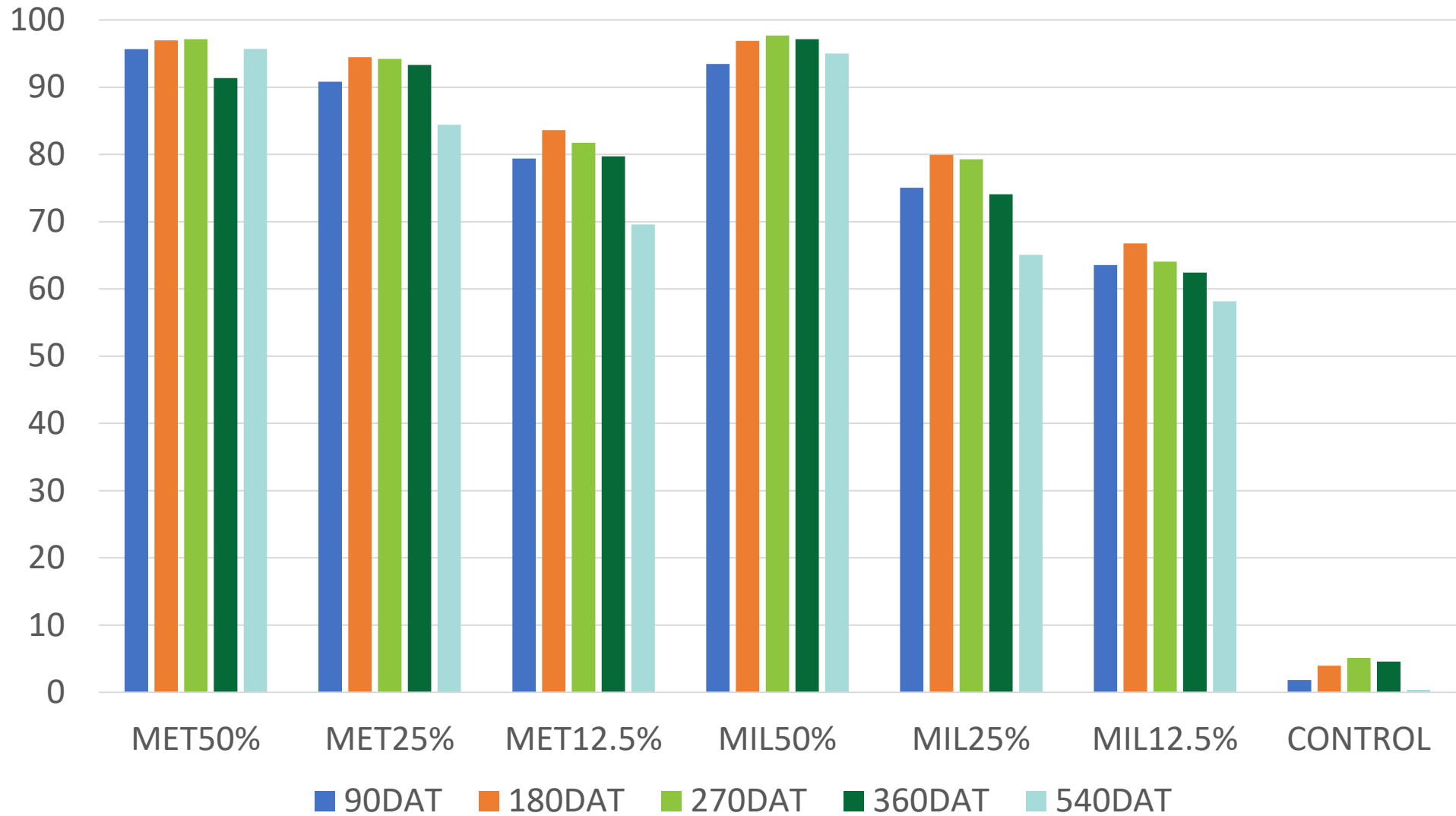
- Is reduced hack and squirt an effective approach for these species?
- What herbicide concentration is required?
- What hack spacing is required?

Experimental Design (Earleaf acacia)

