

Palmer amaranth, benghal dayflower, and broadleaf signalgrass response to glufosinate applied alone or mixed with 2,4-D, or dicamba

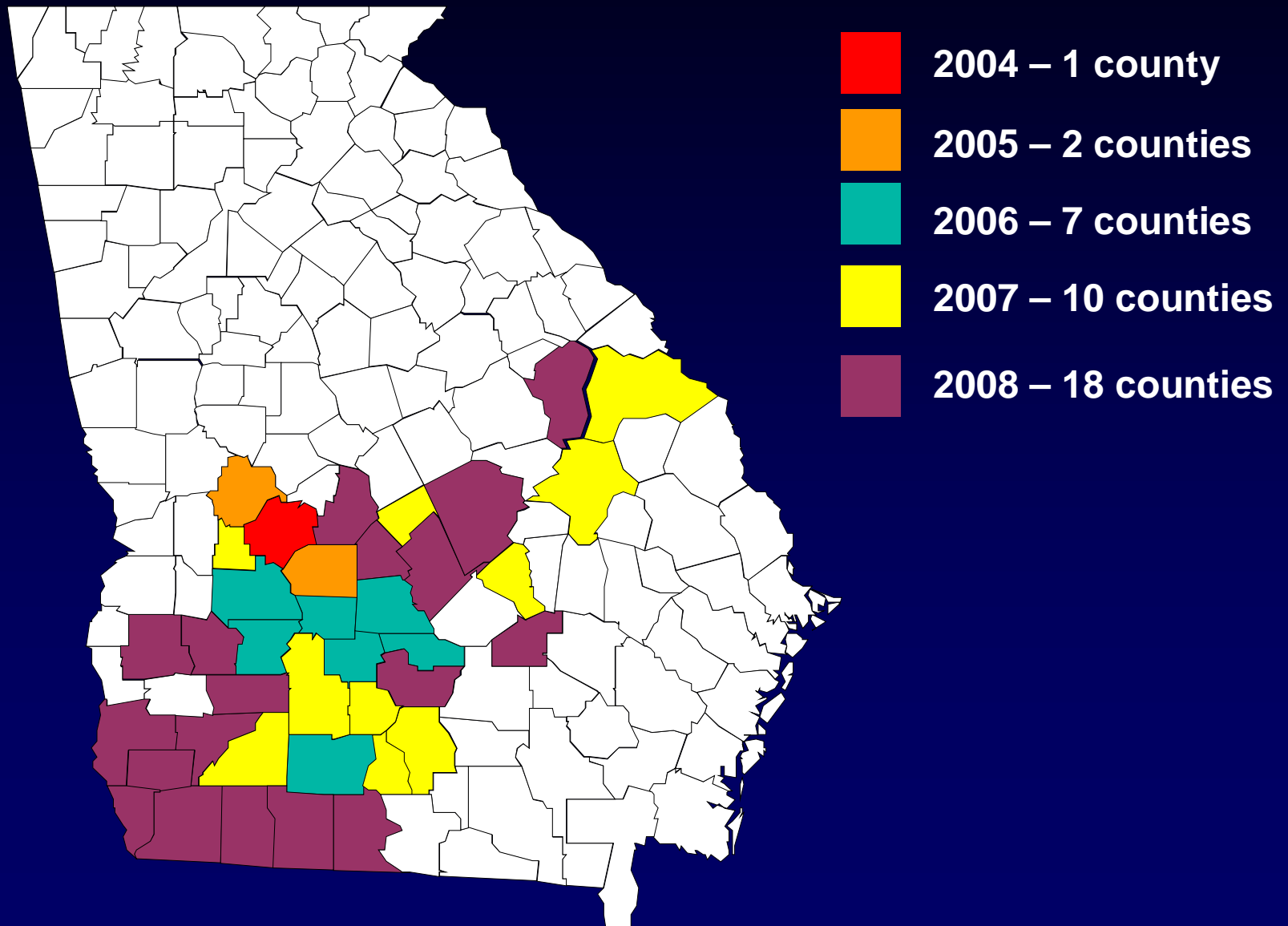
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Georgia counties confirmed to be infested with glyphosate-resistant Palmer amaranth.



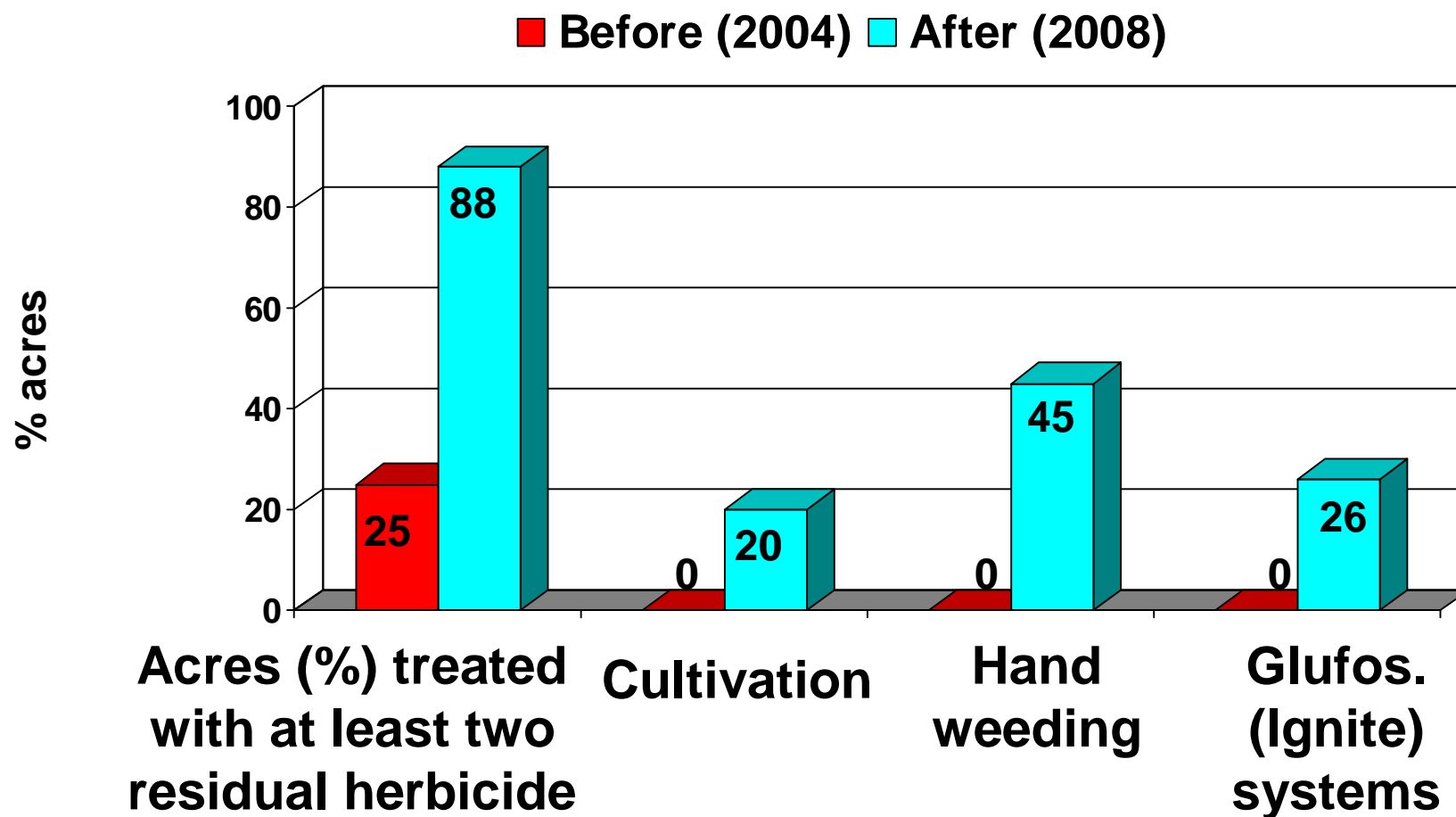
Biotypes with multiple resistance to glyphosate and ALS herbicides are becoming more common across Georgia.



