

New Plant Bug Management Technologies



Cotton
Incorporated

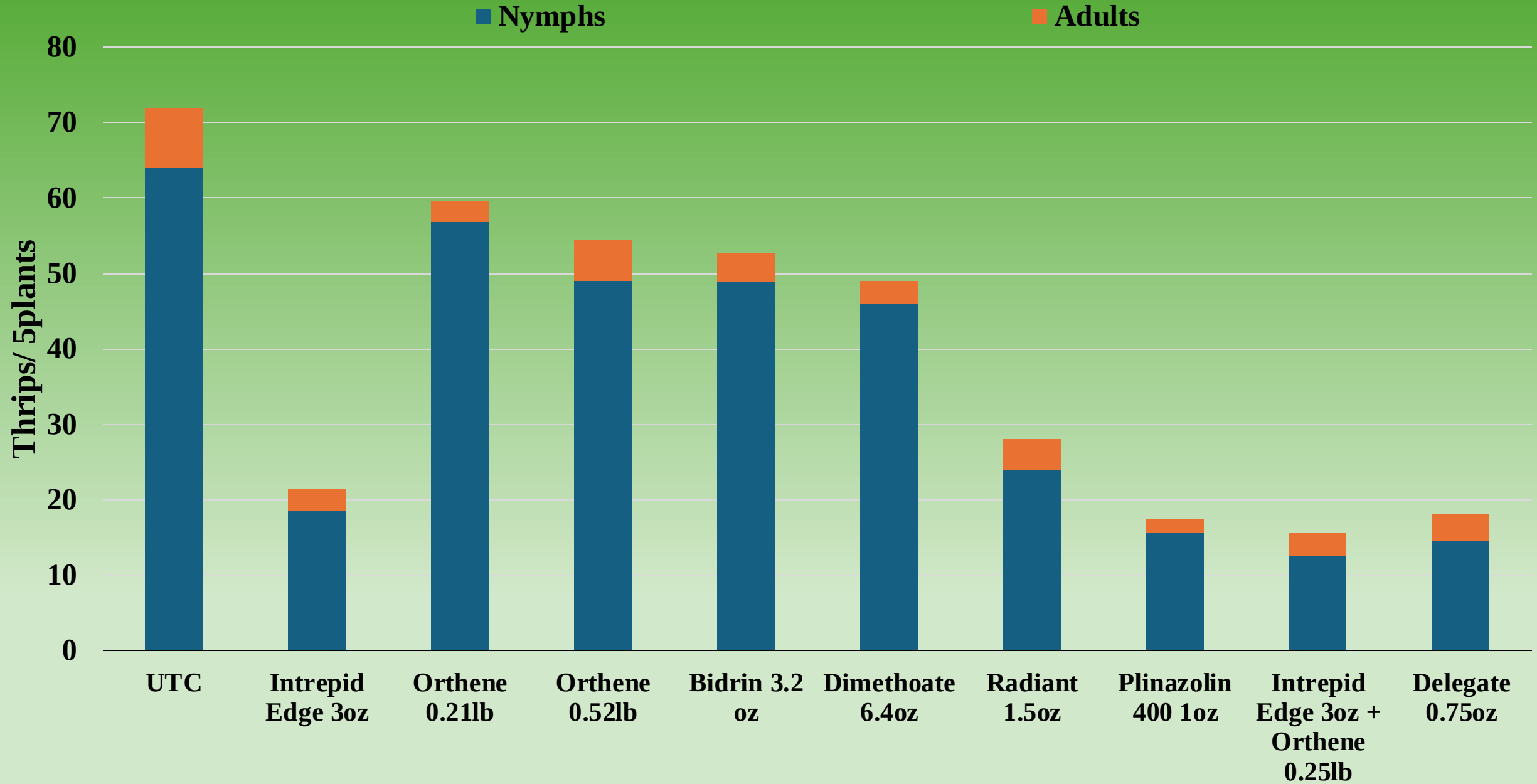
UofA **DIVISION OF AGRICULTURE**
RESEARCH & EXTENSION
University of Arkansas System

What is Isocycloseram?

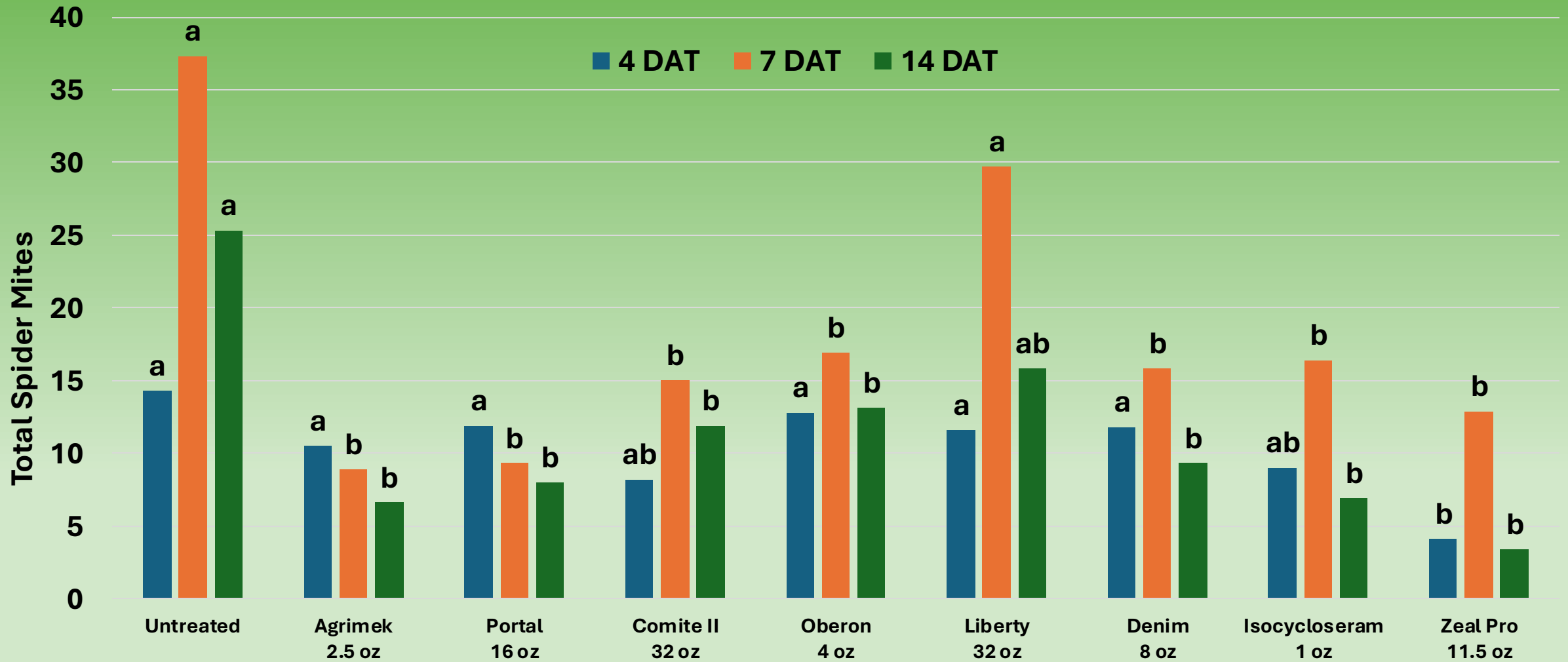
- New mode of action from Syngenta
 - GABA-gated chloride channel allosteric modulator
 - Group 30 Isoxazoline class
- Looks great on multiple insect pests of cotton as well as other crops
- Provides long residual
- Does not translocate



