

# Distribution and Management of Glyphosate- Resistant Italian Ryegrass

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# Topics for Discussion

- Italian ryegrass background
  - Biology
  - Distribution of glyphosate-resistant (GR) populations
- Management programs
  - Emergence patterns
  - Residual herbicide timing
  - Spot treatments
  - POST herbicide timing
  - Spring salvage



# Italian Ryegrass Biology

- Environment
  - Fertile soils in areas with mild climates
  - Low tolerance for harsh winter conditions
- Emergence
  - Peaks in fall but emerges throughout winter months
  - 6 to 10 d when day-time temperatures are 50 to 87 F
- Growth
  - Rapid seedling growth continuing into winter and spring
- Reproduction
  - Open pollination; propagates exclusively by seeds
  - Seed dispersal in vicinity of parent

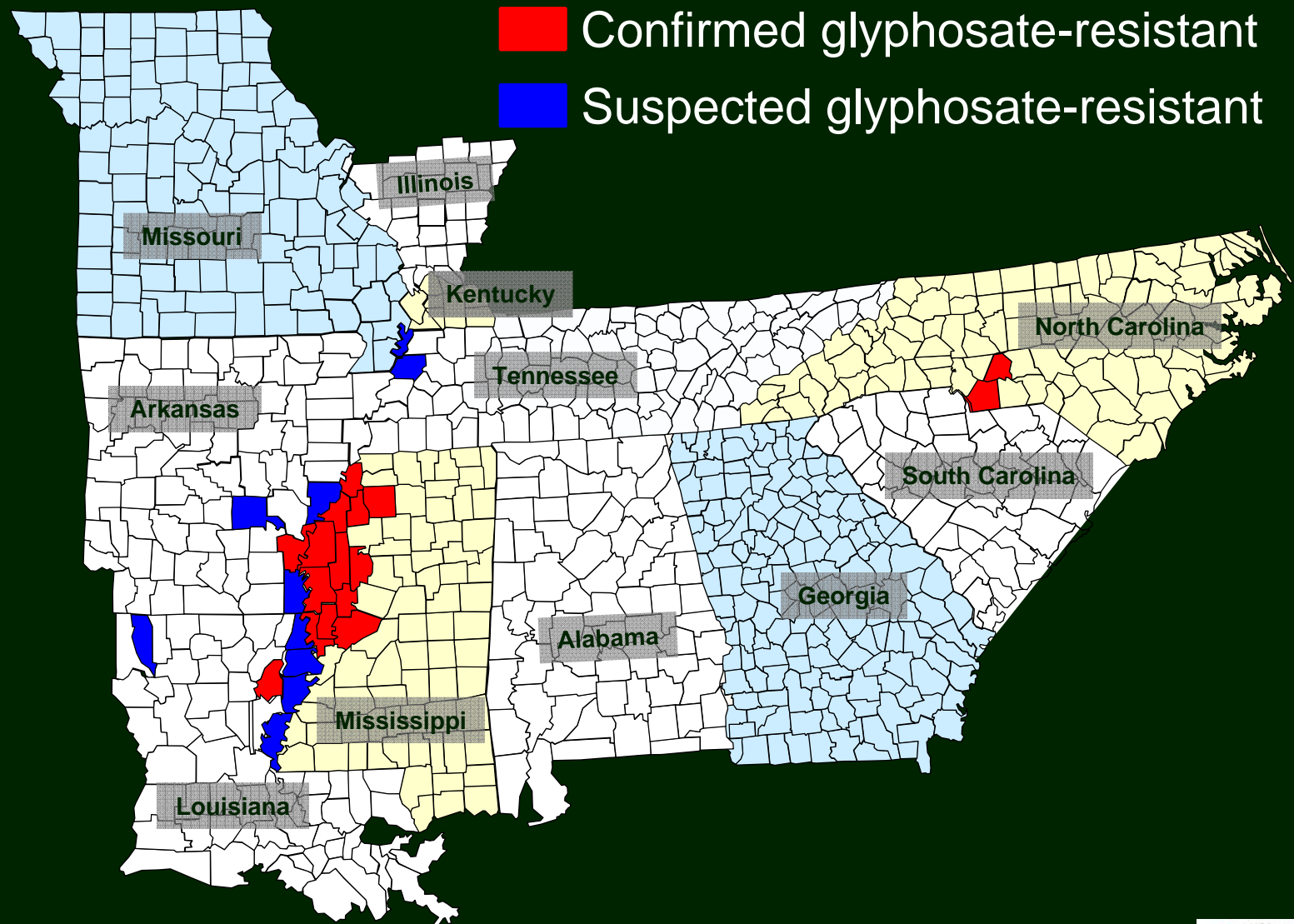
# Italian Ryegrass Resistance

- First GR *Lolium* spp. – Rigid ryegrass; Australia, 1996
- First GR Italian ryegrass – Chile, 2001
- First GR Italian ryegrass in U.S. – Oregon, 2004
- First GR Italian ryegrass in crops – Mississippi, 2005
- GR Italian ryegrass documented in Arkansas (2008), North Carolina (2009), Louisiana (2010)
- Italian ryegrass with multiple resistance to glyphosate, ALS inhibitors, and ACCase inhibitors in 7 counties in the Mississippi Delta.

# Resistance Comparison

- *Lolium* spp. (ryegrass)
  - 4 species; 10 herbicide MOA; 17 countries
  - Italian ryegrass – 4 herbicide MOA; 11 U.S. states
- *Amaranthus* spp. (pigweeds)
  - 7 species; 9 herbicide MOA; 16 countries
  - Palmer amaranth – 4 herbicide MOA; 13 U.S. states
- *Echinochloa* spp. (barnyardgrass)
  - 6 species; 11 herbicide MOA; 27 countries
  - Barnyardgrass – 5 herbicide MOA; 6 U.S. states

