

Spider Mites: A Persistent Problem in Mid-South Cotton

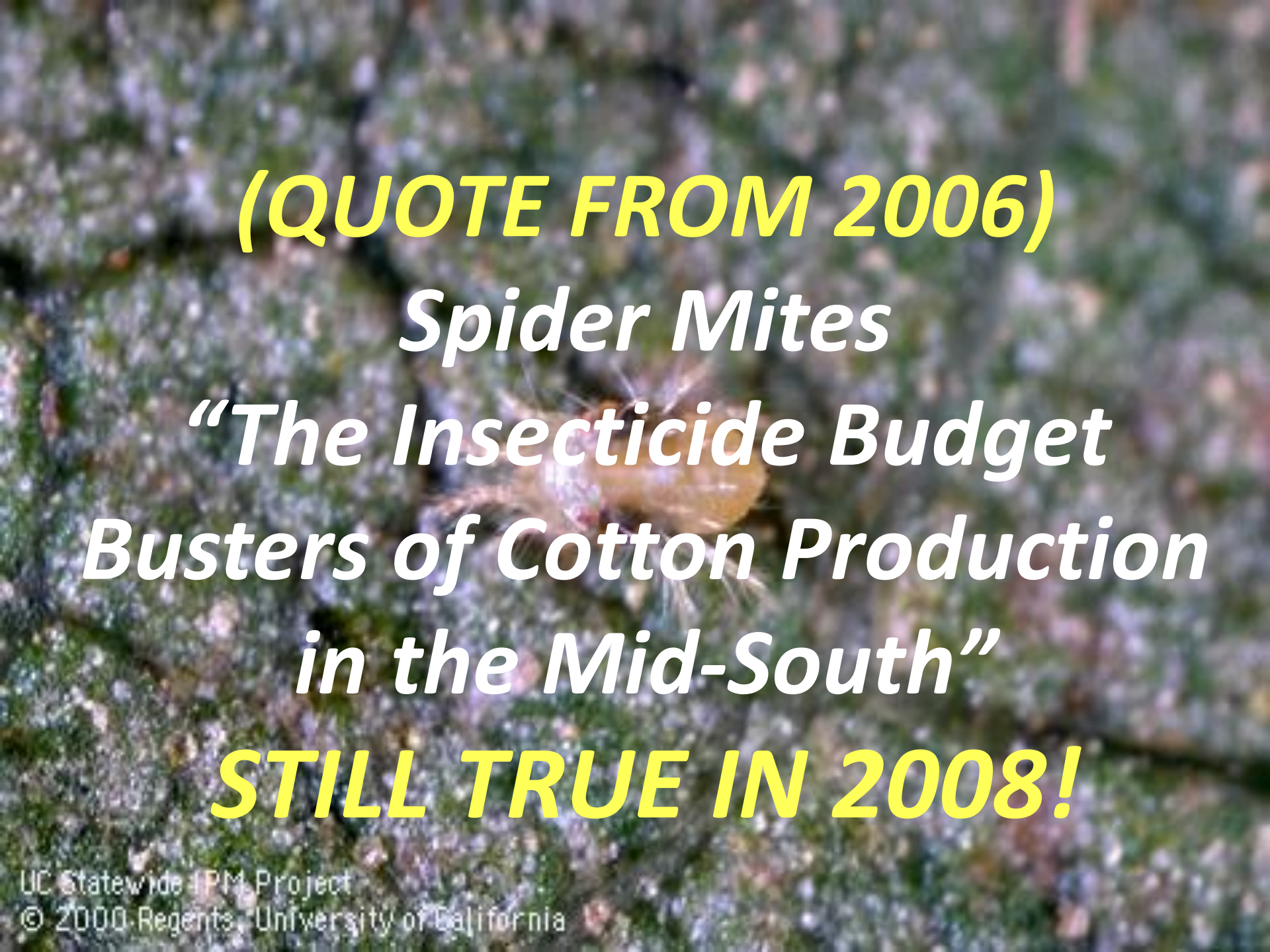
2008 Crop Management Seminar

Cotton Incorporated

November 12, 2008

Angus Catchot, J.F. Smith, J. Gore, F. Musser, S. Stewart, G. Lorenz, R. Bagwell, and R. Leonard





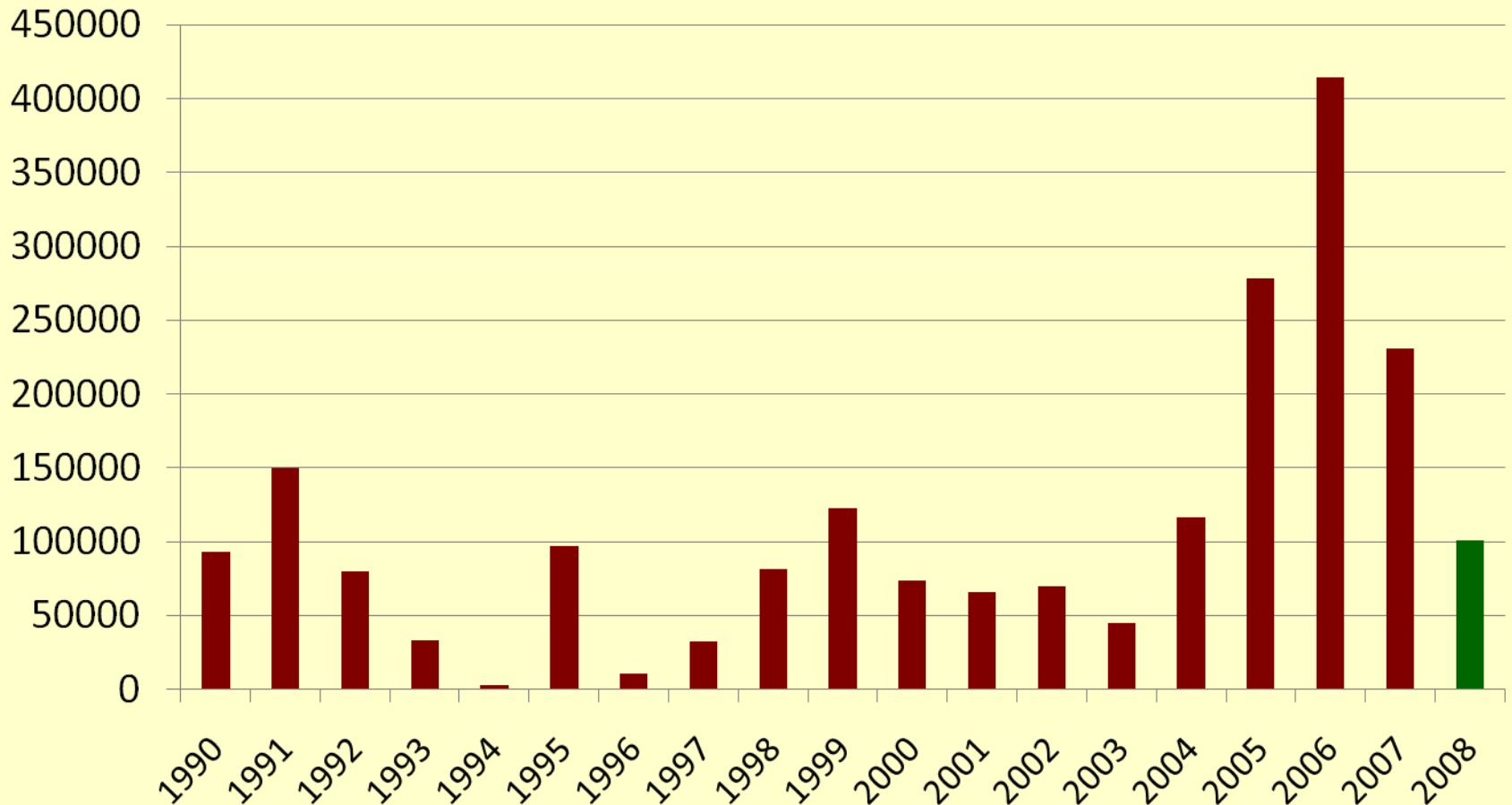
(QUOTE FROM 2006)

