

A close-up photograph of a cotton plant. The image shows several white cotton bolls (seed pods) attached to dark brown stems. Some bolls are fully open, showing the white cotton fibers, while others are still partially closed. The background is slightly blurred, showing more of the plant and some green leaves.

# Thrips Management in Cotton: The Game has Changed

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Mississippi State University

# Thrips Damage in Cotton

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- Consistent and Predictable
- Damage variable



# Thrips Species Infesting Cotton Seedling in US

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*Frankliniella fusca* - tobacco thrips

*Frankliniella tritici* - flower thrips

*Frankliniella occidentalis* - western flower thrips

*Neohydatothrips variabilis* - soybean thrips

*Thrips tabaci* - onion thrips

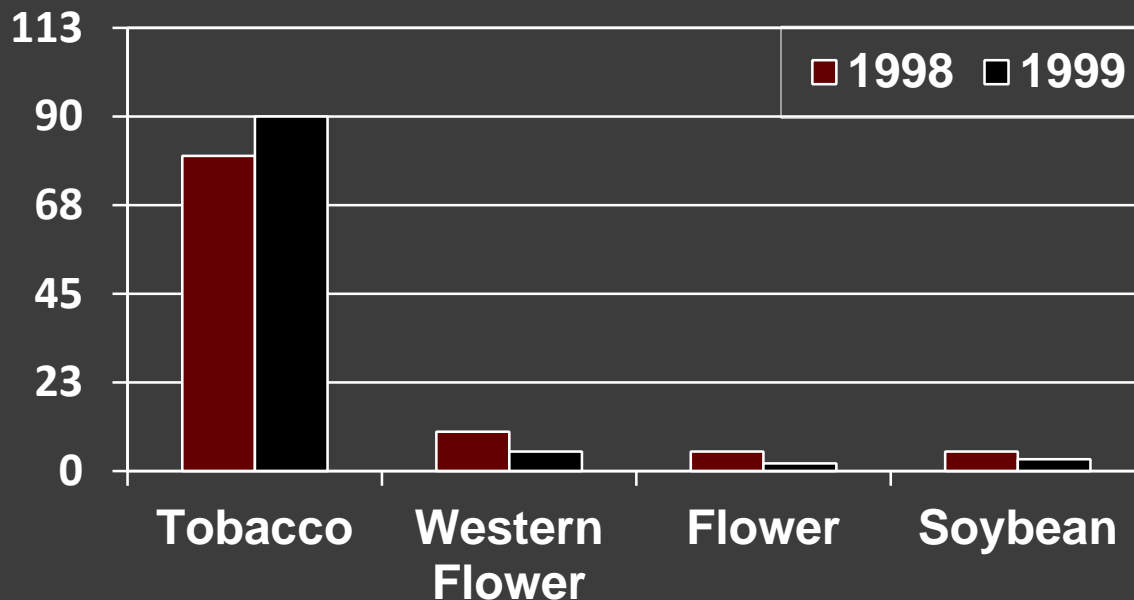
# Thrips Species in MS Seedling Cotton

Tobacco thrips (*Frankliniella fusca*)