# GR Italian Ryegrass





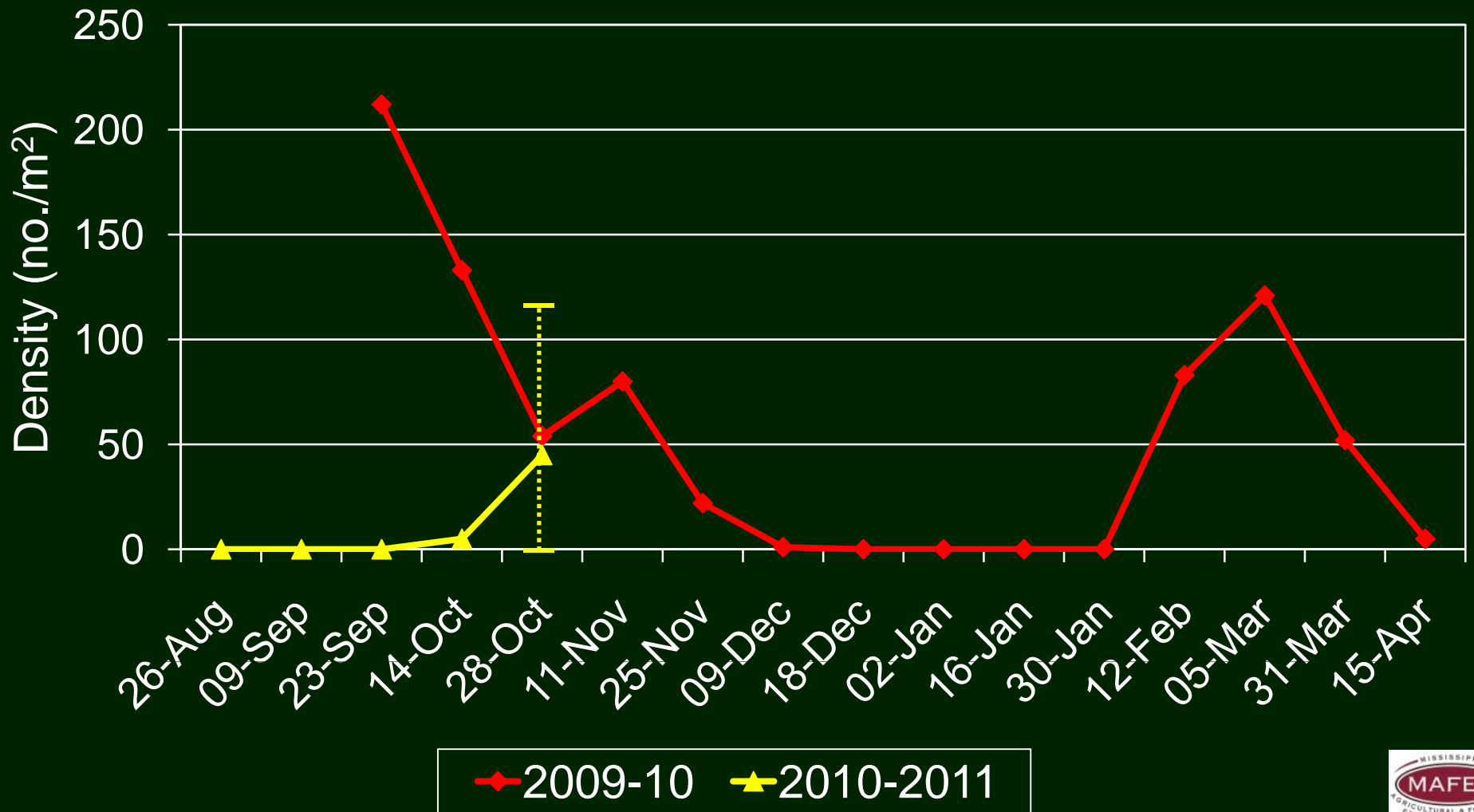
# Management Programs





# Emergence Patterns

## GR Italian Ryegrass Emergence in Mississippi

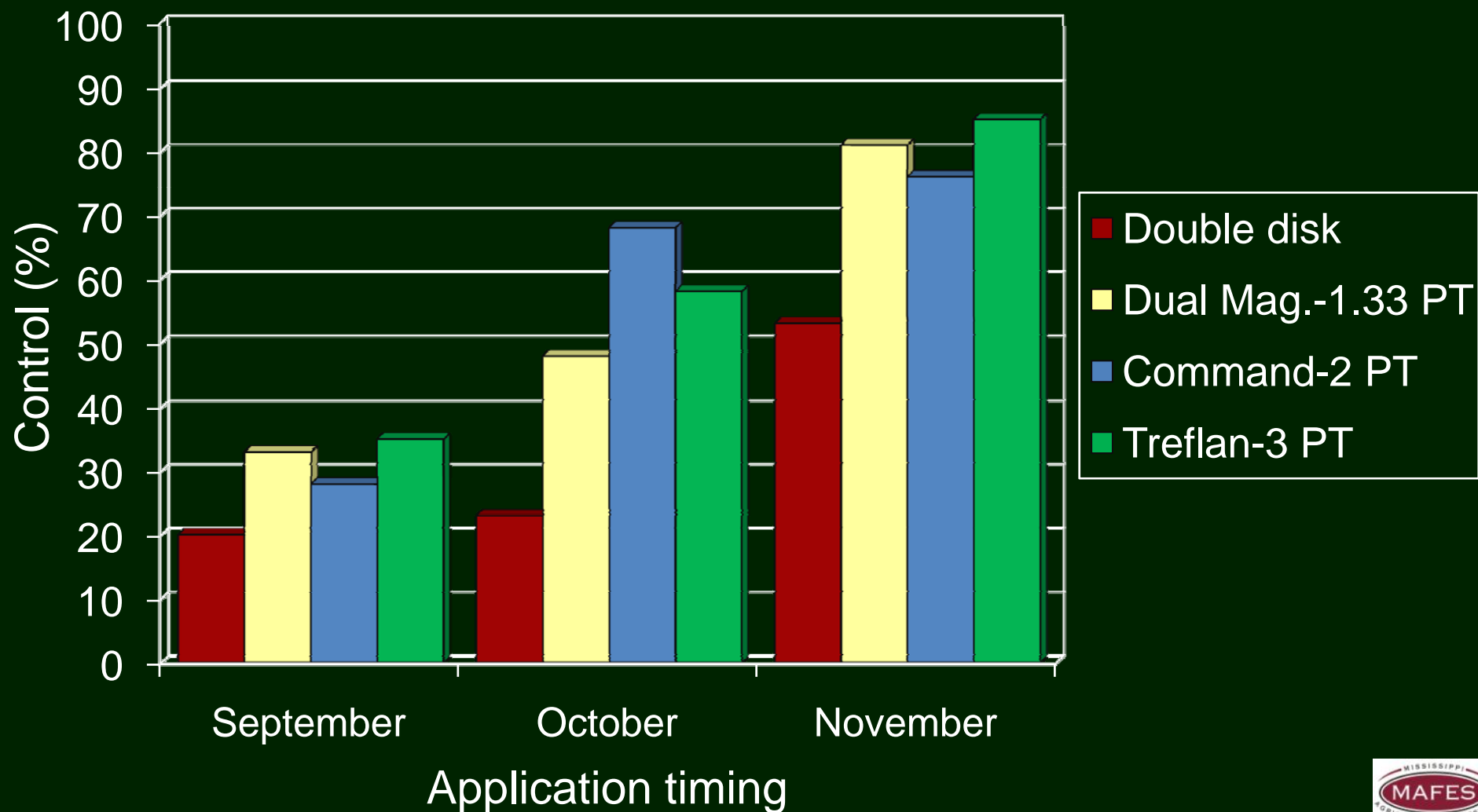


# Management Programs

- Apply residual herbicide when weather permits from mid-October to mid-November.
- Control emerged GR Italian ryegrass in the fall with aggressive tillage or Gramoxone Inteon.
- Manage GR Italian ryegrass on ditch banks, turn roads, and field borders.
- Scout fields in early- to mid-January to make spring management decisions.
- Control ALL escapes prior to planting.