Glyphosate 3 lb
Pyrithiobac 0.25 lb



Impact of GR Palmer amaranth in Georgia counties with severe infestations.*



*Average of Macon, Taylor, Sumpter, Schley, and Dooly counties

Dryland Conservation Tillage



Prowl + Reflex PRE

Roundup + Dual POST

Direx + MSMA PD



Prowl + Reflex PRE

Ignite + Dual POST

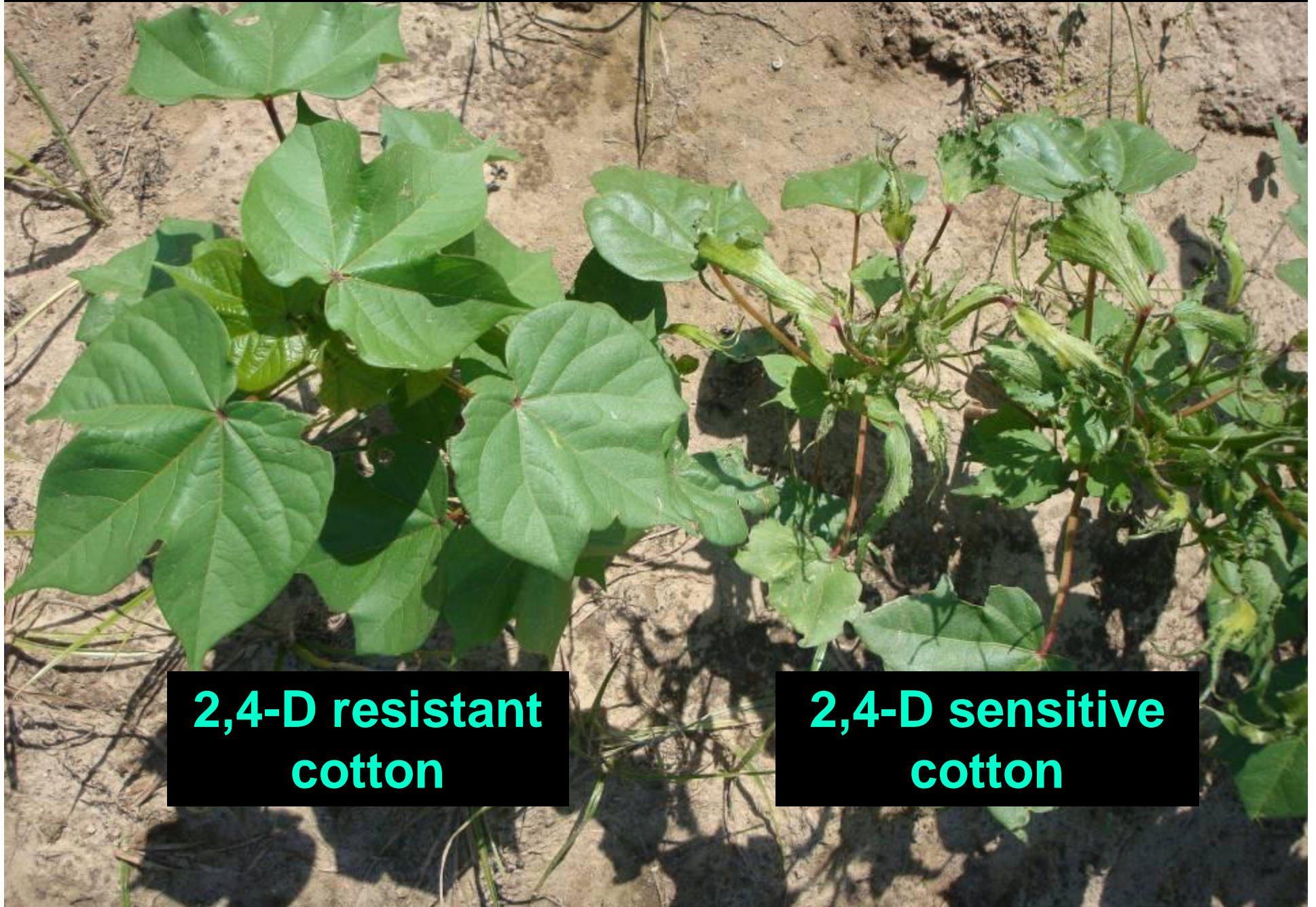
Direx + MSMA PD

Glufosinate 0.42 lb on 5 in. Palmer amaranth



“The challenge is making applications of glufosinate to target plants less than 10 cm in height” (Coetzer et al. 2002).