Spider Mites

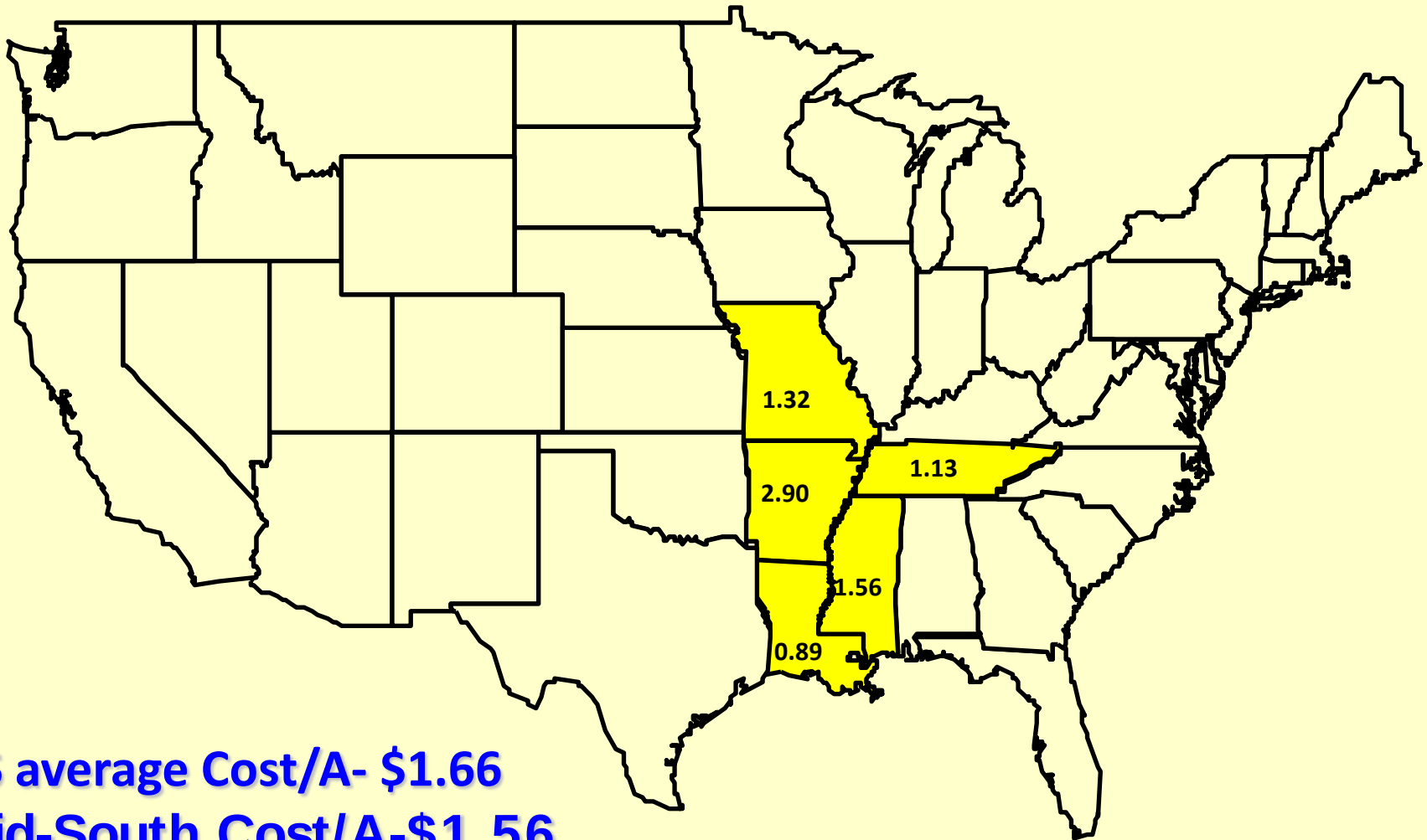
***“The Insecticide Budget
Busters of Cotton Production
in the Mid-South”***

STILL TRUE IN 2008!

