

Performance of the New Bt Lygus Trait



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Gowda et al. 2016

Background

Thrips are bad and plant bugs are worse
Something new to control them would help





No Trait + Cruiser Avicta



Lygus Trait + Cruiser Avicta

Bt Lygus Trait = Cry51Aa2

Jackson, TN (2014)



Materials and Methods

Experiment Locations (2016 and 2017)

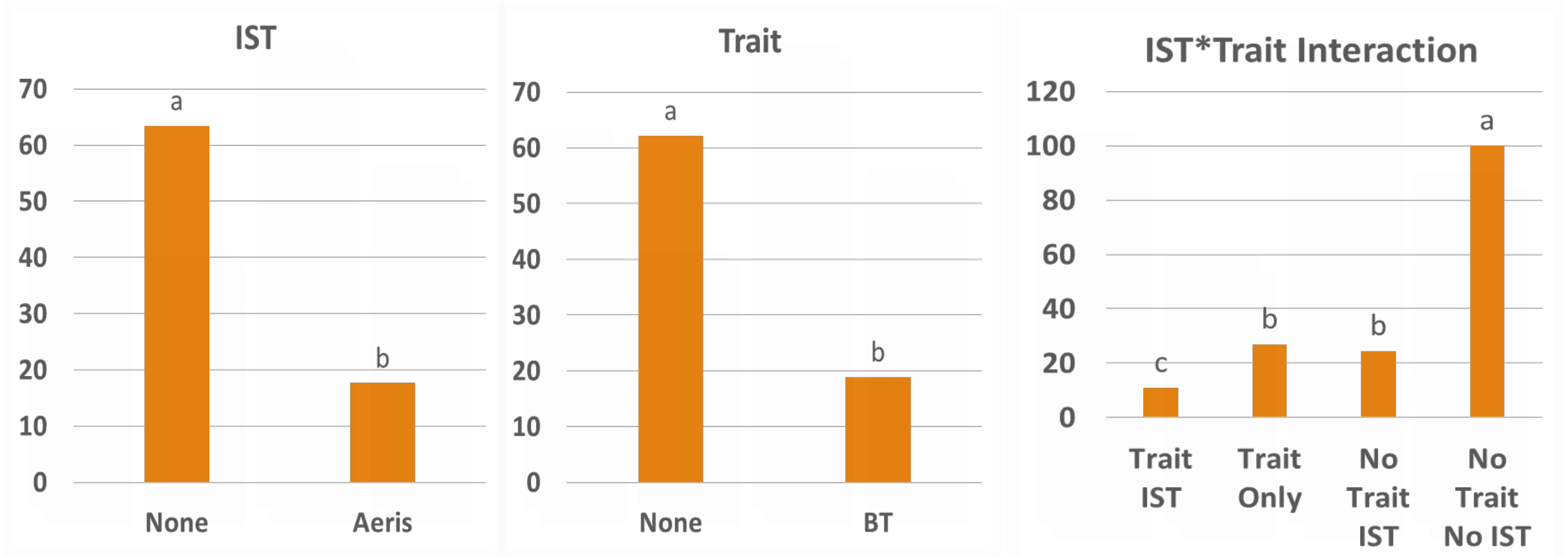
- Jackson, TN – West Tennessee Research and Education Center (WTREC)
- Milan, TN – Milan Research and Education Center

Split-Plot Design with Three Main Effects

- Factor A – 3 Foliar Spray Regimes for TPB
- Factor B – Bt Trait vs. No trait
- Factor C – IST + Foliar Thrips Spray vs. Not Treated