Future Technology: 2,4-D or Dicamba Resistant Cotton



**2,4-D resistant
cotton**

**2,4-D sensitive
cotton**

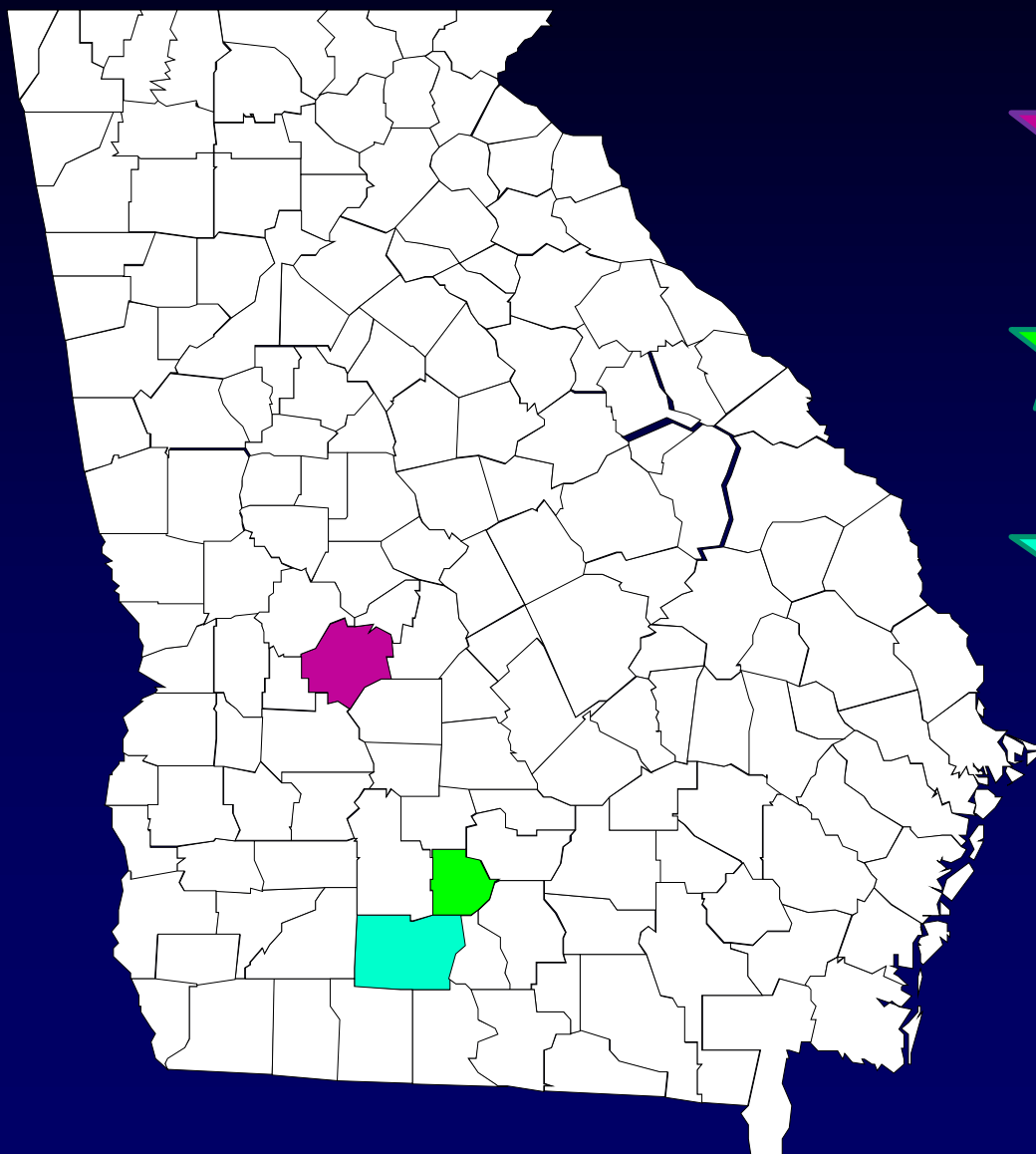
Objective

- Determine the response of glyphosate-resistant Palmer amaranth to glufosinate, 2,4-D (Weedar), or dicamba (Clarity) applied alone and glufosinate mixed with 2,4-D or dicamba.
- Carpetweed, benghal dayflower, broadleaf signalgrass, and pitted morningglory

Hypothesis

- Tank mixtures of glufosinate + 2,4-D or dicamba will be more effective in controlling broadleaf weeds than glufosinate alone.

Trial Locations



Macon County
(Glyphosate-resistant
Palmer amaranth)



Chula
(Palmer amaranth,
carpetweed)



Sunbelt Expo
(benghal dayflower,
broadleaf signalgrass,
pitted morningglory)

Treatments

A factorial arrangement of two “glufosinate” options and seven “tank mix” options

Ignite Option: None or Ignite at 0.42 lbs

Tank mix option: 2,4-D, dicamba, or none

- | | |
|---------------------|---------------------|
| – 2,4-D (Weedar 64) | .5, 0.75, 1.0 lb/ac |
| – Dicamba (Clarity) | .25, 0.5, 1.0 lb/ac |
| – None | |

Application Methods

- Backpack sprayer
- Broadcast
- Overtop
- 15 gal/Ac
- Drift Guard T-Jet 11002 VS
- Early morning application
- 7-9 inch weed