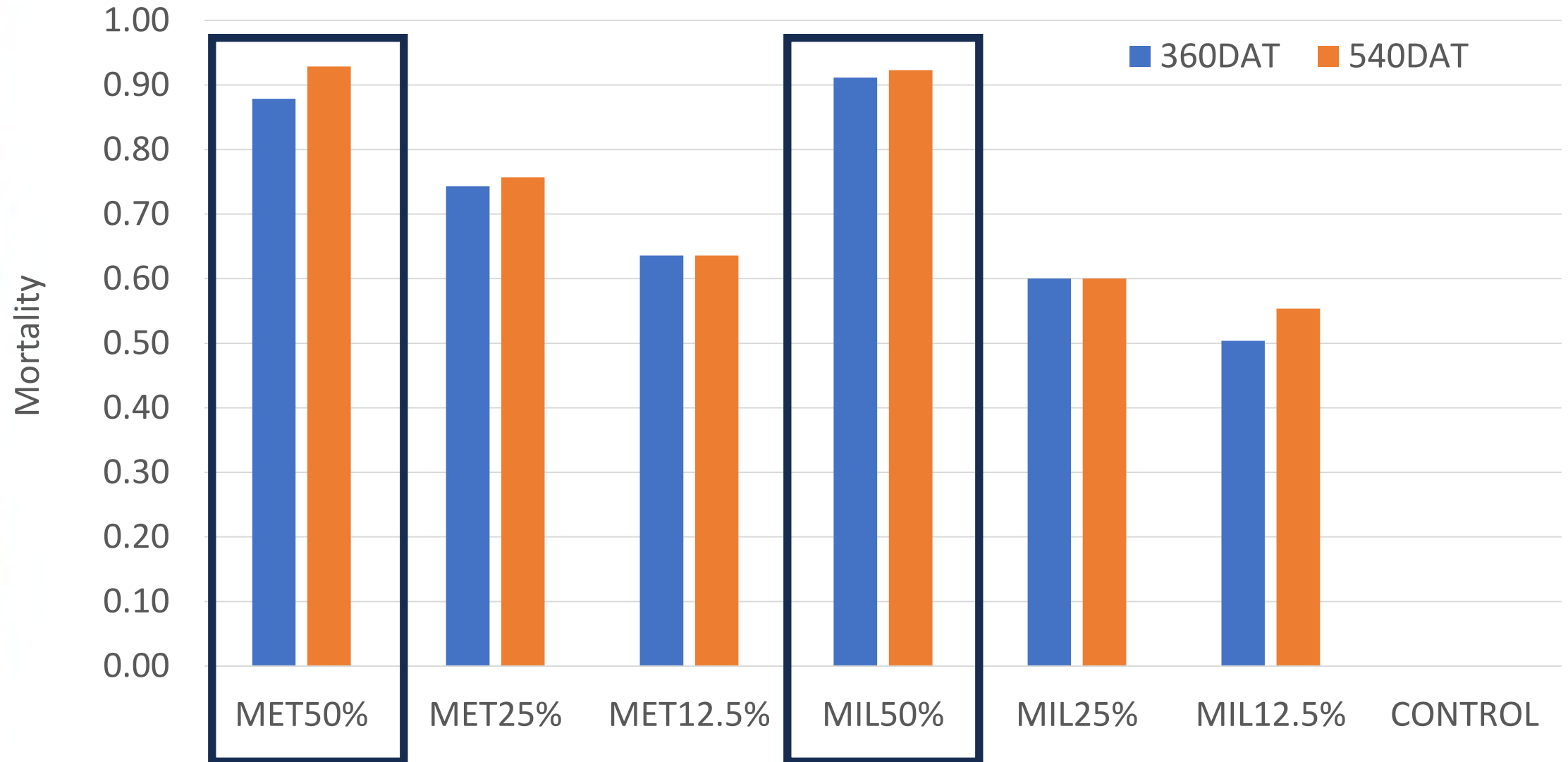
- Martin County Pine flatwood site (March 2023)
- Individual trees served as experimental units
 - 24 experimental units/trt
 - 2.5-16.5 inch diameter trees (mean diameter = 5.8 inches)
- Hack protocol
 - 1 hack per 4 inches stem diameter
- Herbicide Treatments
 - Method herbicide at 50, 25, and 12.5% v/v in water
 - Milestone herbicide at 50, 25, and 12.5% v/v in water
 - Nontreated control



Earleaf Acacia Defoliation



Earleaf Acacia Mortality 360 and 540 DAT







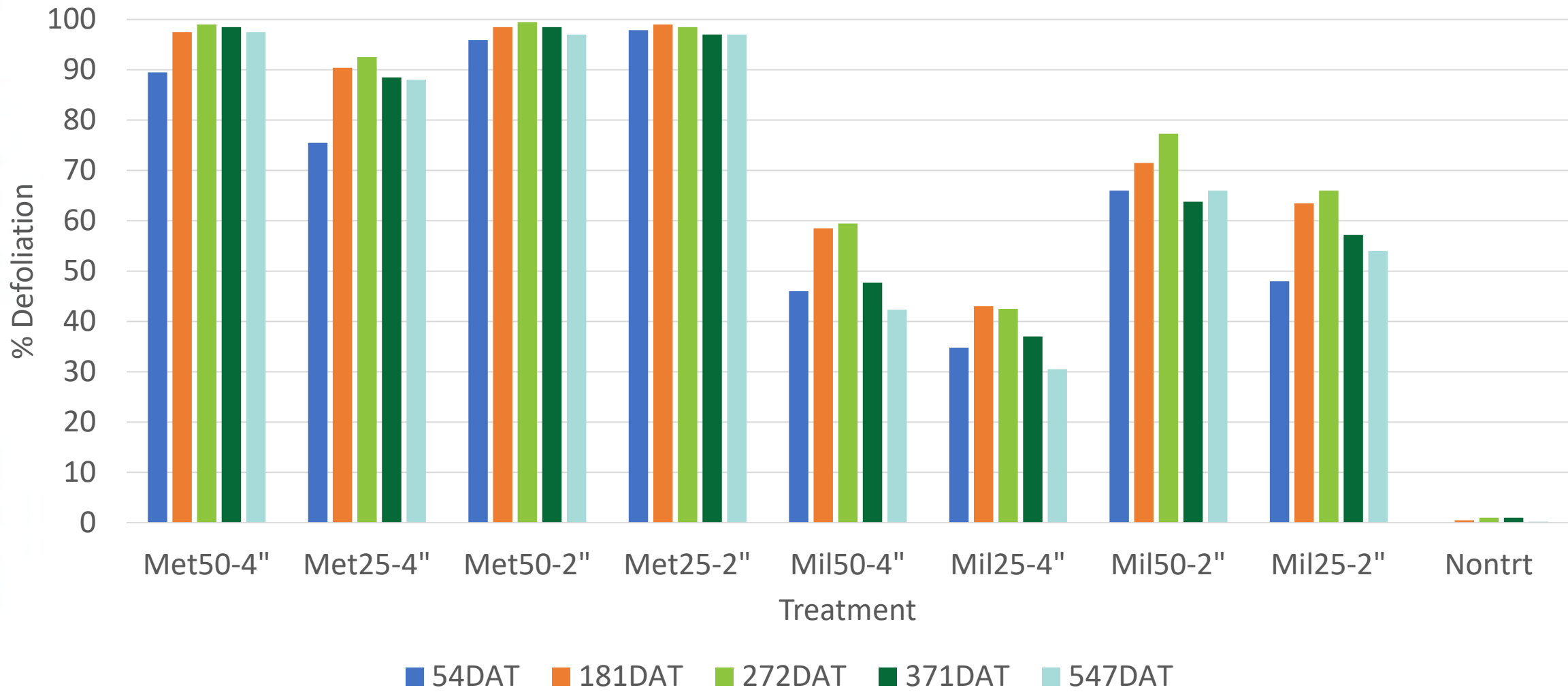
CLEAR EVIDENCE OF DEAD
CAMBIUM

Experimental Design (Java plum)

