



# **Dallisgrass Control: Everything but the Kitchen Sink**

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# Heterogeneous Distribution of Weedy *Paspalum* Species and Edaphic Variables in Turfgrass

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for perennial weeds in natural ecosystems or reduced tillage systems, where plowing and cultivation are not management options.

Landscape attributes and weed species presence are spatially variable (Cardina et al., 1997; Johnson et al., 1995, 1996; Marshall, 1988; Thornton et al., 1990). In contrast, weed control tactics are often selected and implemented based on average field conditions. Investigating the spatial association of weed populations with edaphic and topographic features has the potential to benefit growers by reducing both input costs and the unneeded application of control tactics.

The introduction of new equipment and computer software used in georeferencing



# Mowing to Reduce Weed Colonization

- Mowing depletes carbohydrate reserves through biomass reduction



## Bahiagrass & Dallisgrass

Mowing Heights (in.)  
0.5, 2, 3, and  
non-mowed

## Effect of Mowing on Lateral Spread and Rhizome Growth of Troublesome *Paspalum* Species

Gerald M. Henry, Michael G. Burton, and Fred H. Yelverton\*

The effect of mowing regime on lateral spread and rhizome growth of dallisgrass and bahiagrass was determined in field studies conducted in 2003 and 2004 in North Carolina over 5 mo. Treatments were selected to simulate mowing regimes common to intensively managed common bermudagrass turfgrass and include 1.3-, 5.2-, and 7.6-cm heights at frequencies of three, two, and two times per week, respectively. A nonmowed check was included for comparison. Lateral spread of dallisgrass was reduced 38 to 47% regardless of mowing regime when compared with the nonmowed check. Rhizome fresh weight of dallisgrass was reduced 49% in 2003 and 30% in 2004 when mowed at the 7.6-cm regime after 5 mo, whereas the 5.2-cm mowing regime caused a reduction of 31%. Rhizome fresh weight of dallisgrass was most negatively affected by the 1.3-cm regime, which caused reductions of 57% in 2003 and 37% in 2004. Lateral spread of bahiagrass was more strongly affected by mowing height and frequency than dallisgrass, with reductions of 21 to 27%, 40%, and 44 to 62% when mowed at 7.6, 5.2, and 1.3-cm regimes, respectively. Rhizome fresh weight of bahiagrass was reduced 24 to 33%, 55%, and 70 to 73% when mowed at 7.6, 5.2, and 1.3 cm, respectively. Based upon these results, areas mowed at a golf course rough height ( $\geq 5.2$  cm) may be more conducive to bahiagrass spread, whereas dallisgrass may tolerate areas mowed at a fairway height (1.3 cm). Mowing at the shorter heights examined in this study clearly reduced the potential of *Paspalum* spp. vegetative spread and may help to explain observed distributions of *Paspalum* spp. infestations in bermudagrass turfgrass.

**Nomenclature:** Bahiagrass, *Paspalum notatum* Flueggé PASNO; bermudagrass, *Cynodon dactylon* (L.) Pers.; dallisgrass, *Paspalum dilatatum* Poir. PASDI.

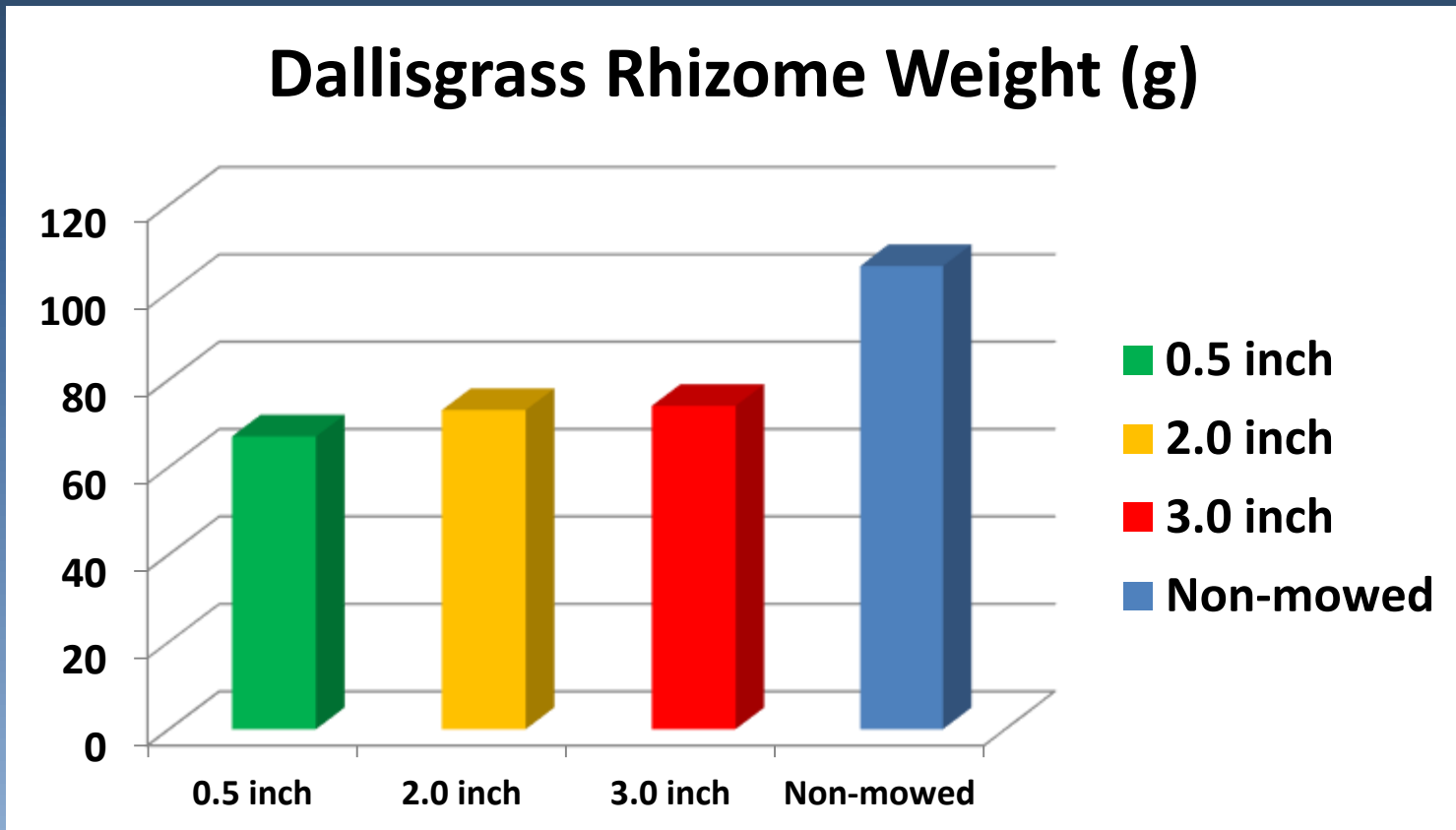
**Key words:** Golf course weeds, rhizome production, turfgrass.