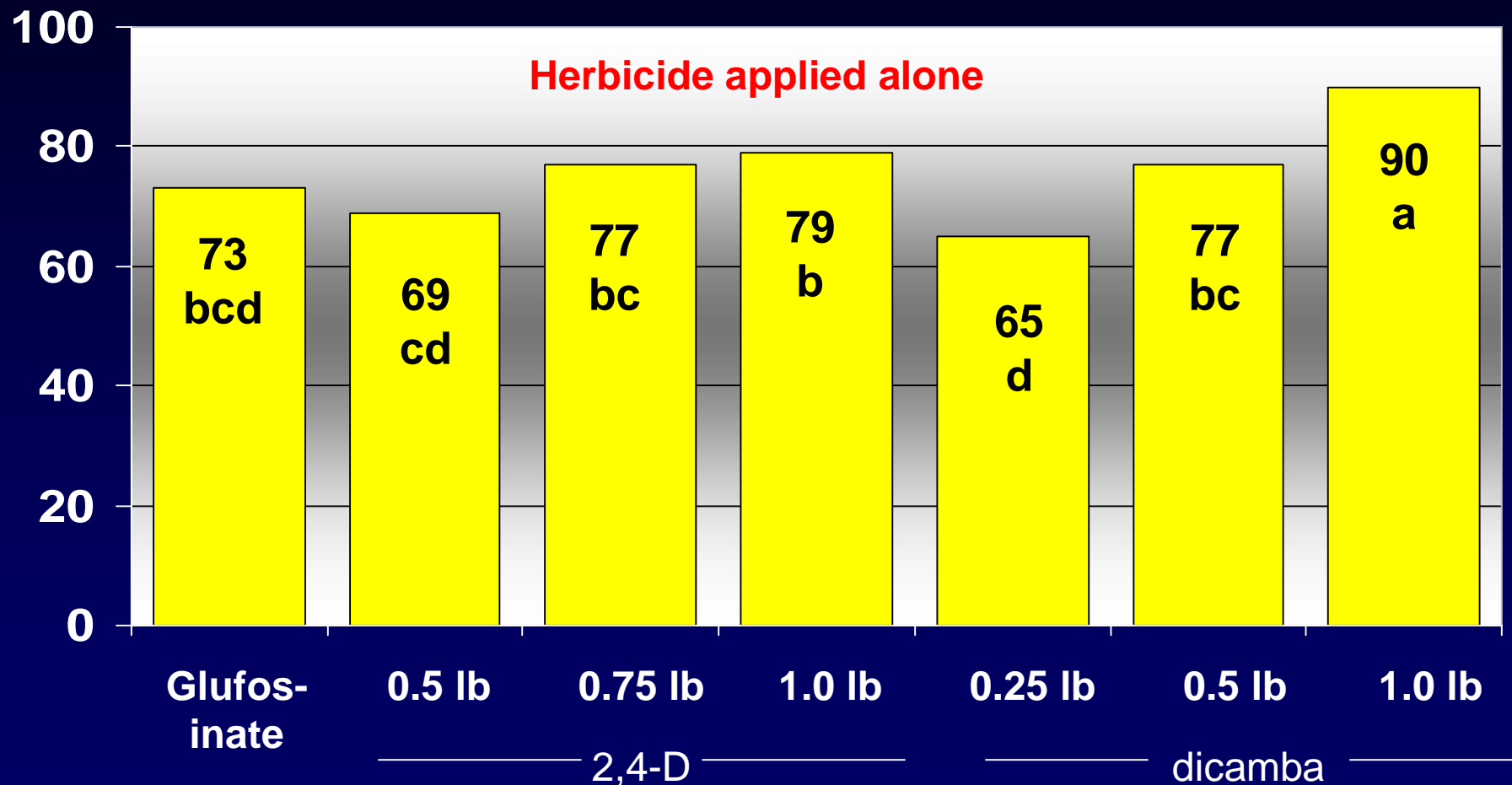
Conditions at Time of Application

- Moist/Wet
- Sunny conditions
- Air Temperature: 76-95 F
- % Relative Humidity: 56-74

Data Reported & Statistical Analysis

- Palmer amaranth control was combined over the three locations.
- Carpetweed, benghal dayflower, broadleaf signalgrass, and pitted morningglory
- Weed control at 20 d is reported; interaction means are reported.

Percent GR Palmer amaranth control at 20 d. Average 3 loc., GA, 2009.





Non-treated



glufosinate

12 DAT

12 DAT



24 DAT



2,4-D at 0.75 lb

12 DAT

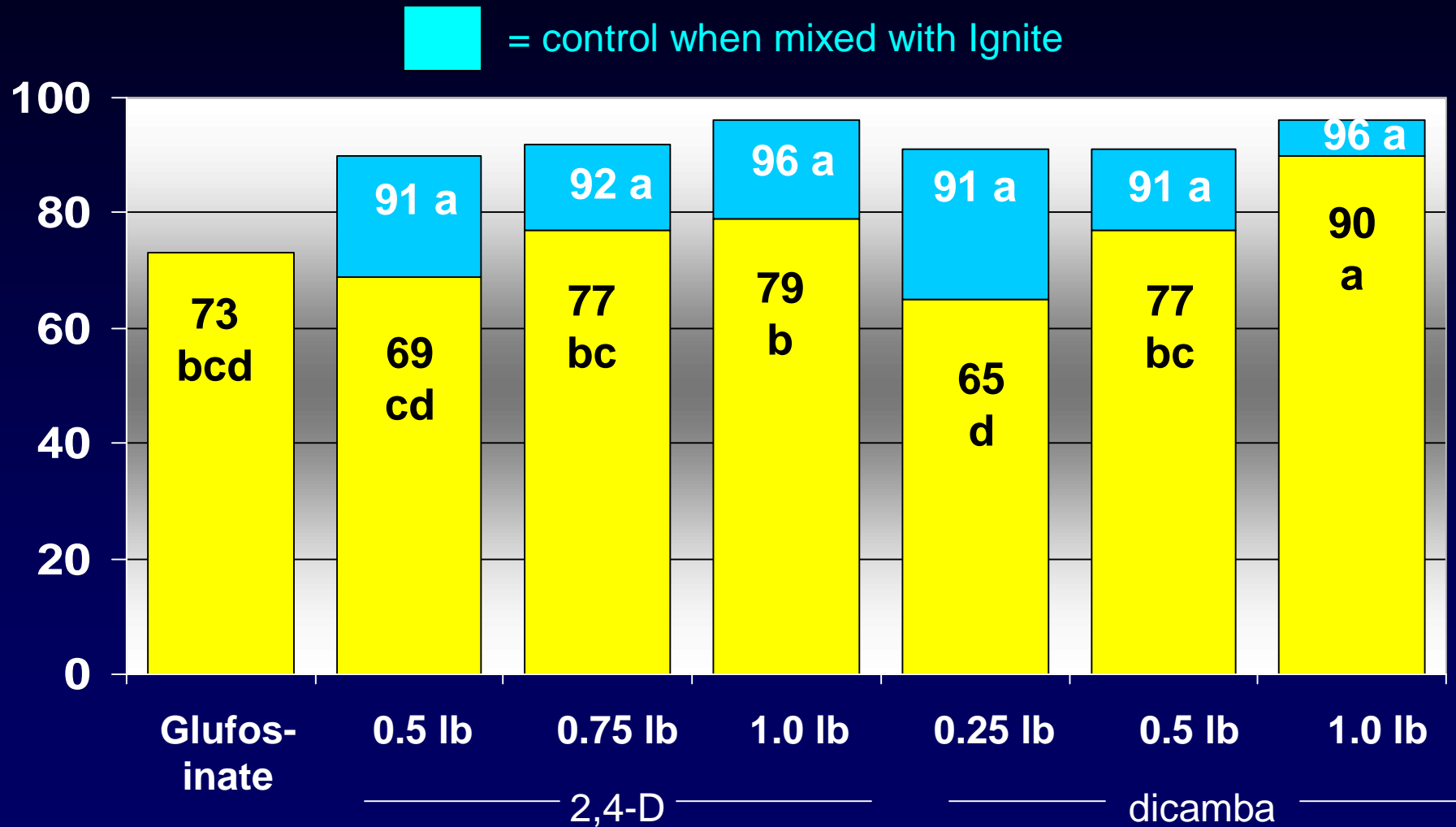


24 DAT



dicamba 0.5 lb

Percent GR Palmer amaranth control at 20 d. Average 3 loc., GA, 2009.