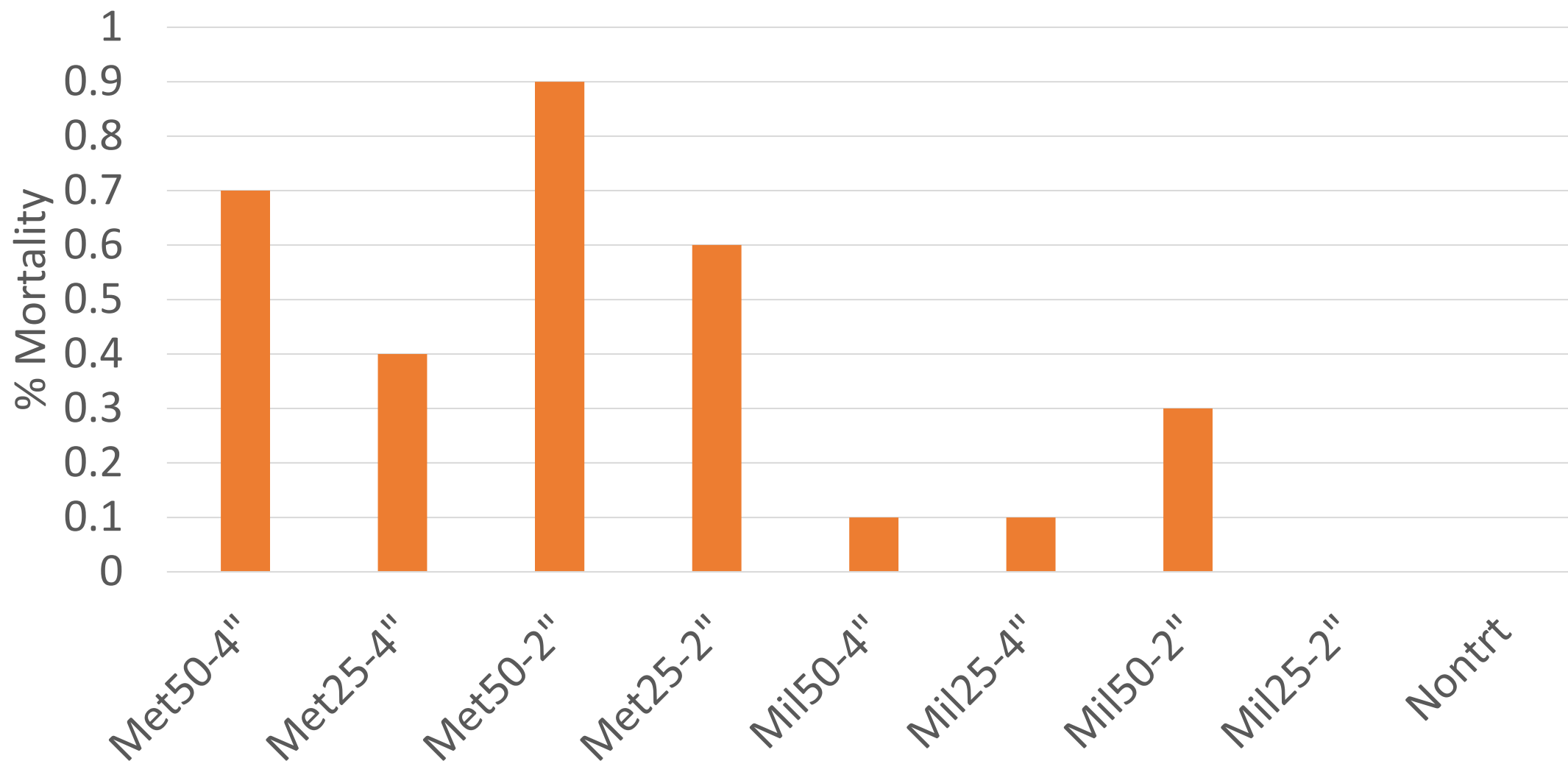
- Okaloacoochee slough wildlife management area (March and May 2023)
- Individual trees served as experimental units
 - 20 experimental units/trt
 - 4-14 inch stem diameter (mean diameter = 8 inches)
- Hack Protocol
 - 1 hack per 4 inches stem diameter
 - 1 hack per 2 inches stem diameter
- Herbicide Treatments
 - Method herbicide at 50, and 25% v/v in water
 - Milestone herbicide at 50 and 25% v/v in water
 - Nontreated control