“Mowing height and frequency had a greater impact on bahiagrass growth and reproduction than dallisgrass.”

# Mowing to Reduce Weed Colonization

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Rhizome Weight (g)





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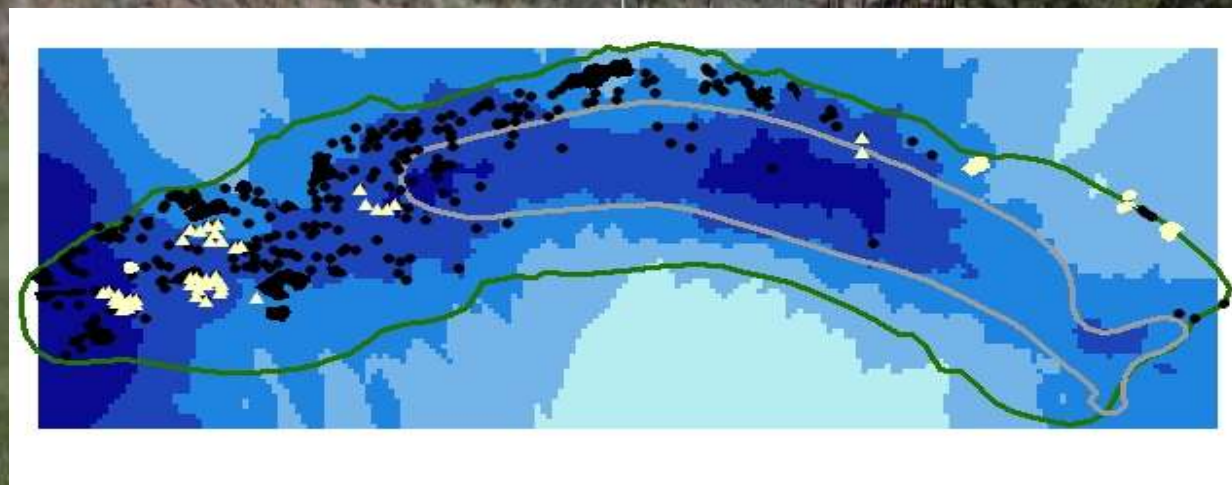
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# Effect of Soil Moisture

- Dallisgrass, bahiagrass, and each in competition with bermudagrass
- Sand and sandy loam soil types
- Monitored vegetative growth and survival