Trends in Spider Mite Treatments in Mississippi (Acres Treated)



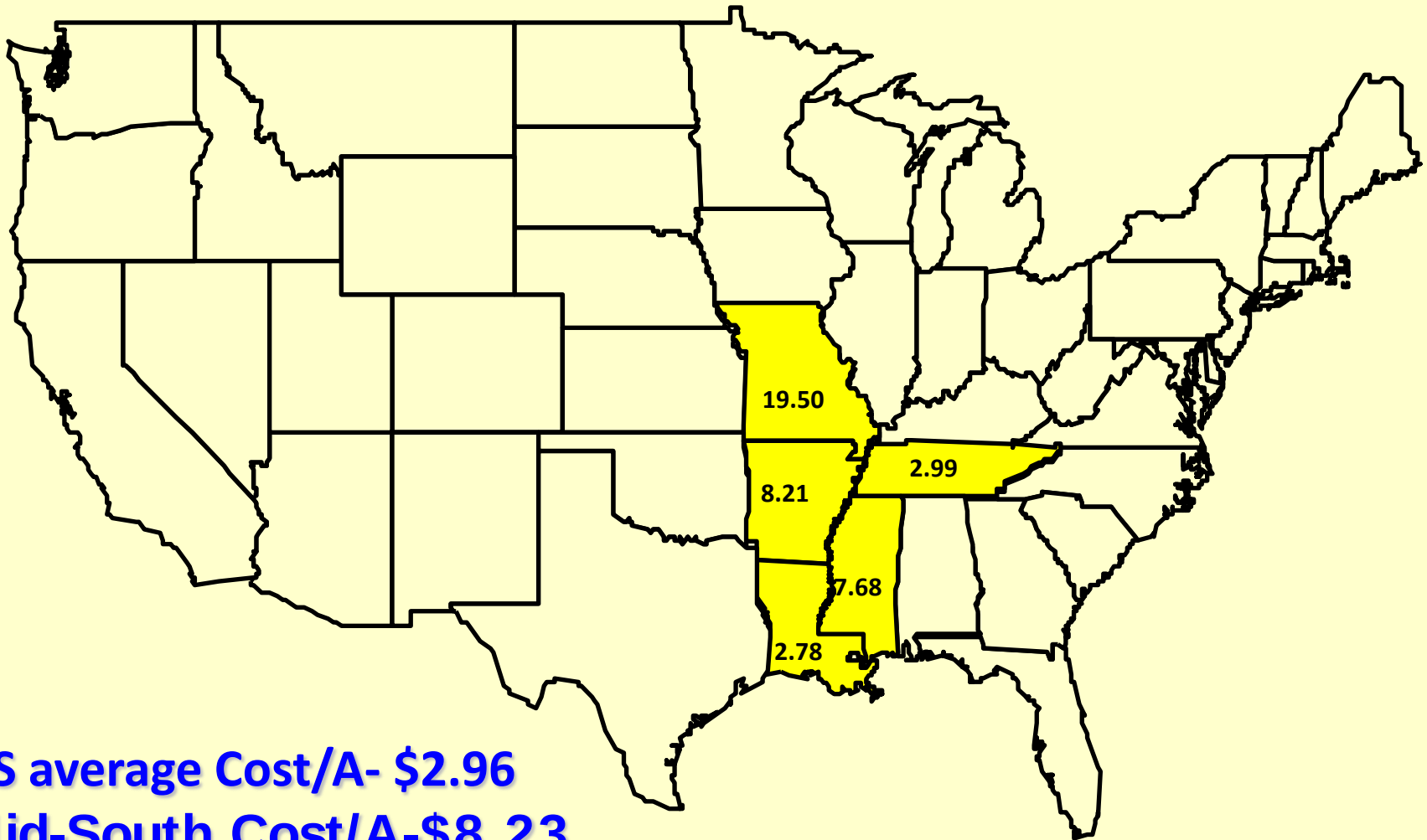
Mid-South *Spider Mite* Control Costs - 2004



US average Cost/A- \$1.66

Mid-South Cost/A-\$1.56

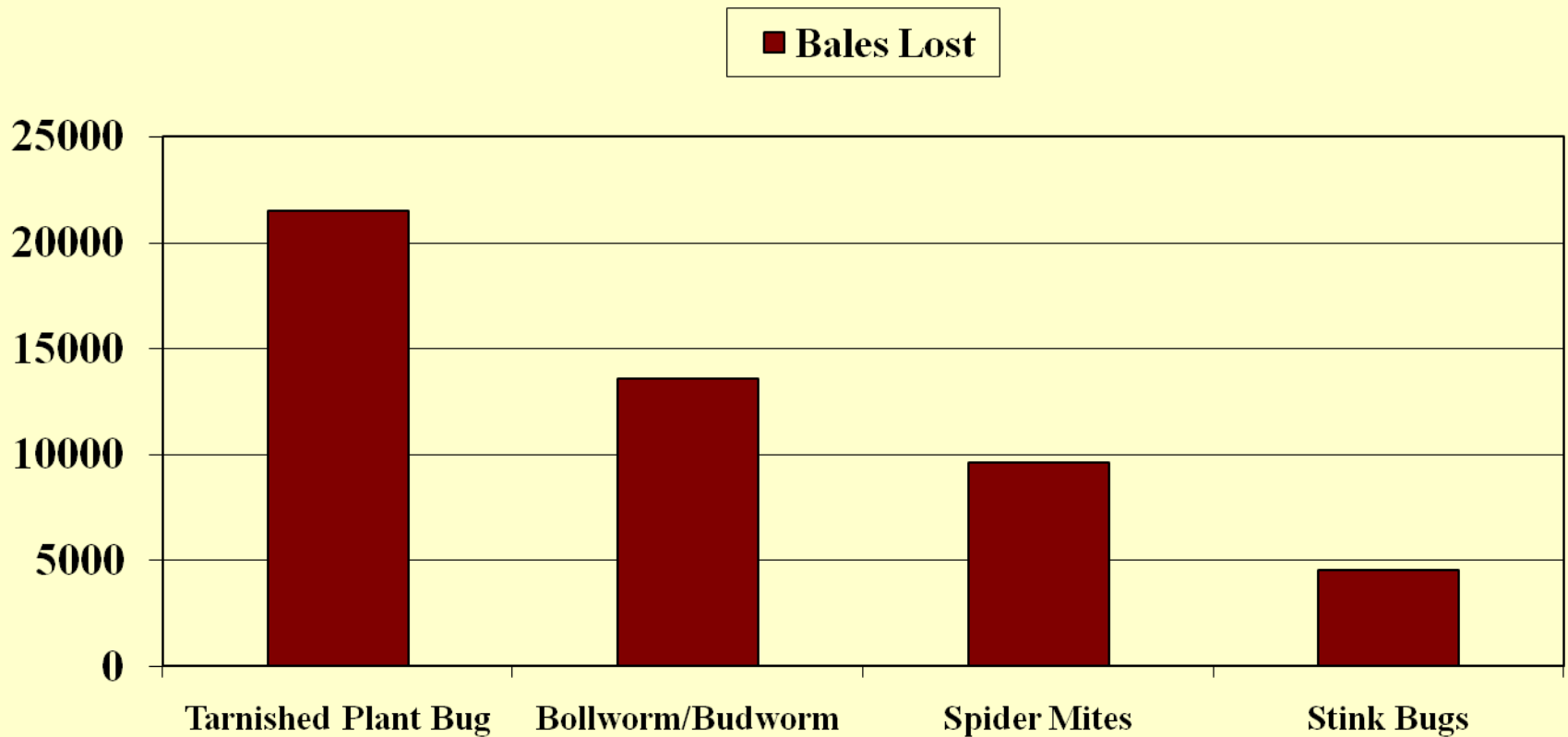
Mid-South *Spider Mite* Control Costs - 2007