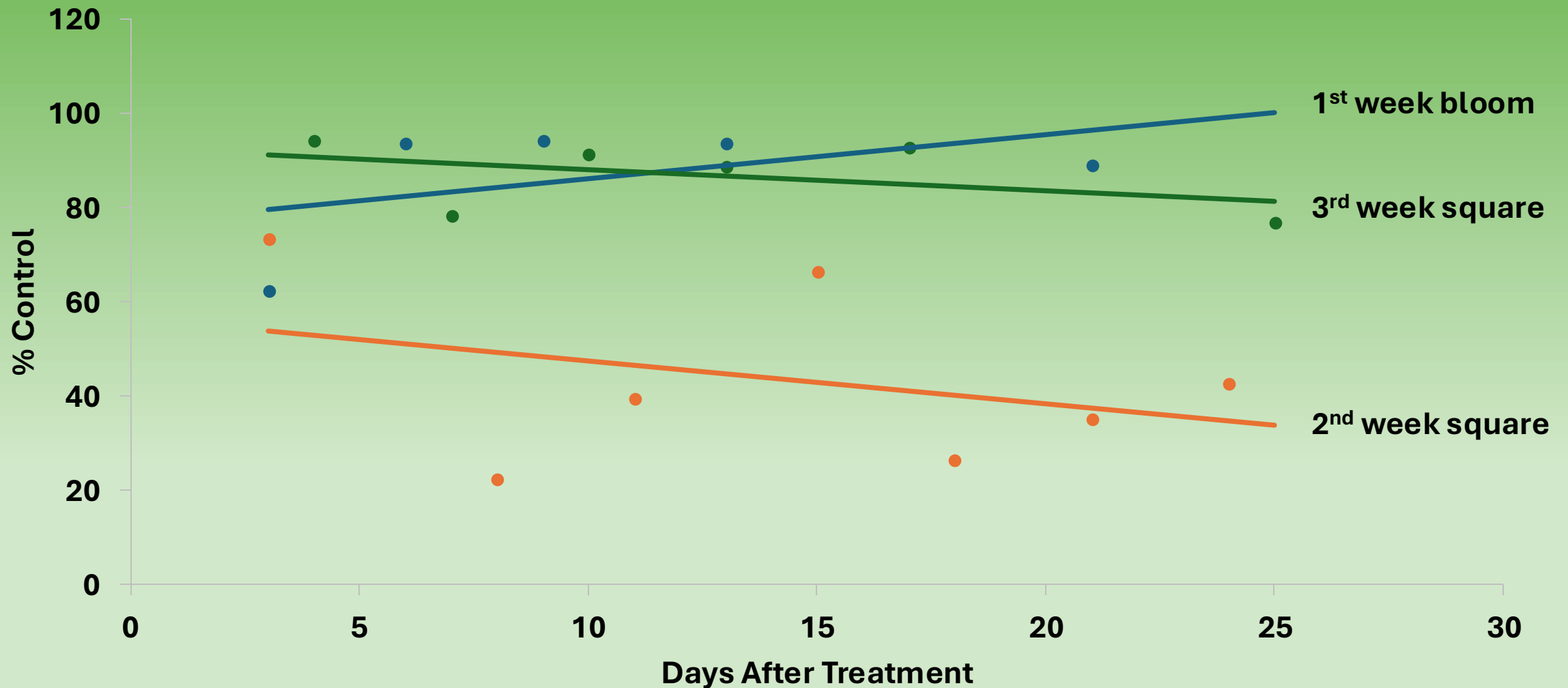
Foliar Thrips Marianna 3 DAT



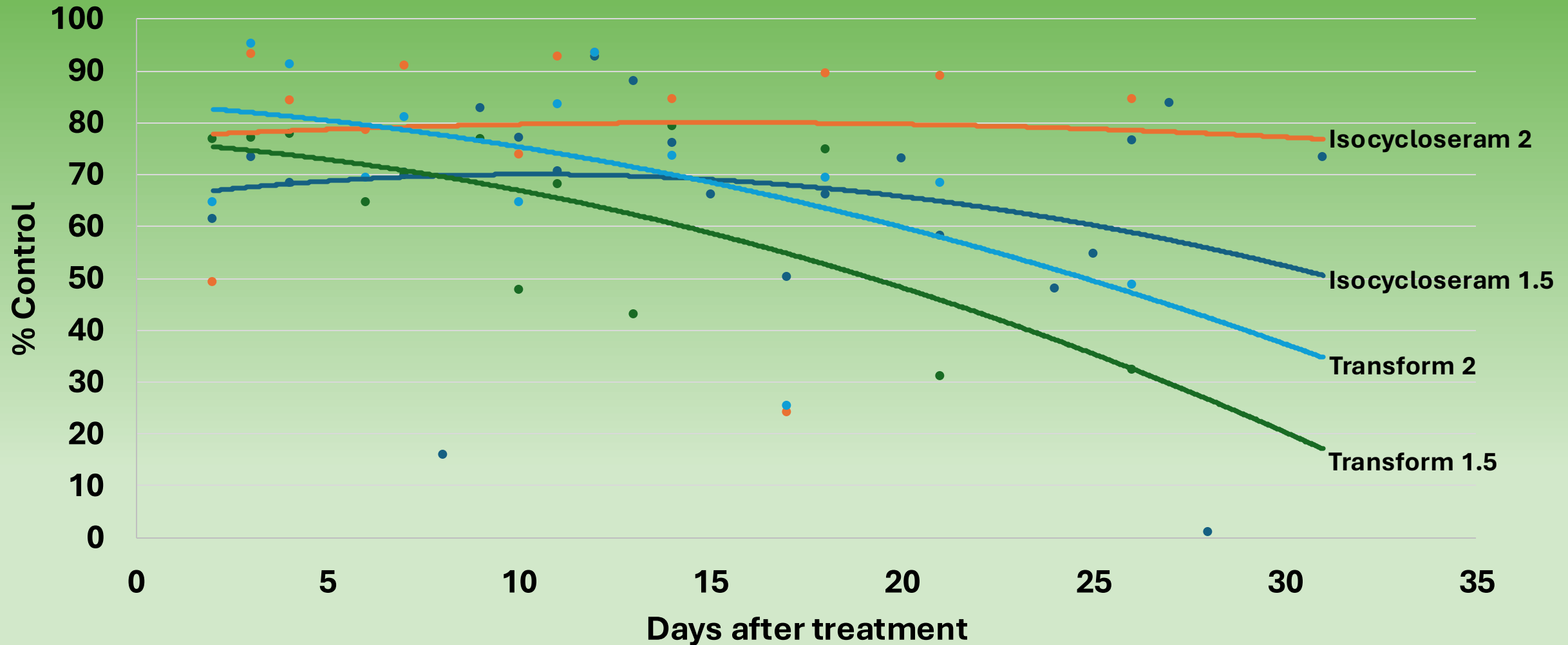
Regional Spider Mite 2023



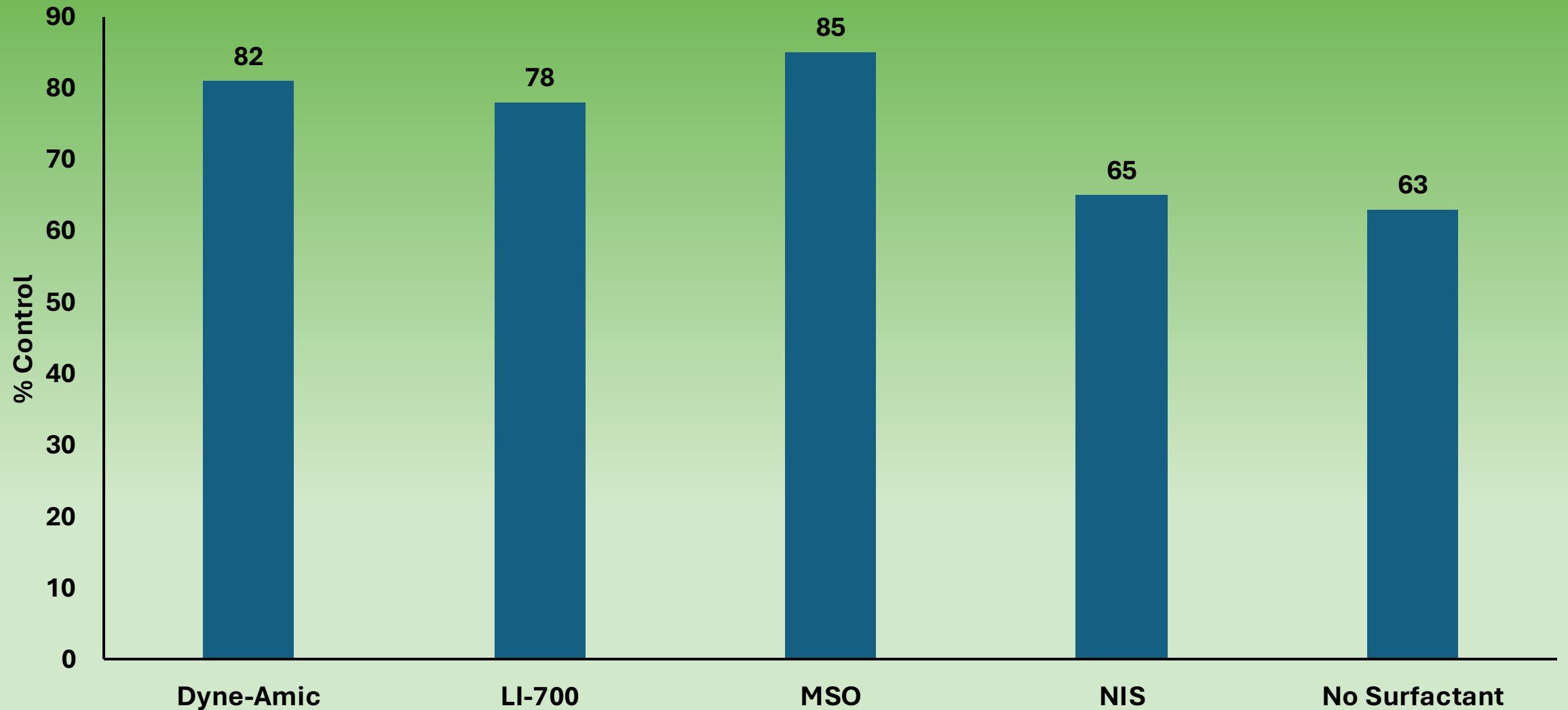
Isocycloseram Application Timing



Isocycloseram vs Transform Plant Bug Residual

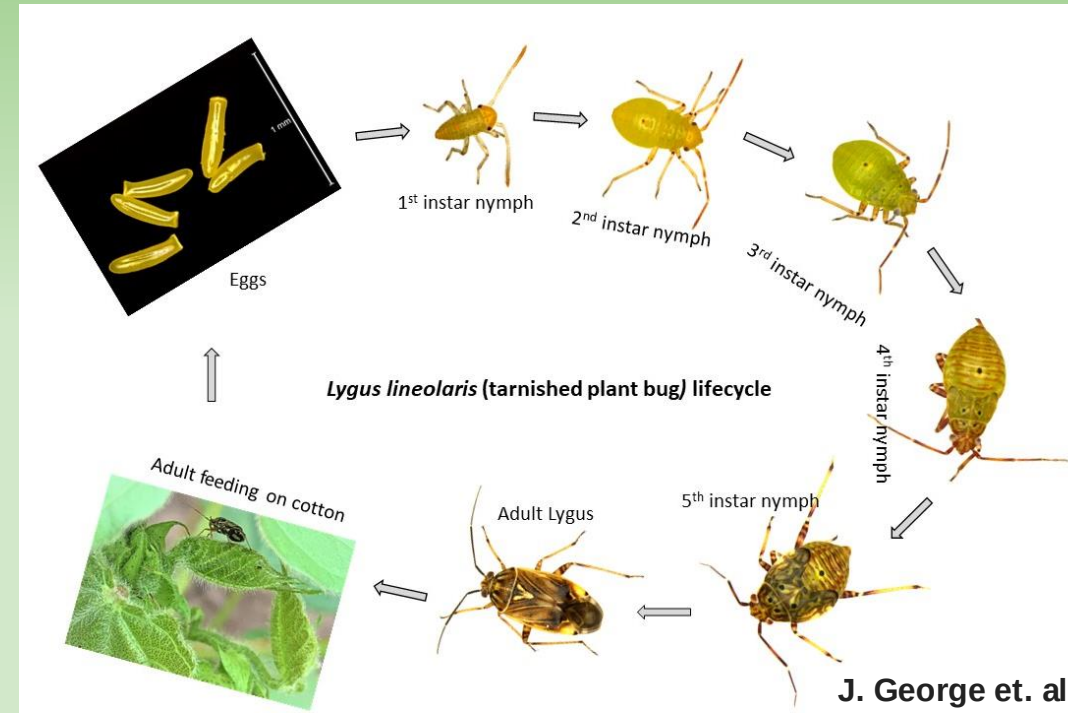


Isocycloseram Surfactant Efficacy

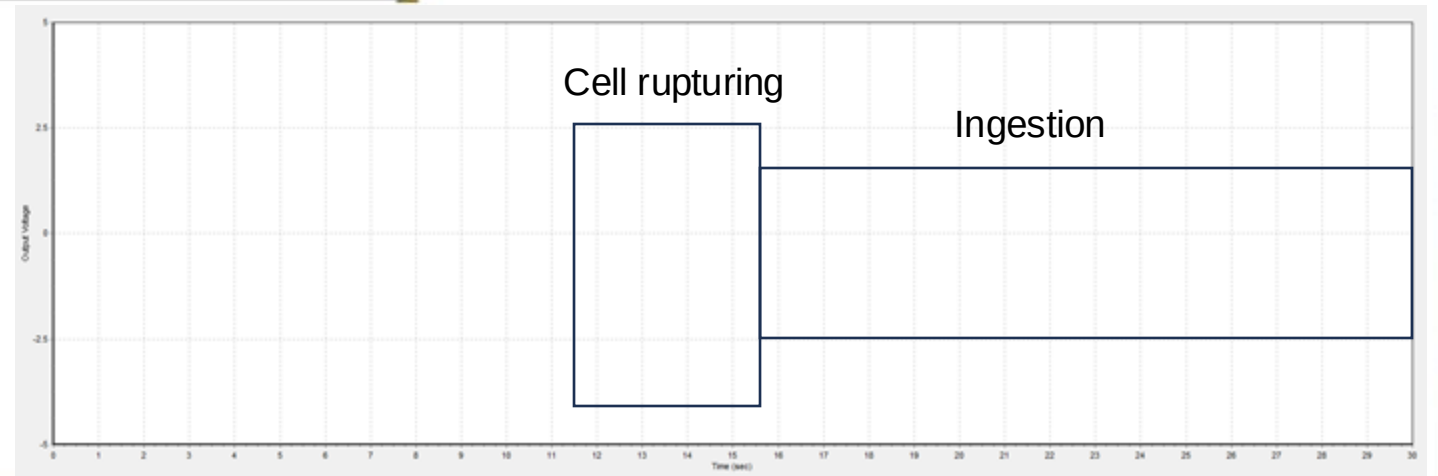
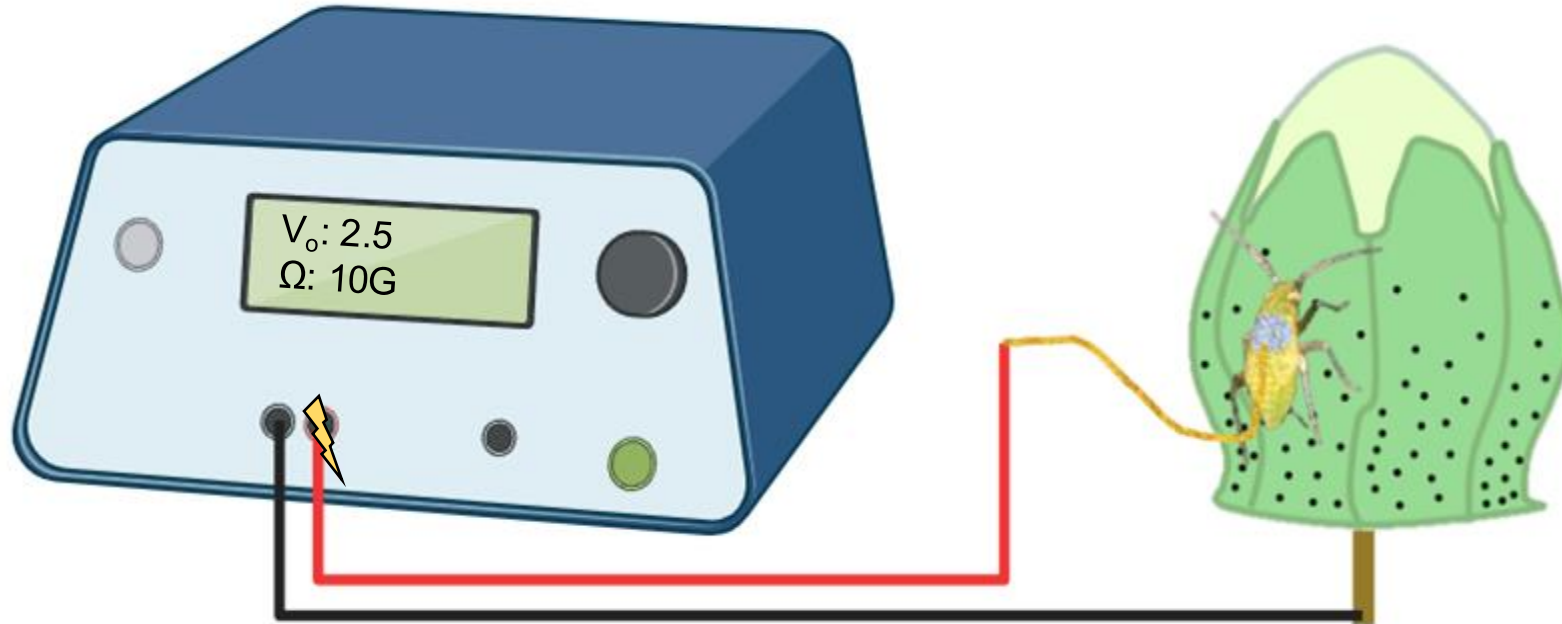