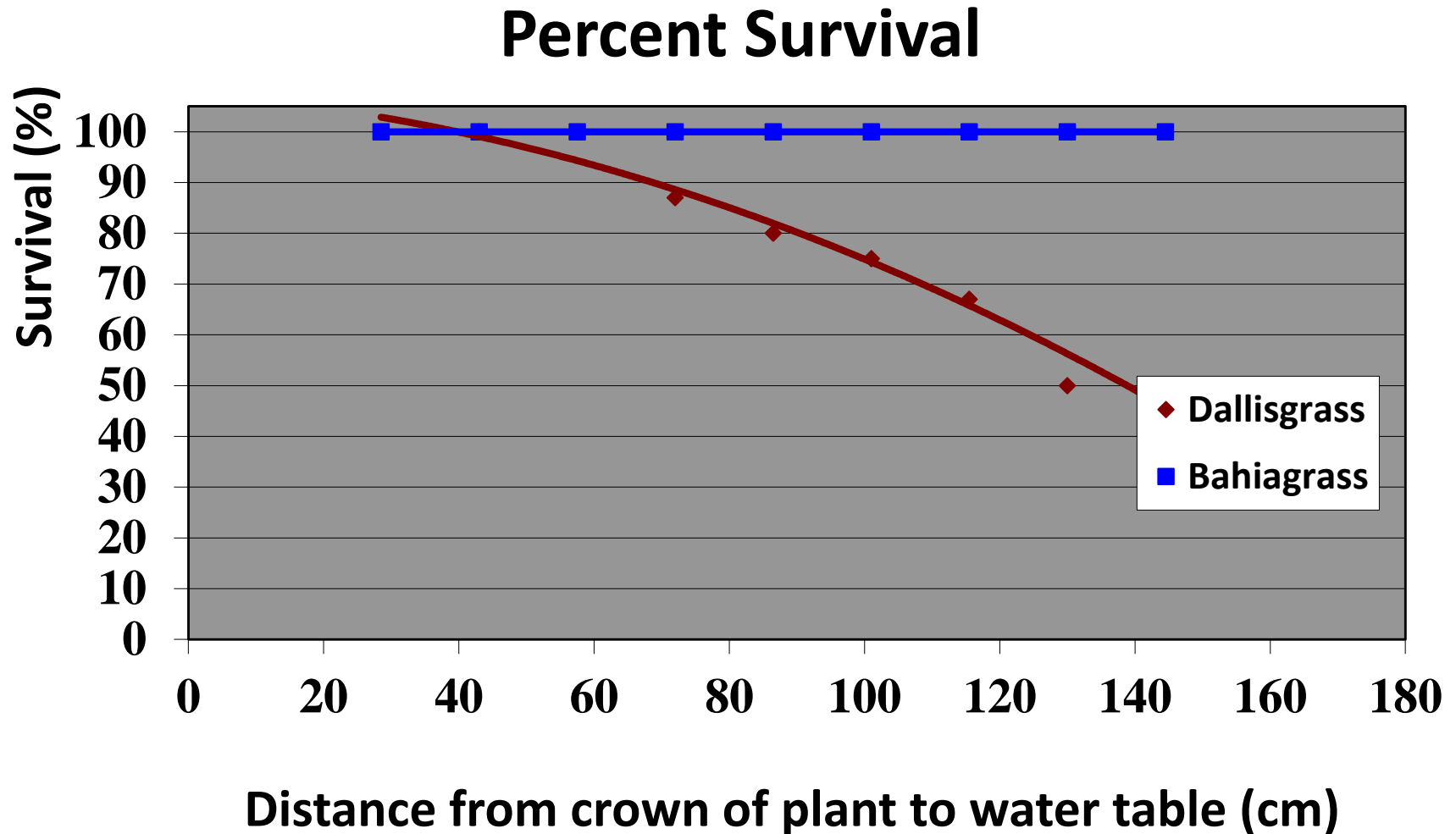
## **Asymmetric Responses of *Paspalum* Species to a Soil Moisture Gradient**

Gerald M. Henry,<sup>★</sup> Fred H. Yelverton, and Michael G. Burton

**“Dallisgrass may be more competitive with bermudagrass when soil moisture is high, while bahiagrass may be more competitive when soil moisture is low.”**



# Paspalum spp. Response to Soil Moisture



# Chemical Control



# Tribute Total – 60.5 WDG

- Company – Bayer CropScience
- Active Ingredients:
  - Thienencarbazon
  - Foramsulfuron
  - Halosulfuron
- Postemergence activity
- Bermudagrass and zoysiagrass tolerance





# **Dallisgrass (*Paspalum dilatatum*) Control with Thiencarbazon-methyl, Foramsulfuron, and Halosulfuron- methyl in Bermudagrass Turf**

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*Additional index words.* *Cynodon dactylon*, turfgrass, weed, iodosulfuron-methyl-sodium, dicamba, dormancy, phytotoxicity, perennial grass

availability and continued use of MSMA has been uncertain following the 2009 decision by the Environmental Protection Agency, which eliminated the use of MSMA on home lawns and athletic fields, while restricting use on sod farms, golf courses, and highway rights of way and prohibiting use in all turfgrass environments after 31 Dec. 2013 (United States Environmental Protection Agency (EPA), 2009). The 2009 EPA decision on MSMA prohibition was recently delayed, pending a registration review that began in 2013 and is scheduled for completion in 2019 (United States Environmental Protection Agency, 2015).

Limitations on the efficacy of other herbicides for dallisgrass control have also been reported. Henry et al. (2007b) observed