12 DAT



glufosinate



glufosinate + 2,4-D 0.75 lb

12 DAT

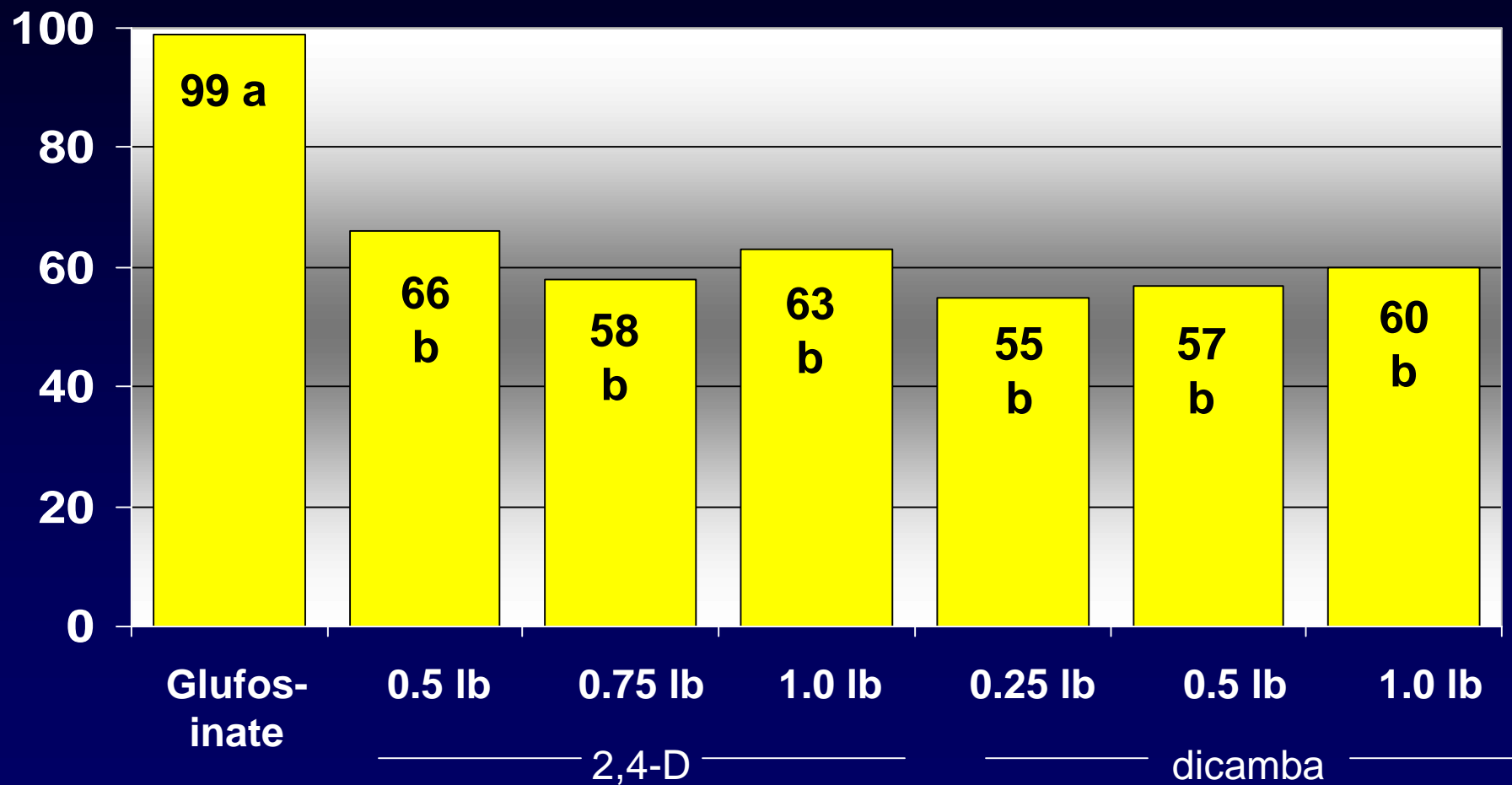


glufosinate



glufosinate + dicamba 0.5 lb

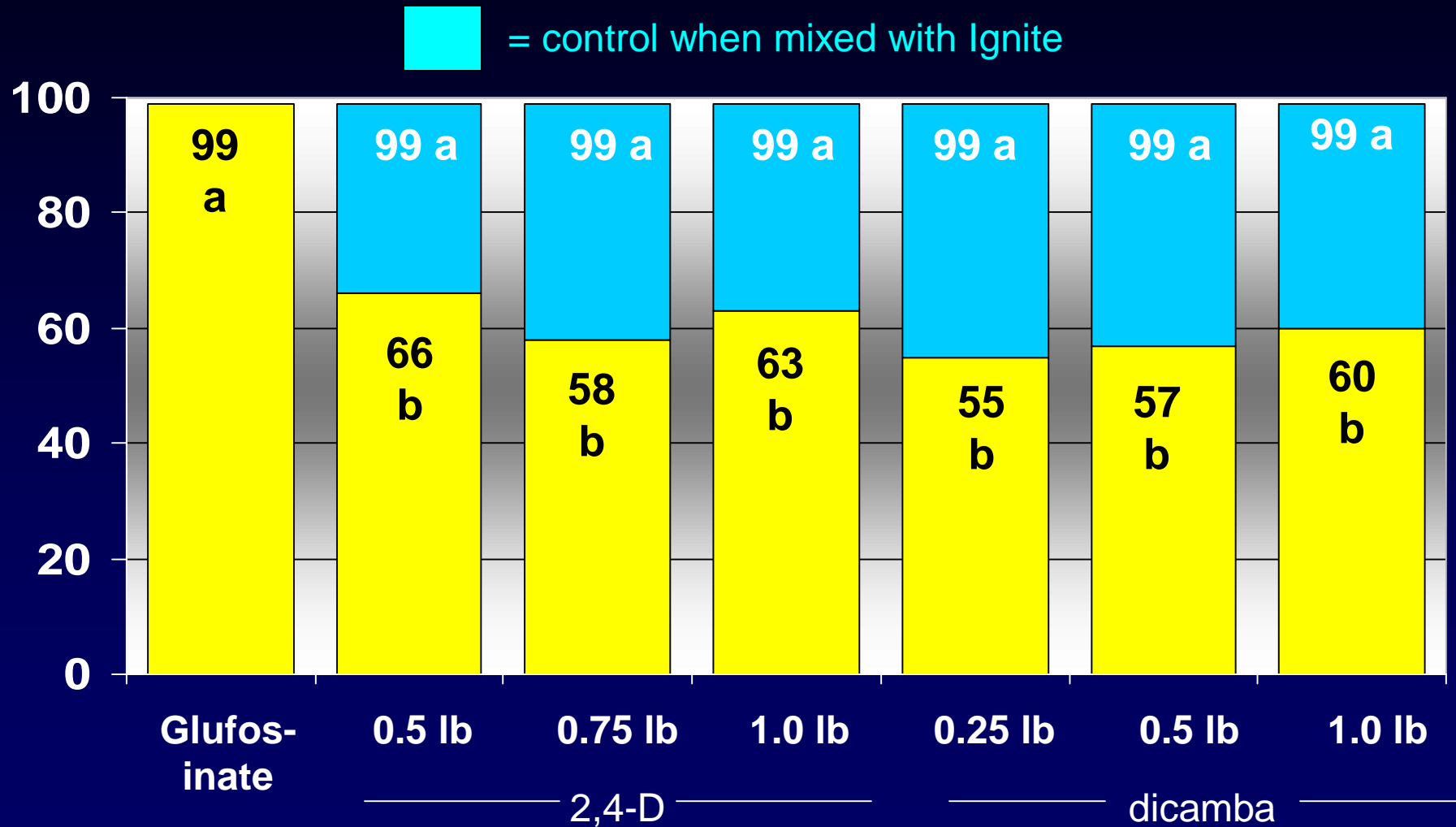
Percent carpetweed control at 20 d. Chula, GA, 2009.





