



# Managing Insecticide Resistant Tarnished Plant Bugs

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# Effective *Lygus* Management Requires an Integrated Approach

- Planting date and maturity selection is key – manage for earliness
- Reducing alternate hosts near cotton field edges
  - Corn, Pigweed, Maretail, etc.
- Utilizing Diamond early
- Insecticide mixtures and rotating chemistries

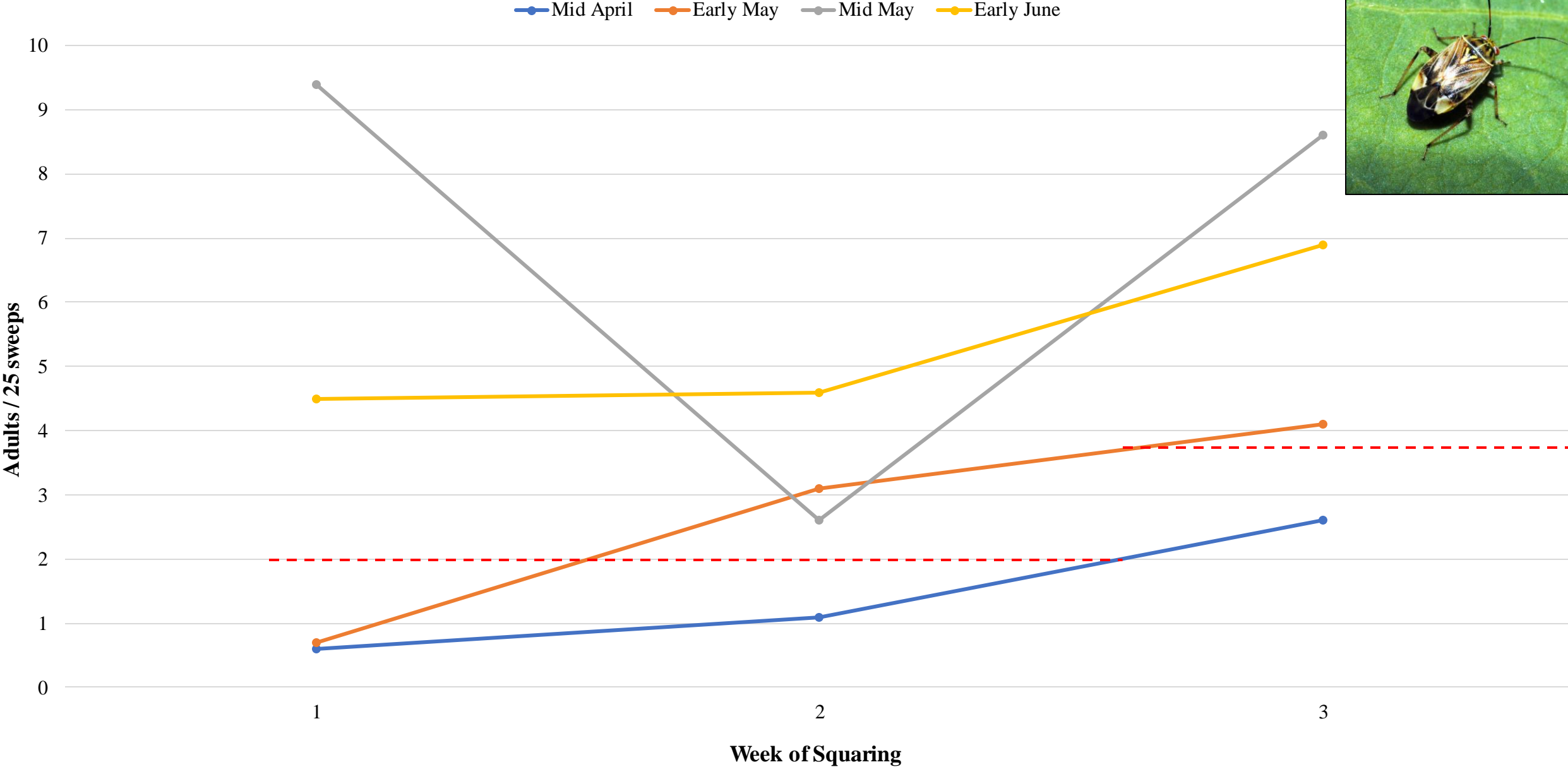


# Effective *Lygus* Management Requires an Integrated Approach

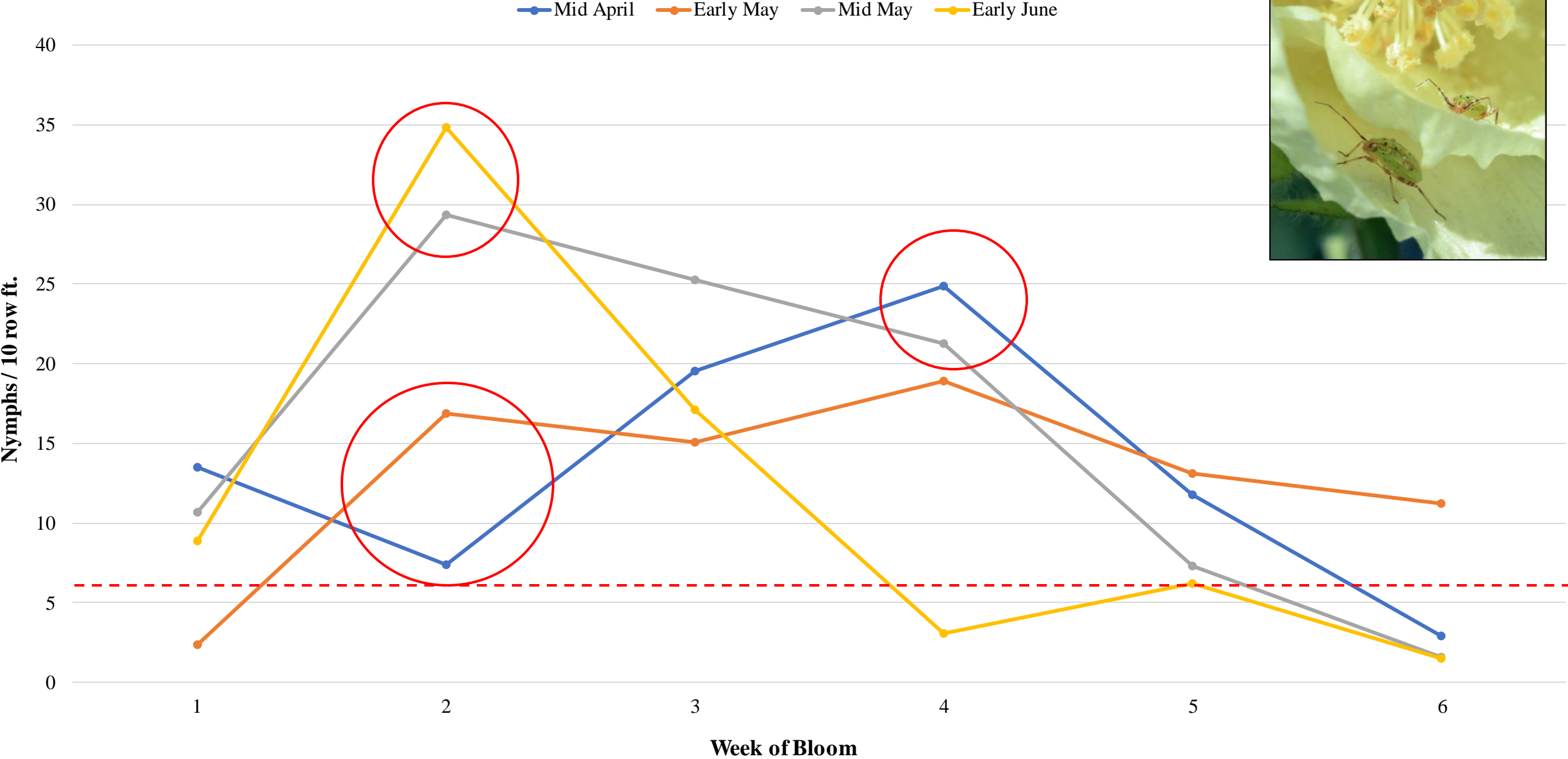
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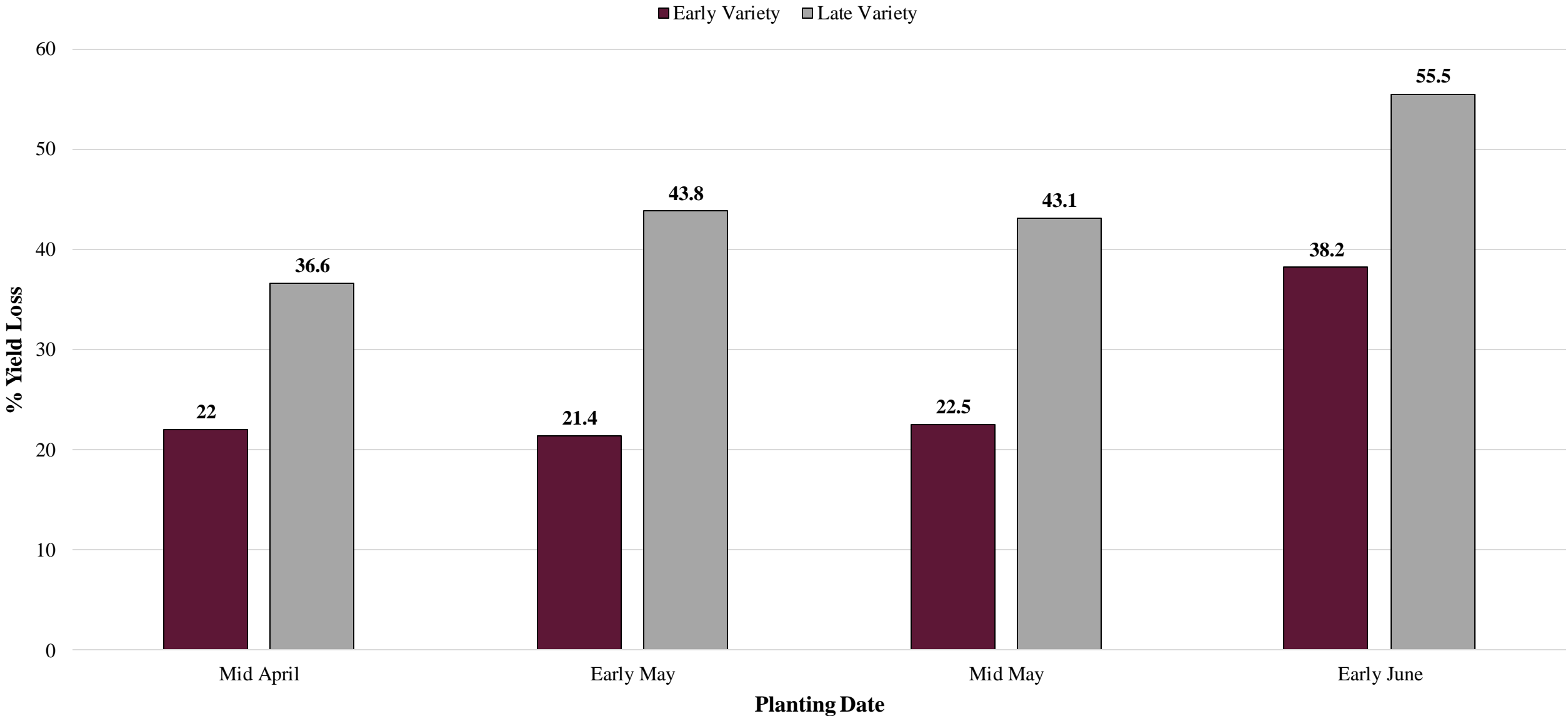
# Impact of Planting Date on *Lygus* (Adults) During Squaring