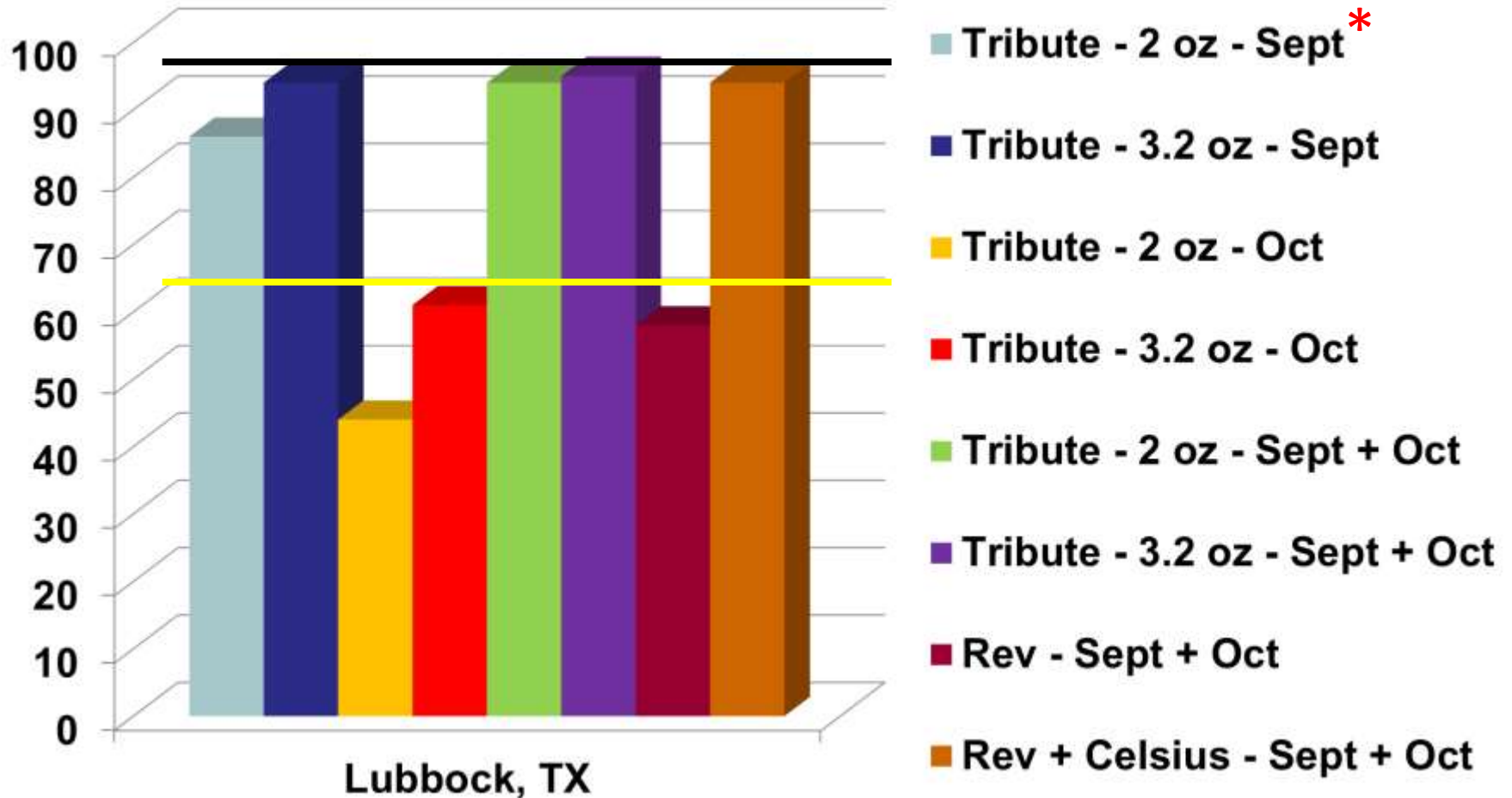
**Evaluate rates and timings of Tribute Total**

**Rates – 2 or 3.2 oz/A**

**Application timings – Sept., Oct., or Sept. fb Oct.**

**+ MSO – 0.5% v/v and AMS – 2% w/v**

# Dallisgrass Control – 37 WAIT



\*+ MSO – 0.5% v/v and AMS – 2% w/v



**Tribute Total – 3.2 oz/A – Sept**



**37 WAIT**



**Tribute Total – 3.2 oz/A - Oct**



**37 WAIT**



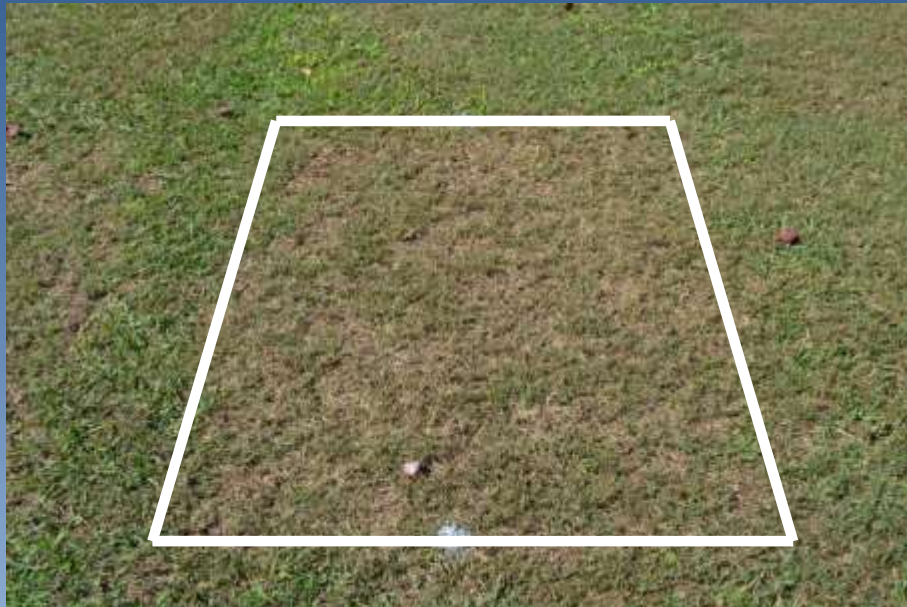
# 3 Years After Application





# Dallisgrass Control

- Current Tribute Total program employs late summer and/or fall applications
- Is spring or summer control still feasible?
- Enhancing herbicide translocation may be key!