US average Cost/A- \$2.96

Mid-South Cost/A-\$8.23

2007 Mississippi Cotton Insect Losses



Twospotted Spider Mite

Biology

- Egg, larval (3 pair of legs), two nymphal stages, adult
- Generation time is highly temperature dependent
- Lay ~100 eggs in 2-4-week lifespan
- Multiple overlapping generations per year
- Adults overwinter in leaf litter or debris
- Become active in early-spring



**Spider mites feed on the underside of leaves
puncturing epidermal cells, reducing
photosynthesis**



Early-Season Damage



Late Season Damage



Possible Factors Contributing to Increased Frequency of Spider Mite Outbreaks in the South

- **Delayed burndown/Field Border Management**
- **Hot and Dry Conditions**
- **Beneficial Insect Reduction (Flaring)**
- **Increased use of Insecticide Seed Treatments vs. Temik?**
- **Resistance**

Impact of Spring Burndown Timing on Mite Outbreaks

4/3/08 – Date of First Burndown



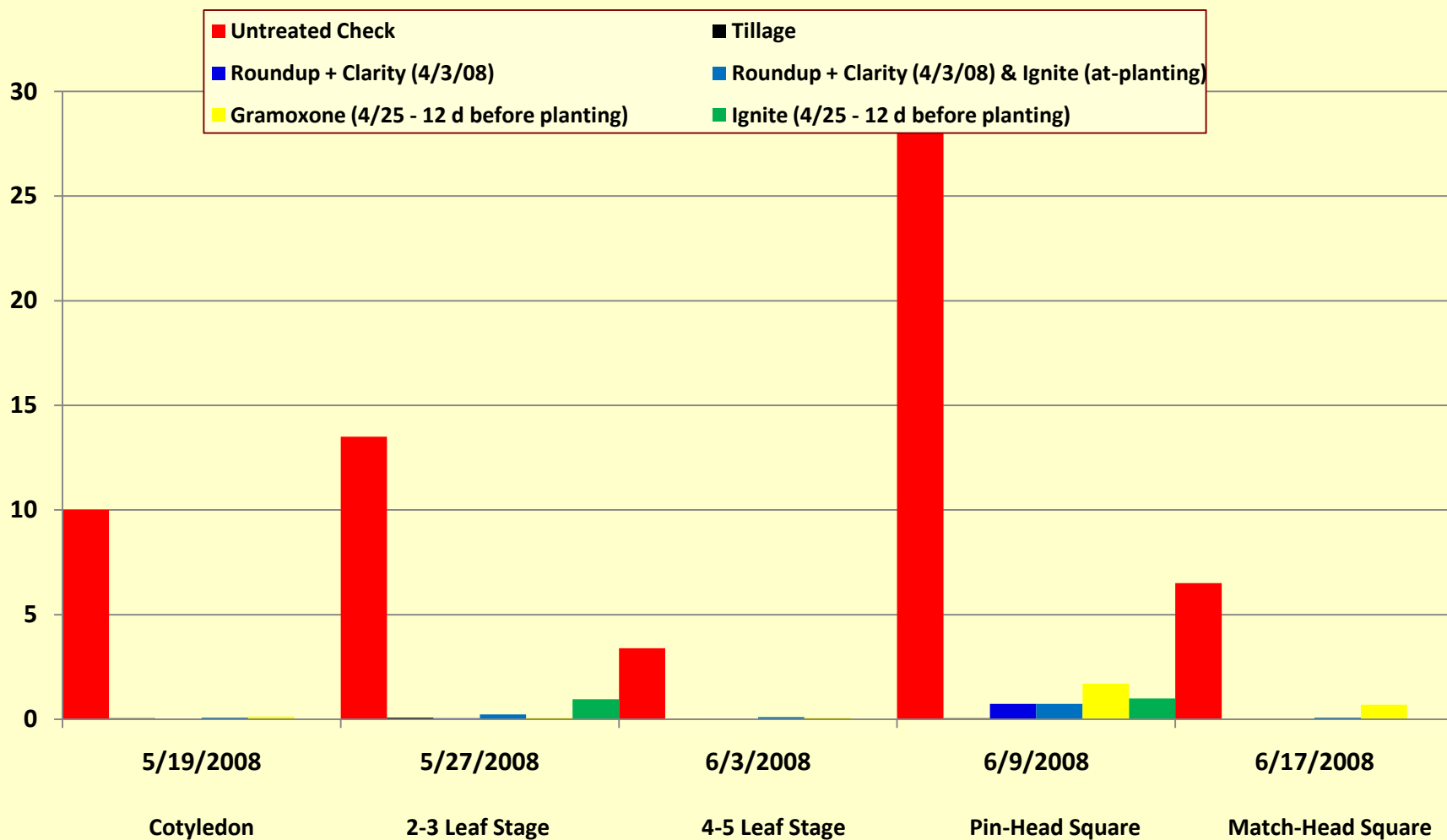
Impact of Spring Burndown Timing on Mite Outbreaks