2,4-D 0.5 lb at 10 DAT

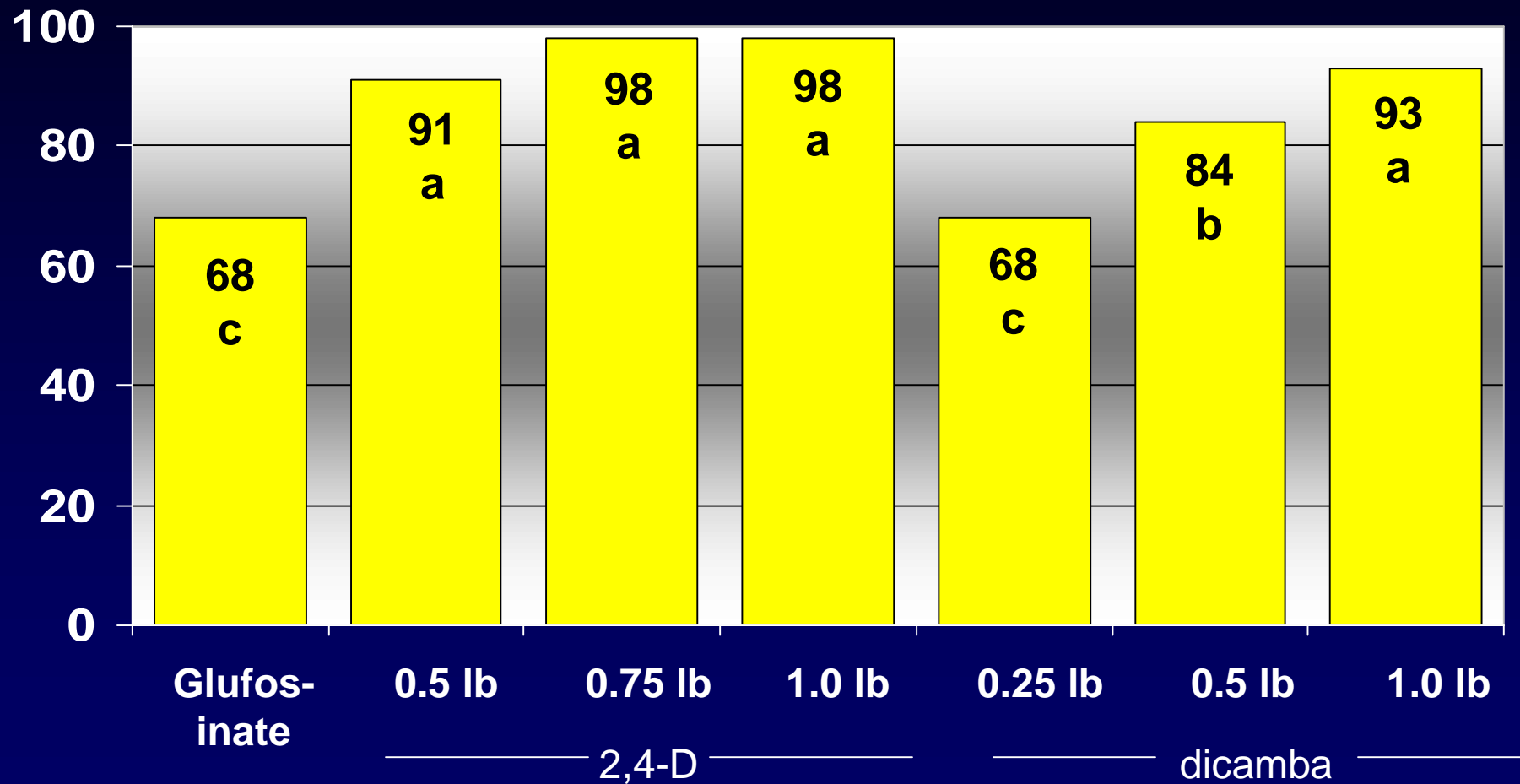
Percent carpetweed control at 20 d. Chula, GA, 2009.



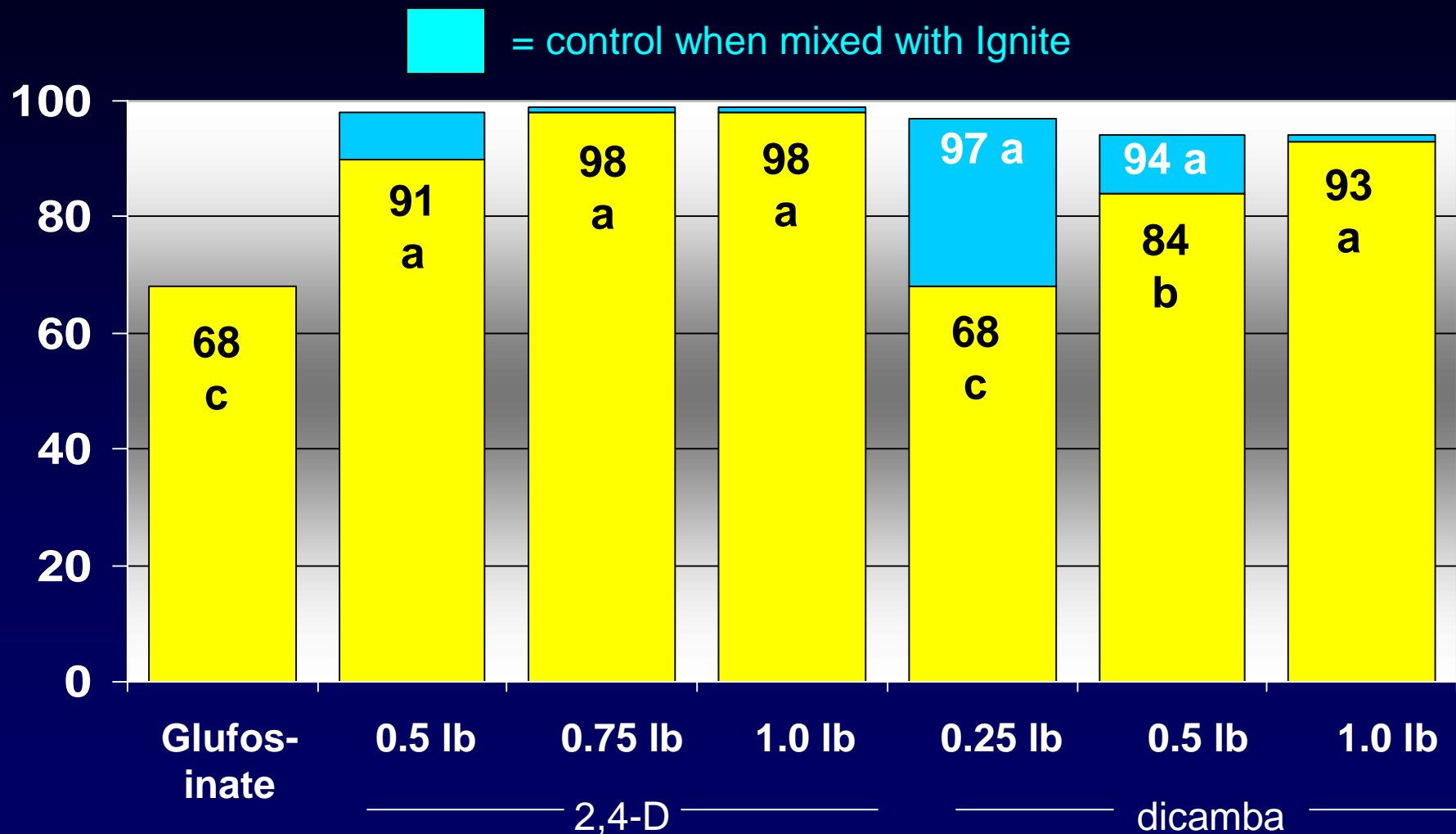
Benghal dayflower infesting Roundup Ready cotton