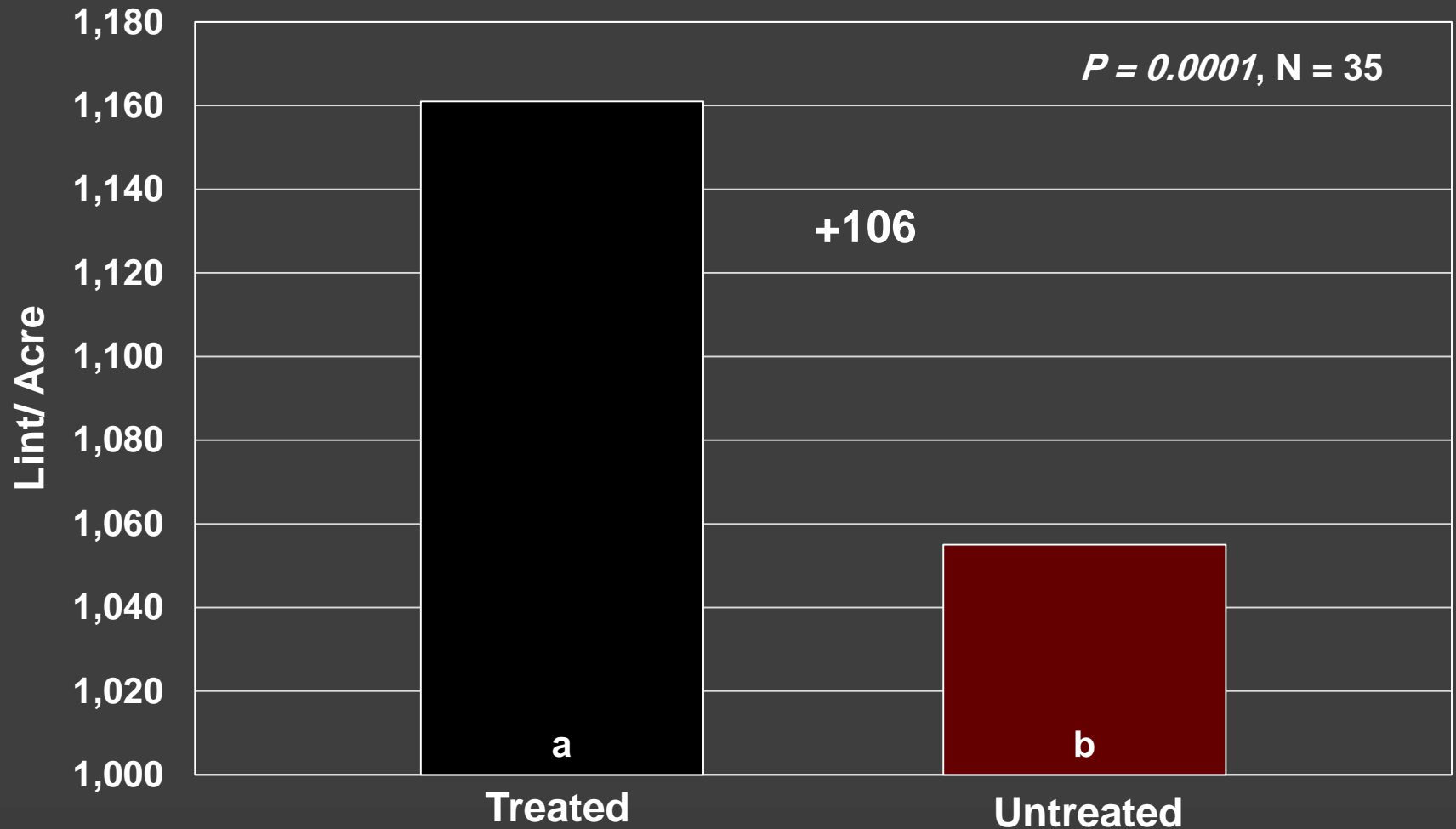
Western Flower thrips (*Frankliniella occidentalis*)

Flower thrips (*Frankliniella tritici*)

Soybean thrips (*Neohydatothrips variabilis*)



# Cotton Neonicotinoid/Untreated Overall Yield Across the Mississippi 1996-2014



# At-Planting Treatments

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- **Acephate 6.4 oz / cwt**
- **Cruiser 0.375 mg AI / seed**
- **Avicta Duo 0.525 mg AI / seed**
- **Gaucha 0.375 mg AI / seed**
- **Aeris 0.75 mg AI / seed**
- **AgLogic 5 lb / acre**

# Neonicotinoid IST Crops in Mid-South

- Corn
- Cotton
- Rice
- Soybean
- Grain Sorghum
- Wheat
- Peanuts



# Thrips in Cotton



**In recent years (2011) producers have seen a decline in efficacy with Cruiser against tobacco thrips in cotton**



# Resistance

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- **2011**
  - Multiple control failures
  - Documented resistance to thiamethoxam
- **2015**
  - Sporadic issues with imidacloprid