5/8/08 – at-planting



Impact of Spring Burndown Timing on Mite Outbreaks

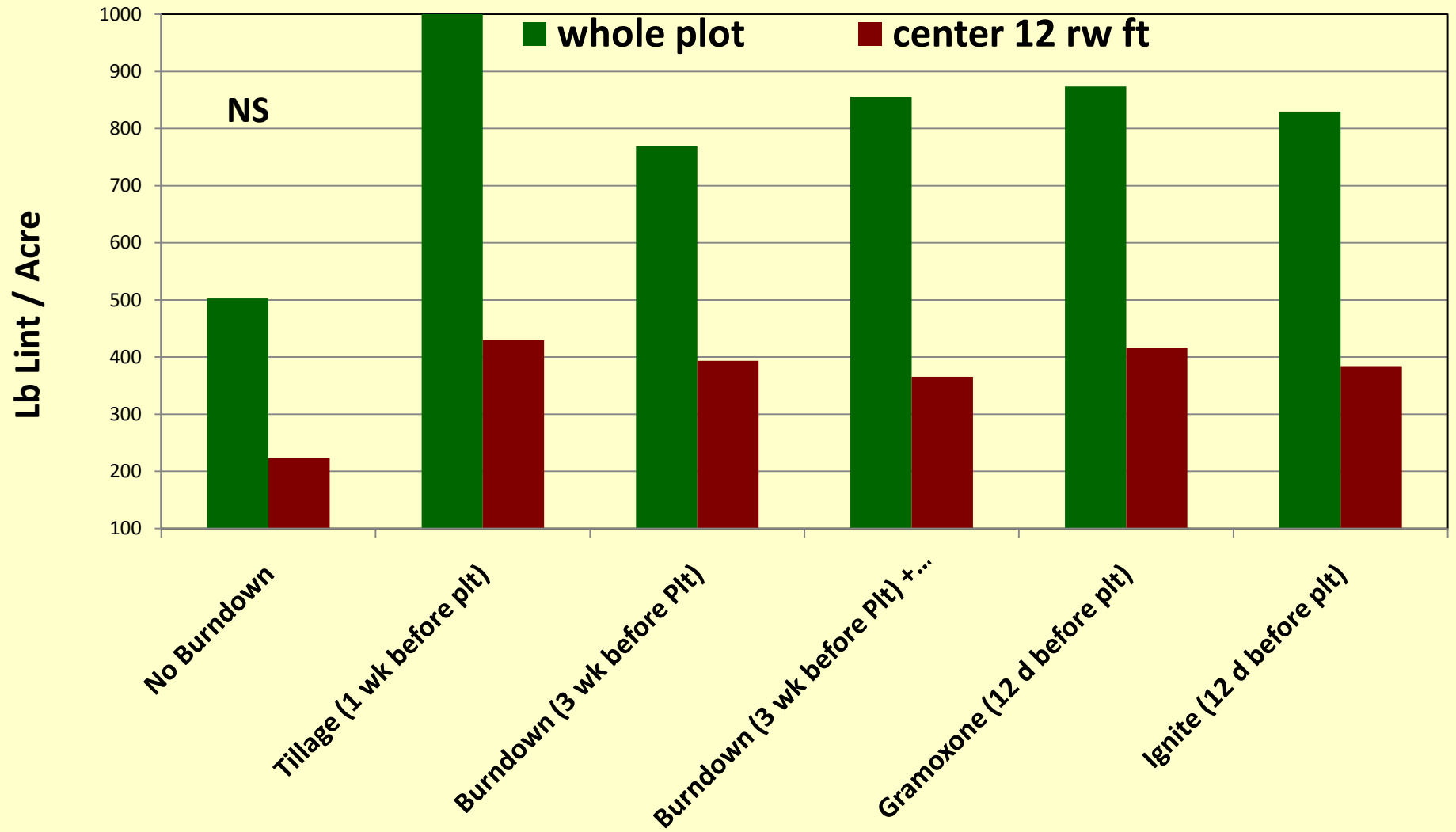
Number Mites/Leaf in Cotton



Avoid the “Green Bridge”