# Impact of Planting Date on *Lygus* (Nymphs) During Bloom



# Yield Impacts of Planting Date and Varietal Maturity Compared to Season-Long Controlled Plots

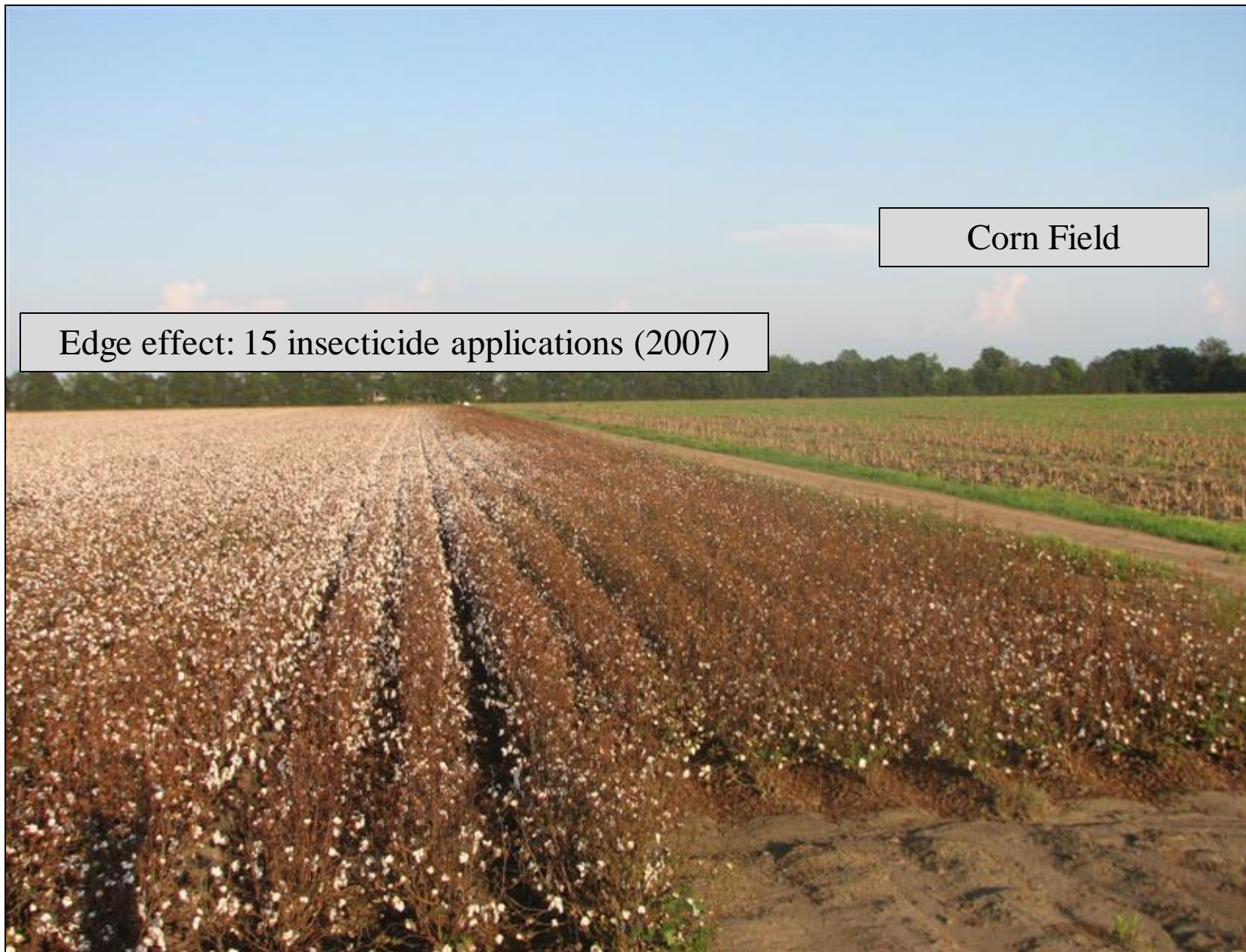


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Corn Field

Edge effect: 15 insecticide applications (2007)



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Edge effect: 11 insecticide applications (2021)

Corn Field





- Ditch banks can harbor *Lygus*
- Mowing/spraying ditch banks
- Untimely mowing ditch banks can cause *Lygus* movement
- Power lines prevent aerial applications