Final thoughts on Isocycloseram

- Will be a great control option for thrips, mites, and tarnished plant bug
 - Cost???
- Sampling for adults vs nymphs after an application small large
 - Must pay attention to plant damage
- Threshold levels of first instar nymphs after an application can be found in heavy pressure

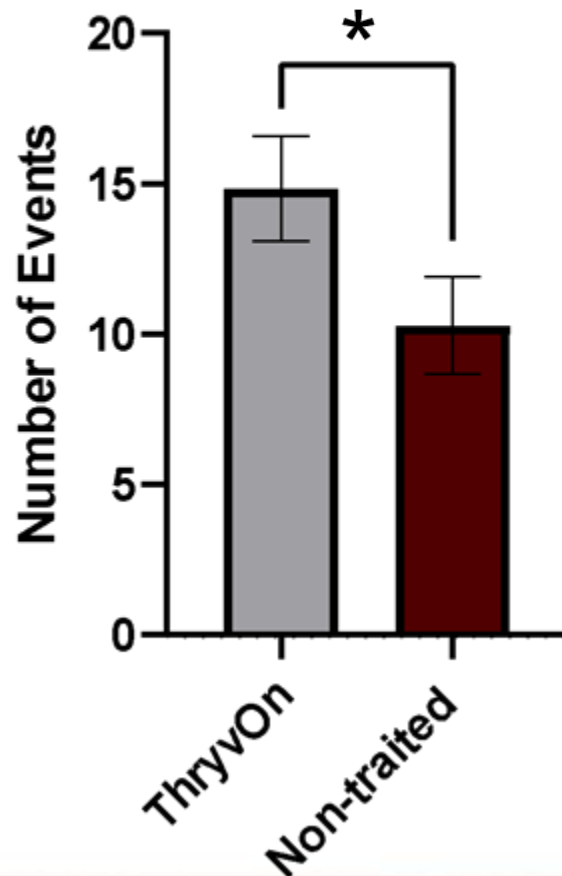


Electropenetrography (EPG)