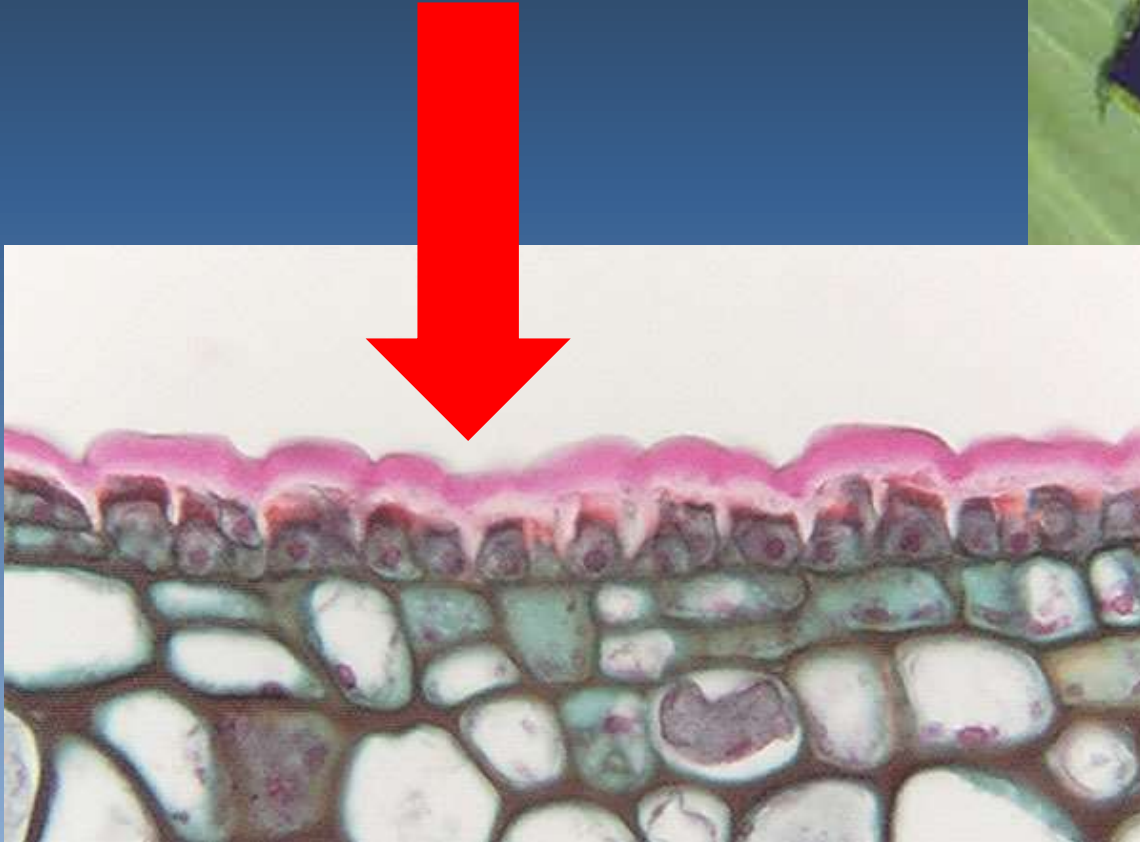






# Herbicide Absorption Barriers

- Leaf cuticle





# Verticutting – Paspalum spp.

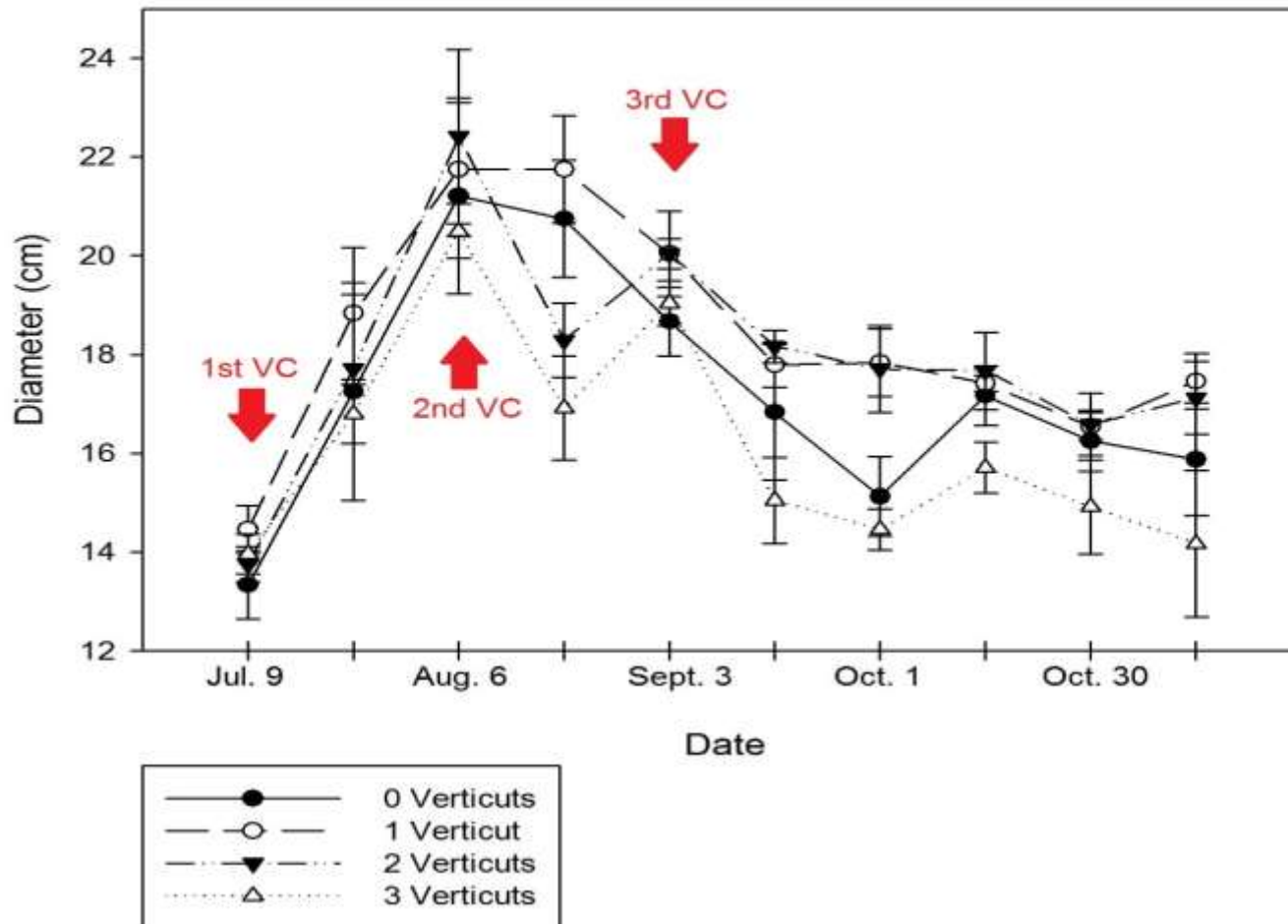
- Dallisgrass and bahiagrass
- Verticutting treatments
  - No verticut
  - Verticut 1x
  - Verticut 2x
  - Verticut 3x
- Examine lateral spread





# Verticutting - Dallisgrass

Dallisgrass Growth at Four Verticutting Frequencies



# Dallisgrass Control

- Location: Pine Hills GC, Winder, GA
- Trial site moved 48 hrs before study initiation
- Half the site was verticut two directions – 1 in. depth
- Entire area was raked of debris