Thrips Counts – 2 Leaf Stage

Numbers per 5 plants

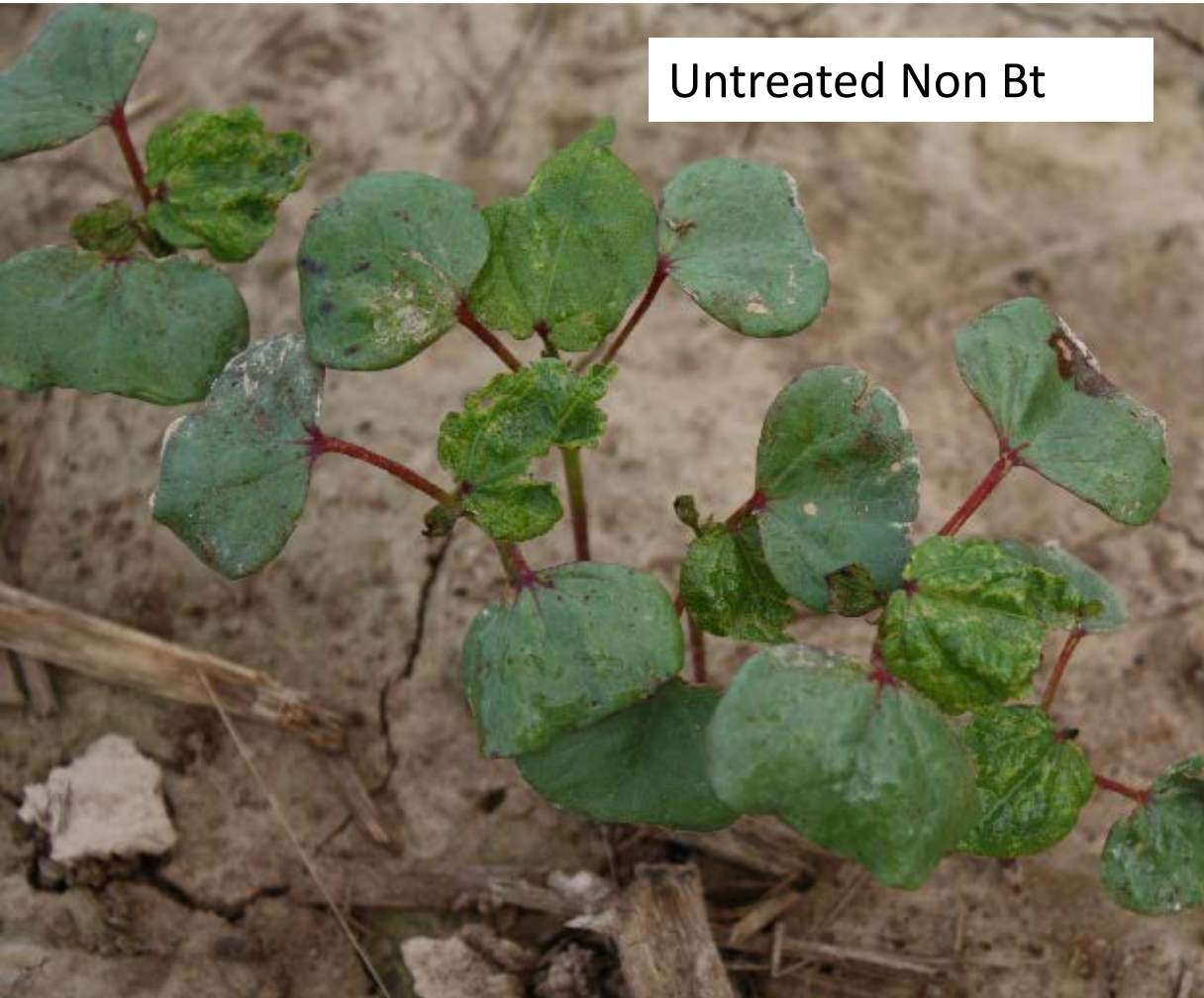


Averaged over 2 years in 2 locations

P < 0.05

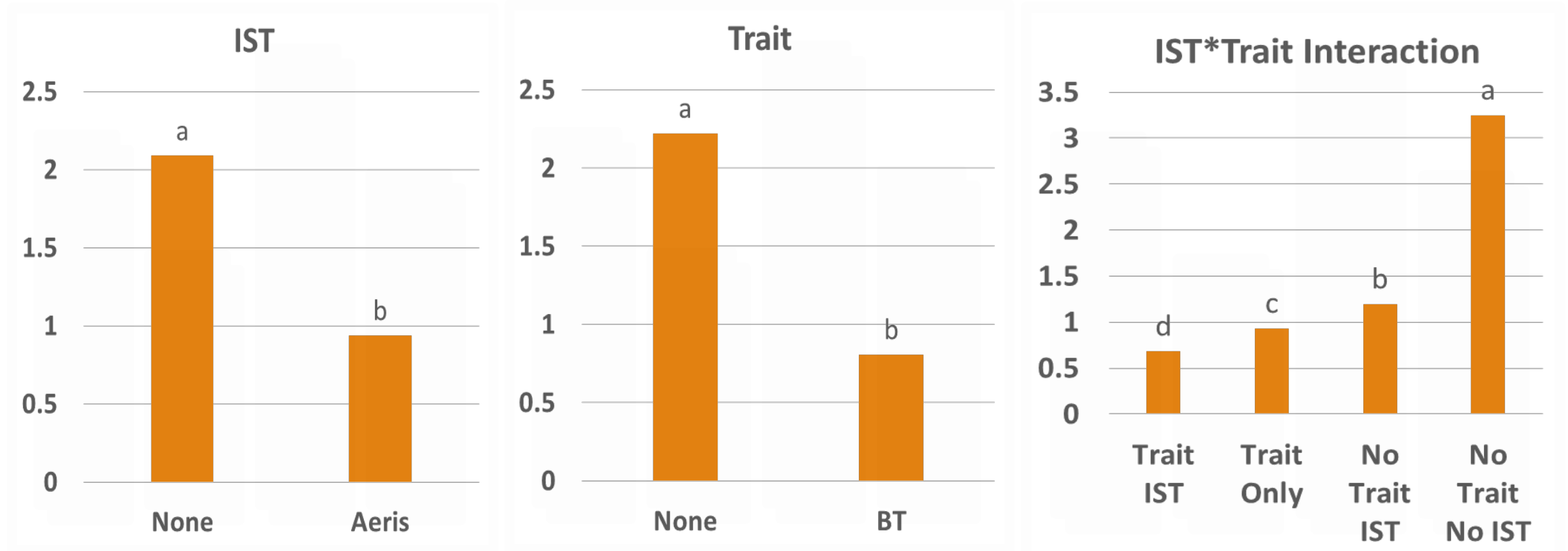
Thrips Injury in 2-Leaf Cotton

2016, Jackson



Thrips Injury Ratings – 3.5 Leaf Stage

0 - 5 Scale



Averaged over 2 years in 2 locations

P < 0.05

Jackson, 2016

Not Treated

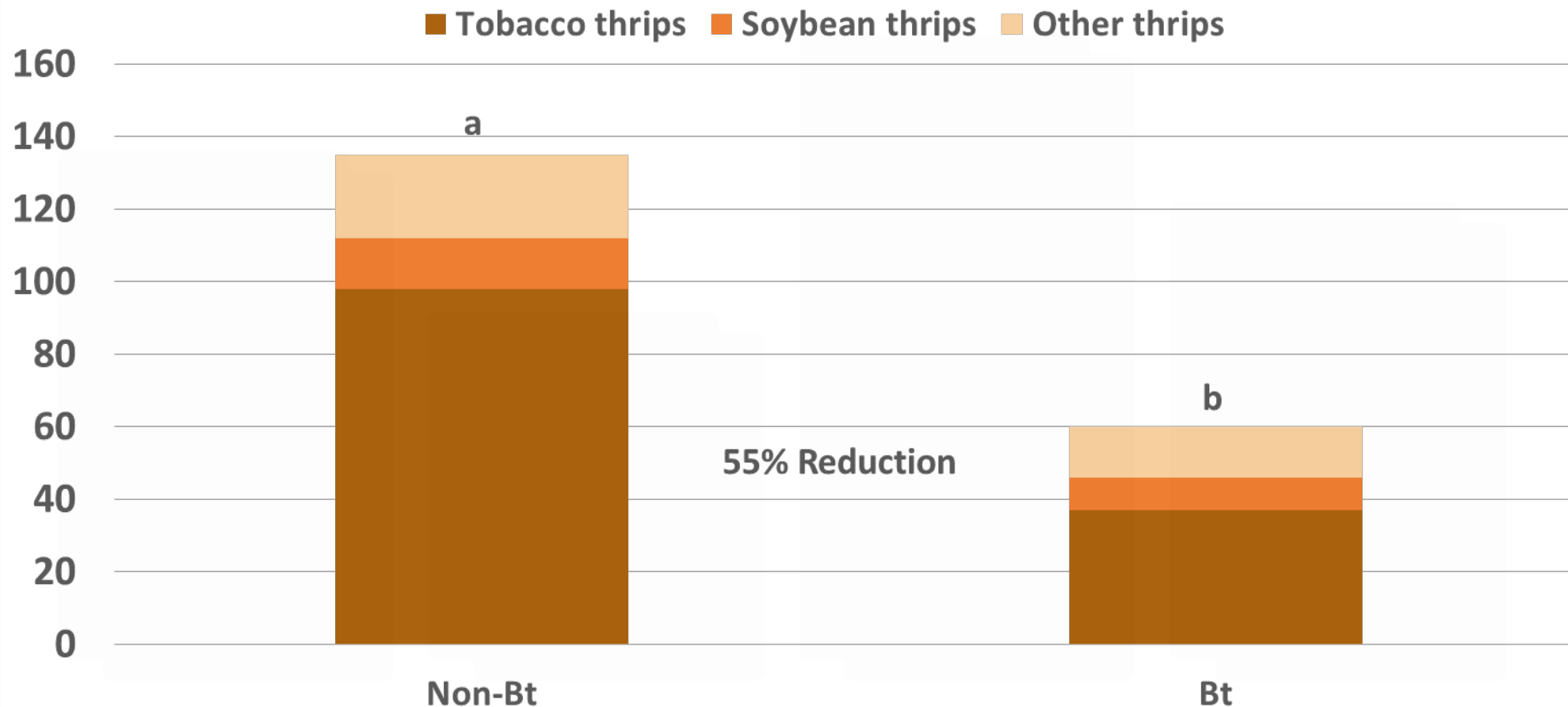


Thrips Preference



Thrips (Preference Study)