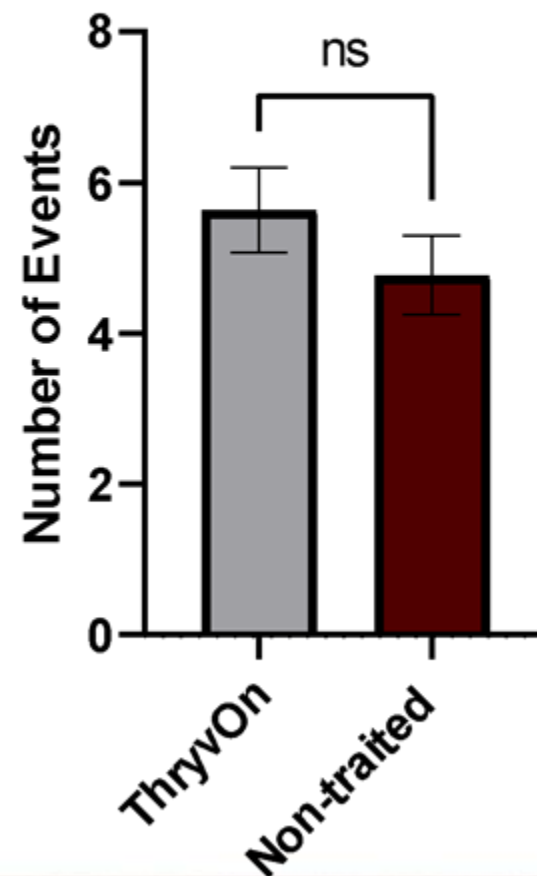


Number of Individual Events

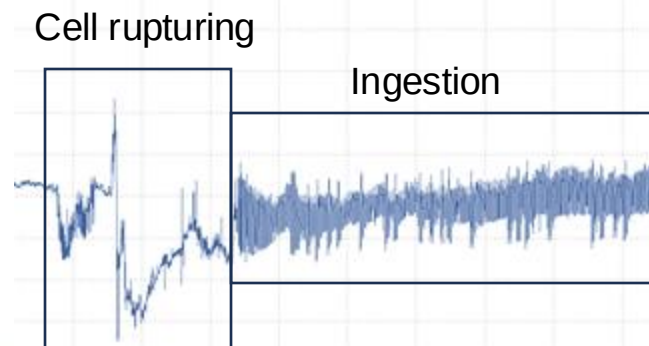
Cell Rupturing



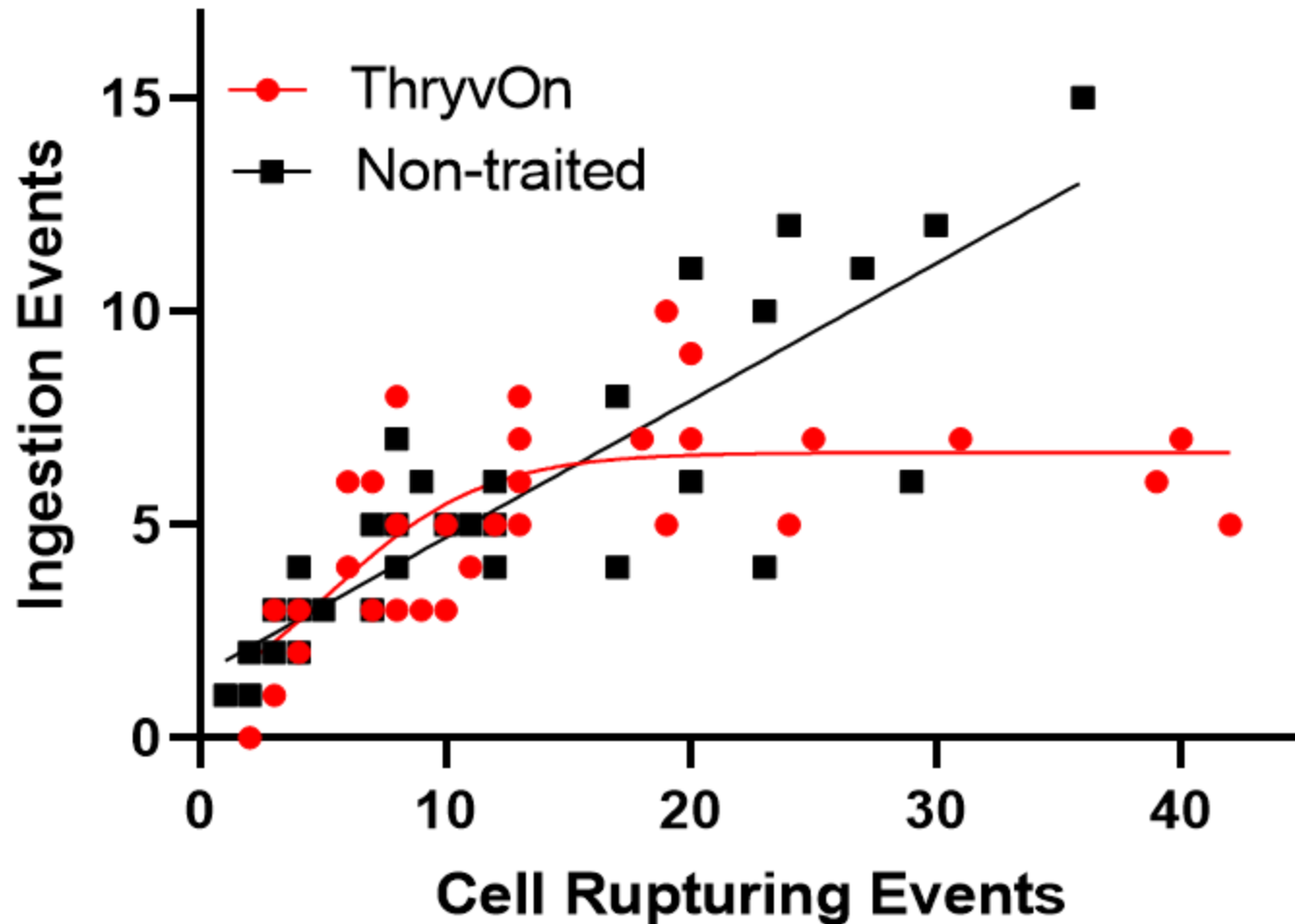
Ingestion



- Significantly more cell rupturing events occurring on ThryvOn Squares
- Statistically similar number of ingestion events between ThryvOn and the non-traited

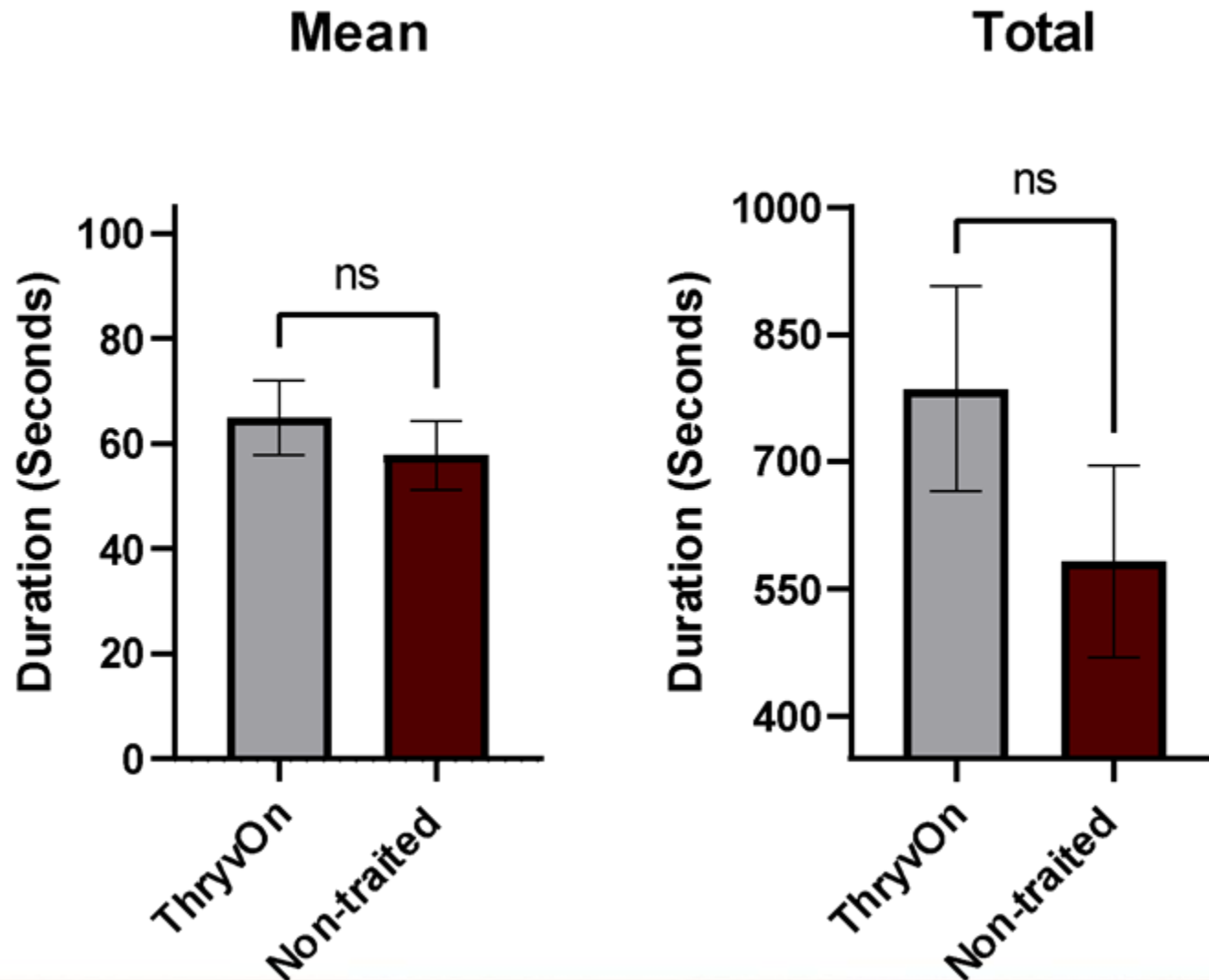


Cell Rupturing Events vs Ingestion Events

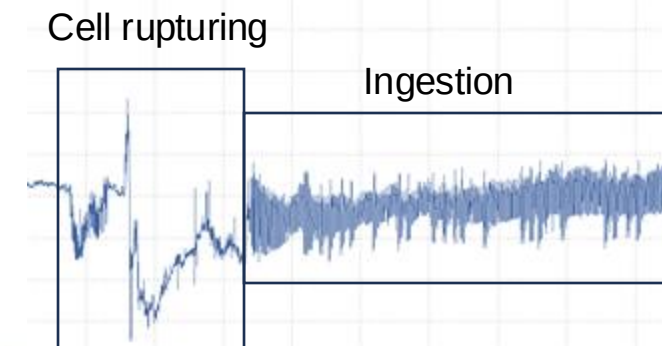


- Non-traited best fit model was linear regression ($R^2=0.7641$)
- ThryvOn best fit model was logistic growth regression ($R^2=0.5262$)
- Similar trajectory until ingestion events plateaued at around 6 on ThryvOn squares