# Residual Herbicide Timing

GR Italian Ryegrass Control on March 31, 2010



**September**



**October**



**November**



**Dual Magnum at 1.33 PT/A**



**Treflan at 3 PT/A + double disk**

**Double disk; November**



**Treflan + double disk; Nov.**



**2 wk after double disk**



**2 wk after Treflan + double disk**



# POST Control + Residuals



Dual Magnum at 1.33 pt/A + Gramoxone Inteon at 3 pt/A

# Manage Field Borders



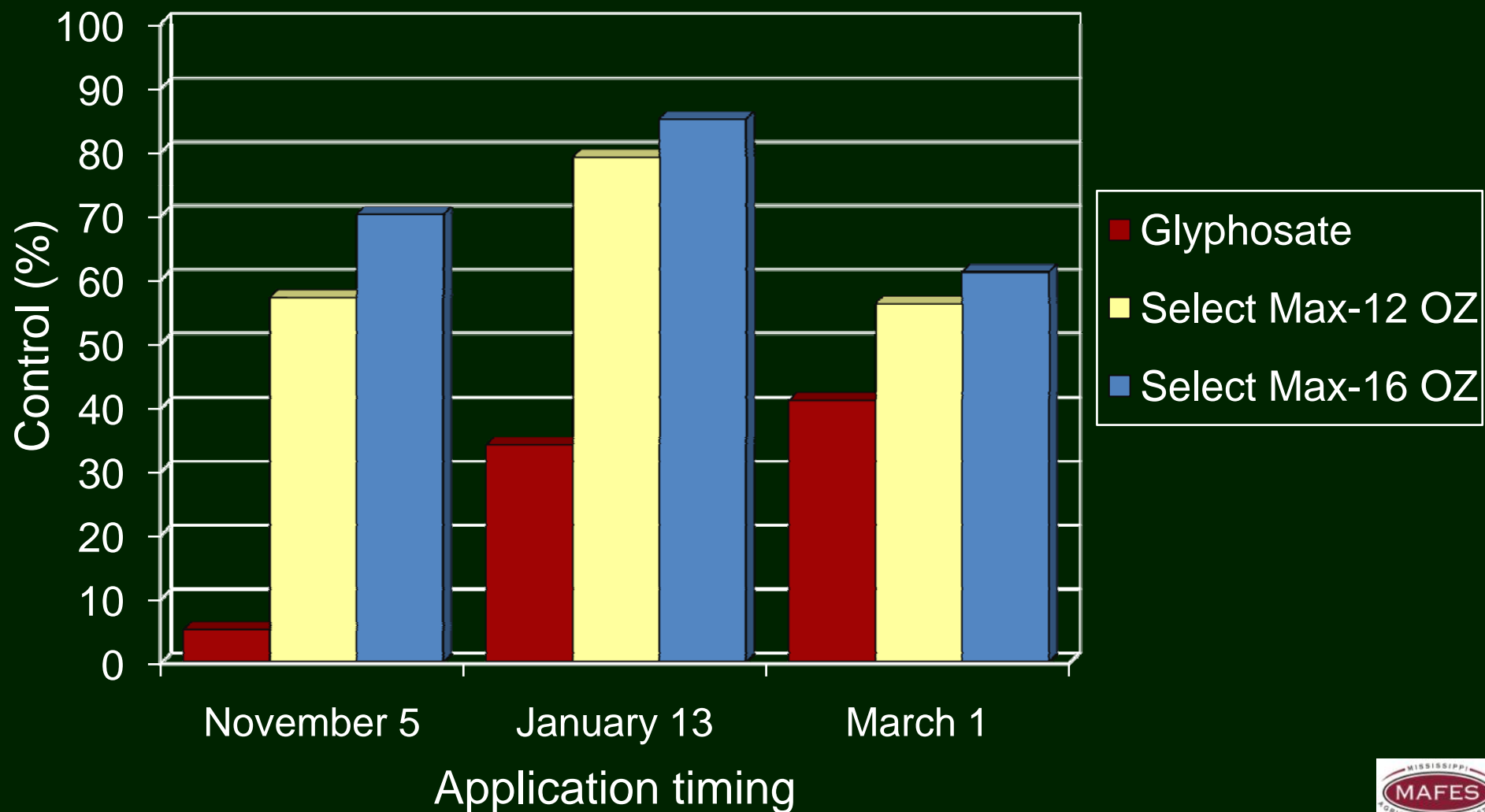
Select Max on turn roads in February

Dual Magnum around field border