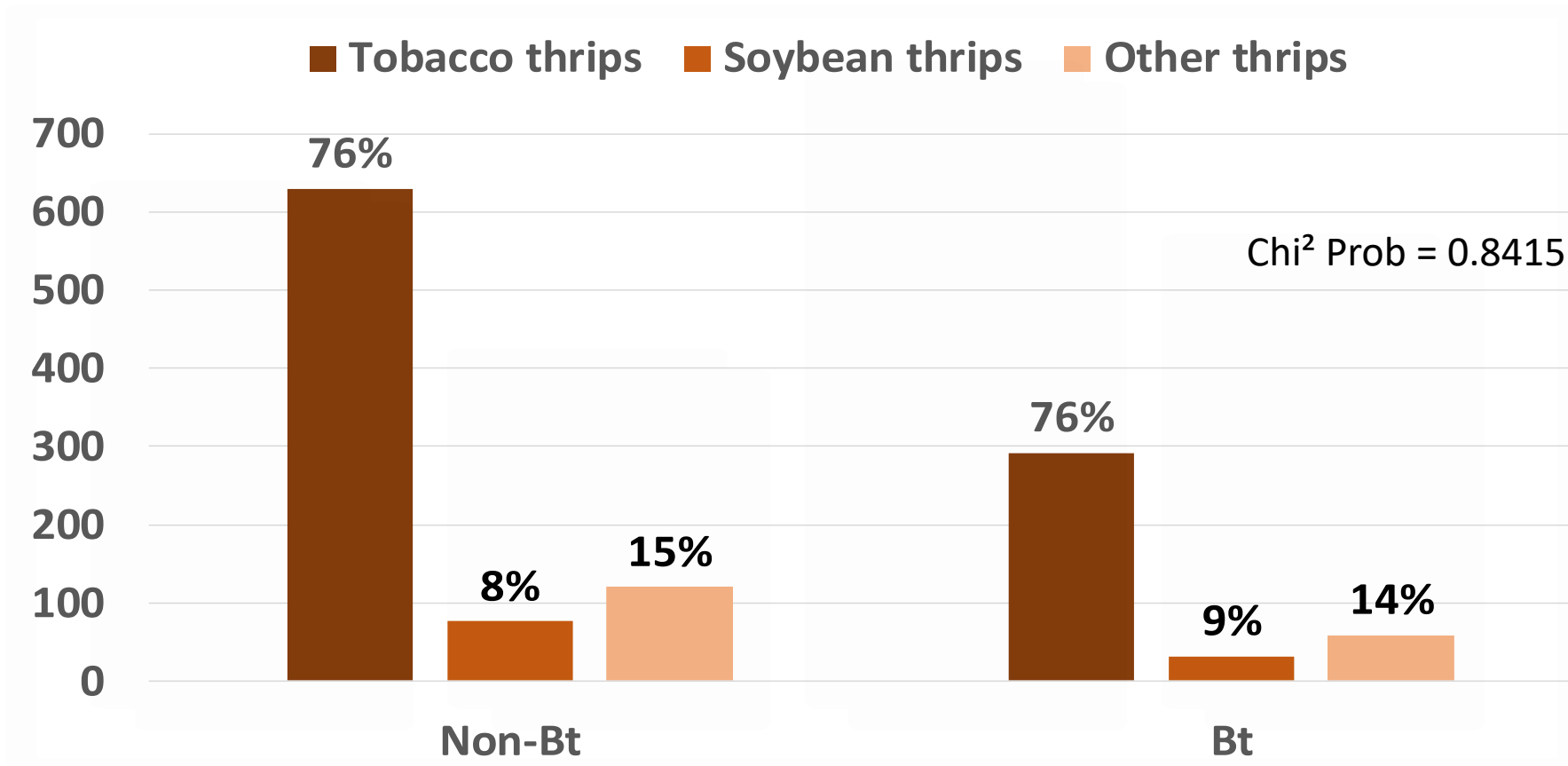
Total Adult Thrips



P < 0.05

Distribution of Adult Thrips

N = 1208 (Observations from Field Study)

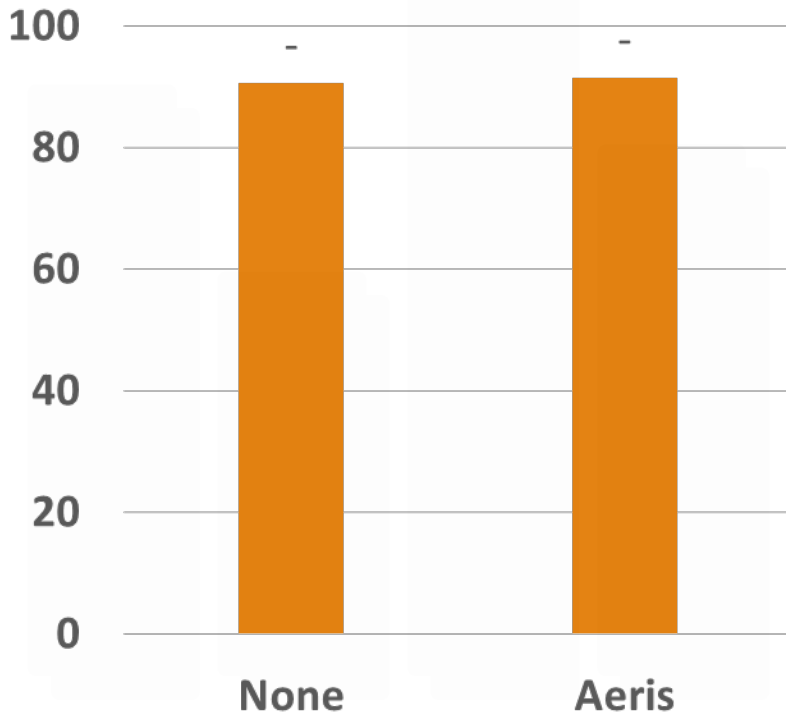


Total adult thrips over 4 tests in 2 locations in untreated plots

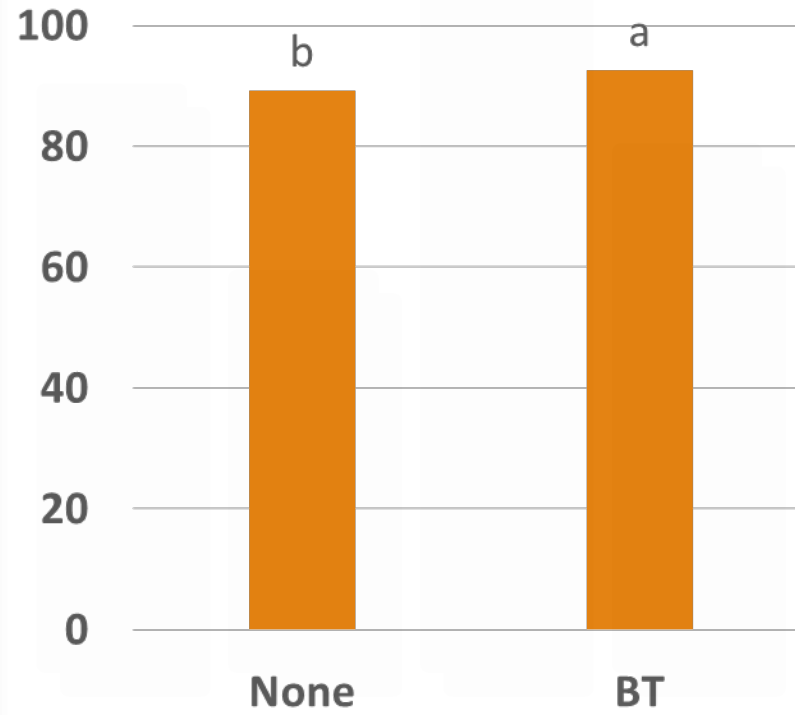
Average Early Season Square Retention

Percent Retention

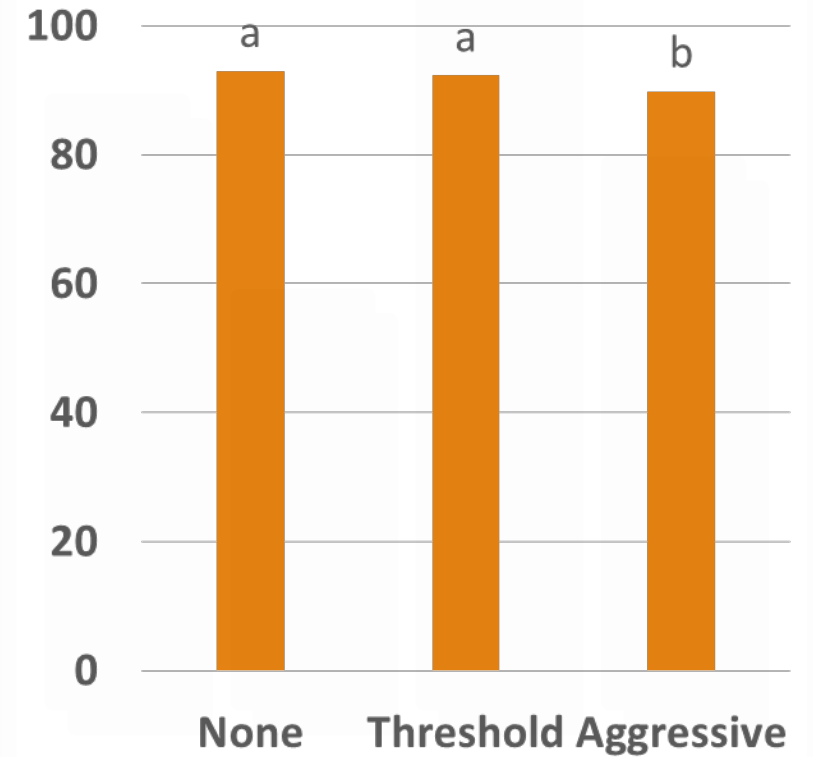
IST (P=0.1083)