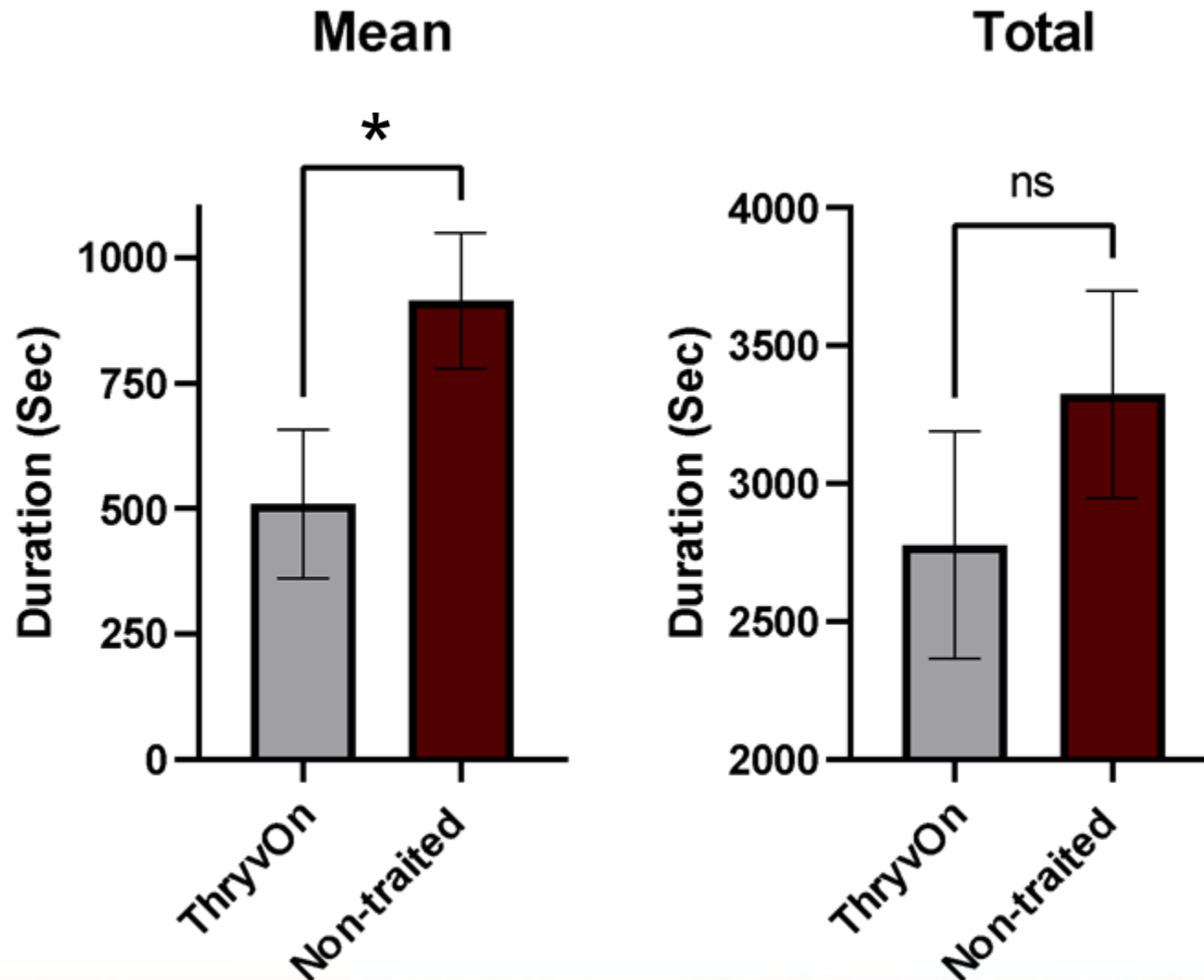
Duration of Cell Rupturing Events



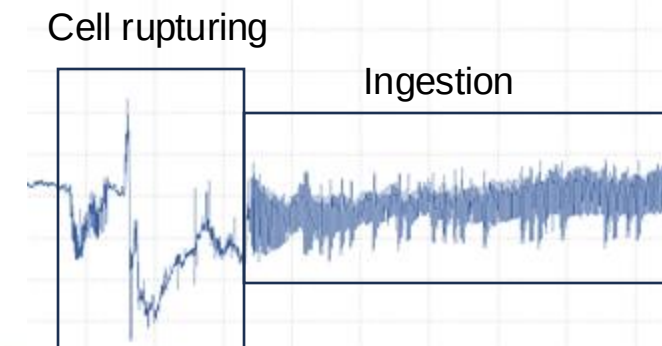
- Significantly more cell rupturing events occurring on ThryvOn Squares
- Statistically similar number of ingestion events between ThryvOn and the non-traited



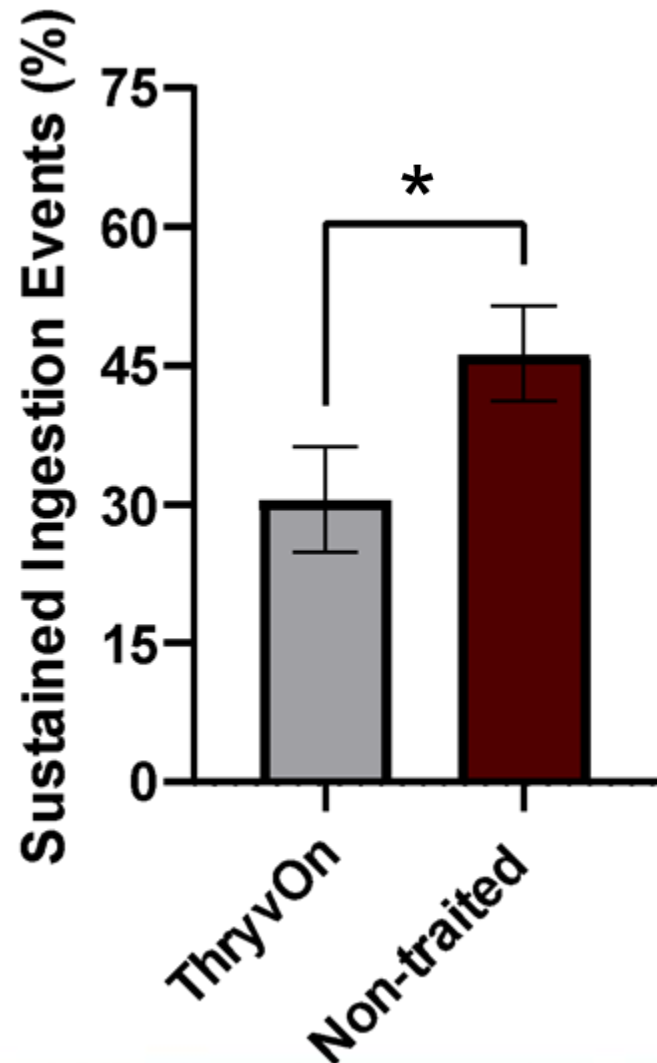
Duration of Ingestion Events



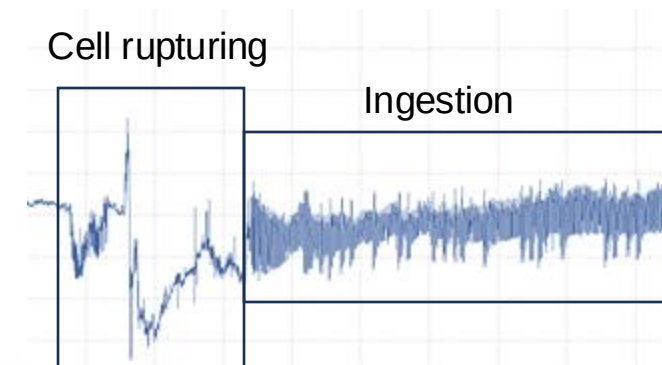
- Significantly longer mean duration of ingestion events occurring on non-traited squares
- Statistically similar total duration of ingestion events between ThryvOn and the non-traited



Sustained Ingestion Events



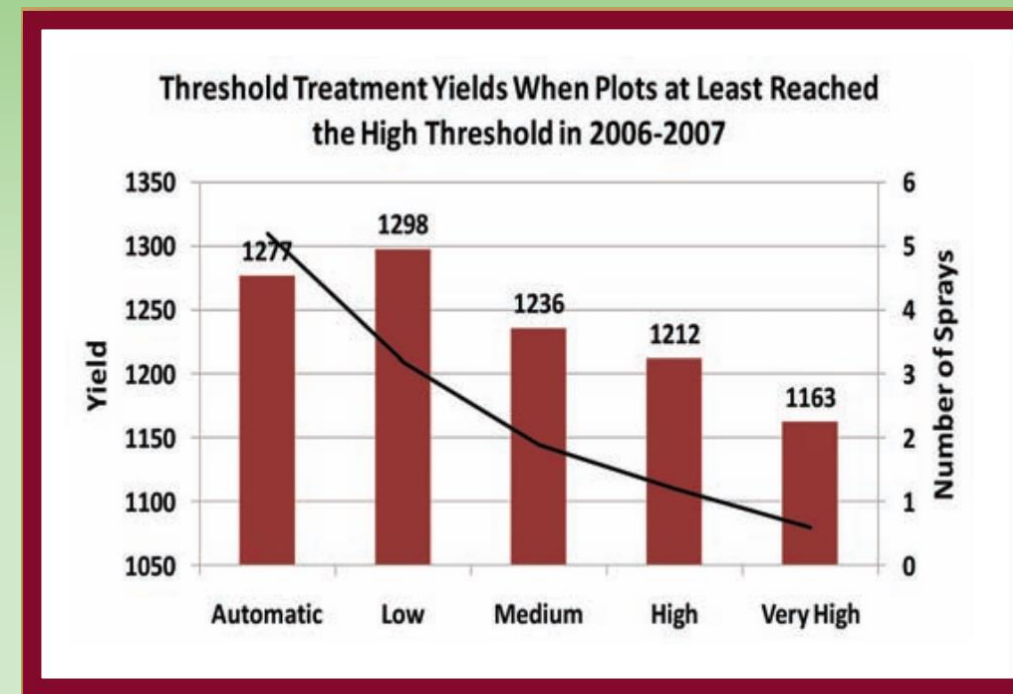
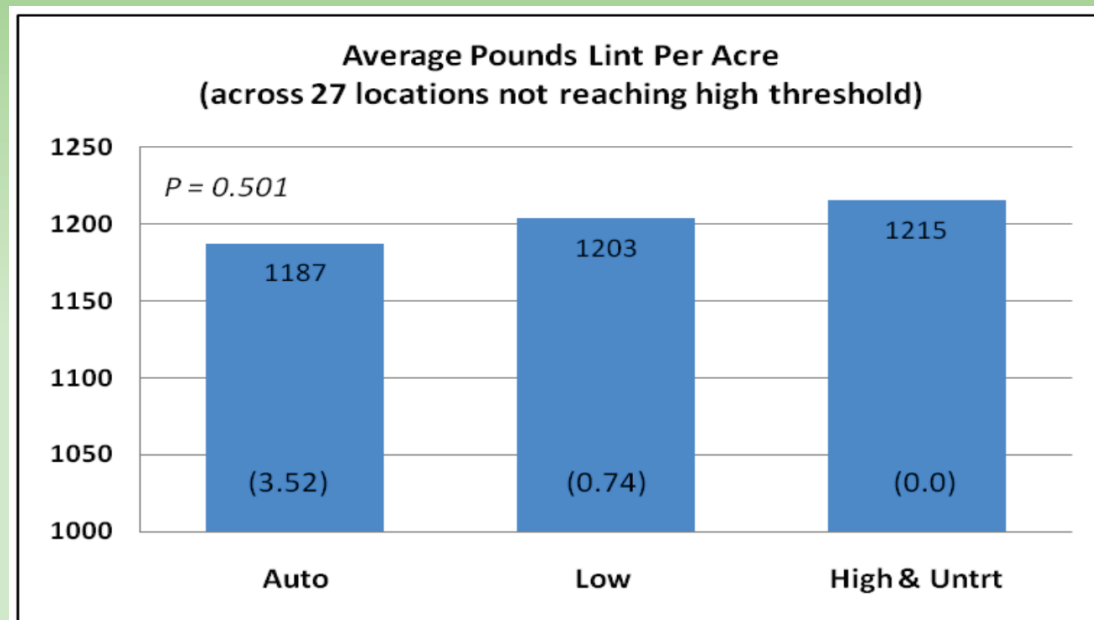
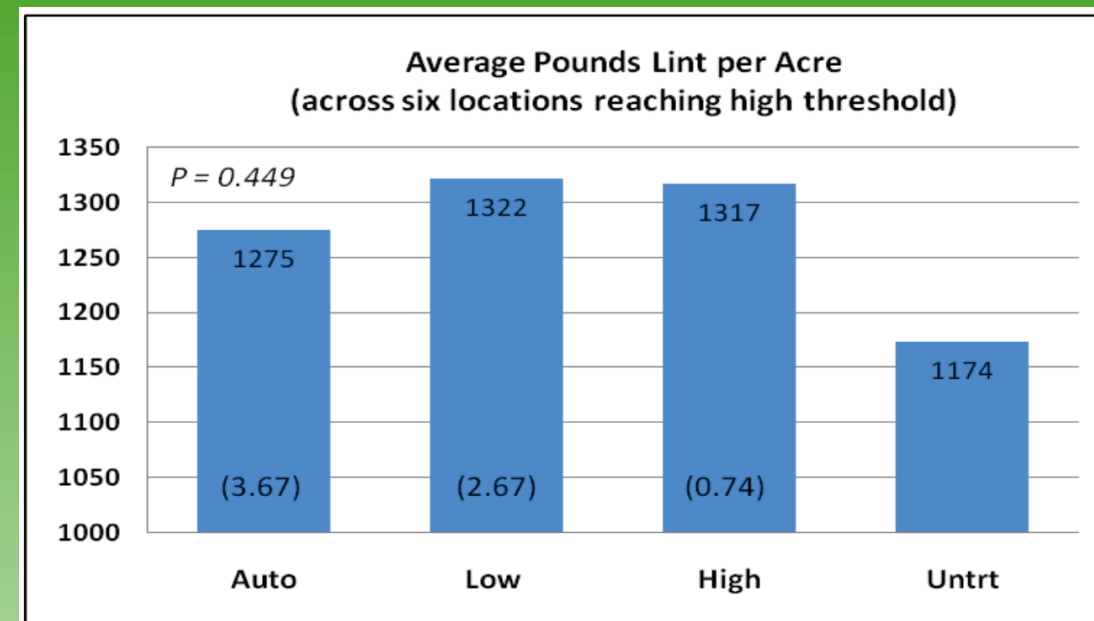
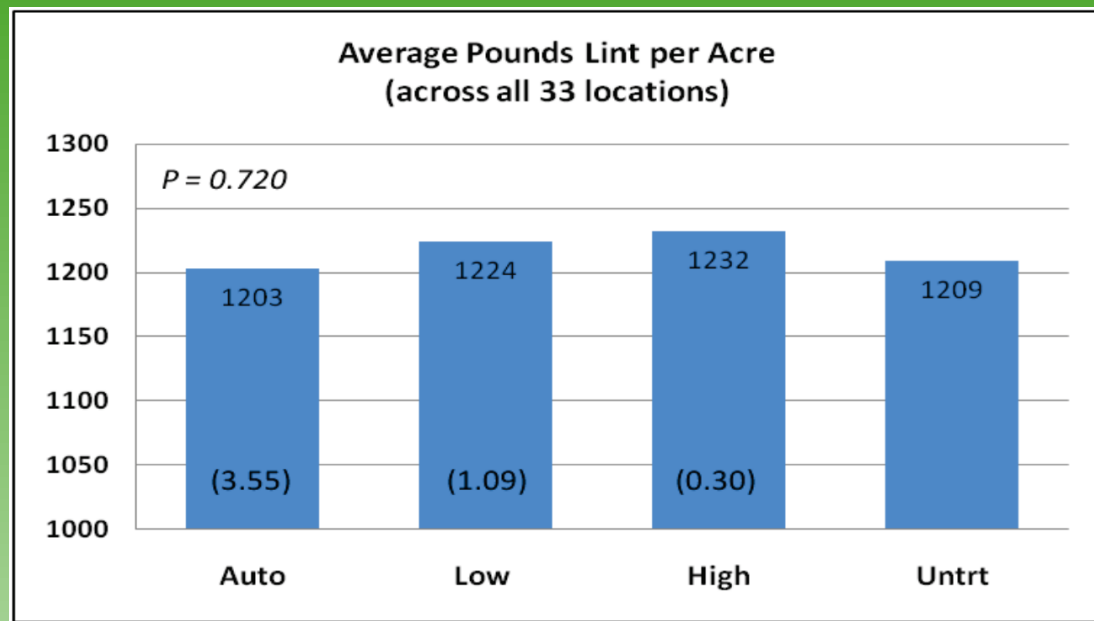
- Percentage of ingestion events sustained longer than 600 seconds without interruption
- Significantly higher percentage of ingestion events were sustained when feeding on non-traited squares