# POST Herbicide Timing

GR Italian Ryegrass Control on March 31, 2010





January 13 application



March 1 application



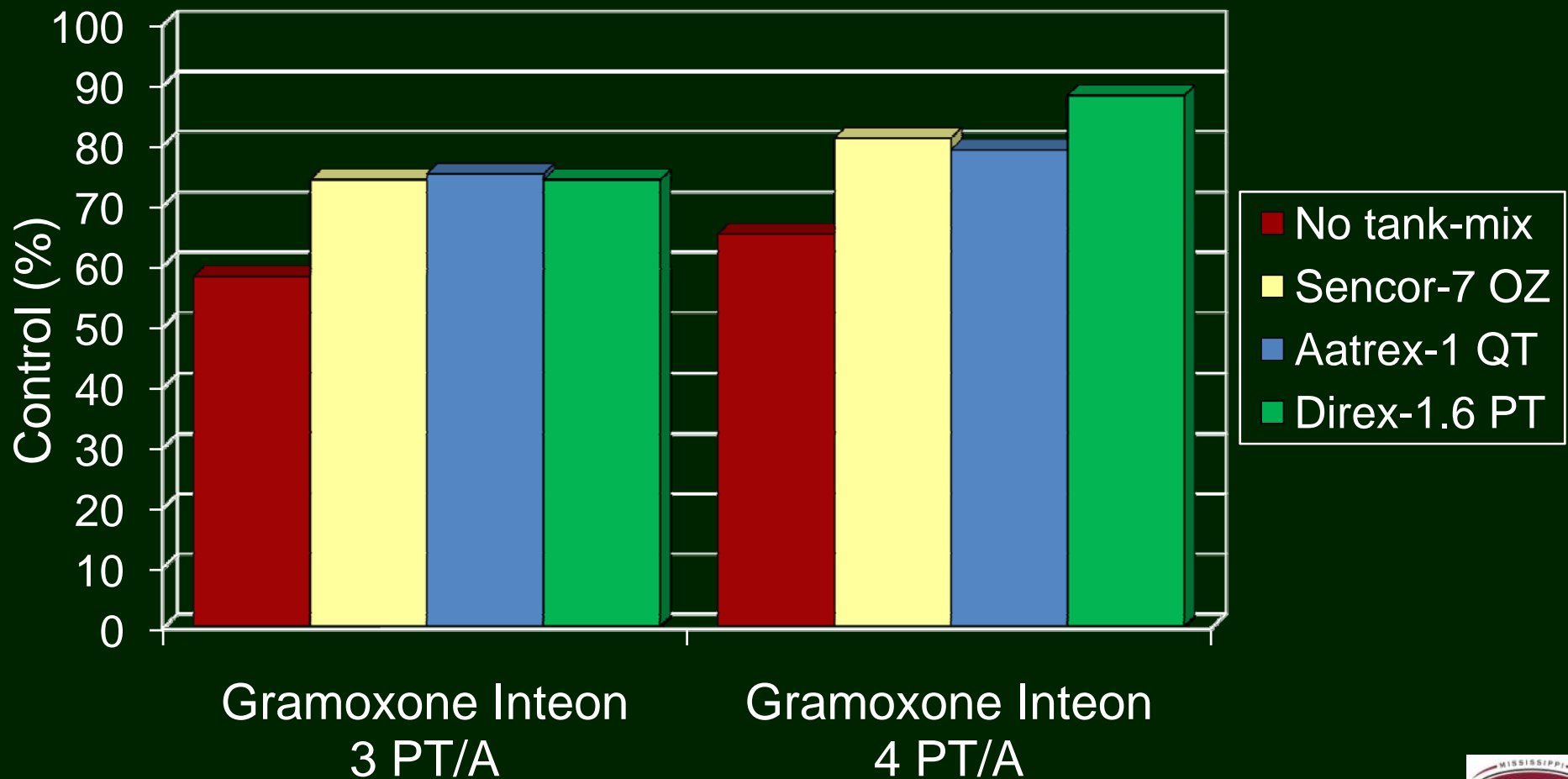
Roundup WeatherMax at 22 OZ/A



Select Max at 16 OZ/A

# Spring Salvage Applications

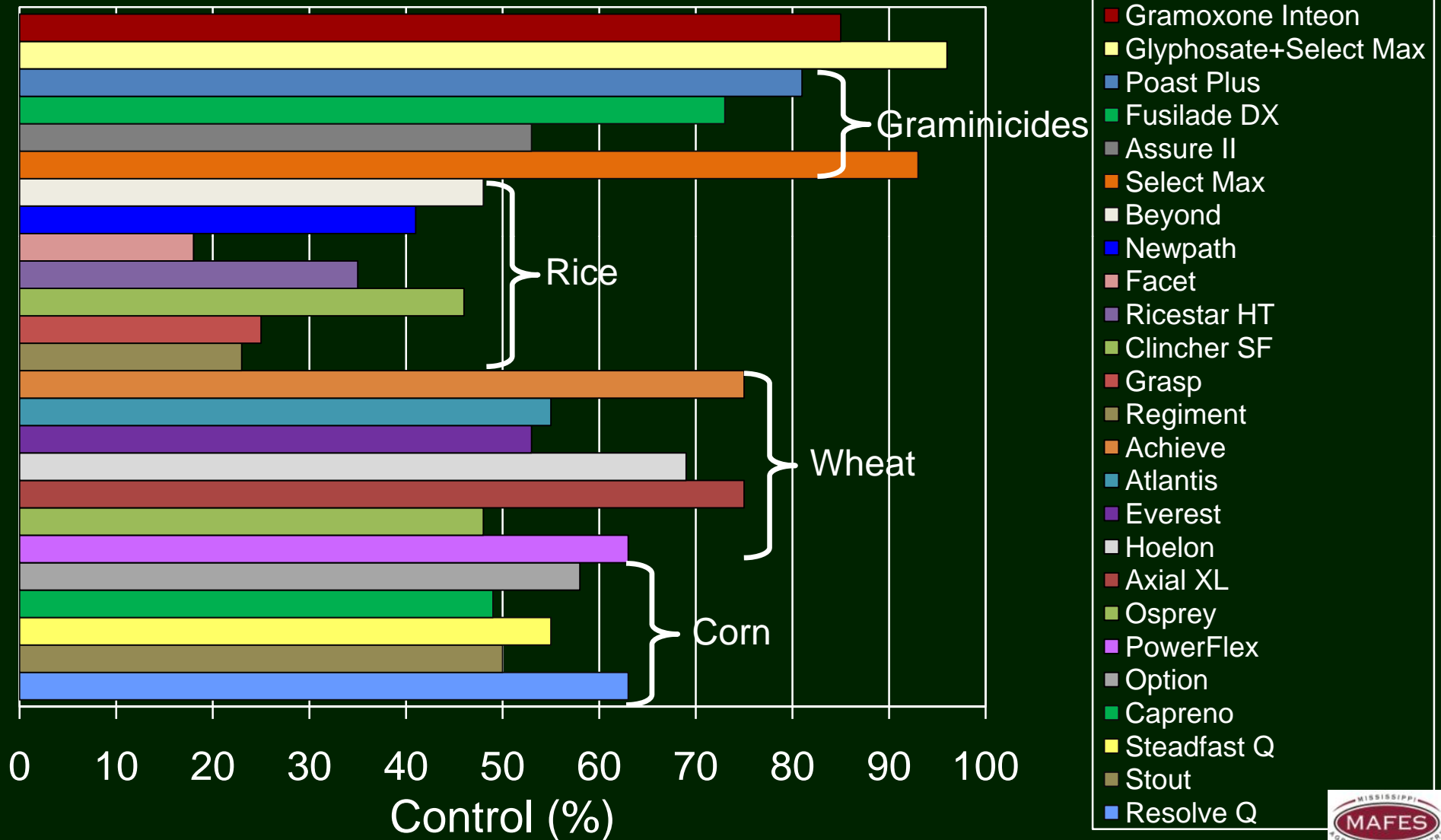
Gramoxone Inteon Tank-mixtures  
GR Italian Ryegrass Control 28 DAT





# Alternative Herbicides

## GR Italian Ryegrass Control 82 DAT



# Summary

- Residual herbicide in mid-October to mid-November
  - Cotton/soybeans – Dual Magnum at 1.33 pt/A  
Treflan at 3 pt/A + double disk
  - Corn – Dual Magnum at 1.33 pt/A
  - Rice – Command at 2 pt/A
- Scout – Do not let ryegrass get too big in spring.
- Complete control prior to planting.
  - Select Max at 12 to 16 oz/A in early spring
  - Gramoxone Inteon at 3 to 4 pt/A preplant
- Herbicide short list: <http://msucares.com/crops/weeds/>

# Dates of Interest

November 17, 2010

Pigweed Symposium

East Arkansas Community College

Forrest City, AR

March 10, 2011

GR Italian Ryegrass Field Day

MSU Delta Research and Extension Center

Stoneville, MS

# Questions?

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