# 2014-2015 Field vs Lab Colony: Cruiser

Colony	Cruiser 2014		Cruiser 2015	
	LC <sub>50</sub>	RR	LC <sub>50</sub>	RR
MS Delta	35.10	21.4	149.2	355.2
MS Hills	9.50	5.8	53.7	127.9
Lab	1.64	1	0.42*	1

\* 2 assays and concentration not significant but both had similar LC<sub>50</sub> values

\*\* 1 assay and concentrations where not significant

# 2014 - 2015 Field vs Lab Colony: Gaucho

Colony	Gaucho 2014		Gaucho 2015	
	LC <sub>50</sub>	RR	LC <sub>50</sub>	RR
MS Delta	2.52	1.53	28.6	11.44
MS Hills	1.14	0.69	44.5	17.8
Lab	1.64	1	2.50	1

\* 1 assay and concentrations where not significant

# Factors that May Influence Thrips Damage

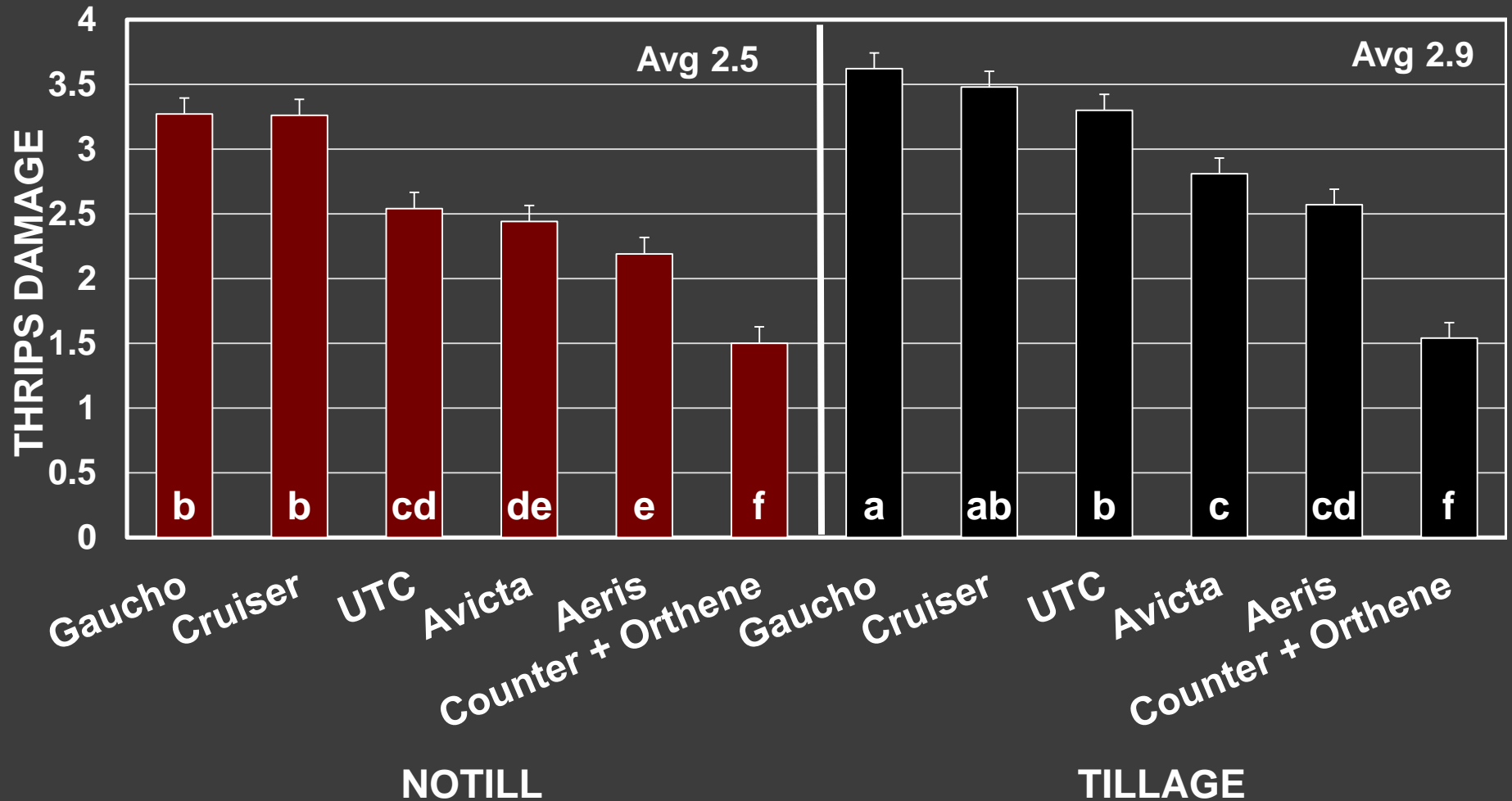
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- Weather
- Herbicide Injury
- Tillage
- Other Stressors
- Nematodes?
- Soil Type?
- Rainfall?
- Variety