Java Plum Defoliation



Java Plum Mortality 540 DAT







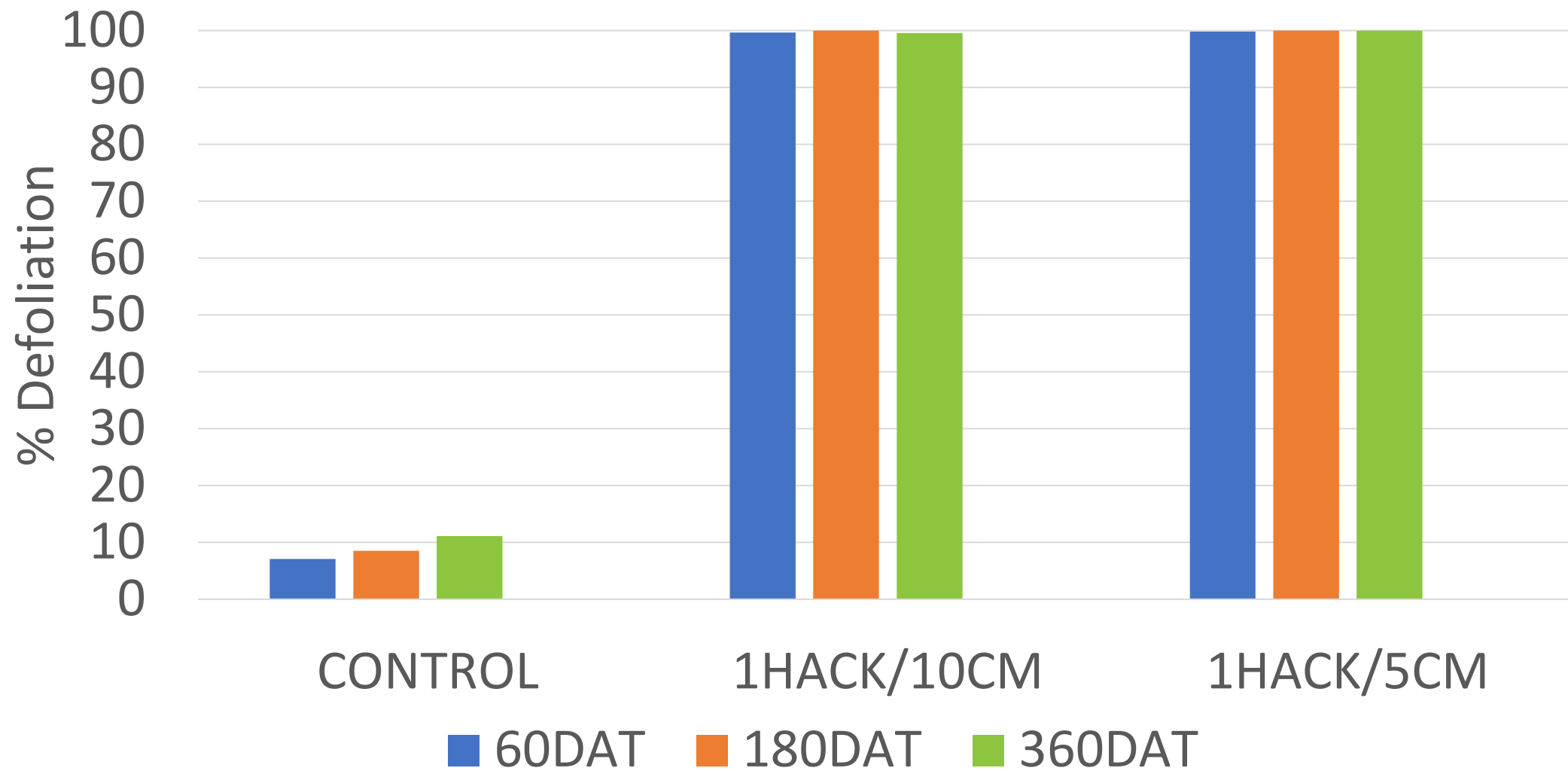
CLEAR EVIDENCE OF DEAD CAMBIUM
ON JAVA PLUM

Leadtrees Work Ongoing at 3 locations

- 3 locations
- 10-20 trees per treatment
- Method herbicide (50% v/v)
 - 1 hack / 4" stem diameter
 - 1 hack / 2" stem diameter
- Late winter, spring timings