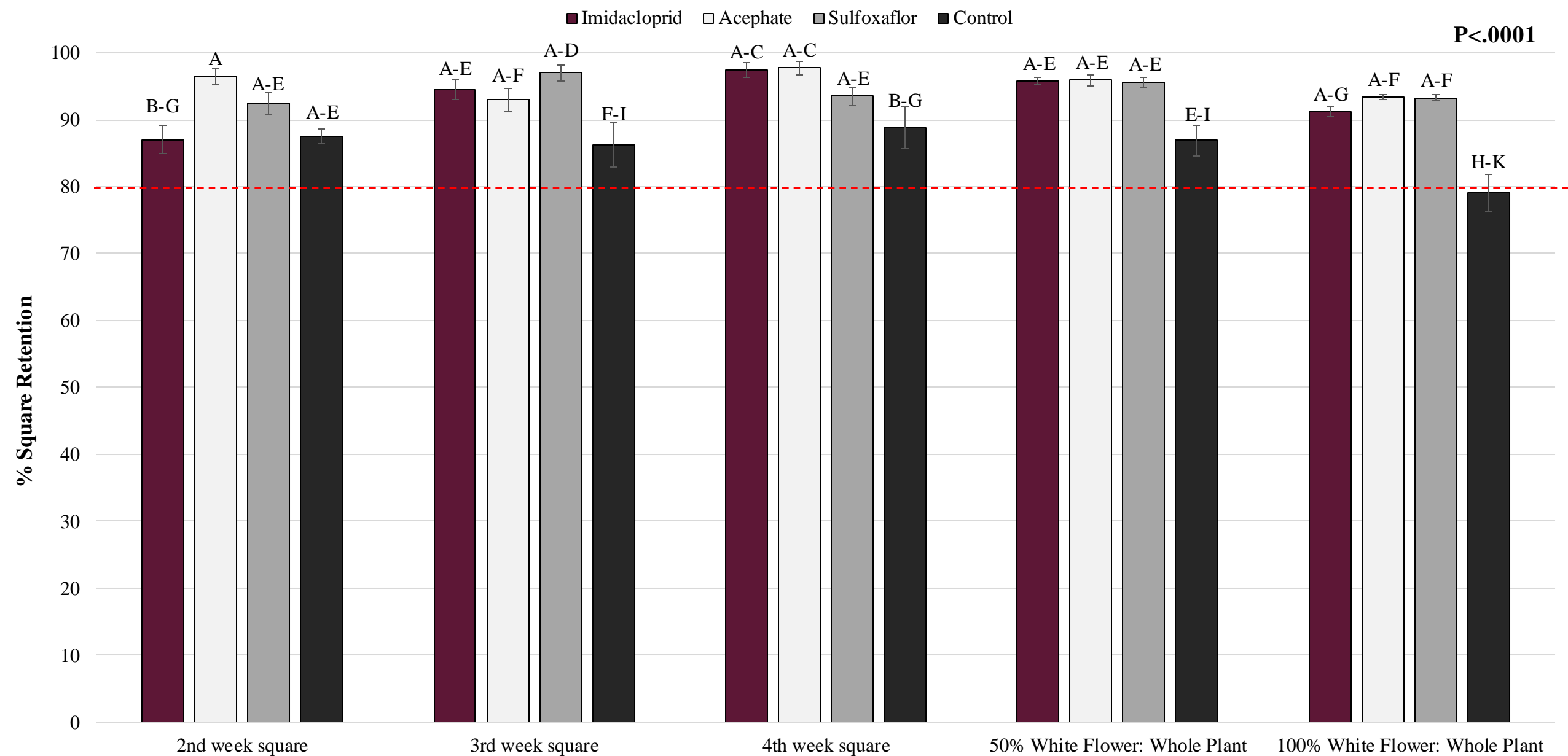


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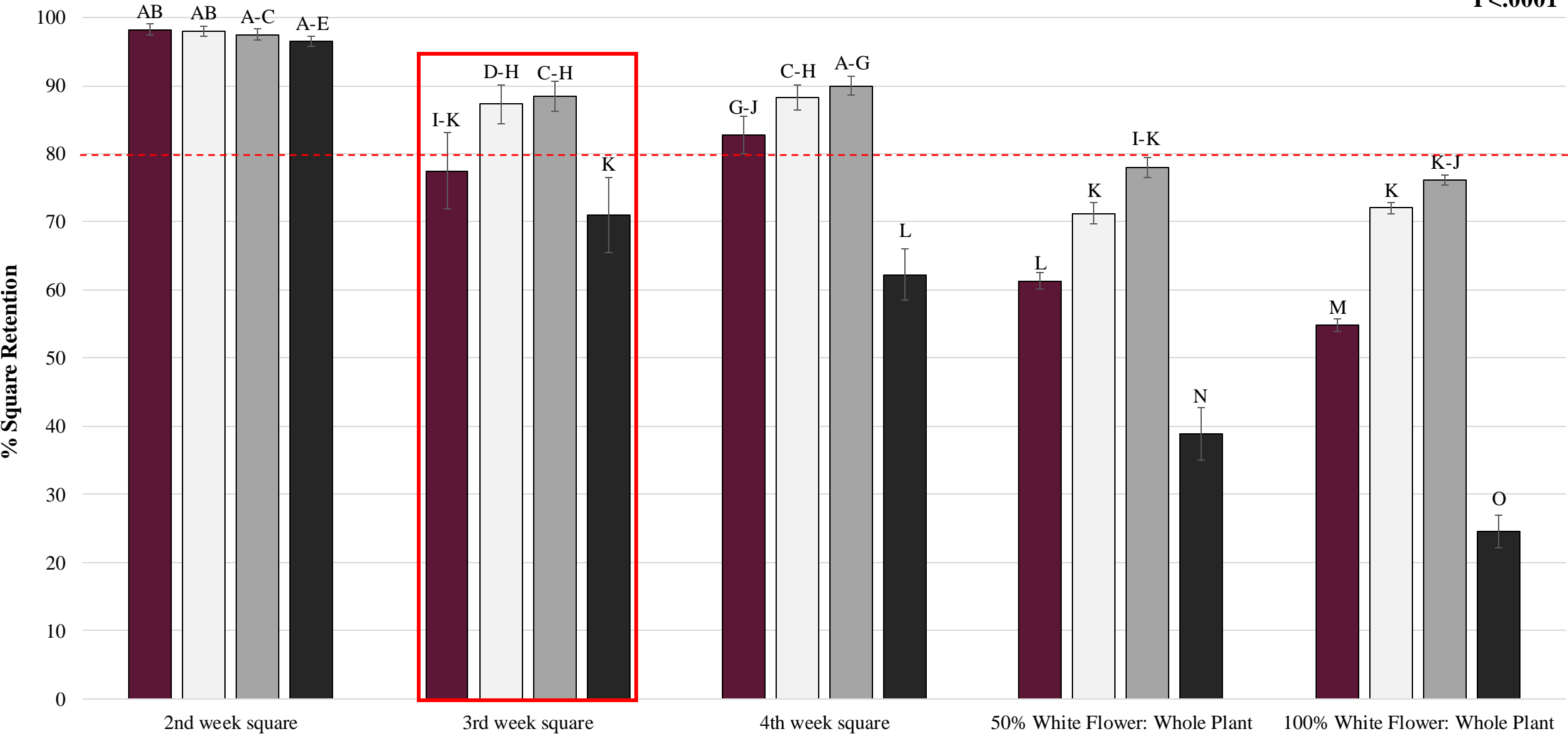
## Insecticide Efficacy Strip Plots (2022)



Insecticide Efficacy Strip Plots (2023)

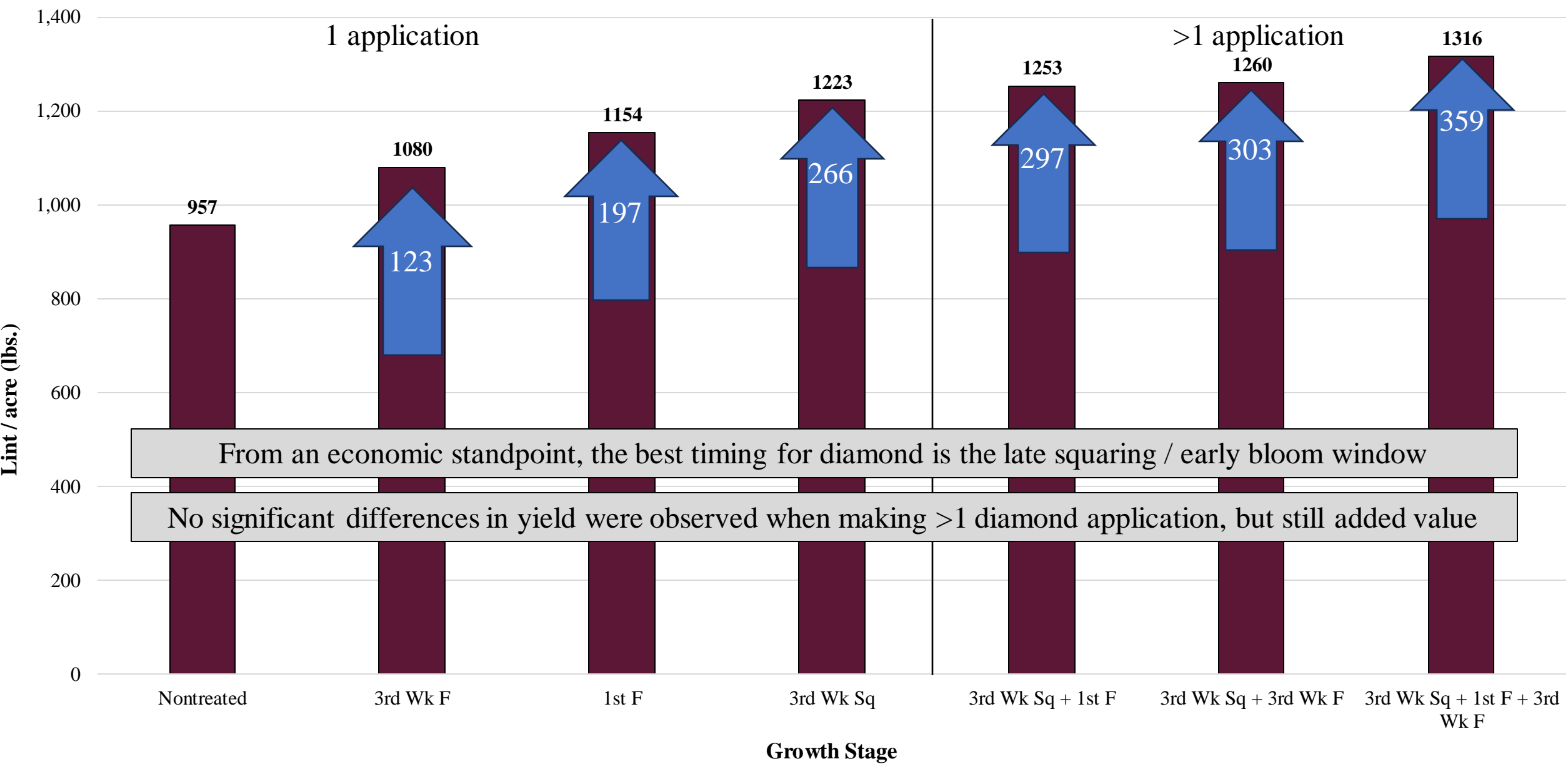
Imidacloprid   Acephate   Sulfoxaflor   Control