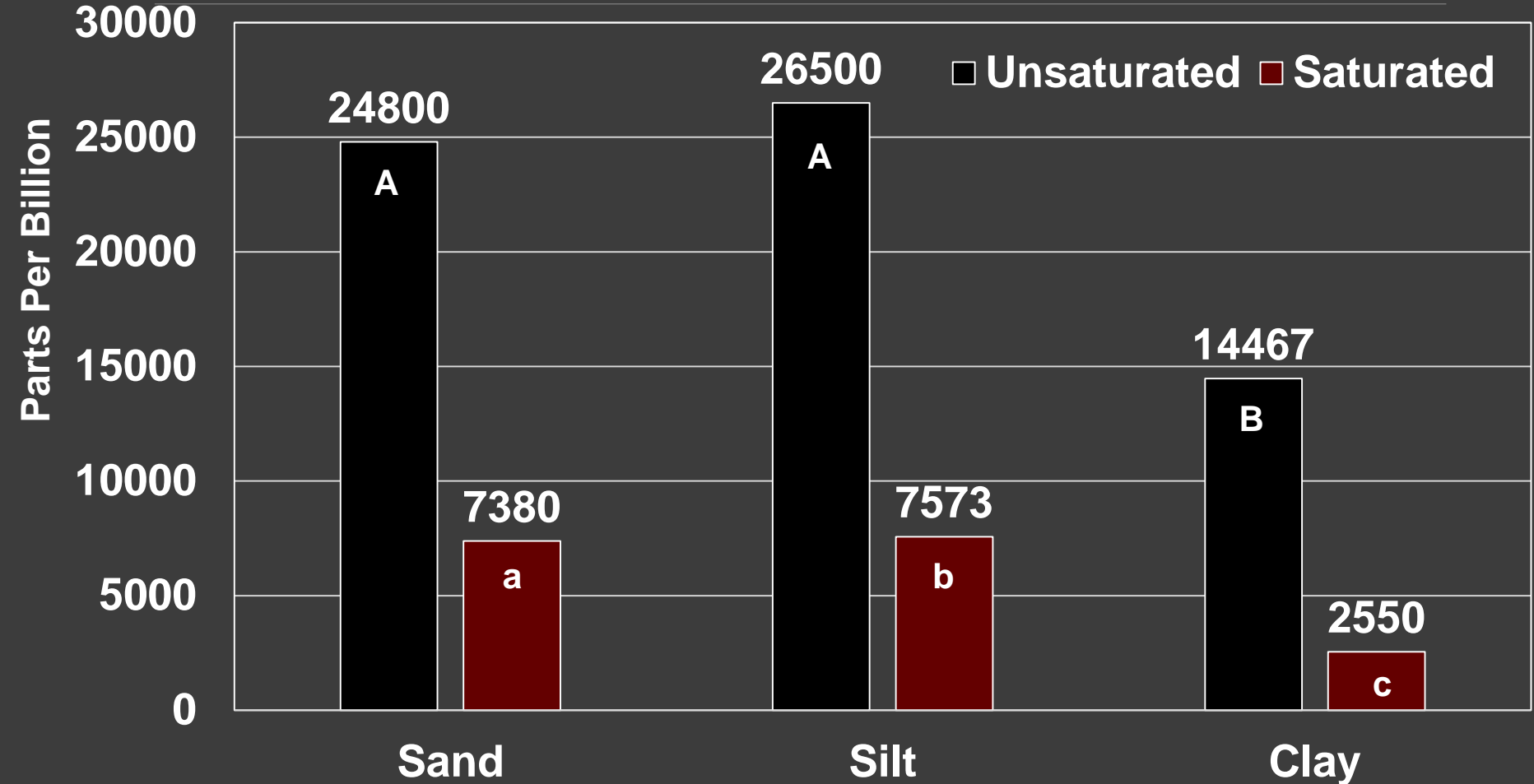


# Tillage: Thrips Damage (24 DAP)

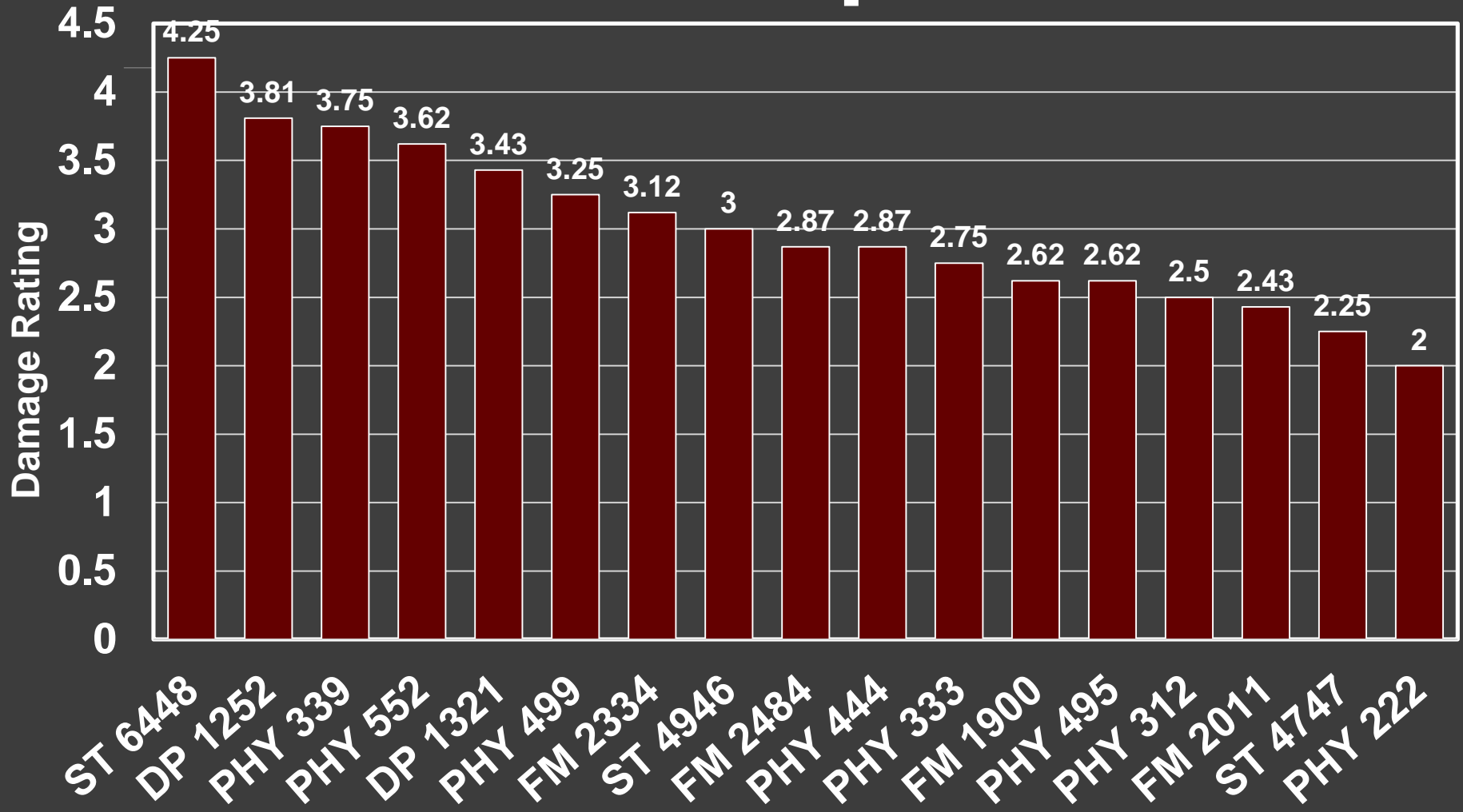
p=0.0242



# Clothianidin PPB in V3 Corn (21 DAP)



# Cotton Varietal Tolerance to Thrips



# Thrips Injury Near Zero





# Thrips Injury

## Approximately Three



- Above a three considered unacceptable control
- Doesn't always result in yield loss