UF's Tamarac Lead Tree Research 360DAT



1 wedge / 4"
Method 50% or 38% @ 1 ml
application volume



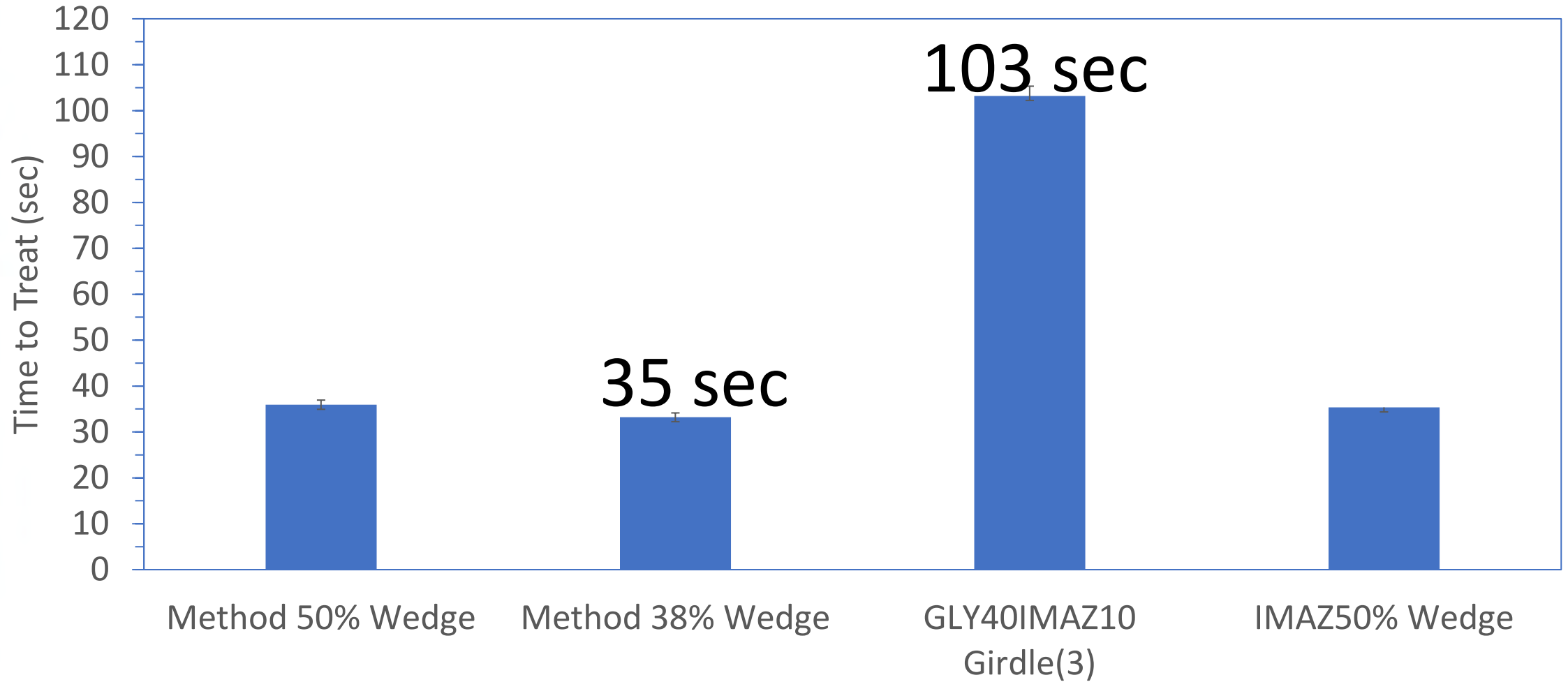
v/s



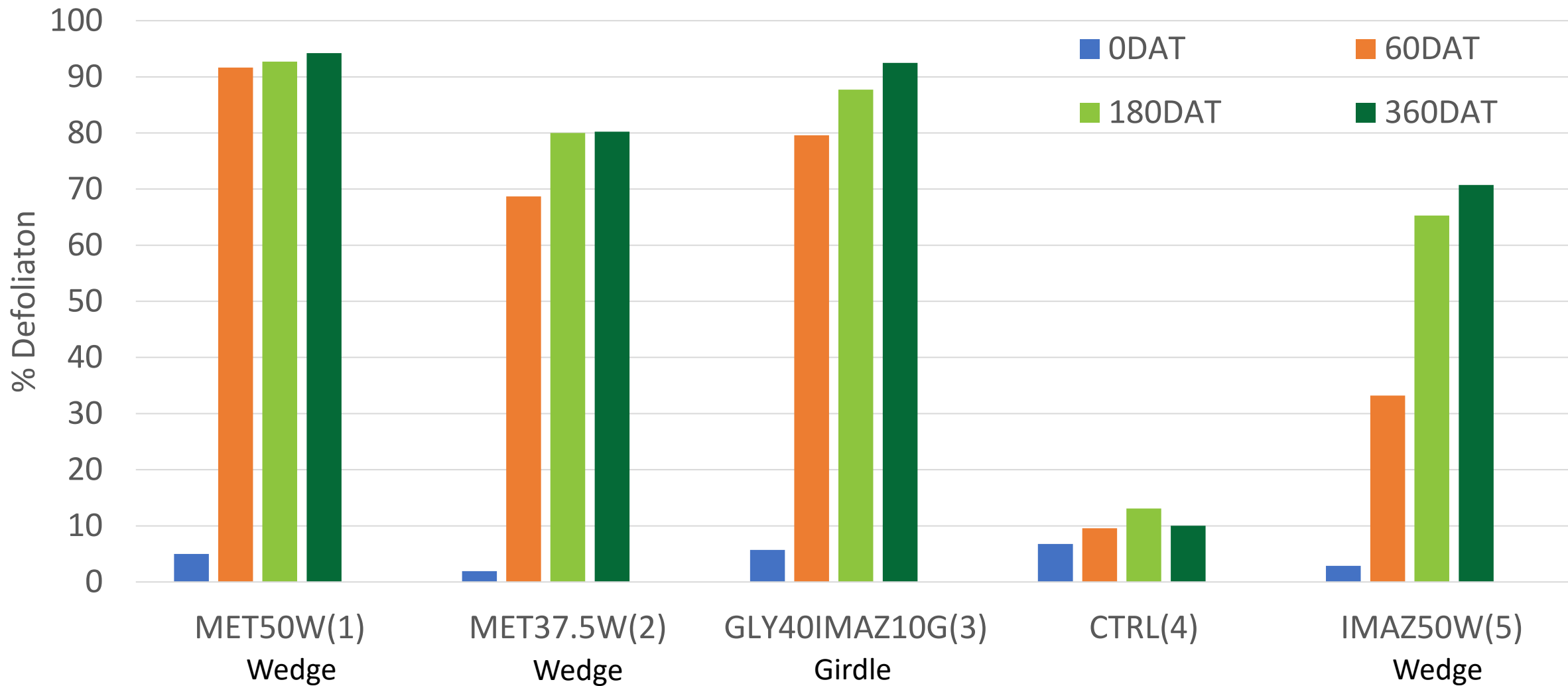
Full girdle + spray
Gly 40% + Imaz 10%



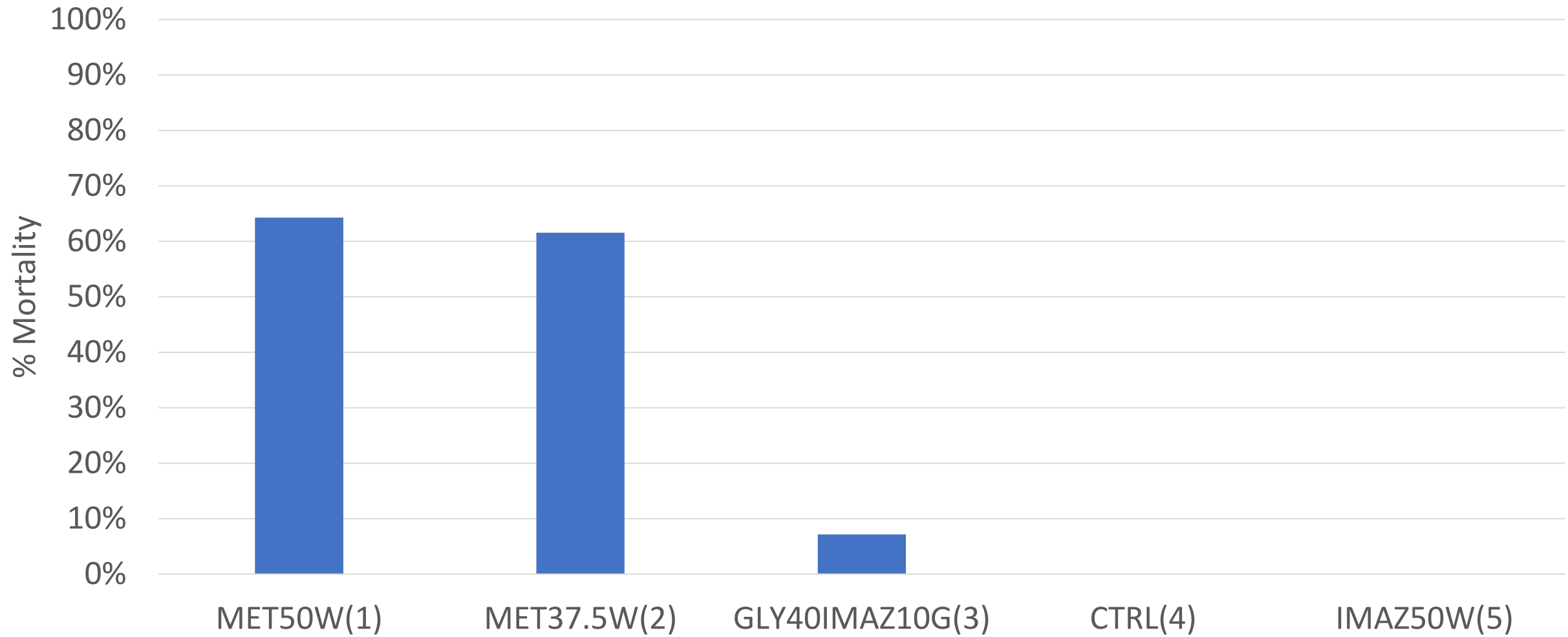
Melaleuca Time to Treat: WEDGE vs. GIRDLE