P<.0001





# Benefit of Diamond Applications by Growth Stage



# Effective *Lygus* Management Requires an Integrated Approach

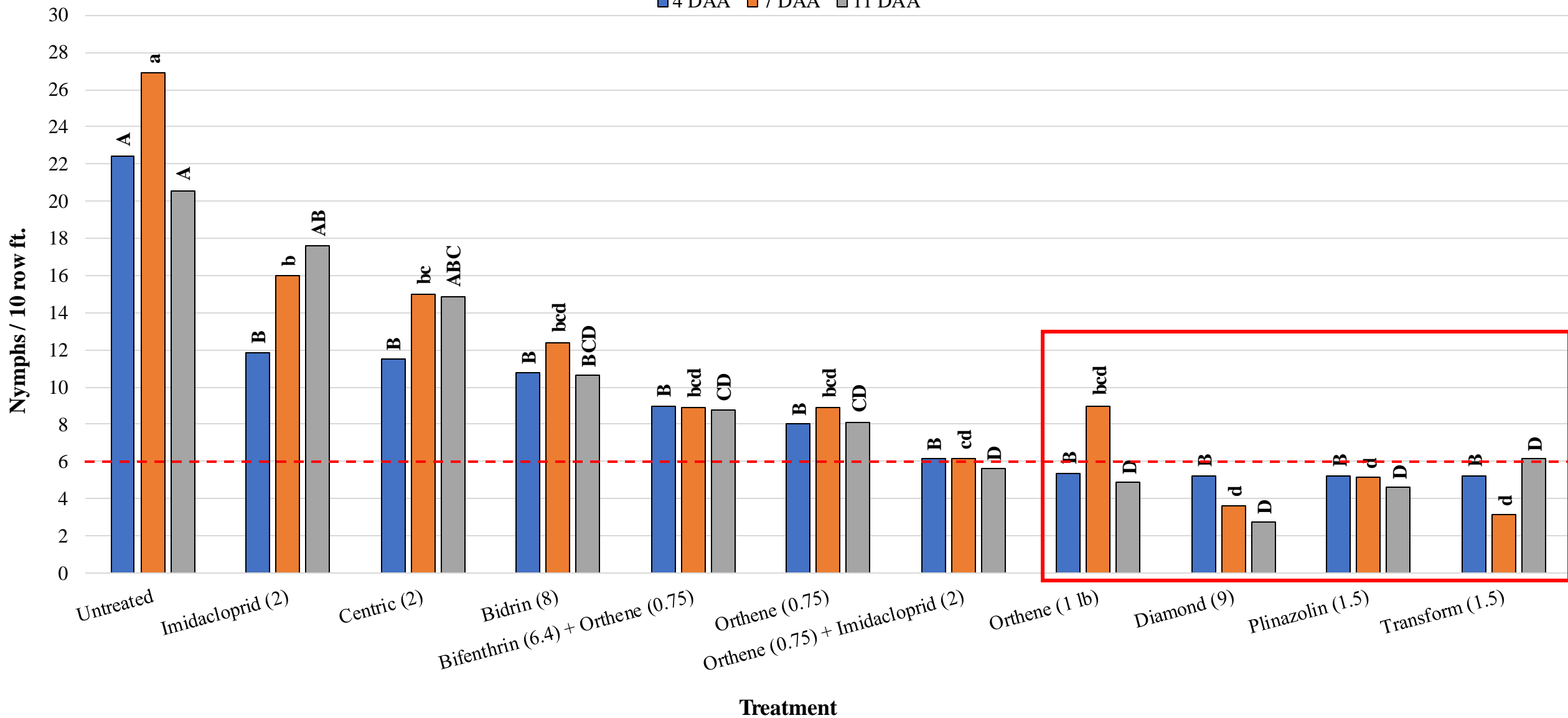
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# Foliar Insecticide Efficacy – Tarnished Plant Bug Control

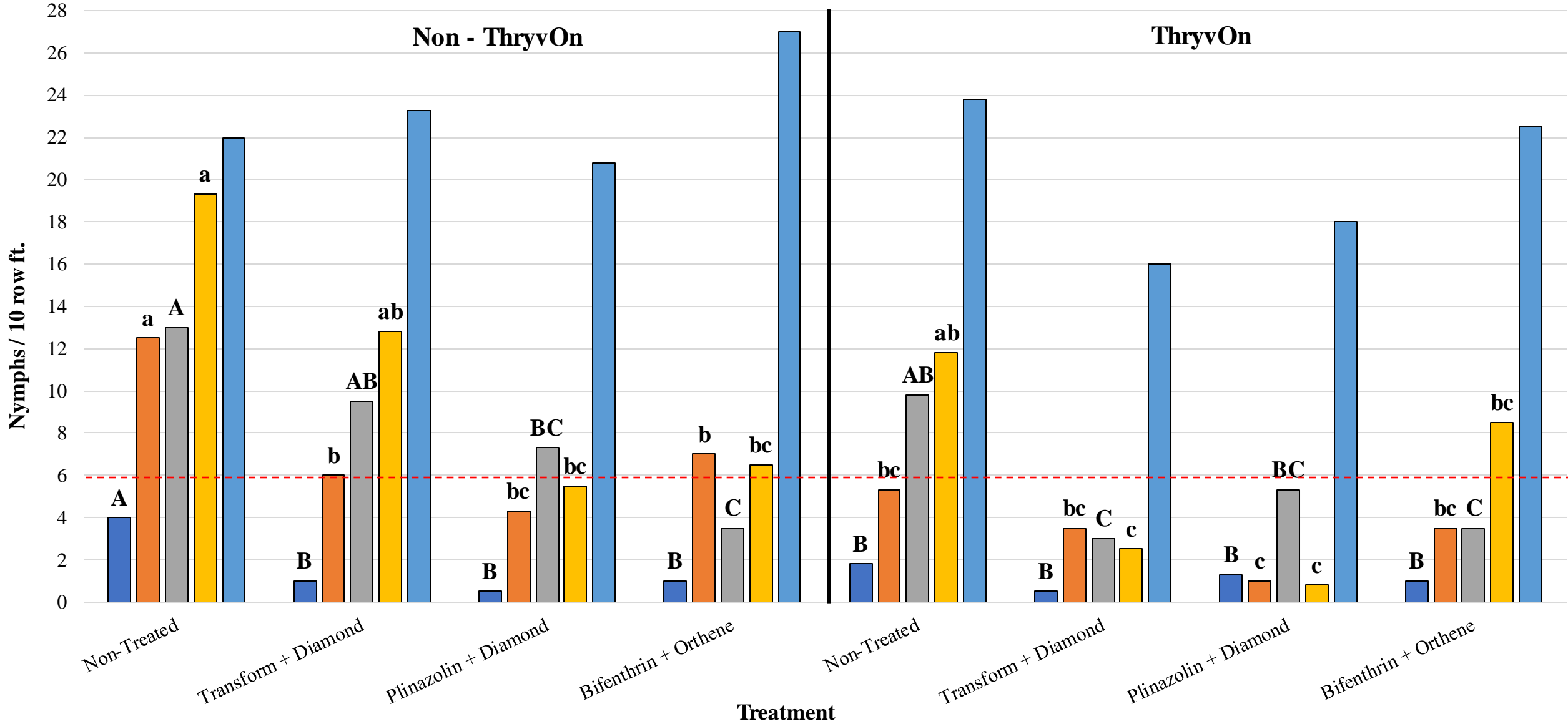
## Stoneville, MS (2023)