EPG Conclusions

- The shorter duration of ingestion events and a lower percentage of sustained ingestion events suggests that ingestion is affected
 - As cotton fleahoppers ingested plant fluids the Mpp51Aa2 protein disrupted the midgut arresting further ingestion
- A higher number of cell rupturing events suggests that cotton fleahoppers continued to try and feed but were unable to ingest as the midgut was disrupted
- The inability to ingest plant fluids from ThryvOn square is a possible reasoning for increased fruit retention





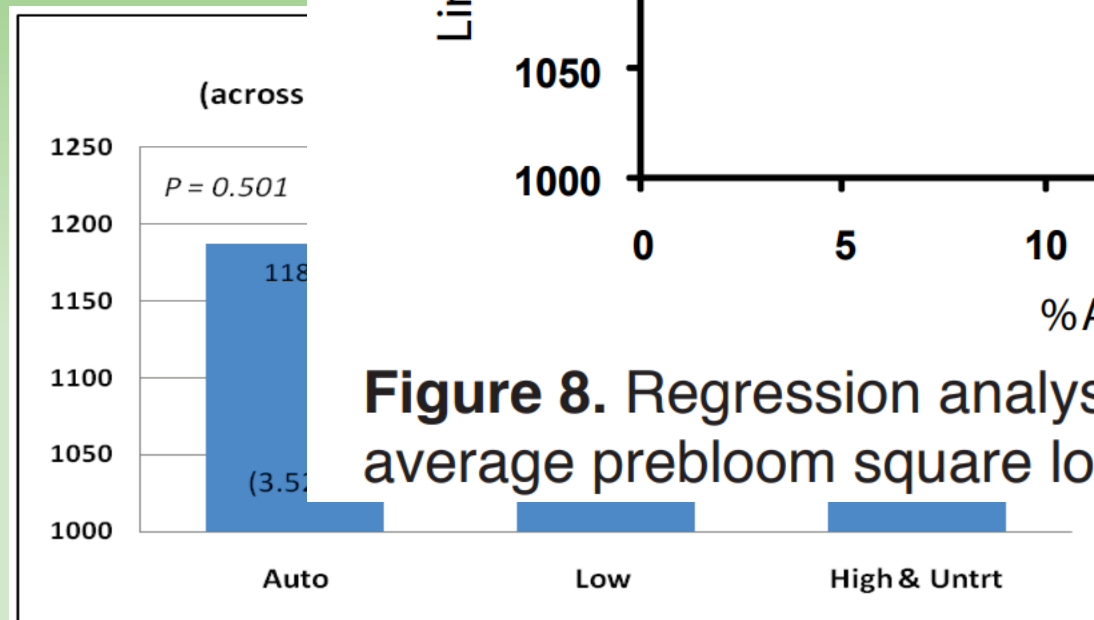
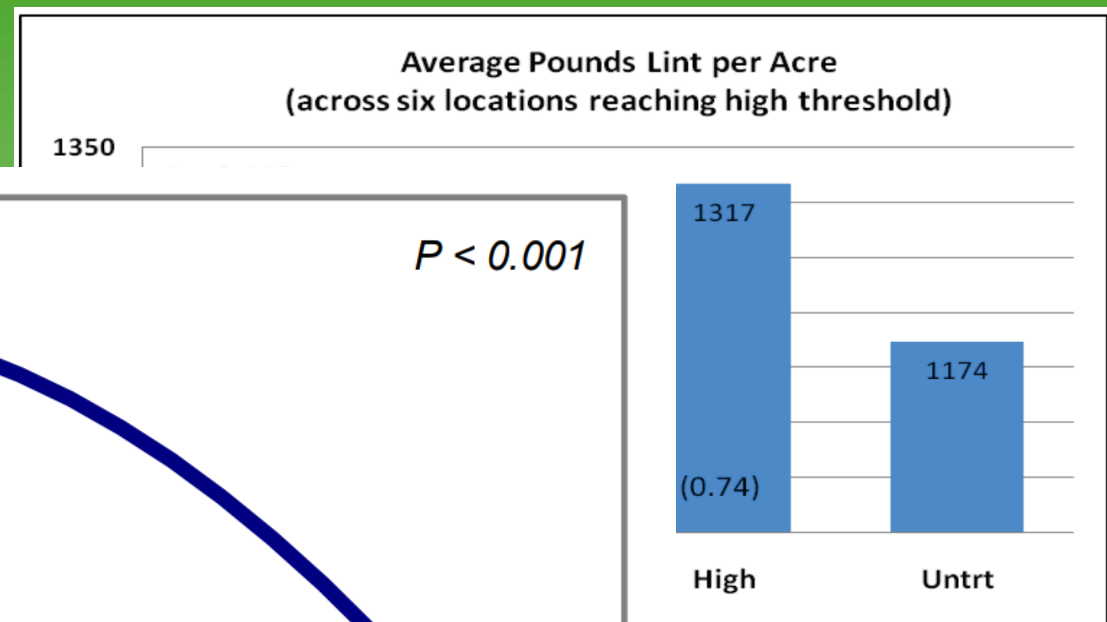
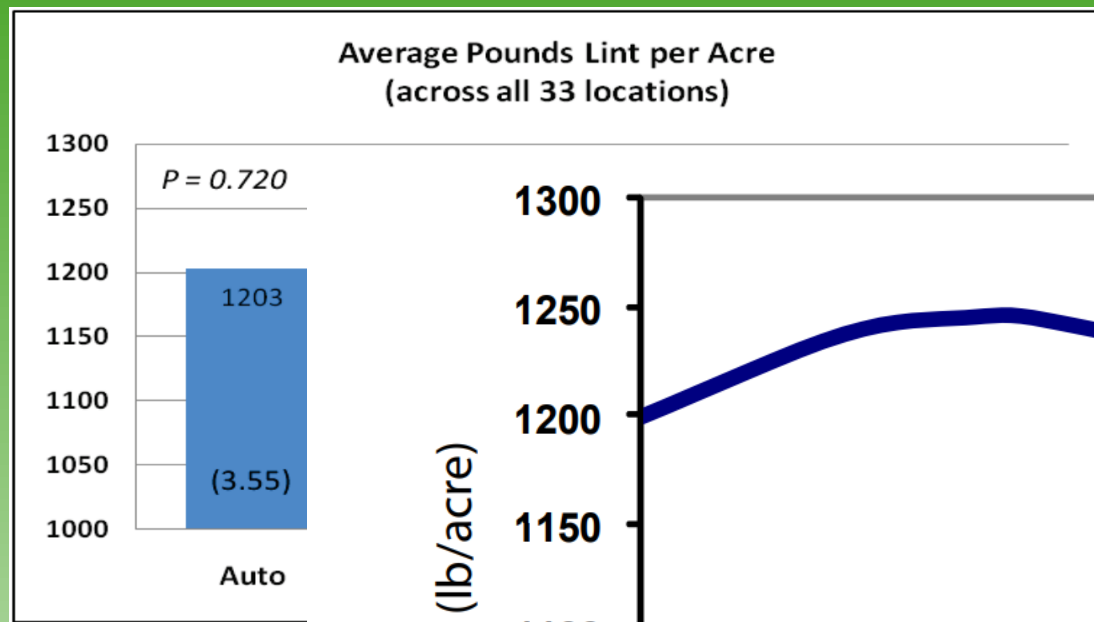
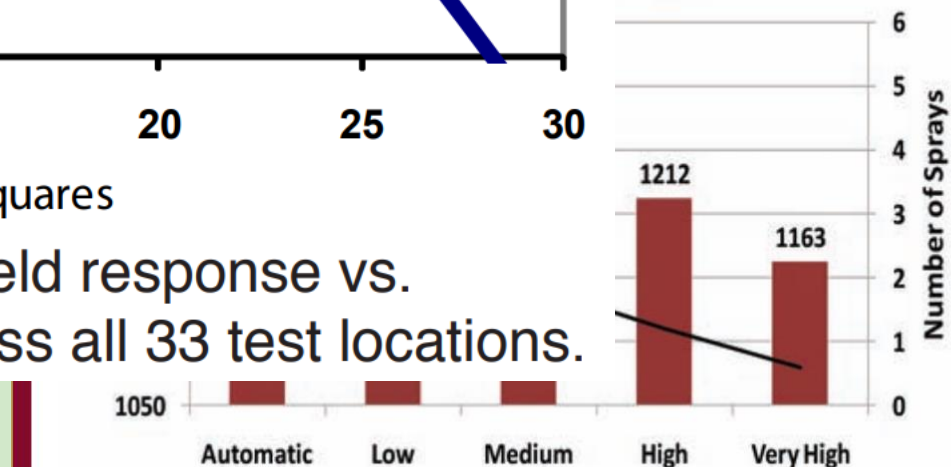
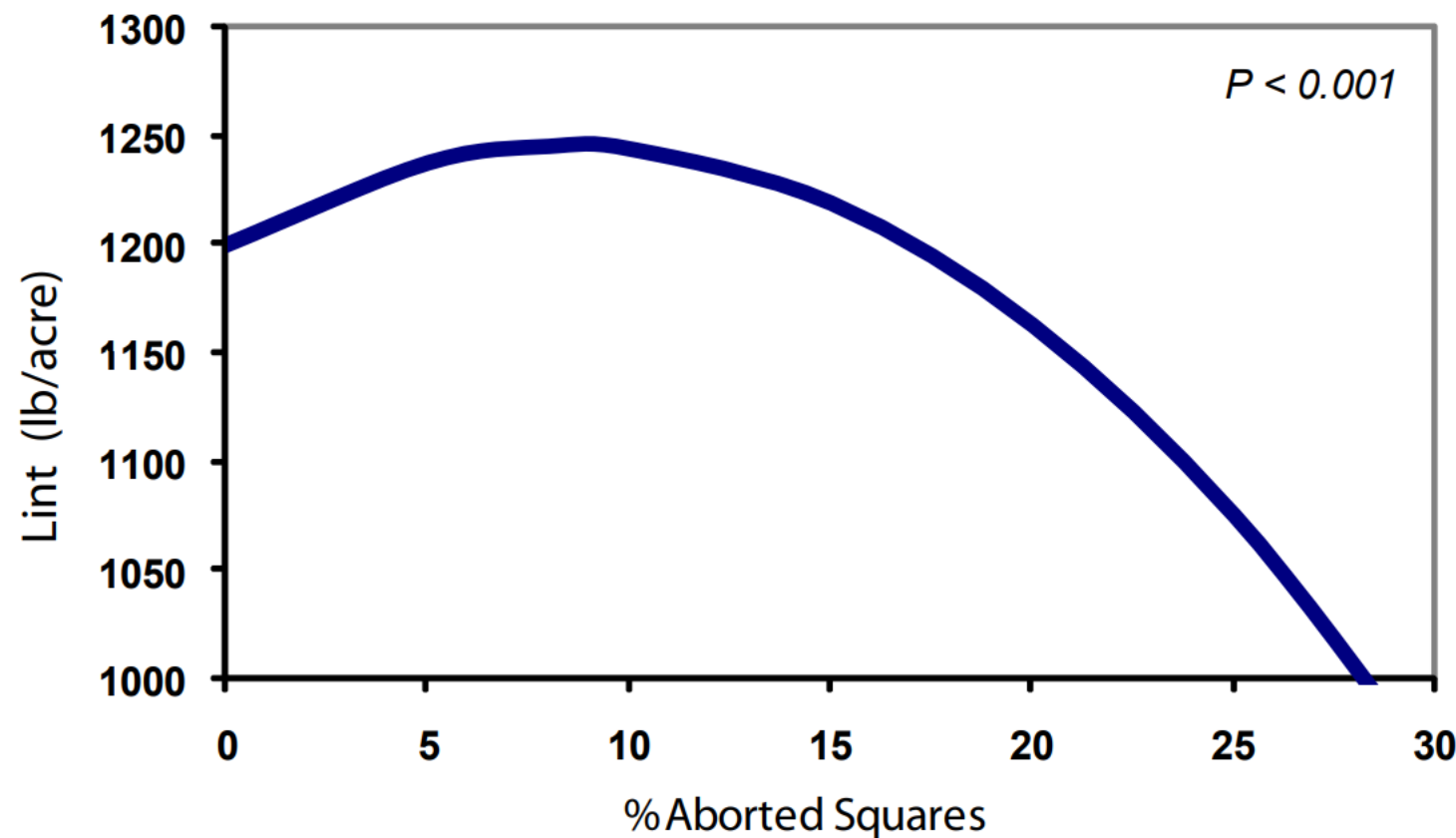


