Cogongrass Control Update:
Influence of morphology on response to glyphosate

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Cogongrass Control with Herbicides

- **Glyphosate** (Accord, Roundup, Glypro, ...)
  - 3-4 lb ai/A broadcast
  - 2-5% v/v spot

- **Imazapyr** (Arsenal, Arsenal AC, Chopper Gen 2, ...)
  - 0.5-1 lb ai/A broadcast
  - 0.5-2% v/v spot

- **Glyphosate + Imazapyr**
Cogongrass can be eradicated on individual sites, but...

Some sites are easier to control than others, especially when using glyphosate.
Objective

To examine the role of cogongrass morphology in response to glyphosate treatment.
Study Outline

• Cogongrass populations from across the Southeast
• Grown in greenhouse
• Response to different rates of glyphosate
• Evaluate results in light of morphology (phenotype) and genetics
Morphological differences in cogongrass ... above and below ground.
Materials and Methods

55 different populations, grown in stock pots at AU greenhouse
• Cogongrass rhizomes were fragmented into 5-6 inch cuttings
• Two cuttings per 6” pot containing standard potting media (n=36)
• Watered regularly
• Two greenhouses in Florida, one in Auburn, both with natural light
Plants grown in the greenhouse for 6 months
At 6 months, plants were well established.
... and below.
Pre-treatment data collection

- Number of tillers
- Maximum leaf height and width
- Leaf canopy cover
- Total leaf area
- Shoot biomass
- Root/rhizome biomass
Leaf areas measured with APS Assess 2.0 software (Lamari 2002)
Treatments

• Control - untreated (0X)
• Glyphosate at 1.7 kg a.i. per hectare (1X)
• Glyphosate at 3.4 kg a.i. per hectare (2X)
Post-treatment data collection

- Shoot biomass at 30 DAT
- Shoot and root biomass at 60 DAT
Plant Morphology

Cluster analysis

- All characteristics high
- All characteristics average
- Low shoot, others average
- All characteristics low
Comparison of average dry weight (g) by morphological cluster and glyphosate rates in Florida greenhouse-A
Comparison of average dry weight (g) by morphological cluster and glyphosate rates in Florida greenhouse-B.
Comparison of average dry weight (g) by morphological cluster and glyphosate rates in Auburn greenhouse
Conclusions

• Both glyphosate rates were effective in controlling all cogongrass morphological clusters in both Florida greenhouses.

• Glyphosate was not as effective on plants that were larger at time of treatment (AU greenhouse).

• The 2X treatment did not improve control.

• Still a lot of questions ….
Questions??

Funding: USDA Forest Service Cooperative Agreement with Dr. Rima Lucardi