UF'S Picayune Strand Melaleuca Tree Wedge-Cut Study Defoliation Dry 360DAT



UF'S Picayune Strand Melaleuca Tree Wedge-Cut Study Mortality Dry 360DAT



Summary to Date

- Earleaf Acacia
 - Both herbicides working well at 50%
 - Lower concentrations currently show lower mortality, but patience is required!
 - This is very hard wood! Keep your machetes sharp or switch to hatchets
- Java Plum
 - Milestone is not consistent (off the table)
 - Method working well at 50% with 2 and 4-inch hack spacings
 - The spongy bark tends to break off in chunks below the hack, or closes up when the machete is removed

Summary to Date

- Leadtree at 360 DAT
 - Method (50%) working well with 2 and 4 inch hack spacings
- Melaleuca Wedge with Method
 - ~1/3 the time needed to girdle
 - Wedge treatment with Method appears to be working well at 360 DAT

UF Data and Operational Efforts Confirm Efficacy for these targets

- Brazilian peppertree
- Chinese tallowtree
- Bishopwood
- Australian pine
- Melaleuca
- Tung oil tree
- Surinam cherry
- Crepe myrtle
- Camphortree
- Chinaberry tree
- Silktree
- Earleaf acacia
- Java plum

High band basal bark treatment Melbourne and Little Manatee River State Park



Pepp

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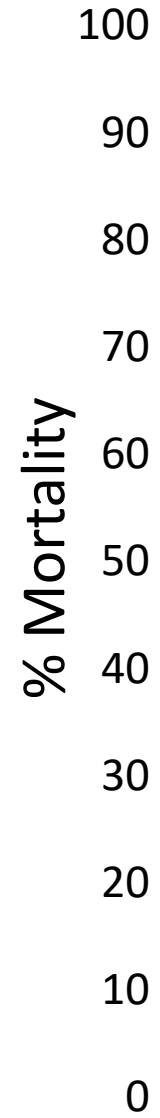
100
90
80
70
60
50
40
30
20
10
0

% Mortality



Pepper

AT



Where we are headed

- Continuing melaleuca IPT wedge/reduced girdle efforts
- Revisiting *Ludwigia uruguayensis* and digging into *L. peruviana* management (Spirit of the Wild WMA)
- Wetland nightshade (*Solanum tampicense*)
- New species of interest: Giant water sensitive plant (*Aeschynomene fluitans*)
- Continued refinement of basal bark treatment

plants.ifas.ufl.edu/resources/management-guides/

26 Complete Management Guides

- Introduction video
- Arrowheadvine, Golden pothos
- Brazilian peppertree, Leadtree
- Camphortree, Chinese tallow
- Coral Ardisia, Shoebuttton ardisia
- Earleaf acacia, Java plum
- Melaleuca, Bishopwood
- Downy rose myrtle, Skunkvine
- Guineagrass, Cogongrass
- OWCF, Japanese climbing fern

Youtube training videos- technical skills!

- Basal bark, cut stump, reduced hack and squirt, reverse cut stem



<https://plants.ifas.ufl.edu/resources/management-guides/>



- 1 **Reduced Hack and Squirt - Introduction**
UF/IFAS Center for Aquatic and Invasive Plants • 46 views • 10 months ago
4:12
 - 2 **Reduced Hack and Squirt - Targets**
UF/IFAS Center for Aquatic and Invasive Plants • 30 views • 10 months ago
8:18
 - 3 **Reduced Hack and Squirt - Treatments**
UF/IFAS Center for Aquatic and Invasive Plants • 24 views • 10 months ago
7:42
 - 4 **Reduced Hack and Squirt - Tools**
UF/IFAS Center for Aquatic and Invasive Plants • 24 views • 10 months ago
10:56
 - 5 **Reduced Hack and Squirt - Techniques**
UF/IFAS Center for Aquatic and Invasive Plants • 23 views • 10 months ago
13:17
 - 6 **CAIP Reduced Hack and Squirt - Timings**
UF/IFAS Center for Aquatic and Invasive Plants • 11 views • 10 months ago
4:44
- Reduced Hack and Squirt - Trouble**

Questions?
pbelk@ufl.edu
sfenloe@ufl.edu

<https://plants.ifas.ufl.edu/resources/management-guides-and-videos/>



HERBICIDES TESTED FOR REDUCED HACK AND SQUIRT TREATMENTS



- Aminocyclopyrachlor
 - No generics available
- Label concentration for hack and squirt:
 - 1 ml of a 50% v/v (mixed with water)
 - 0.5 ml of 100% (undiluted herbicide)
 - 1 hack per 2 inches Diameter at breast height (DBH)
- Our research experience:
 - 1 ml of a 50% v/v mixed in water
 - For each stem, 1 hack per 4 inches of stem diameter
- Maximum label use per acre per year:
0.14 lbs ae/A/year (18 oz/A/year)



- Aminopyralid
 - Generics available
- Label concentration for hack and squirt:
 - 1 ml of a 10% v/v (mixed with water)
 - Continuous hacks around circumference
- Our research experience:
 - Weaker than Method on many species but a 50% solutions works for some
- Maximum label use per acre per year:
0.11 lbs ae/A/year (14 oz/A/year)





TRAINING IS EASY FOR THIS TECHNIQUE

- Determine the number of hacks per stem needed with a standard 2 liter soda bottle, which is 4 inches in diameter



- 0 hacks for <1 inch diameter stems at the base of bigger stems (< 1 soda bottle cap wide)
- 1 hack for 1-4 inch diameter stems (<1 soda bottle wide)
- 2 hacks for 4-8 inch diameter stems (1-2 soda bottles wide)
- 3 hacks for 8-12 inch diameter stems (2-3 soda bottles wide)
- 4 hacks for 12-16 inch stems, etc.