Yield Effects of Spring Burndown



Seed Treatments



Materials and Methods

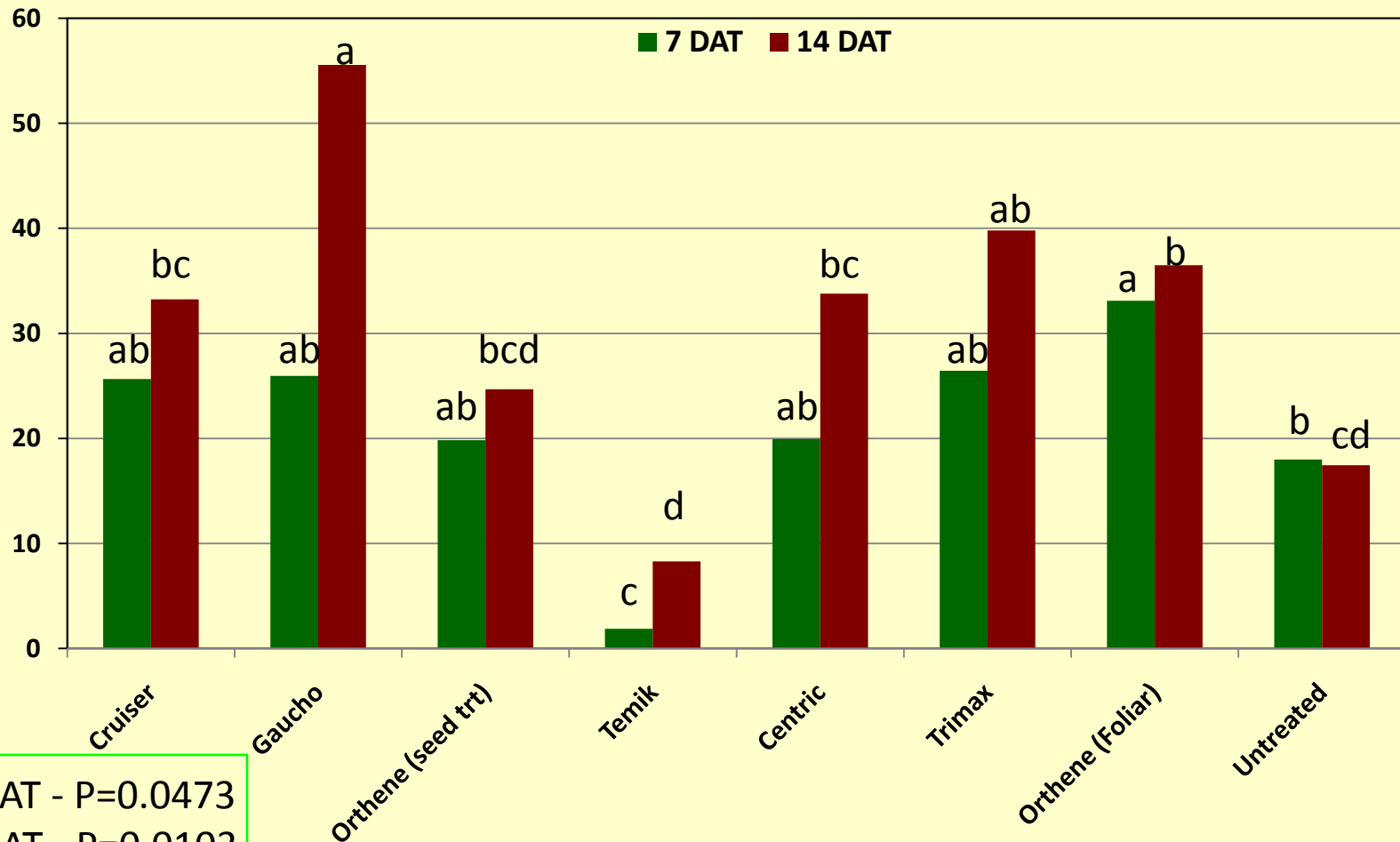
- Cotton infested from 1st to 4th true leaf
- Bean leaves w/ mites stapled to cotton cotyledons
- Uppermost full-size leaf examined with a microscope for mites/eggs at ~7 and 14 DAI
- 4-6 reps, 5-10 plants/plot
- 5 trials conducted in 2007
2 trials conducted in 2008



Effect of Seed Treatments, Temik and Foliar Insecticides on Mites

Starkville, MS - June 2008.

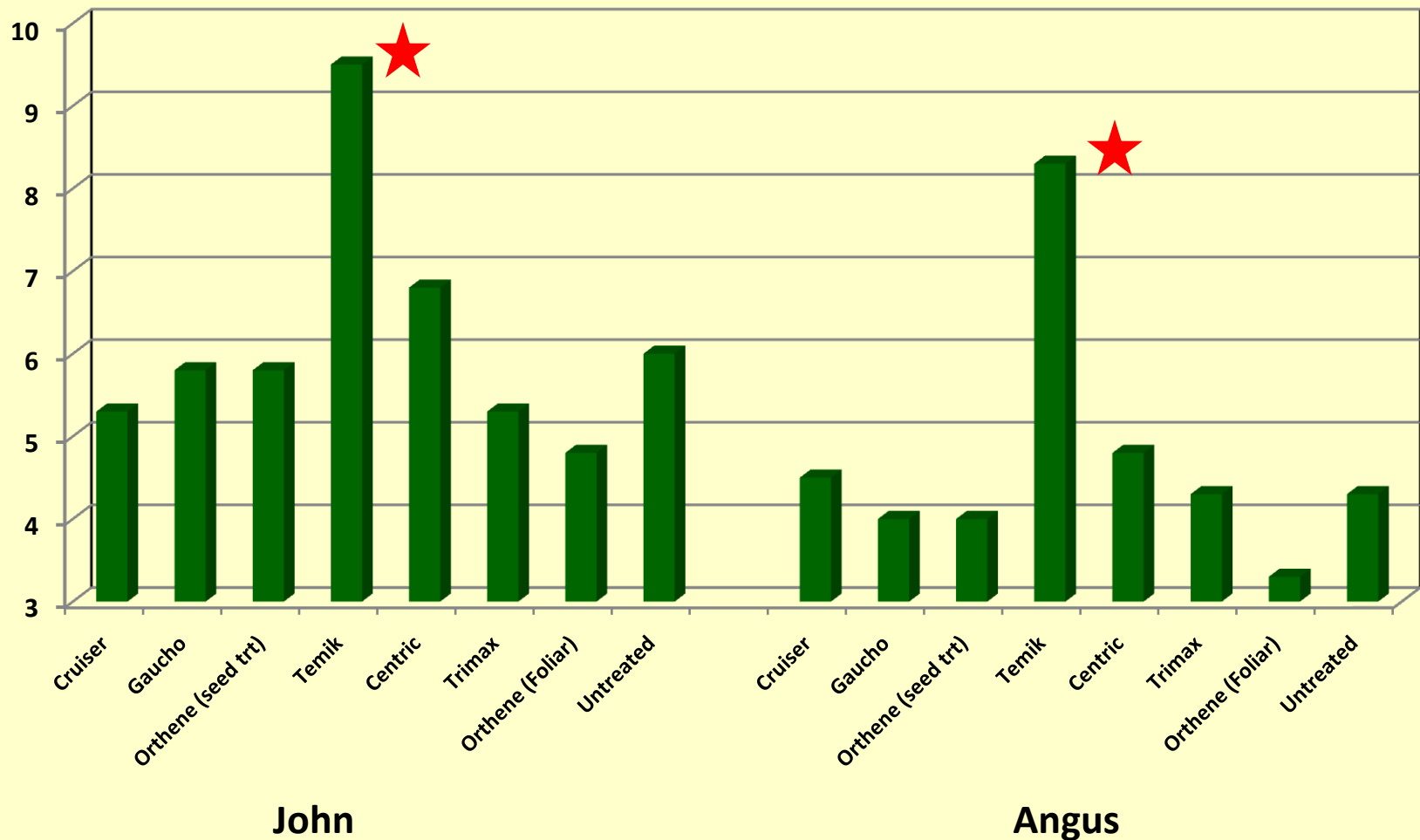
Number of Immature Mites/Leaf.