Figure 8. Regression analysis of yield response vs. average prebloom square loss across all 33 test locations.

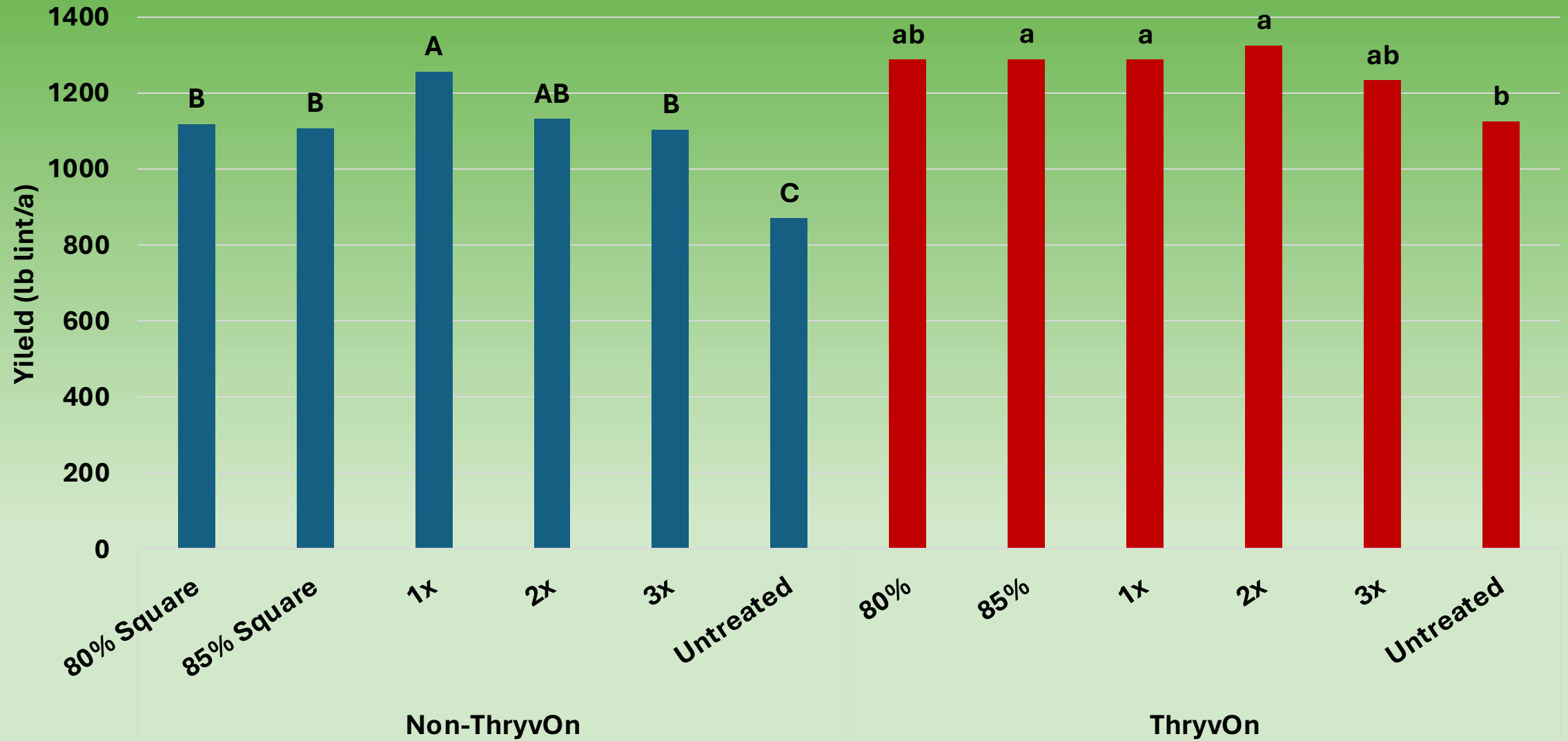


Thryvon Nymph Threshold Locations

- Alabama – 3
- Arkansas – 7
- Louisiana - 2
- Mississippi - 2
- Missouri - 2
- North Carolina – 2
- Tennessee - 2