Trait (P<0.0001)



Spray Regime (P<0.0001)



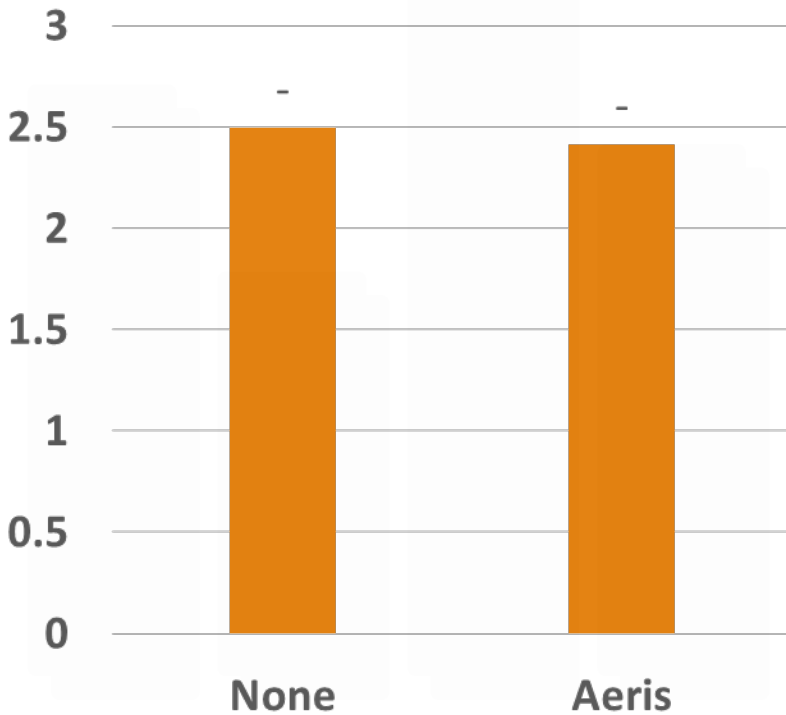
Trait * Spray Regime Interaction

Averaged over 2 years in 2 locations

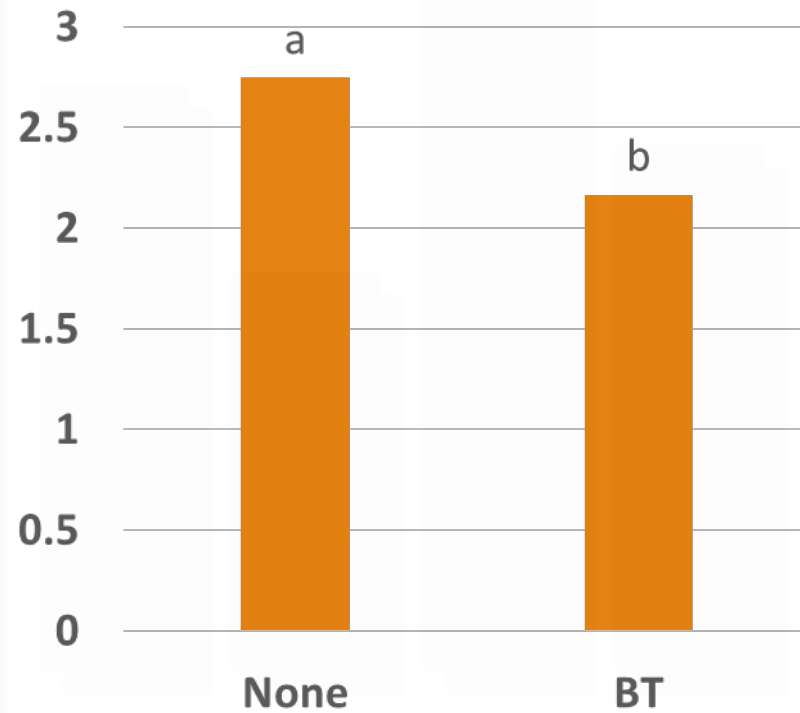
TPB Adults – Prior to Bloom

Sweep Net – Season Average per 25 Sweeps

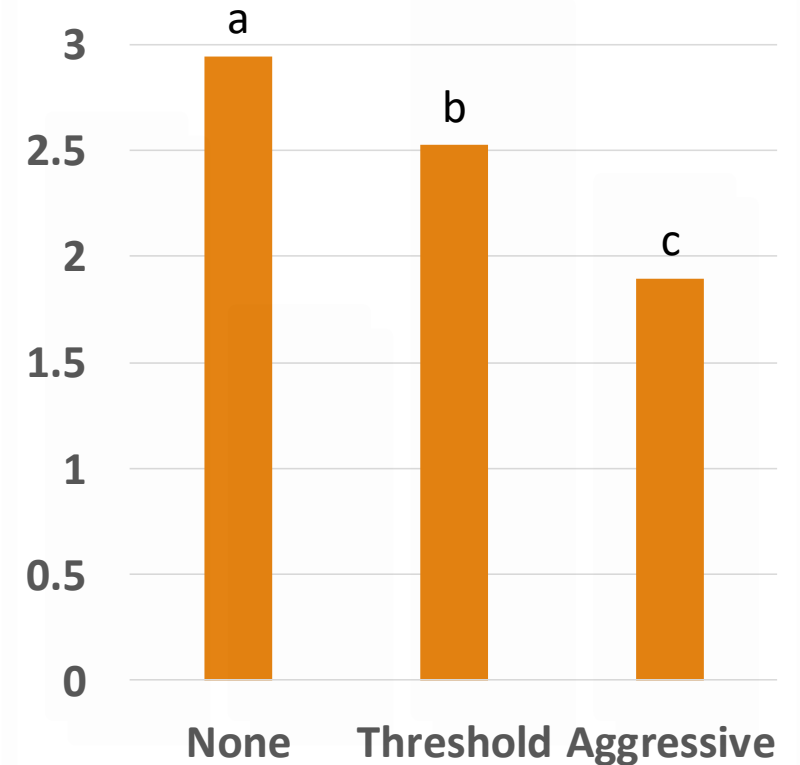
IST (P=0.6622)



Trait (P=0.0017)



Spray Regime (P<0.0001)