Effect of Seed Treatments, Temik and Foliar Insecticides on Mites

Starkville, MS - June 2008

Visual Rating of Mite Injury (1-10, 10=best)



Number of Times That Each Treatment Had the Greatest Number of Mites or Eggs in Each Test or Sampling Date

Treatment	Mites	Eggs
Untreated	2	0
Neonicotinoid	6	3
Temik	1	1

*Trends - Only 2 trials had significant differences

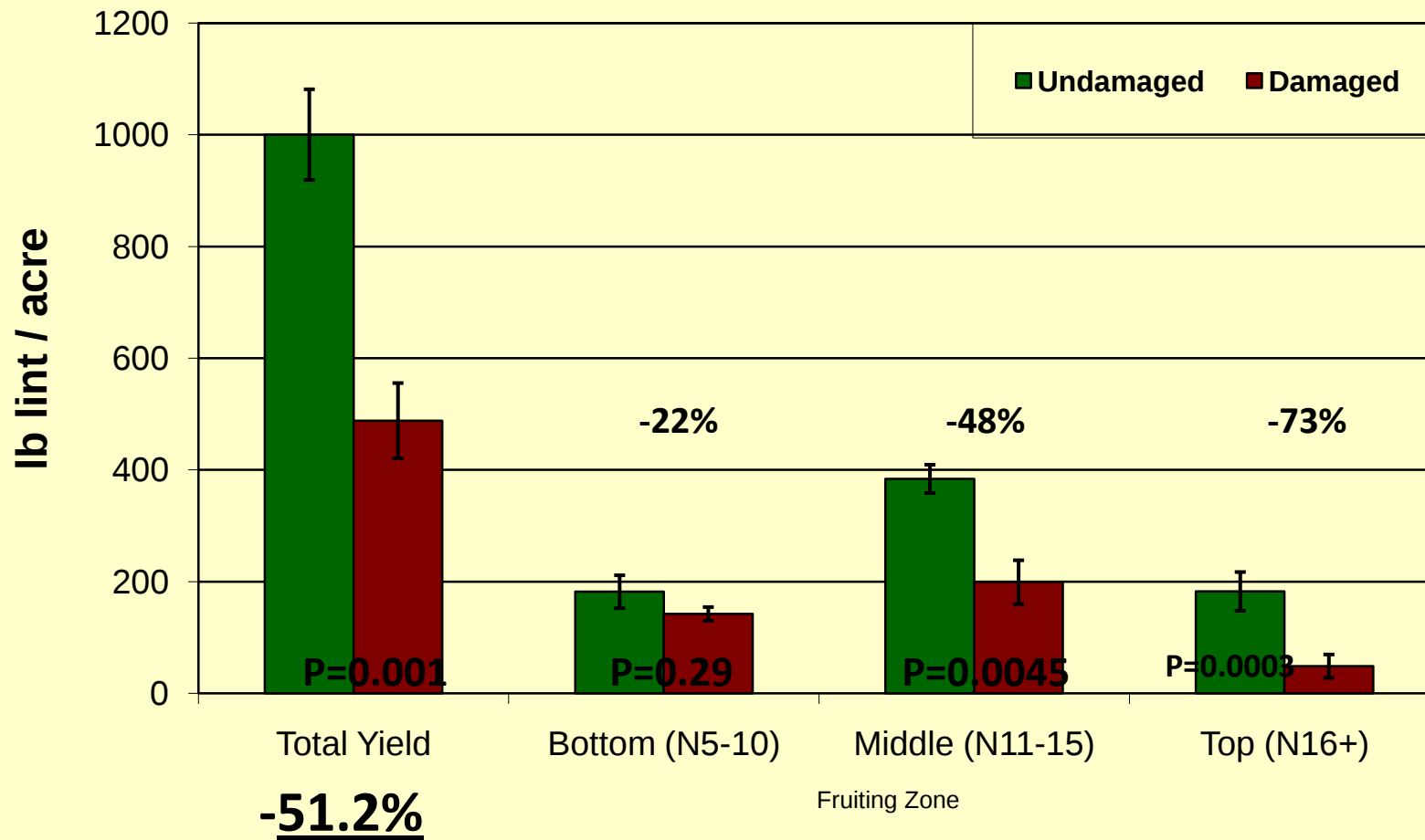
YIELD IMPACT

Greenwood – Non Irrigated