ThryvOn Nymph Threshold Yields

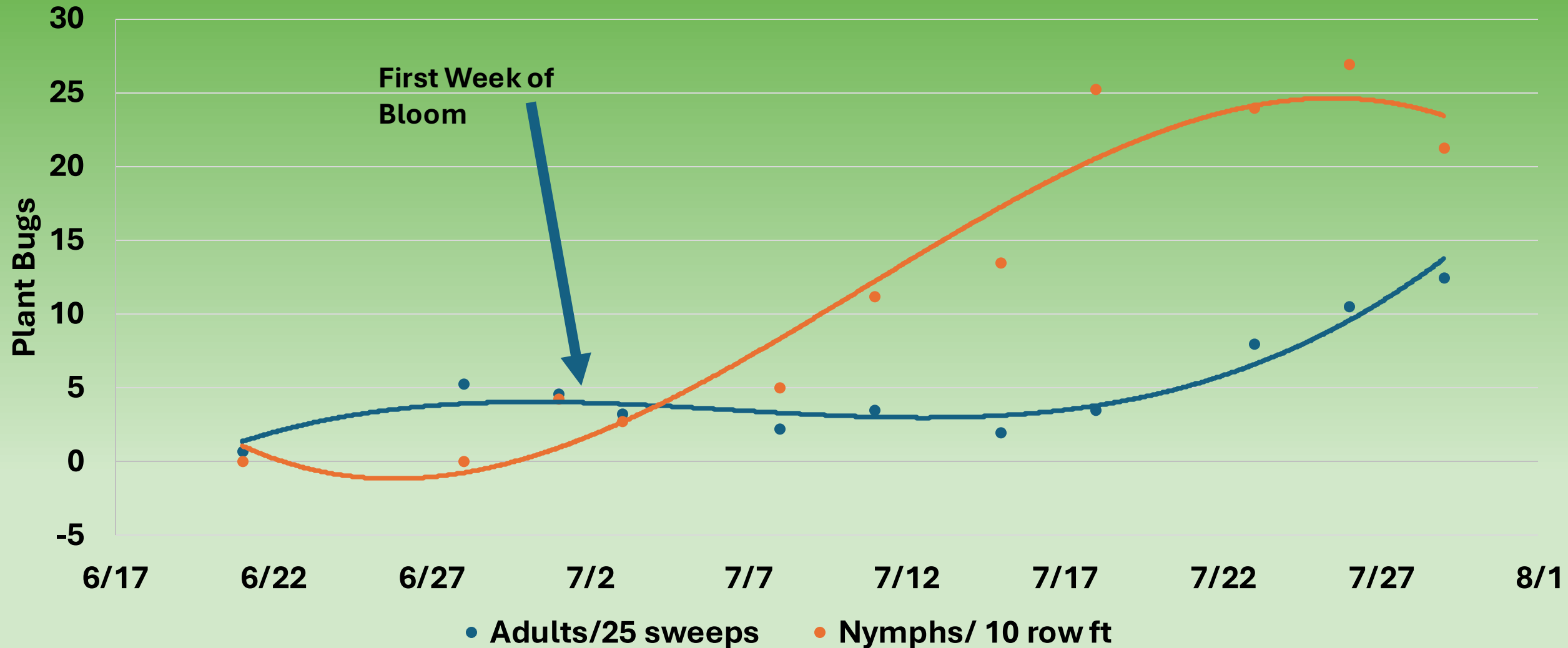




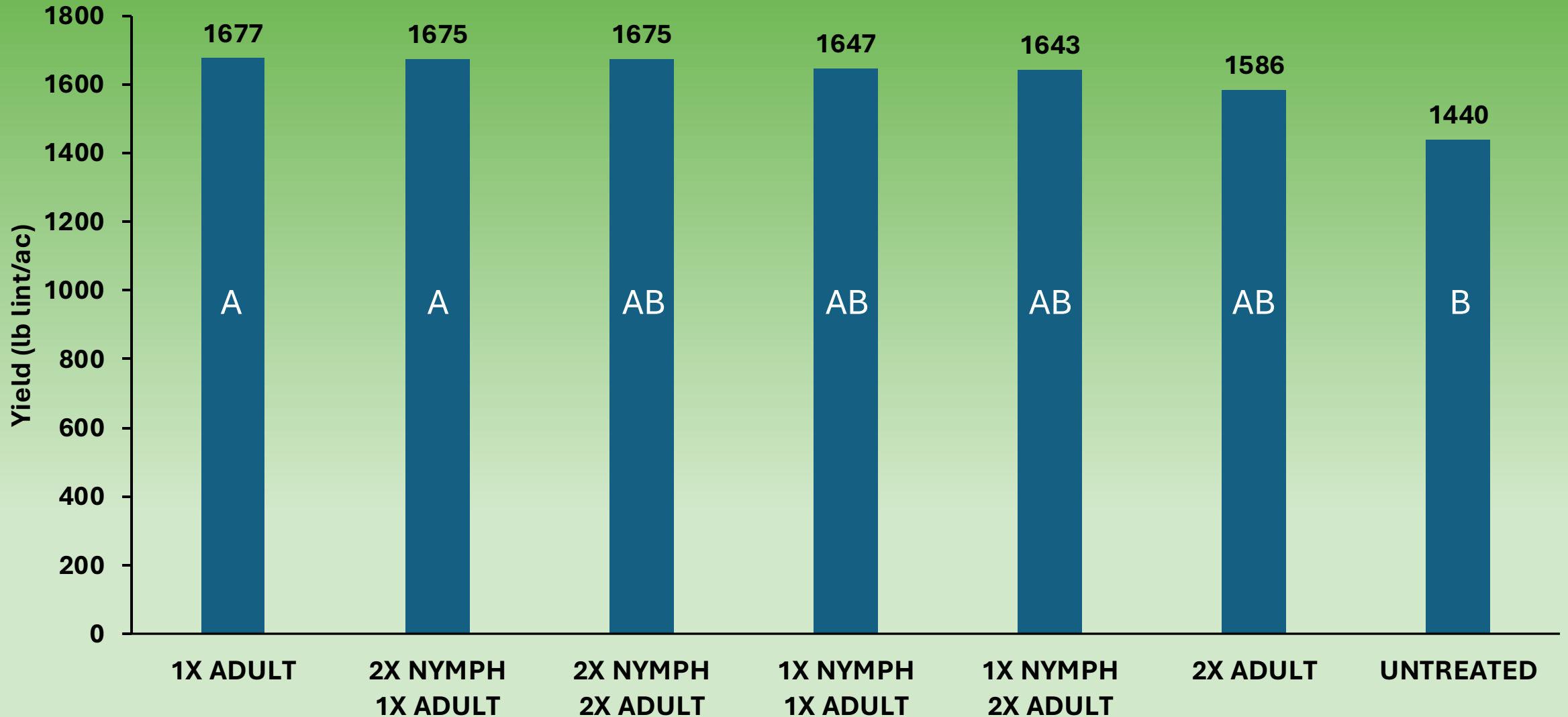
Adult ThryvOn Spray dates

Date	21-Jun 1st week	28-Jun 2nd week	1-Jul 3rd week	8-Jul 1st week	11-Jul 1st week	15-Jul 2nd week	18-Jul 2nd week	24-Jul 3rd week	26-Jul 4th week	29-Jul 4th week	2-Aug cutout	Total Sprays
	Squaring			Bloom								
UNTREATED												0
1X NYMPH/ADULT			X	X				X	X	X	X	6
2X NYMPH/ADULT					X				X		X	3
2X NYMPH 1X ADULT			X					X		X	X	4
1X NYMPH 2X ADULT				X		X		X			X	4
1X ADULT			X					X		X	X	4
2X ADULT										X	X	2
85% SQUARE RETENTION									X			1

Nymphs and Adults in Untreated Plots

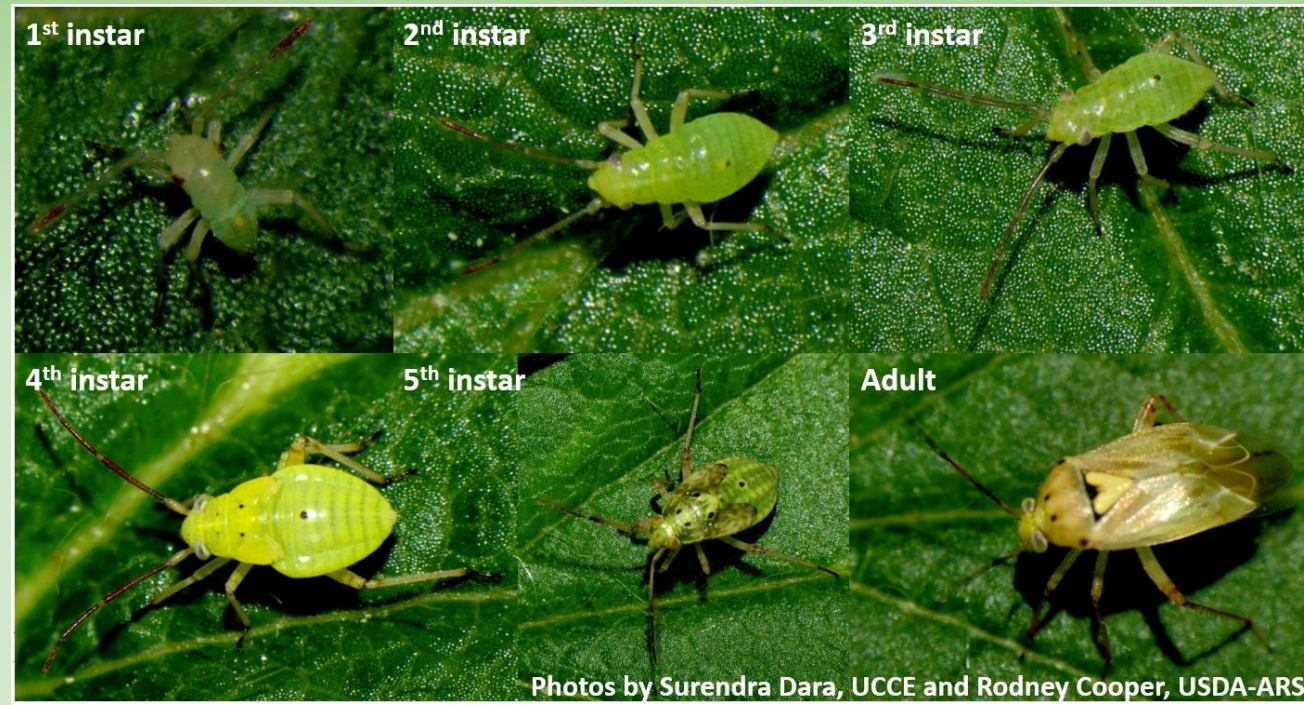


Adult Threshold Test Yield 3 Locations



Final Thoughts on ThryvOn

- Arkansas is recommending a 2x nymph threshold in 2025
 - Keep adult threshold the same
- As nymphs get larger they become more tolerant to ThryvOn
 - Adults can feed through ThryvOn
- Spider mites worse?
- Do we even need to scout for nymphs in ThryvOn?



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NC STATE
EXTENSION



Cotton
Incorporated



“Oh, great—it’s some of your relatives,
David. ... You know, it’s ironic that even
we lice have parasites.”




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