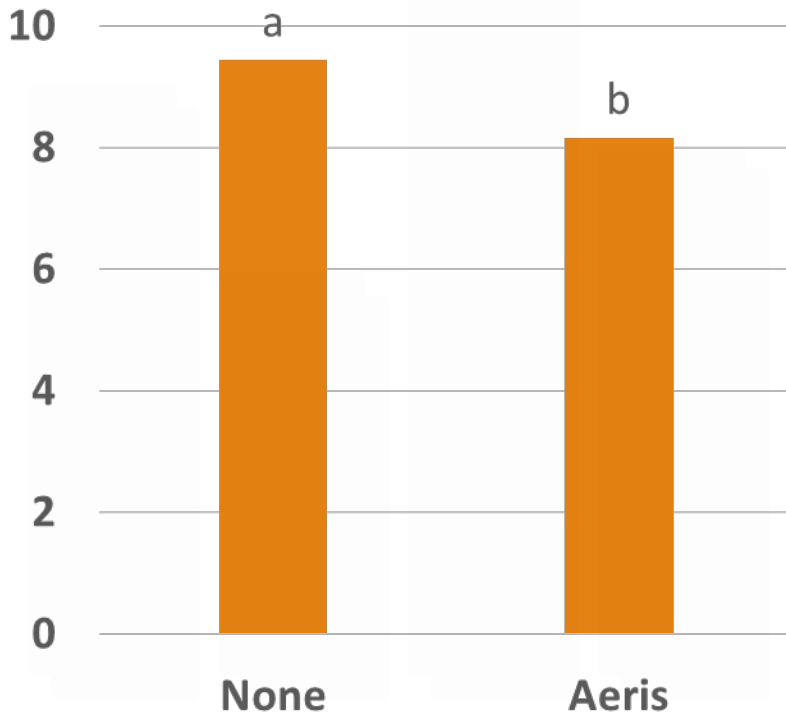


Averaged over 2 years in 2 locations

Season Average Nymphs

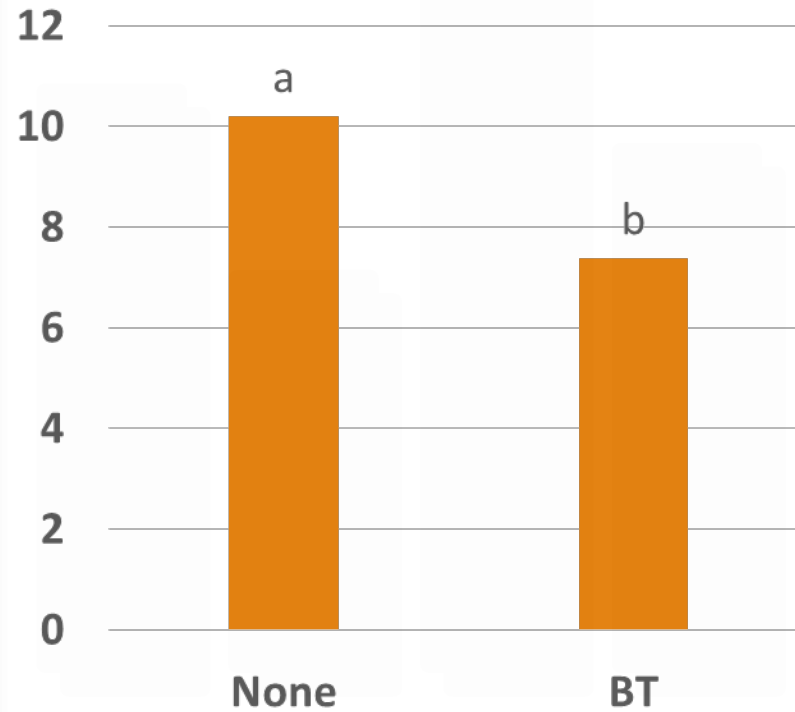
Drop Cloth – Numbers per 10 Row Ft

IST (P=0.0156)



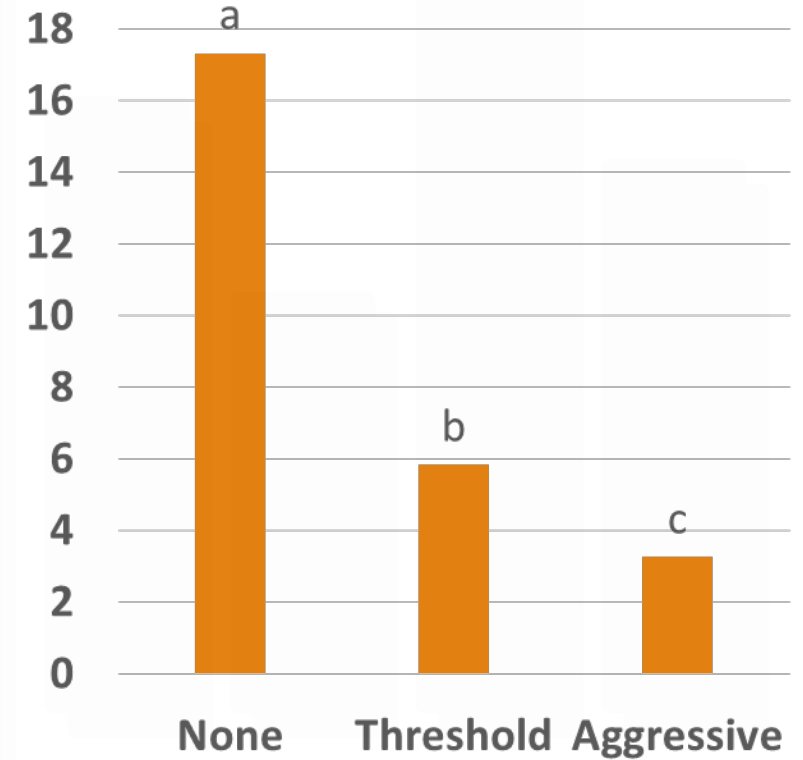
IST*Spray Regime Interaction

Trait (P<0.0001)



Trait*Spray Regime Interaction

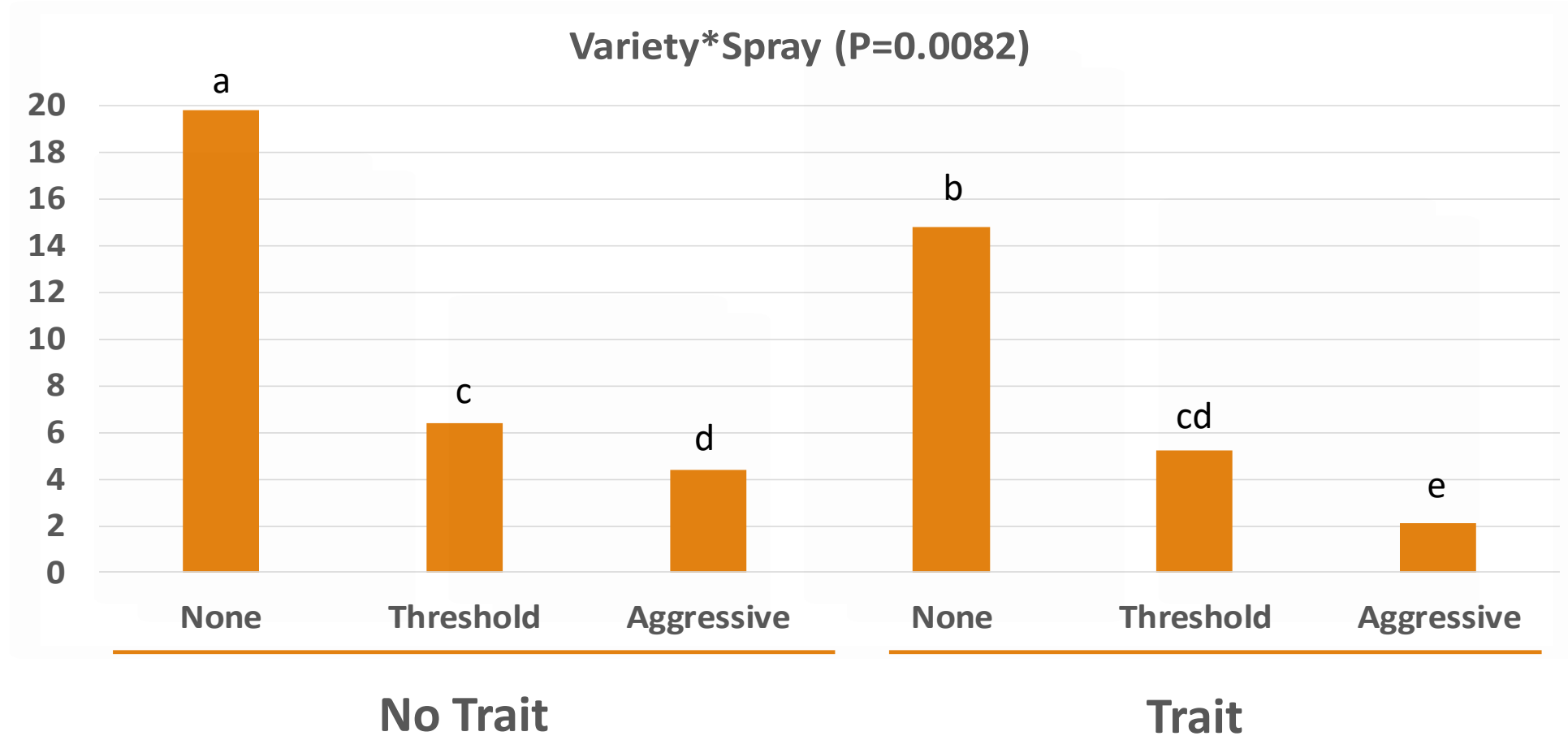
Spray Regime (P<0.0001)