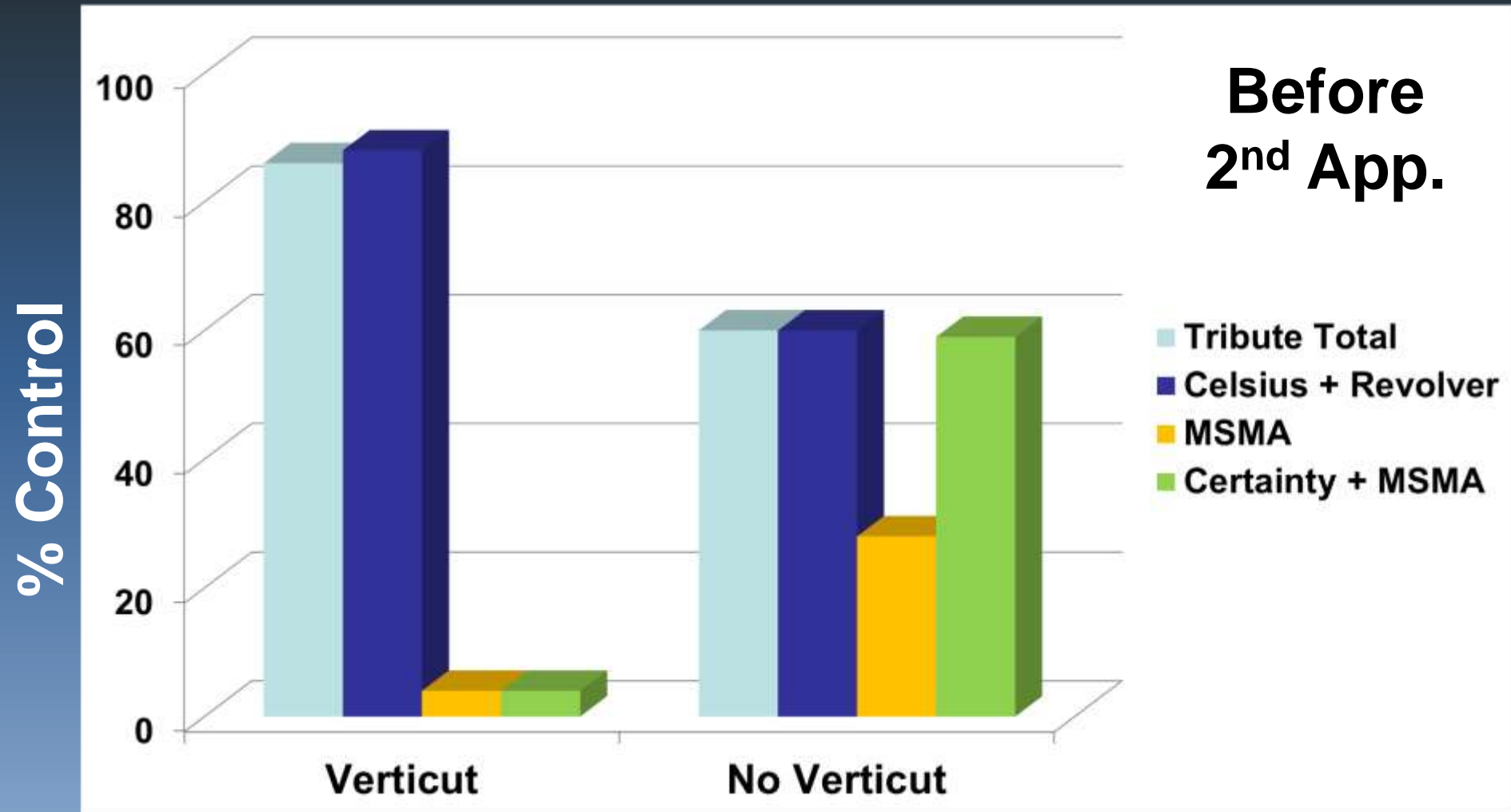




# Dallisgrass Control

- Initial app. – June 14, 2013
- Sequential app. – Aug. 28, 2013
- Herbicide treatments (app. to verticut and non-verticut):
  - Tribute Total – 3.2 oz/A
  - Celsius – 3.6 oz/A + Revolver – 64 fl oz/A
  - MSMA – 44 fl oz/A
  - Certainty – 1.25 oz/A + MSMA – 44 fl oz/A

# Dallisgrass Control – 8 WAIT



**GA: Initial apps. made in June**





**Late Fall**

# Dallisgrass Control

- **Non-selective Herbicides**
  - Glyphosate (Roundup Pro)
- **Applications prior to dallisgrass dormancy and after bermudagrass dormancy**