# Thrips Injury Approaching Five



# View From Further Back

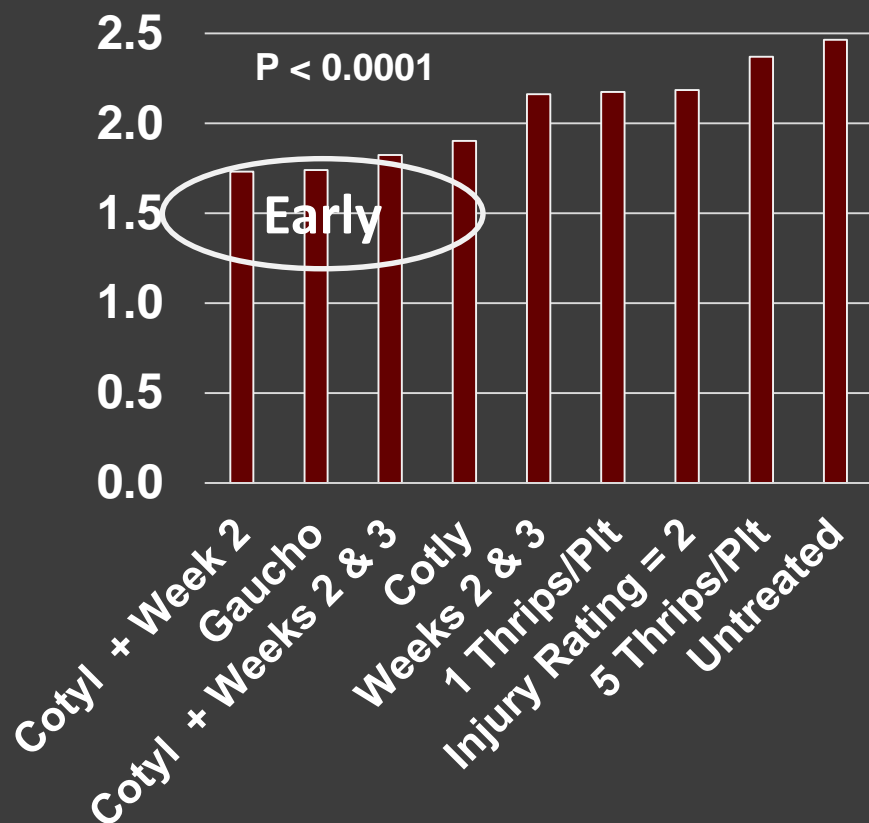
Injury  $\approx 4.5$

Injury  $\approx 1.25$

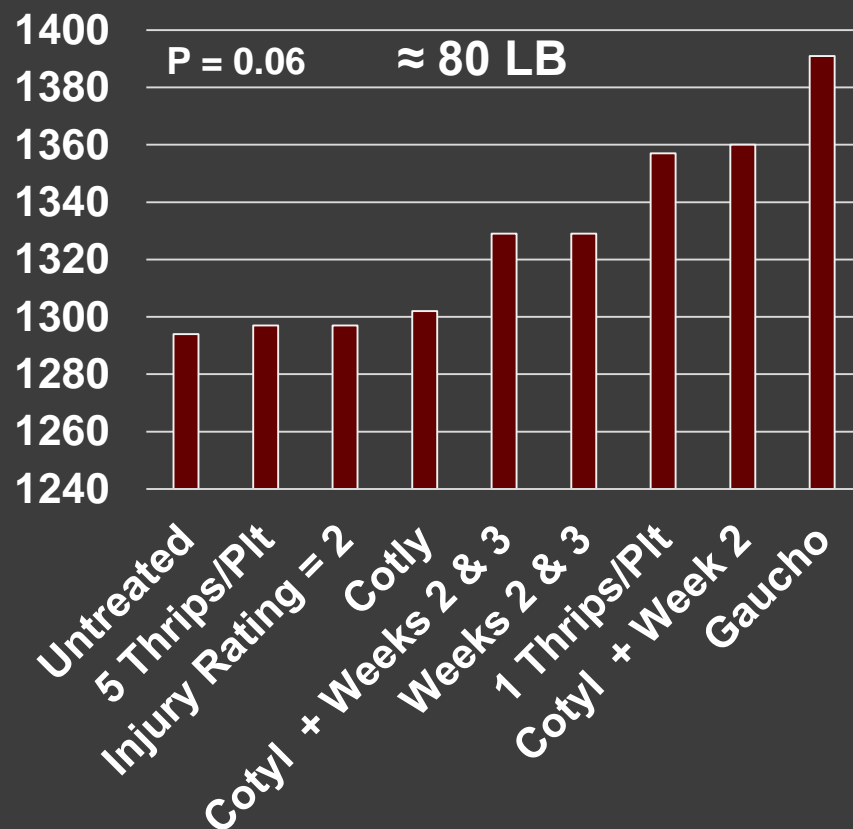


# Regional Foliar Insecticide Trial 2015-2016 (N = 11 tests) Orthene 97 @ 0.25 Lb/Acre

## THRIPS INJURY (0 – 5)



## LINT YIELD (LB/ACRE)



# Doing nothing is not an option

## Yield Increase from an Neonicotinoid IST

Crop	Average Increase	Number of Trials	Gross Value
Cotton	101 Lbs. Lint/Acre	67	\$70
Corn	11.8 Bushels/Acre	91	\$47
Soybean	2.0 Bushels/Acre	170	\$20

- Meta-analysis of results from replicated insecticide trials done in from 2007-2014 (AR, LA, MS, TN)
- John North et al., Mississippi State University

# 2018 Recommendations

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- **Start with imidacloprid based seed treatment**
- **Or an in-furrow spray of imidacloprid**
- **Or AgLogic at 3.5 lbs/acre or higher if available**

# 2018 Recommendations

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- **Add supplemental seed treatment components if using imidacloprid seed treatment**
  - **Acephate at 6.4 oz/cwt**
    - **(higher rates are not labeled)**
  - **Acephate 1lb. In-furrow in addition**
  - **Thiodicarb component (= Aeris)**
  - **Avermectin**
    - **(as in Avicta Duo but not with thiamethoxam)**

# 2018 Recommendations

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- **Supplemental foliar applications**
  - **Acephate, Bidrin, Dimethoate, or Radiant if needed**
    - **Especially if only imidacloprid is used on seed**
    - **Make this application before the 2<sup>nd</sup> leaf stage**



# Acknowledgements

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- Cotton Incorporated
- Our industry partners for providing chemicals used in these experiments