Averaged over 2 years in 2 locations

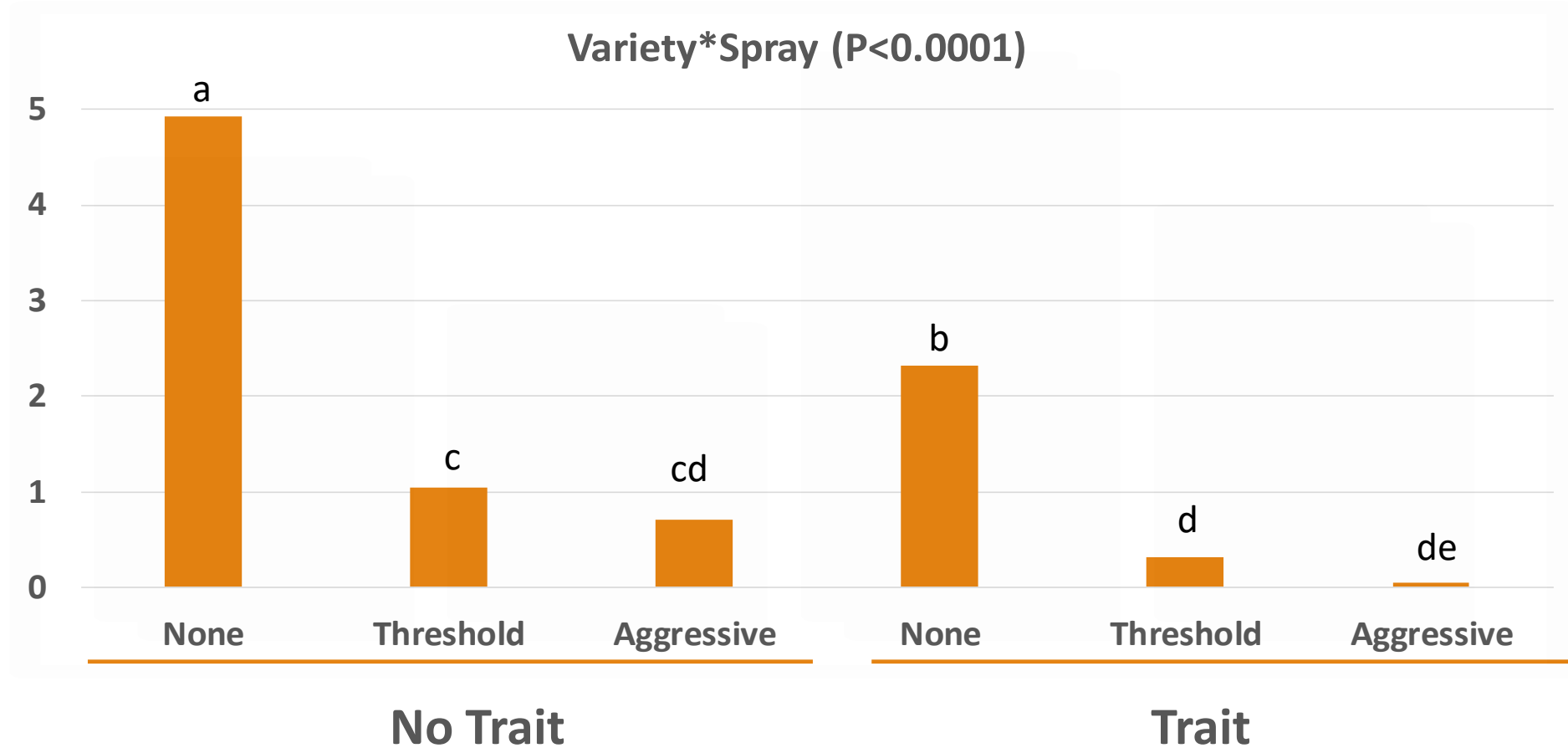
Season Average Nymphs

Drop Cloth – Numbers per 10 Row Ft



Averaged over 2 years in 2 locations

Season Average Large Nymphs *Drop Cloth – Numbers per 10 Row Ft*



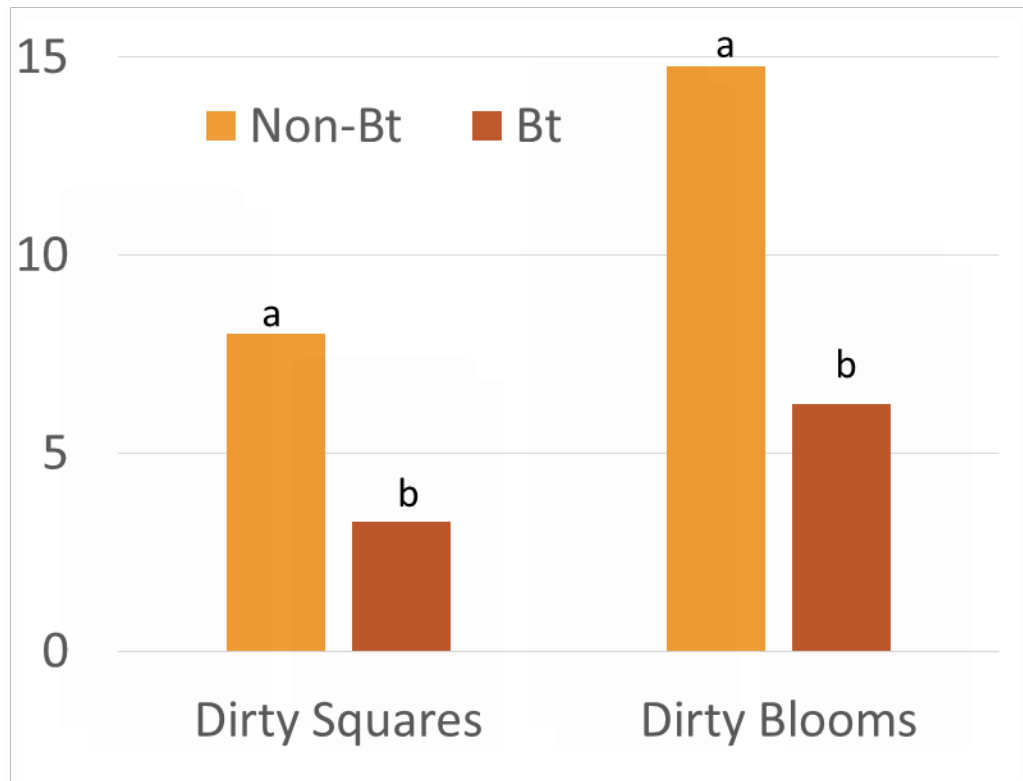
Averaged over 2 years in 2 locations

Thrips / Lygus Trait

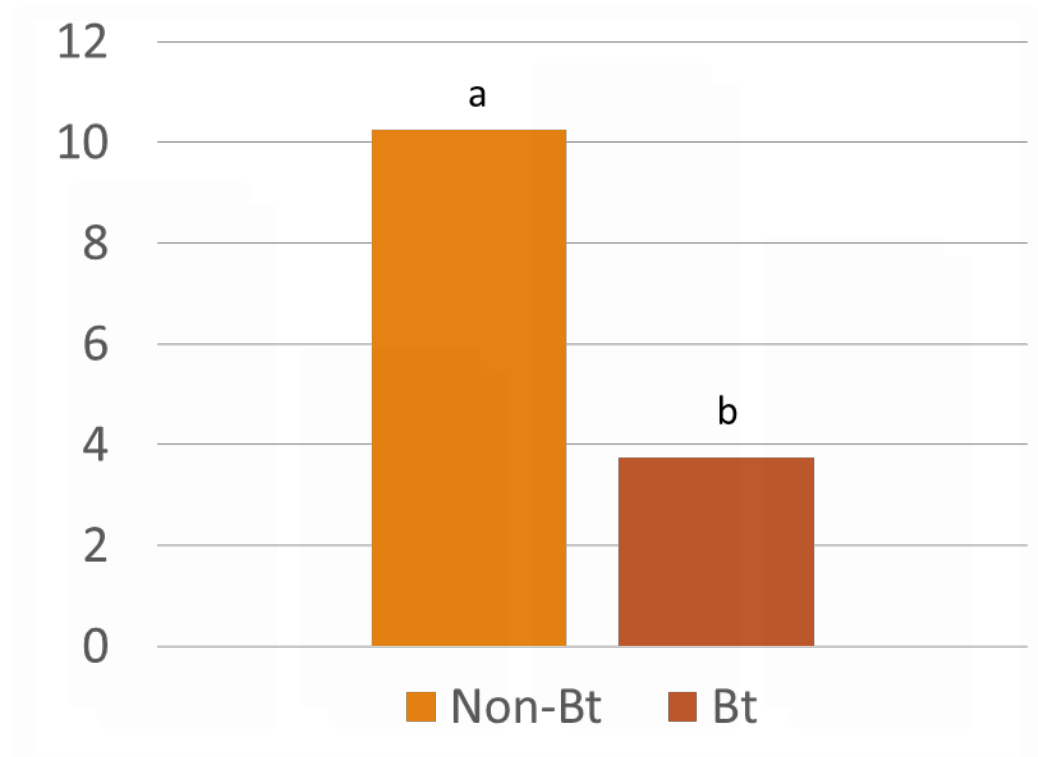