- *SPRAY BOTTLES MATTER*
- *~ 1 ML/STROKE IS THE TARGET*
- *AVOID HIGHER VOLUME SPRAY BOTTLES THAT RESULT IN RUNOFF!*

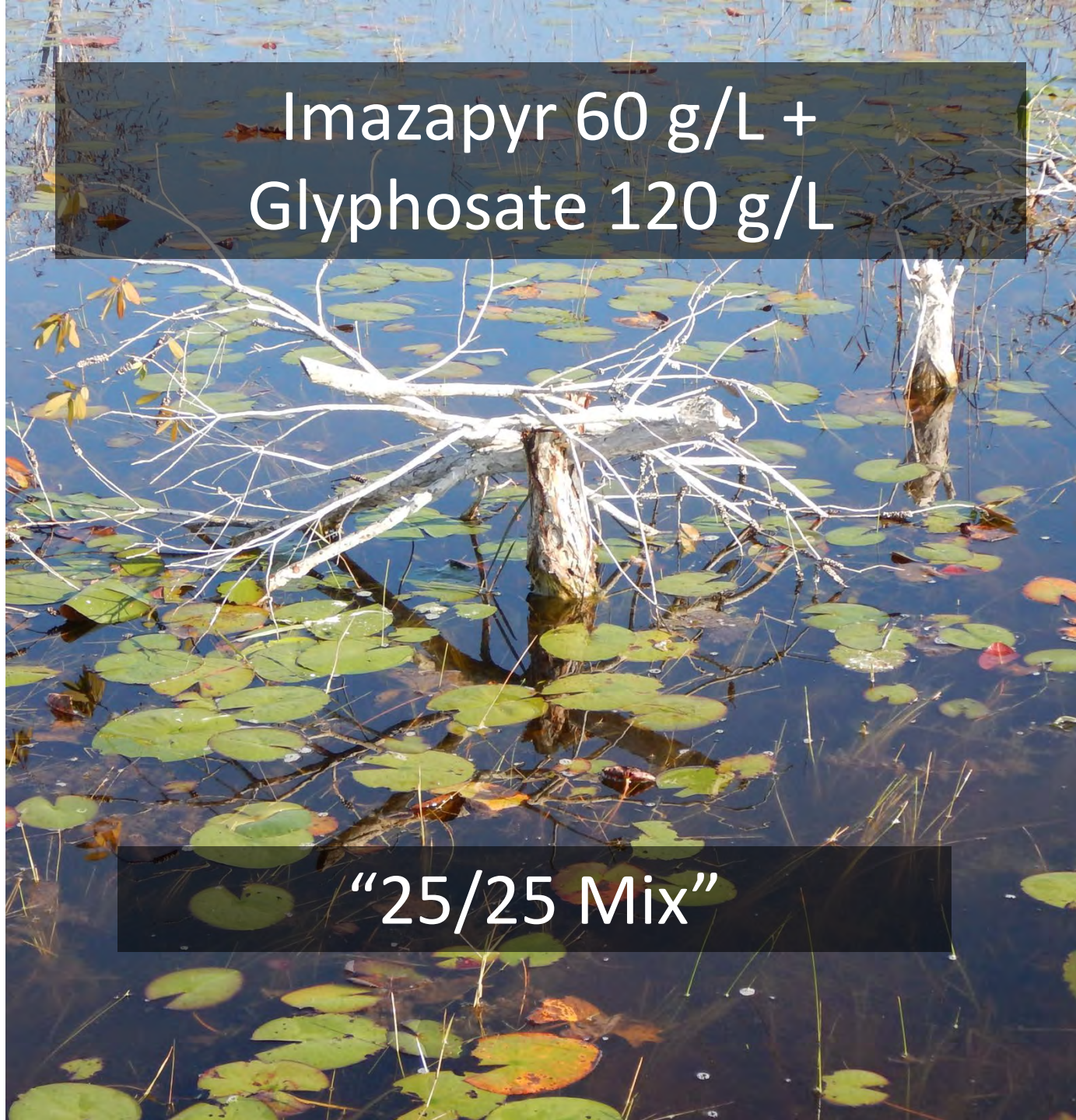
Revisiting Melaleuca Individual Plant Treatments in Wetlands



A close-up photograph of a tree trunk cut horizontally. The interior of the trunk is painted with a thick, vibrant blue-green substance, likely a herbicide. The surrounding ground is covered in dry pine needles and twigs.

Imazapyr 24 g/L +
Glyphosate 192 g/L

“10/40 Mix”

A photograph of a pond or lake. The water is dark blue. There are many green lily pads floating on the surface. Several dead, white, bleached branches are visible, protruding from the water. The water reflects the sky and the surrounding vegetation.

