West Indian marsh grass – Biology and Management

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Maidencane

American cupscale

West Indian marsh grass
West Indian Marsh Grass Identification

- Long stems with little branching
- Flat, triangular leaves to 14” long and 1.6” wide
- Blades and sheaths without hairs
West Indian Marsh Grass
Identification

- Prominent clasping leaf base
- Spongy stem
- Inflorescence a densely-flowered panicle
Habitat

- Hydrologically fluctuating areas
- Floodplains
- Marsh
- Freshwater shorelines
- Roadside ditches
Distribution

Jacono, CABI 2014
Australian Invasion

- August 1988 - approved for release by the Queensland Herbage Plants Liaison Committee in ponded pastures
- By 2000, 1000ha infested
  - Now likely more than 140,000 ha
- Known to hybridize with native \textit{H. acutigluma}
First recorded in 1957
- Forage?
- Ponded pastures
Second record not until 1982
Recorded in 28 counties

Wunderlin and Hansen, 2014
EDDMapS, 2018
Impacts of Invasion

- Displaces native plant species
- Alters fish and macroinvertebrate communities
- Decreases water quality
- Impedes irrigation and drainage
Management

- Glyphosate and imazapyr (Sellers et al. 2008)
- Glyphosate and haloxyfop in Australia (Clarkson et al. 2012)
- Biocontrol Ischnodemus variegatus
  - not very promising
- Fire
Management

- Graminicides
  - ACCase inhibitors
  - Only work on grasses
- Sethoxydim: TIGR ®
  - 24(c) Special Local Needs Label
- Fluazifop-p-butyl: A12460GRASS
  - FL-Experimental Use Permit
Objectives

- Assess efficacy of sethoxydim and two rates of fluazifop on WIMG control in a natural area
- Assess impact on native grass species
- Further understand variations in graminicide performance among native grasses
Site Selection
Diverse plots

West Indian marsh grass dominated plots
Materials and Methods

- Airboat application 100 GPA
- Fluazifop
  - 24 oz/A (0.1875% v/v) broadcast rate
  - 64 oz/A (0.5% v/v) spot treatment rate
- Sethoxydim
  - 3 gal/A (3% v/v) spot treatment rate
- MSO Concentrate
  - 1% v/v
Data Collection

- Baseline: November 20, 2017
- 30 DAT: December 18, 2017
- 90 DAT: March 7, 2018
- Diverse plots
  - Percent species cover, water depth
- WIMG plots
  - Percent WIMG cover, water depth, WIMG height
Statistical Methods

- WIMG plots
  - ANOVA based on percent cover data
- Diverse plots
  - ANOVA based on frequency data
- R statistical package
- Tukey’s HSD post-hoc analysis
Species found - Dicots

Alligatorweed, *Alternanthera philoxeroides*

Dollarweed, *Hydrocotyle sp.*

Lemon bacopa, *Bacopa caroliniana*
Bladderwort  
*Utricularia*  

Largeflower primrose-willow  
*Ludwigia grandiflora*

Dotted smartweed  
*Polygonum punctatum*

Anglestem primrose-willow  
*Ludwigia leptocarpa*

Bladderwort  
*Utricularia sp.*
Species found- Non-grass monocots

Knotted spikerush
*Eleocharis interstincta*

Baldwin’s spikerush
*Eleocharis baldwinii*

Fragrant flatsedge
*Cyperus odoratus*
Pickerelweed
_Pontederia cordata_

Broadleaf arrowhead
_Sagittaria latifolia_
Species found- grasses

- West Indian marsh grass
  *Hymenachne amplexicaulis*

- Southern cutgrass
  *Leersia hexandra*

- Southern watergrass
  *Luziola fluitans*
Kissimmeegrass
*Paspalidium geminatum*

Para grass
*Urochloa mutica*

Knotgrass
*Paspalum distichum*
West Indian marsh grass plots
Hymenachne amplexicaulis response to graminicide treatment

Error bars represent ± 1 SE. Within sample dates, means with the same letter are not different (P<0.05).

- Untreated
- Broadcast Fluazifop
- Spot Fluazifop
- Sethoxydim

Percent Cover

Baseline 30DAT 90DAT
Diverse plots
West Indian marsh grass response to graminicide treatment in diverse plots

Error bars represent ±1 SE
Within sample dates, frequencies with the same letter are not different (P>0.05)
Pickerelweed response to graminicide treatment

Within sample dates, frequencies with the same letter are not different (P>0.05)

Error bars represent ±1 SE

Legend:
- Untreated
- Broadcast Fluazifop
- Spot Fluazifop
- Sethoxydim

Frequency (%)

Baseline  30DAT  90DAT
Southern watergrass response to graminicide treatment

Error bars represent ±1 SE. Within sample dates, frequencies with the same letter are not different (P<0.05).

- Untreated
- Broadcast Fluazifop
- Spot Fluazifop
- Sethoxydim

Frequency (%)

Baseline 30DAT 90DAT

100 75 50 25 0
Conclusions

- These data indicate good short-term control of *Hymenachne*
- 180 DAT data will help determine long-term effects
Future Research

- Continued monitoring of Cypress Lake
  - Secondary applications likely
- Kissimmee River Floodplain
  - Aerial applications
- Greenhouse study to assess water depth influence
- Rate study on native species


Questions?

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