■ 4 DAA ■ 7 DAA ■ 11 DAA



# Tank Mix Performance – ThryvOn vs Non Stoneville, MS 2023

3DAA 7DAA 10DAA 13DAA 21DAA

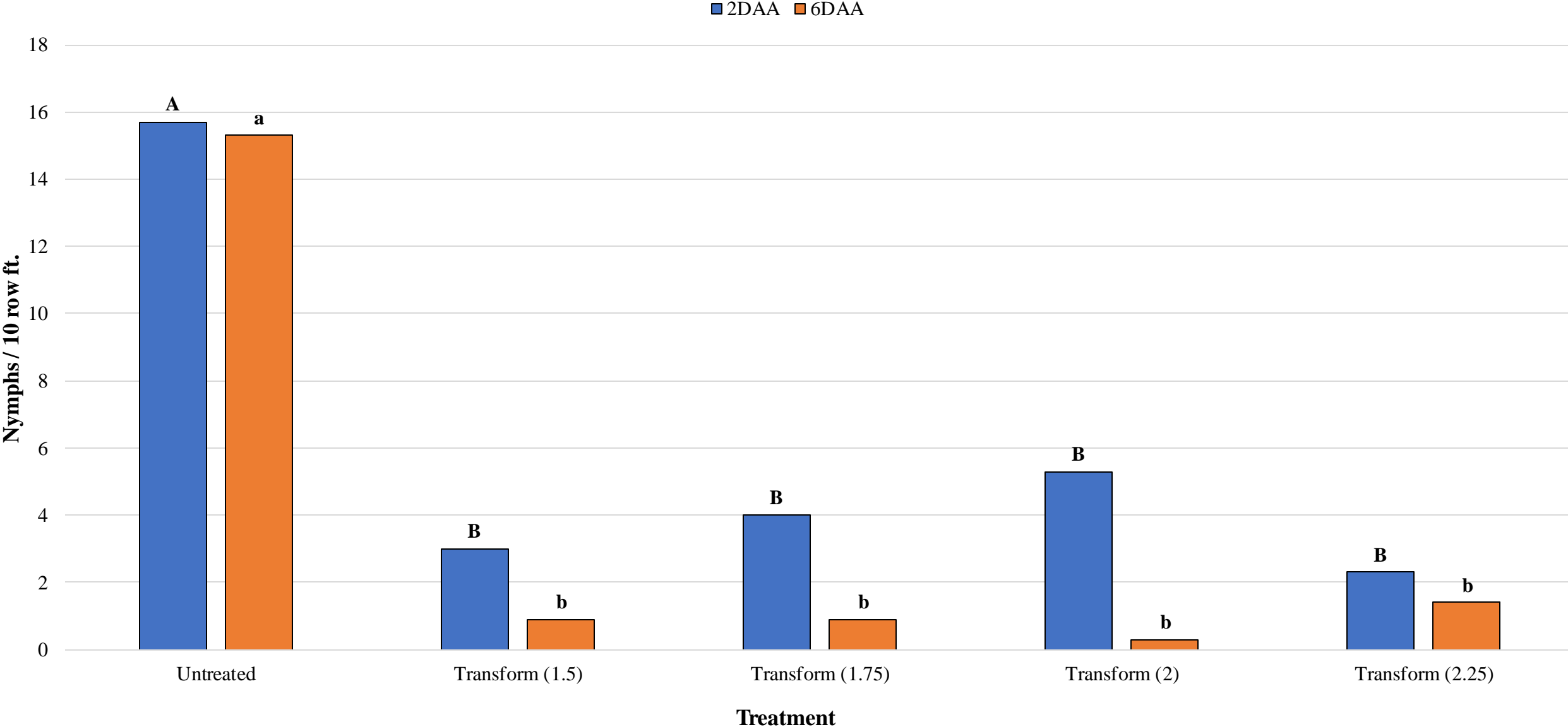


Applied 1<sup>st</sup> week of bloom



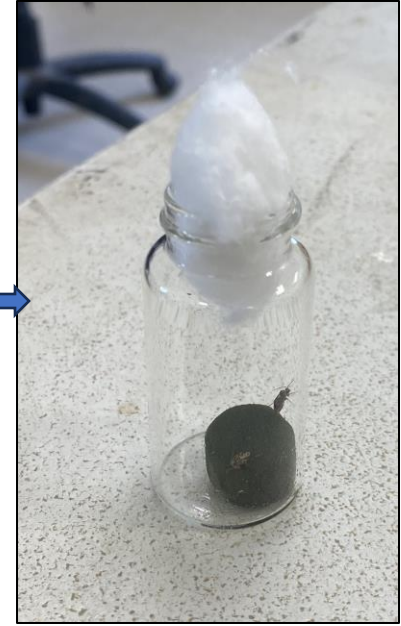
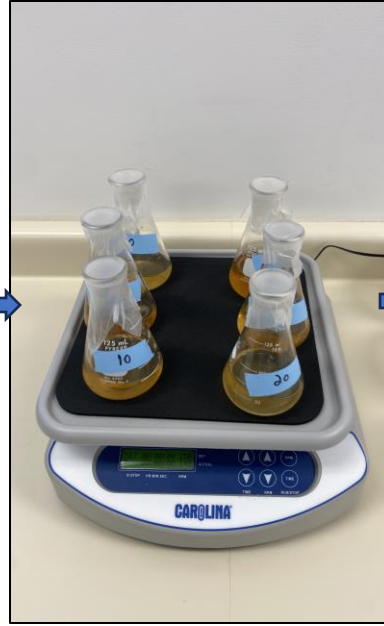
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# Transform Rate Response Study Glendora, MS (2023)