2017, Unsprayed Plots in TN



PLANT BUG INJURED (#/25)



TOTAL PLANT BUGS



Non-BT



BT

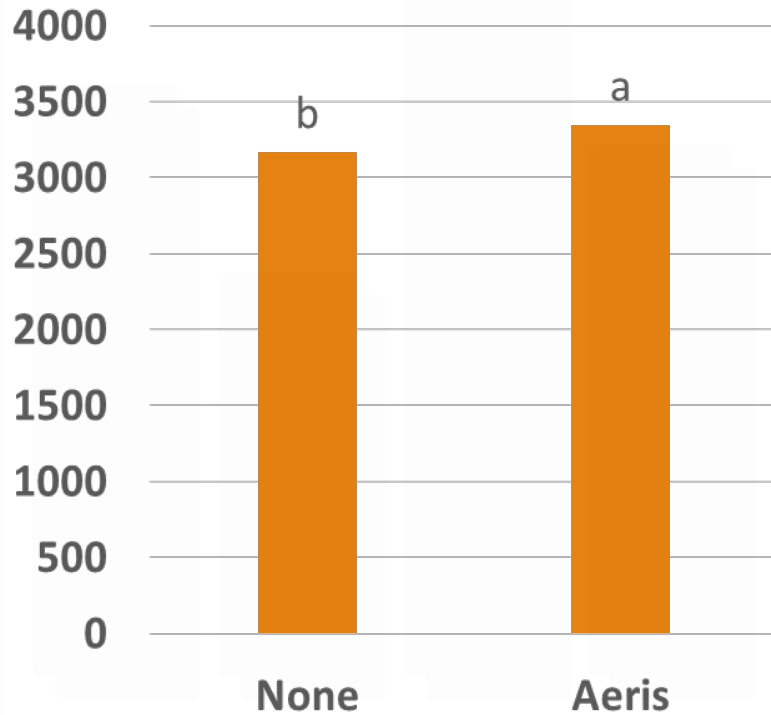


1/6 SUPERTUFF
MFG. CO.
Florence, KY 41042
Made in USA

Yield

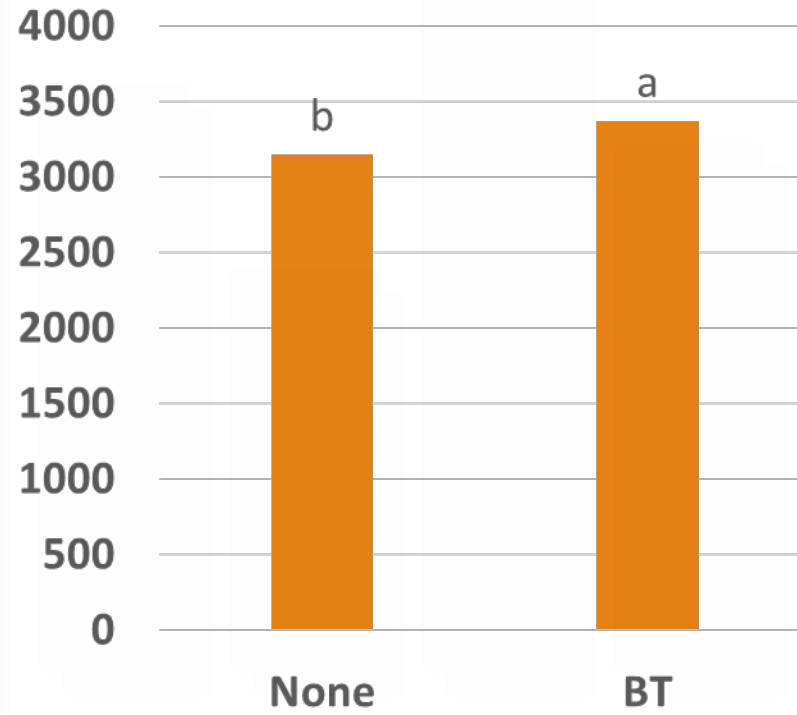
Pounds of Seed Cotton per Acre

IST (P=0.0008)



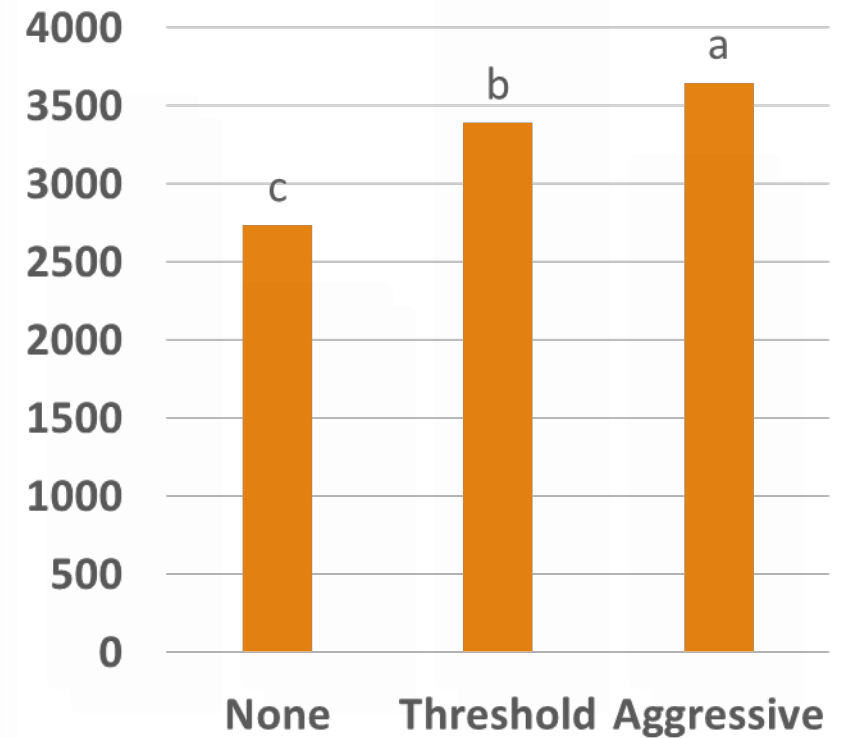
IST * Trait Interaction

Trait (P<0.0001)