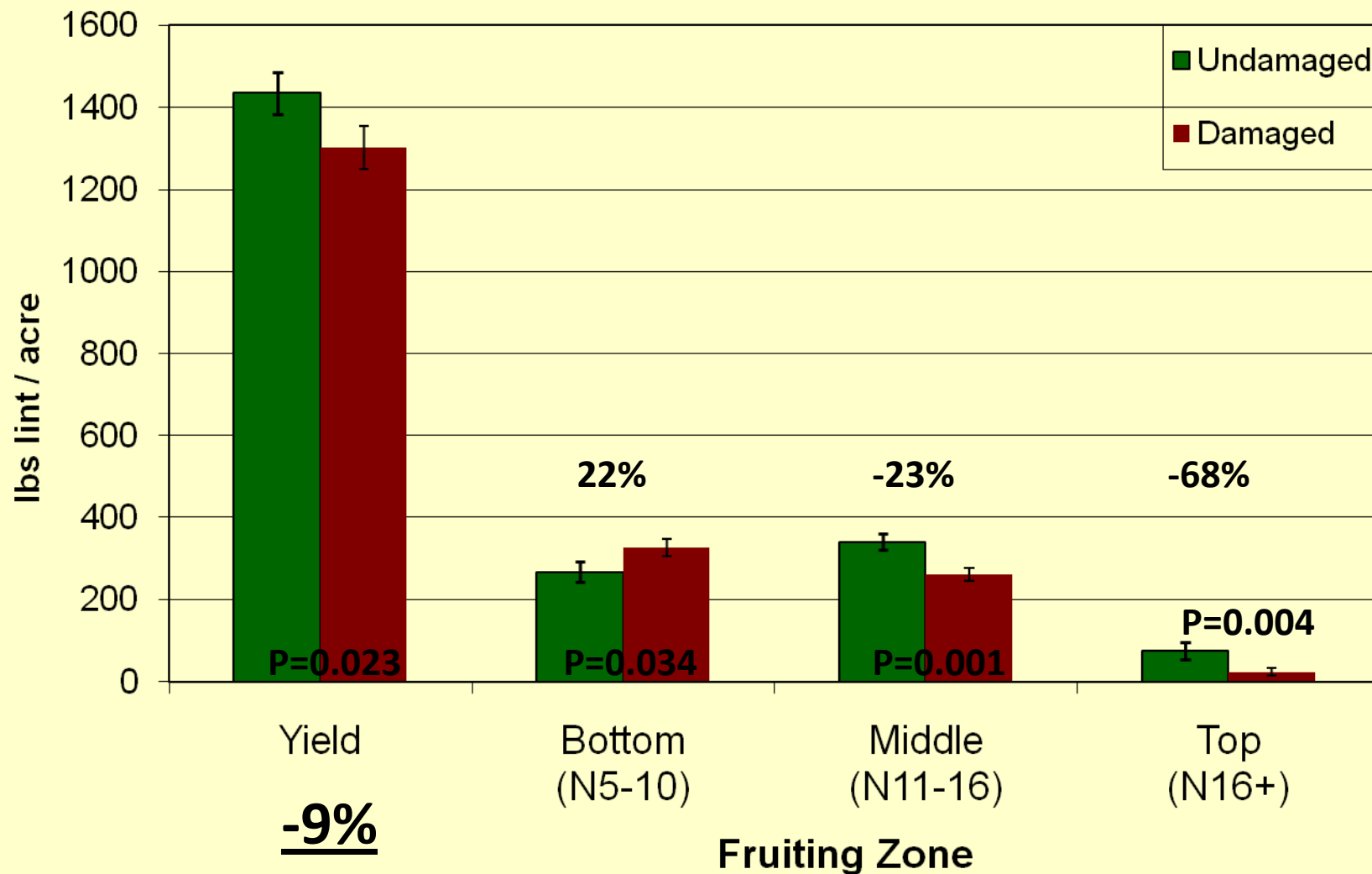
Yield of Damaged and Undamaged Cotton

Dryland Field – Greenwood



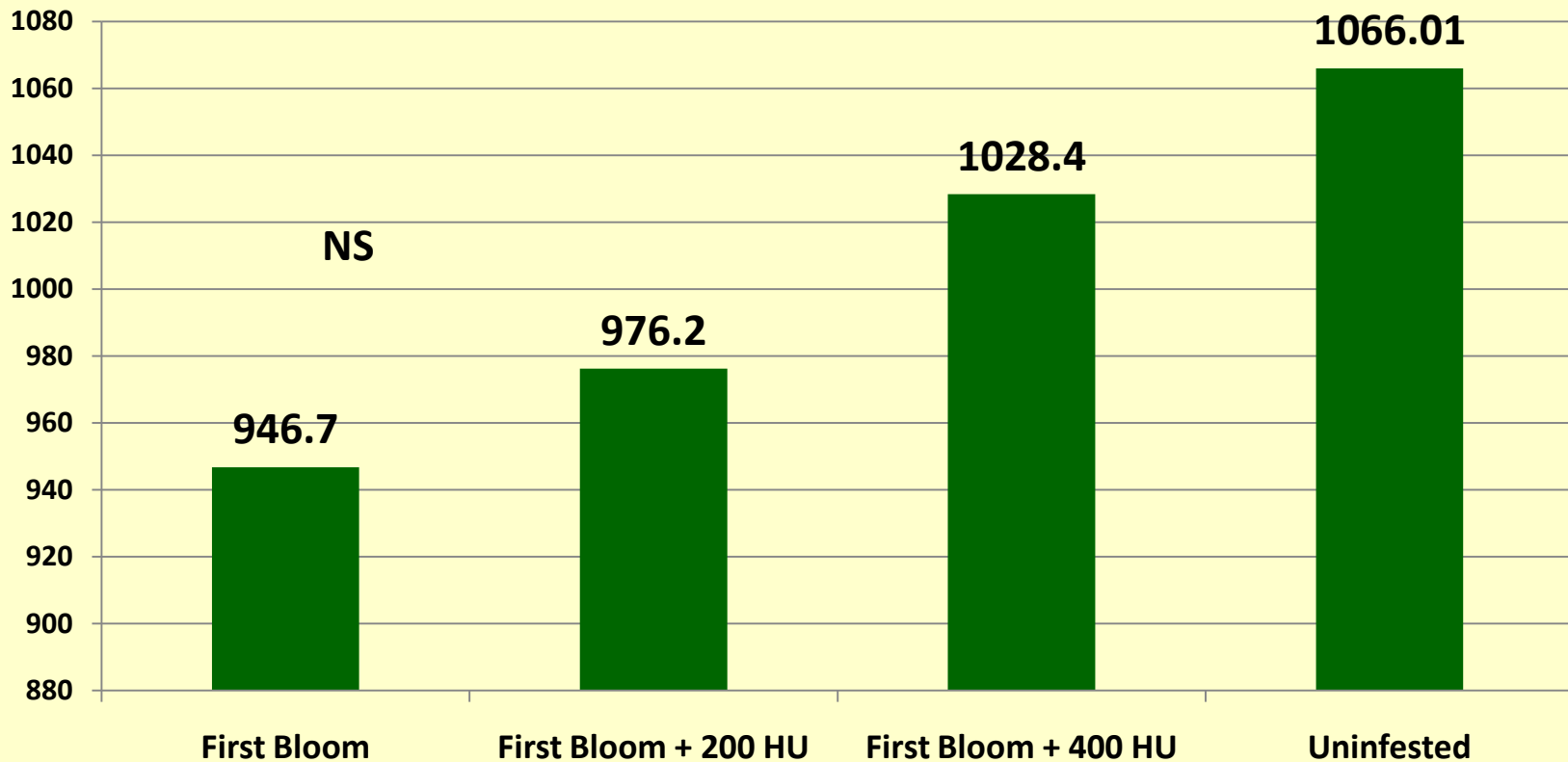
Yield of Damaged and Undamaged Cotton

Irrigated Field - Tchula



**Cotton yield loss from infesting mites
beginning at first bloom then at 200
HU intervals thereafter**

Yield Effects from Spider Mite Infestation



Summary

- **Winter Weed Management**
- **Seed Treatments**
- **Yield Loss**



Questions?

Special Thanks