# Tarnished Plant Bug Resistance Monitoring



# Floral Foam Assays – Transform WG (Sulfoxaflor)

Collection Location	LC <sub>50</sub> (PPM)		Resistance Ratio
	2010	2023	
Mississippi (4)	0.73	1.69	2.31
Arkansas (1)	0.31	0.90	2.9
Louisiana (1)	0.61	1.96	3.2
Tennessee (2)	0.32	0.56	1.75
Missouri (1)	-	0.64	-



# ThryvOn Cotton Research



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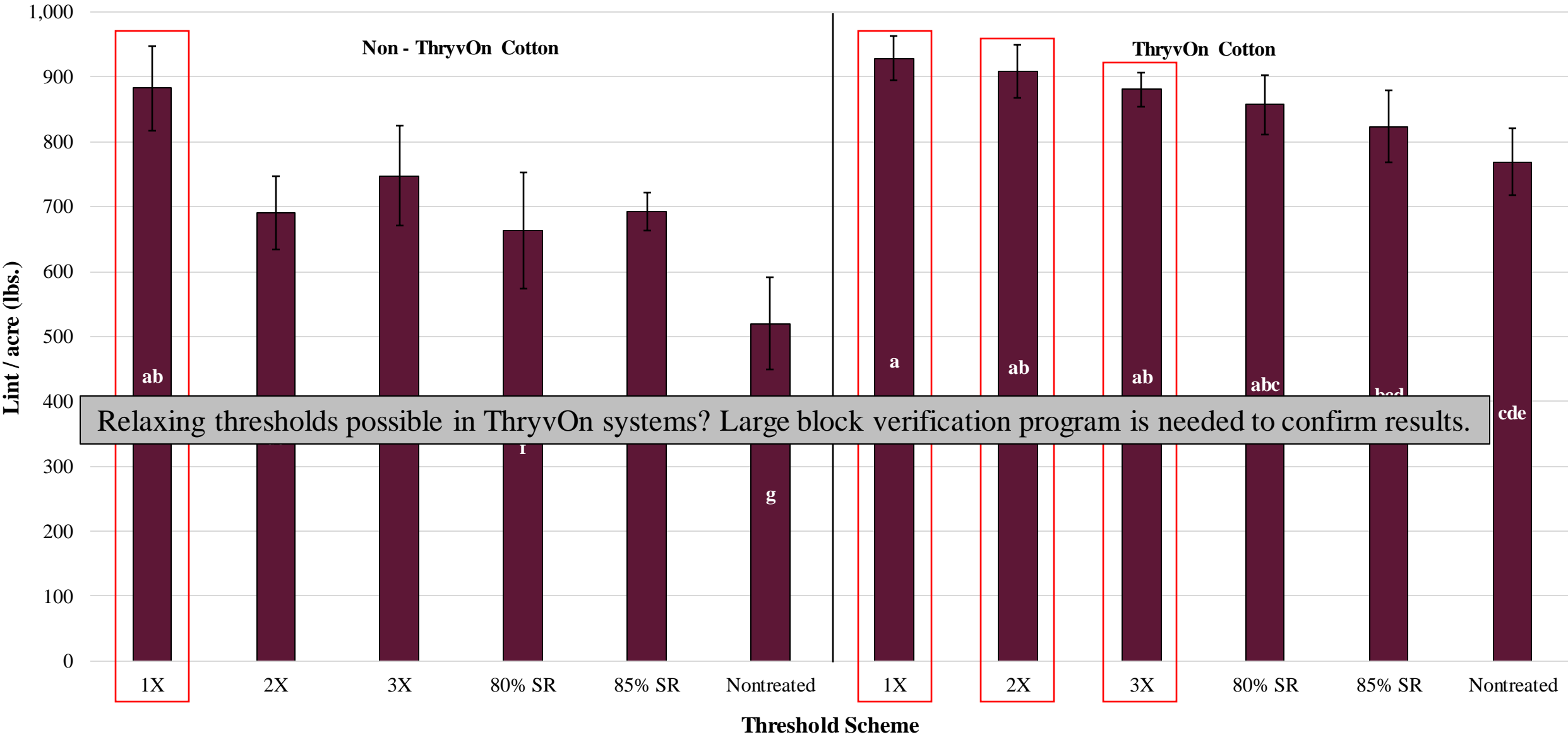
## ThryvOn Threshold Study

- Can we relax the action threshold for TPB in ThryvOn cropping systems?
- Stoneville, MS & Marianna, AR
- Treatments:
  1. 1X threshold
  2. 2X
  3. 3X
  4. 85% SR
  5. 80% SR
  6. Nontreated
- Deltapine 2038 (NTO) & 2131 (TO)



Cotton Yield by Threshold Scheme - ThryvOn vs Non-ThryvOn  
2 Locations (MS, AR)