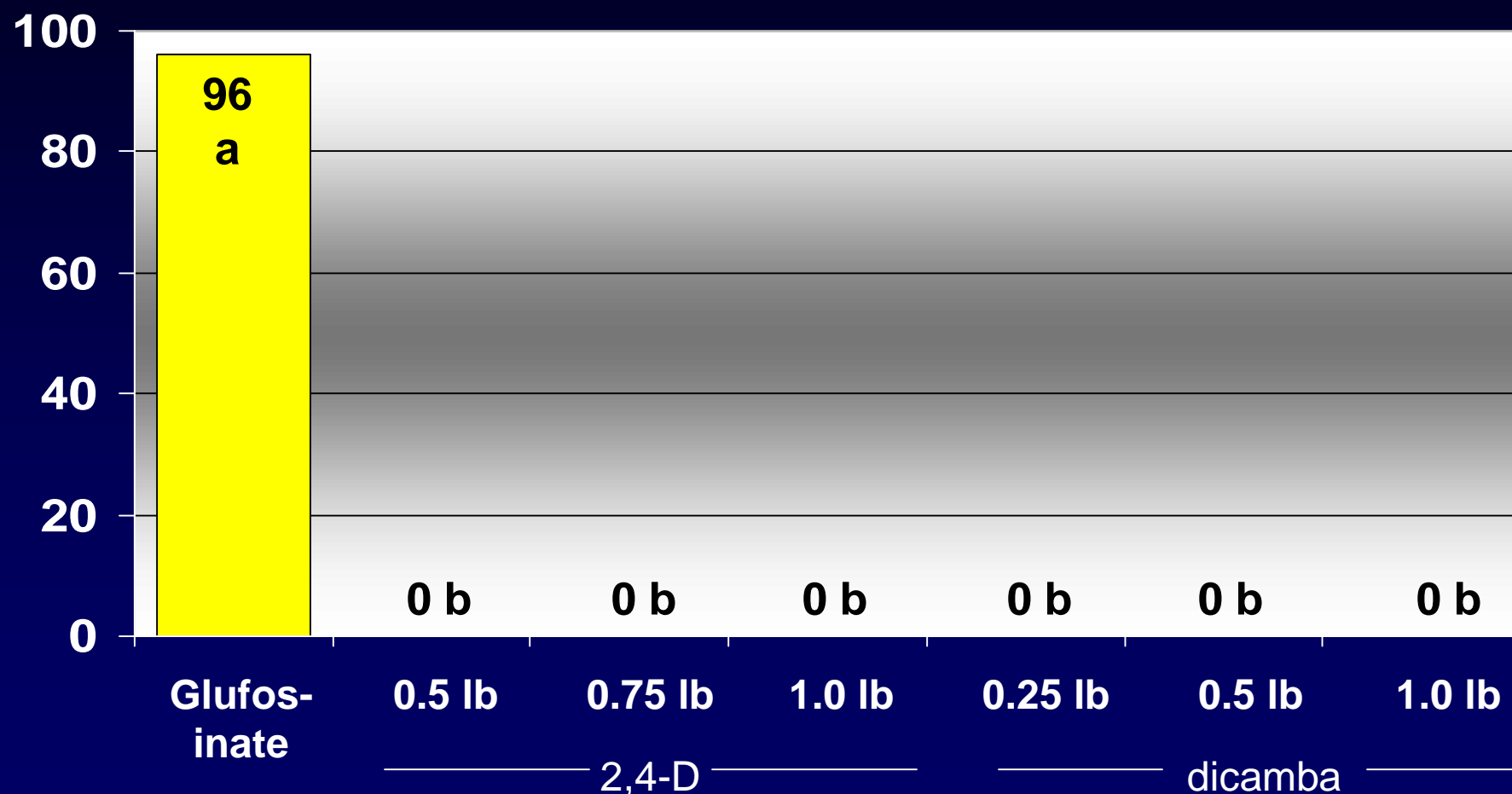
Percent benghal dayflower control at 20 d. Sunbelt Expo, GA, 2009.



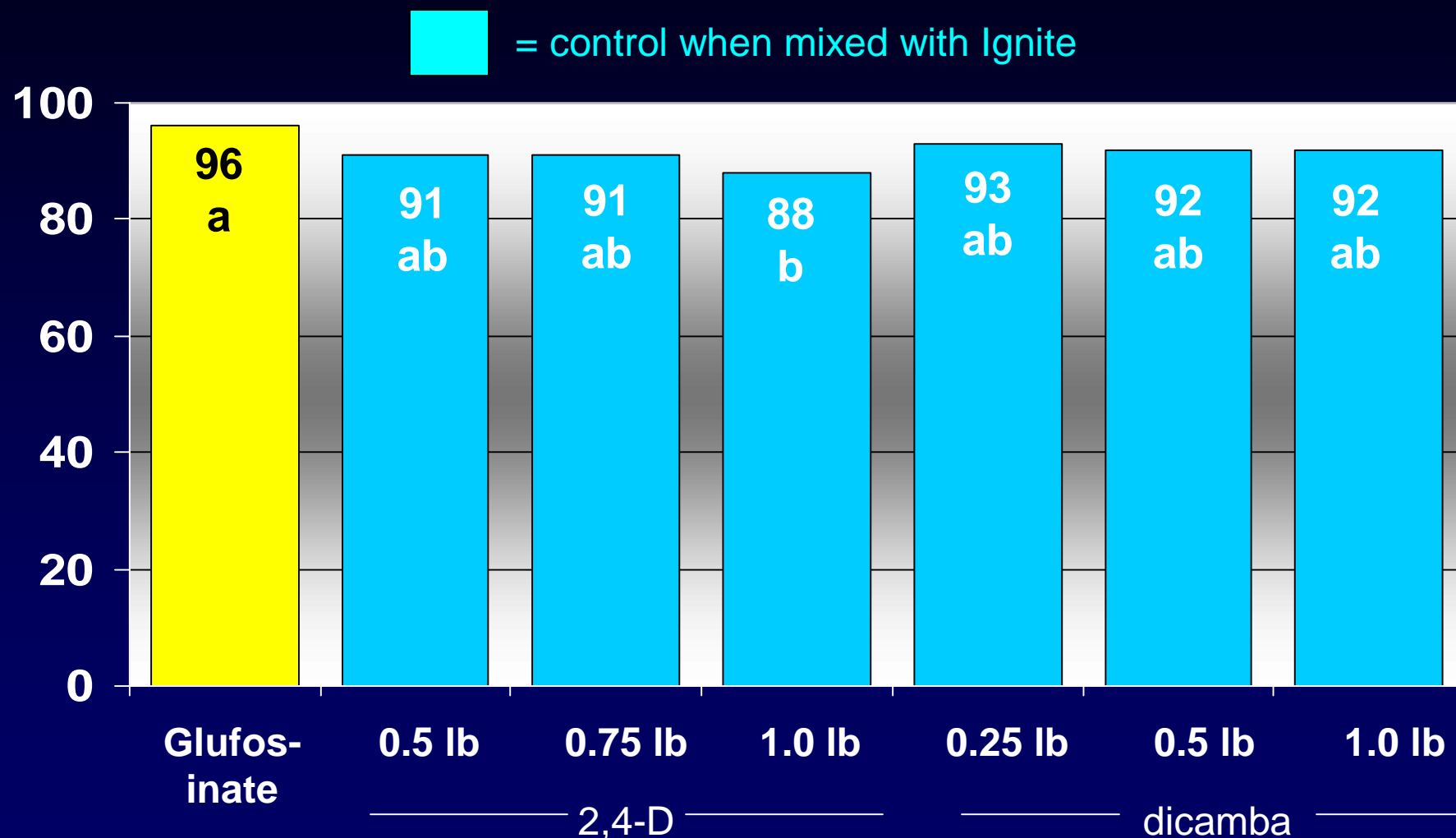
Percent benghal dayflower control at 20 d. Sunbelt Expo, GA, 2009.