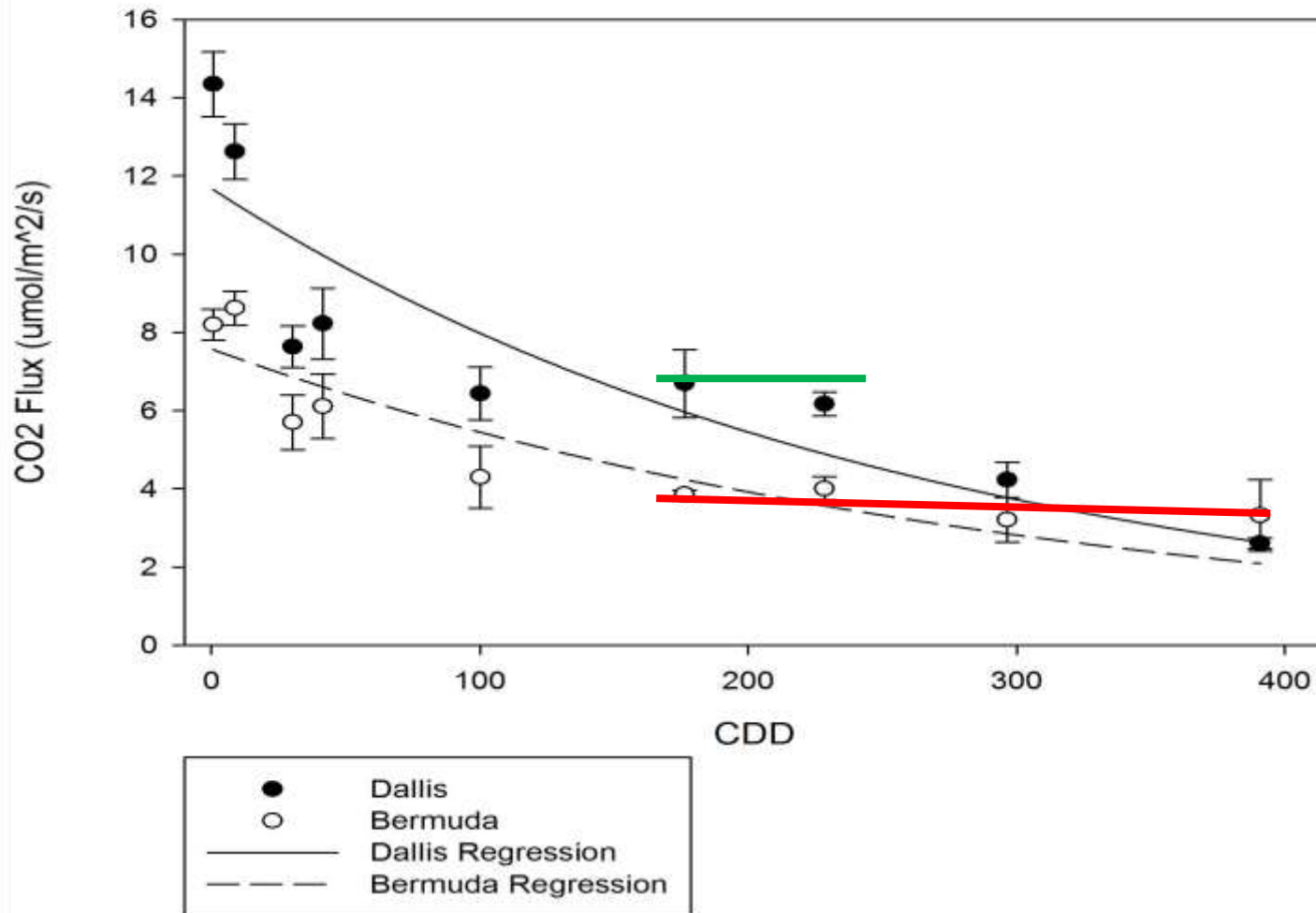
# Dormancy Determination

- Monitor CO<sub>2</sub> flux of hybrid bermudagrass, dallisgrass, and bare soil in close proximity
- Four locations
- 2 golf courses
- Similar environments



# Dormancy Determination

UGA Course







# CDD – Target POST Apps.

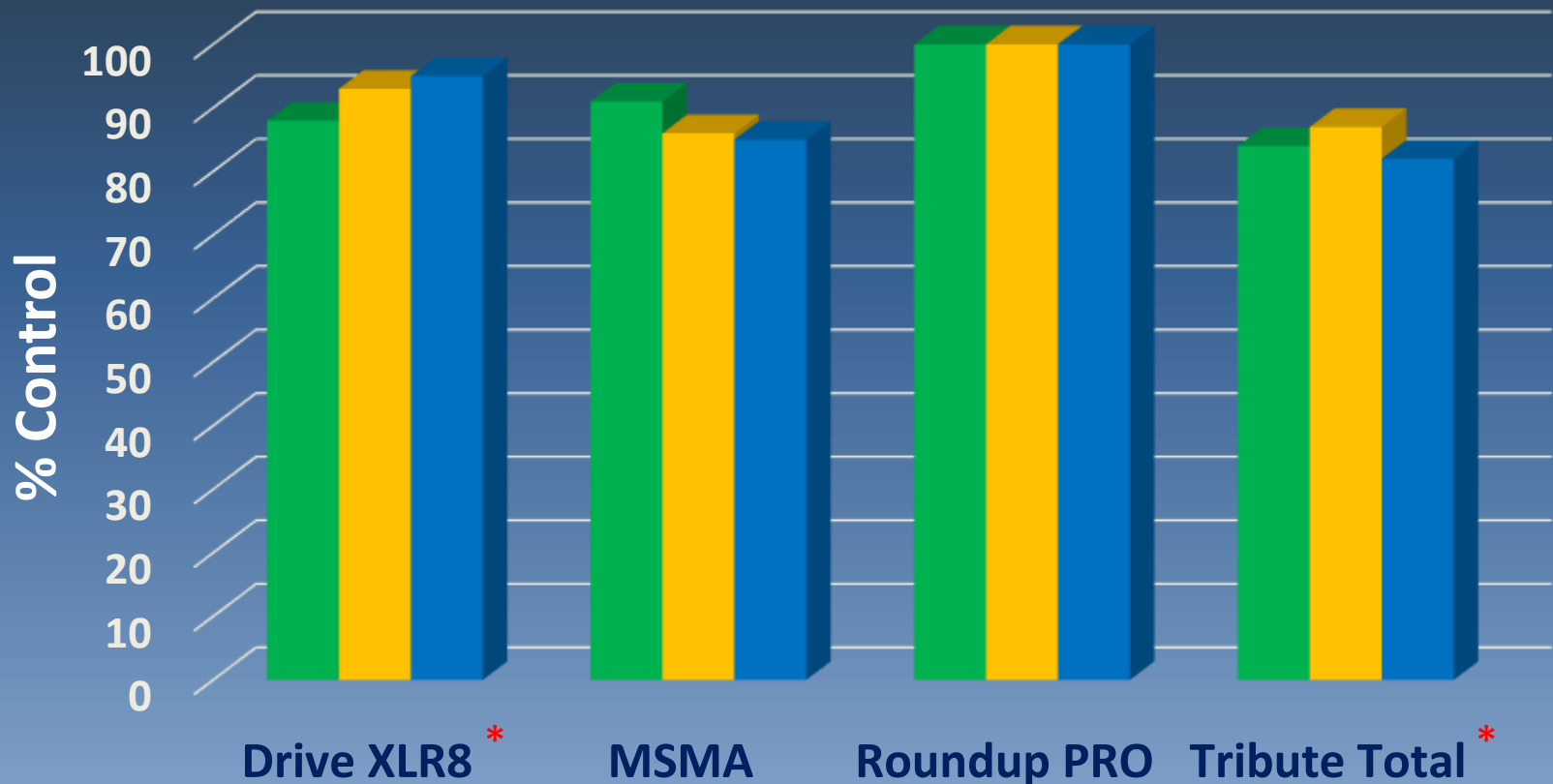
- 5 to 125 CDD<sub>71.5 F</sub>
- Treatments:
  - Drive XLR8
  - MSMA
  - Roundup PRO
  - Tribute Total





# Dallisgrass Control

21 WAIT



\*+ MSO – 0.5% v/v



# Questions?

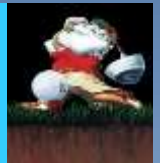


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