Imazapyr 60 g/L +
Glyphosate 120 g/L

“25/25 Mix”

Girdle + Spray treatment

Imazapyr 24 g/L +
Glyphosate 192 g/L
(10/40 mix)
Drier sites

Imazapyr 60 g/L +
Glyphosate 120 g/L
(25/25 mix)
Flooded/deep water sites

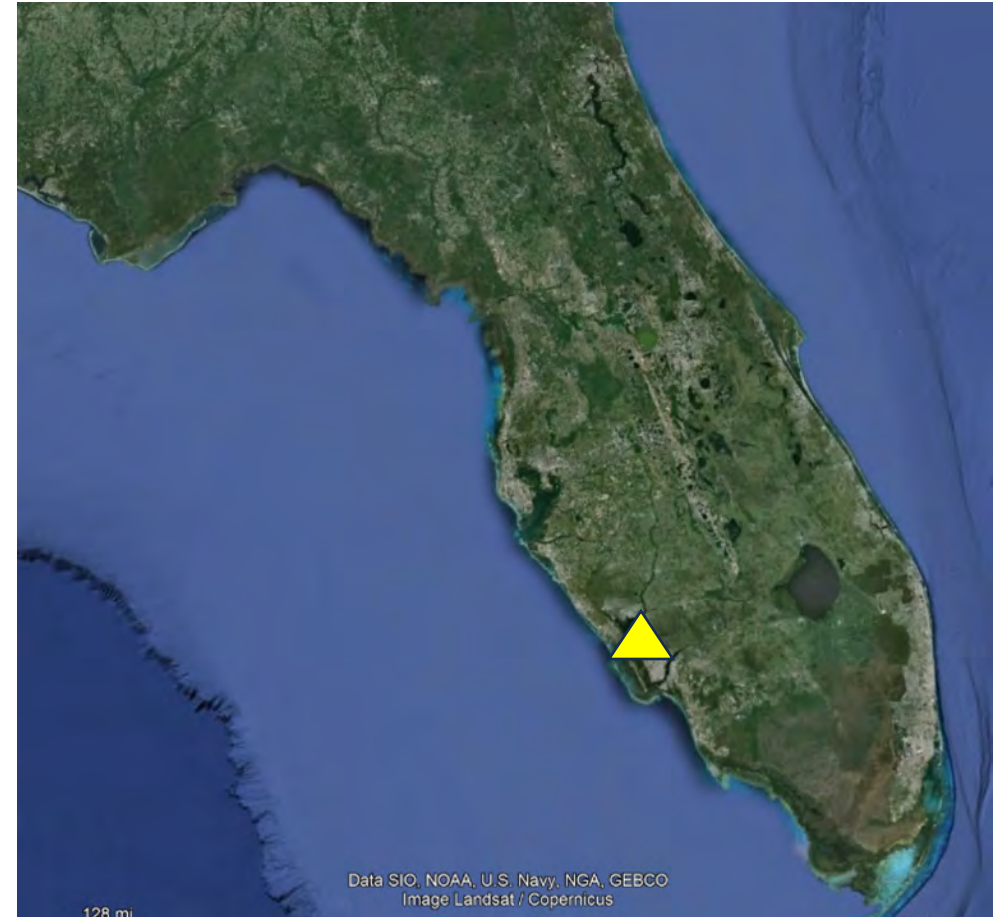


Research Questions

- Can glyphosate be replaced in the melaleuca mix with triclopyr for cut stump or girdle treatments?
- Does season of treatment influence herbicide efficacy for cut stump or girdle treatments?
- Does stump height influence herbicide efficacy for cut stump treatment?
- Can a “wedge cut + spray” approach work as well as the girdle + spray approach?

Experimental Approach (Cut Stump Studies)

- Season of treatment study
 - Spring treatments applied May 2022
 - Fall treatments applied November 2022
- Stump height study
 - Treatments applied May 2022
 - 6 or 18 inch stump heights
 - Stumps cut with a brush saw and treated with a squirt bottle (1 ml/stroke)
- Both studies used 20 reps trees/trt



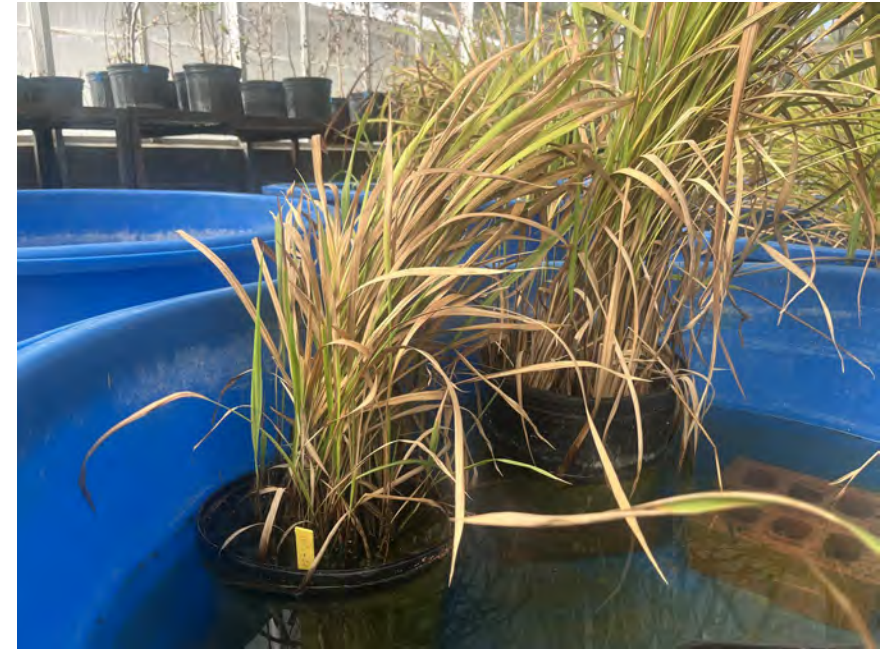
Cogongrass Hydrology (CAIP)

- Evaluating flooding tolerance of cogongrass
- Populations from Panther Wildlife Refuge and Gainesville
- Testing well established and juvenile plants
- Flooding periods of 0, 2, 4, 6, 8, 10 months



Current Status

- Both adults and juveniles currently surviving for four months of continuous inundation
- Some rhizome rotting apparent but it is not clearly linked to underwater depth of rhizomes



Cogongrass Field Hydrology (CREW)

- Study established where long wet season inundation occurs
- Coupled with seasonal treatment timings to test hydrologic differences