P < 0.01



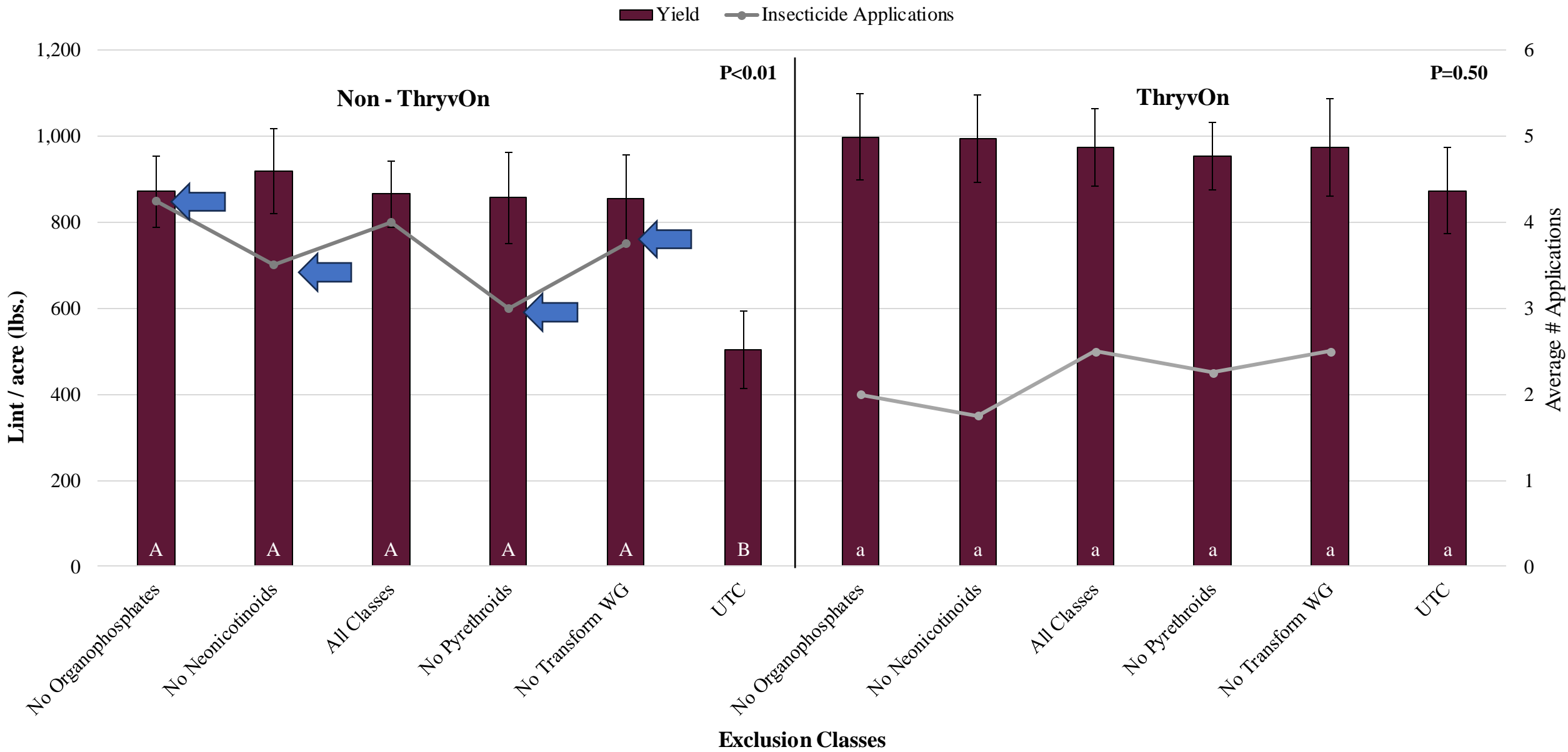


# Insecticide Exclusion Study

- How would the potential loss of insecticide chemistries affect cotton yields?
- Stoneville, MS & Marianna, AR
- Treatments:
  1. Season-long nontreated
  2. No classes excluded
  3. Excluding pyrethroids
  4. Organophosphates
  5. Neonicotinoids
  6. Transform WG
- Deltapine 1646 (NTO) & 2131 (TO)

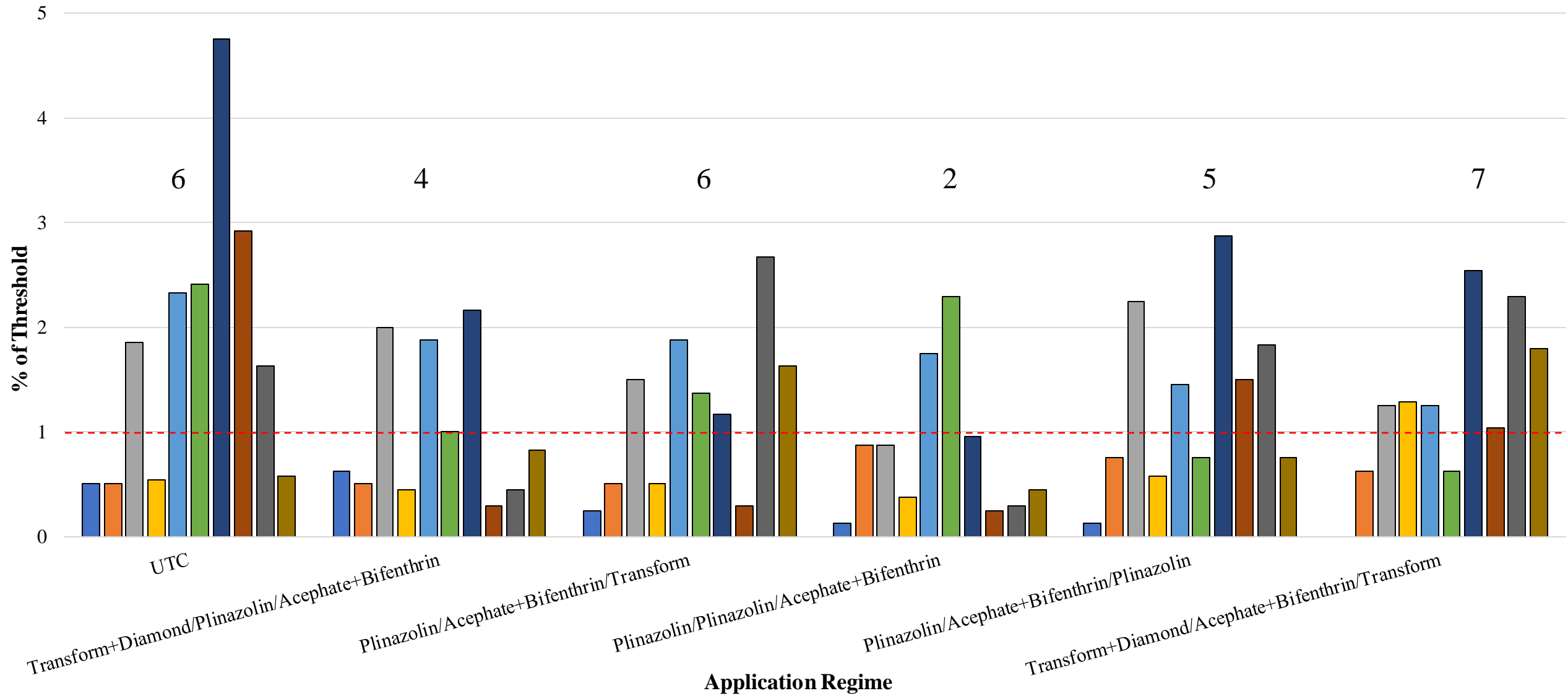


# Effects of Excluding Insecticide Classes for TPB Control



# Plinazolin Fit – Non ThryvOn Cotton

- 1st Wk Square
- 2nd Wk Square
- 3rd Wk Square
- 4th Wk Square
- 1st Wk Bloom
- 2nd Wk Bloom
- 3rd Wk Bloom
- 4th Wk Bloom
- 5th Wk Bloom
- 6th Wk Bloom




# Take home messages...

- Manage cotton to be as early as possible
  - Fewer insecticide applications required
- Attempt to limit cotton acreage near suitable TPB hosts
  - Reduce edge effects
- Utilize Diamond early in the reproductive window
  - One application pays, 2<sup>nd</sup> application should not be discounted!
- Transform continues to be a top performer in plant bug control
  - Lab and field data both support this statement







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