Percent broadleaf signalgrass control at 20 d. Sunbelt Expo, GA, 2009.



Percent broadleaf signalgrass control at 20 d. Sunbelt Expo, GA, 2009.





Pitted
morningglory
controlled 97
to 99% by all
treatments

Everman et al. noted greater than 90% control with glufosinate applied POST on pitted morningglory.

Conclusions-Palmer amaranth

- Glufosinate alone only provided 73% control
- 2,4-D alone provided 69-79% control
- Dicamba alone provided 69-90%
- Tank mixtures of glufosinate+2,4-D or dicamba at least 91% control

Conclusions-Carpetweed

- Glufosinate alone provided 99% control
- 2,4-D alone provided 58-66%
- Dicamba alone provided 55-60%
- All rates of glufosinate+2,4-D or dicamba provided 99% control

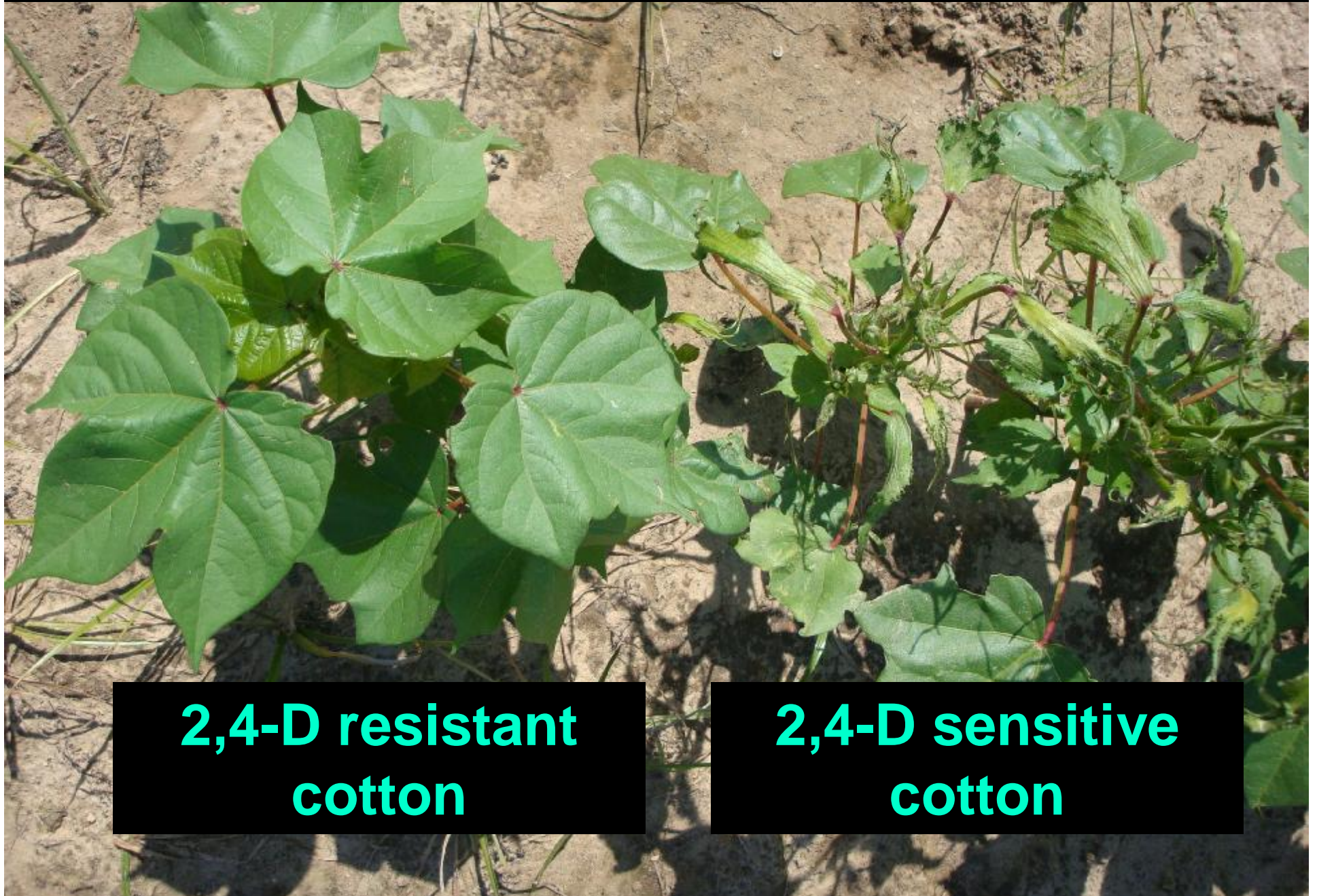
Conclusions- Benghal dayflower

- Glufosinate alone provided 63% control
- 2,4-D provided 91-98% control; combinations with glufosinate could not improve control
- Dicamba control ranges from 68-93% but when combined with glufosinate control ranges from 93-97%

Conclusion-Broadleaf signalgrass

- Glufosinate alone provided 96% control and no control with 2,4-D or dicamba alone
- 2,4-D mixed with glufosinate, control ranged from 88-91%; at 1 lb/ac of 2,4-D the control was 8% less than glufosinate alone
- Dicamba mixed with glufosinate provided 92-93% control

Future Research



**2,4-D resistant
cotton**

**2,4-D sensitive
cotton**