Trait * Spray Regime Interaction

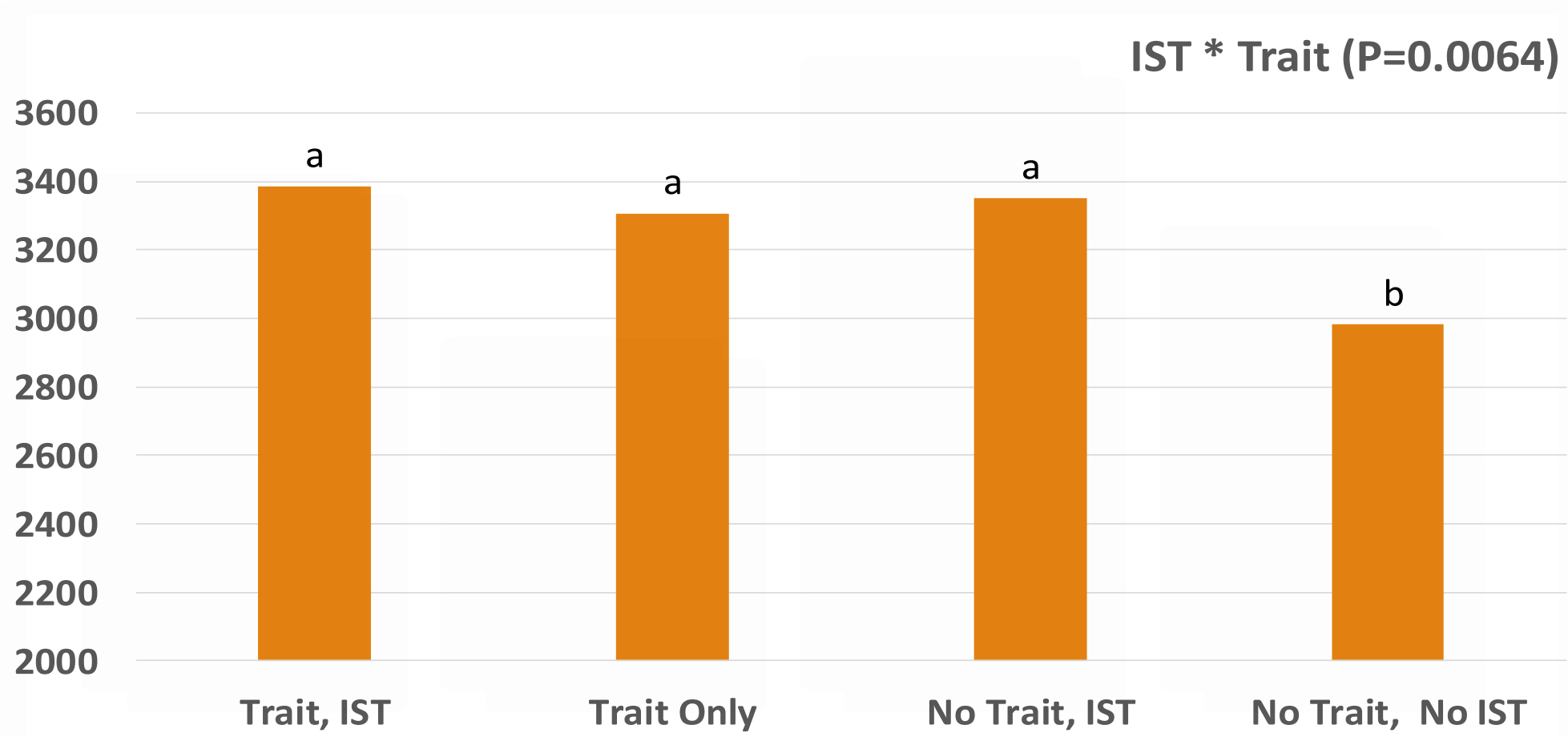
Spray Regime (P<0.0001)



Averaged over 2 years in 2 locations

Yield

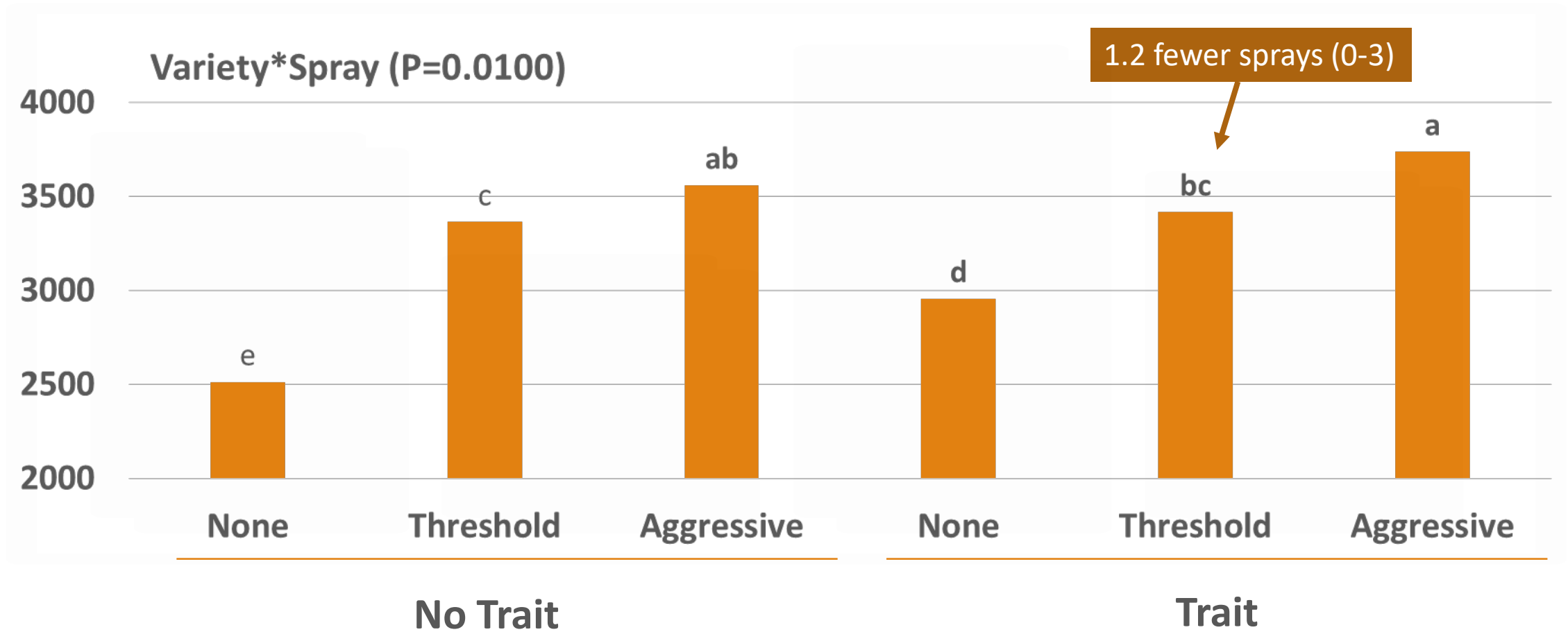
Pounds of Seed Cotton per Acre



Averaged over 2 years in 2 locations

Yield

Pounds of Seed Cotton per Acre



Averaged over 2 years in 2 locations

Conclusions

The Bt trait gave as good or better control than the best, alternative thrips control strategy

The Bt trait also:

- Reduced plant bugs
- Decreased plant bug injury
- Decreased insecticide applications
- Similar observations in Mississippi

Still need more experience



Acknowledgements

Thank you to

- Monsanto
- Cotton Incorporated
- Sandy Steckel and Matthew Williams
- Randi Dunagan, Clay Perkins, and our Summer Crew



MONSANTO

