

# Management of Caterpillar Pests in Soybean

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# Corn Earworm (*Helicoverpa zea*)

- Primary pest of soybean in Arkansas and the Midsouth.
- The corn earworm overwinters in its pupal stage, emerges as an adult (moth) in April and May, and progresses through multiple generations by the end of the September.
- Corn earworm spends the first generation in field corn where they develop in ears before moving into soybeans and other crops.
- Moths deposit eggs on soybean leaves and stems, eggs hatch into caterpillars in two to three days and develop through six stages (instars) .
- Reaching full size in about two weeks.







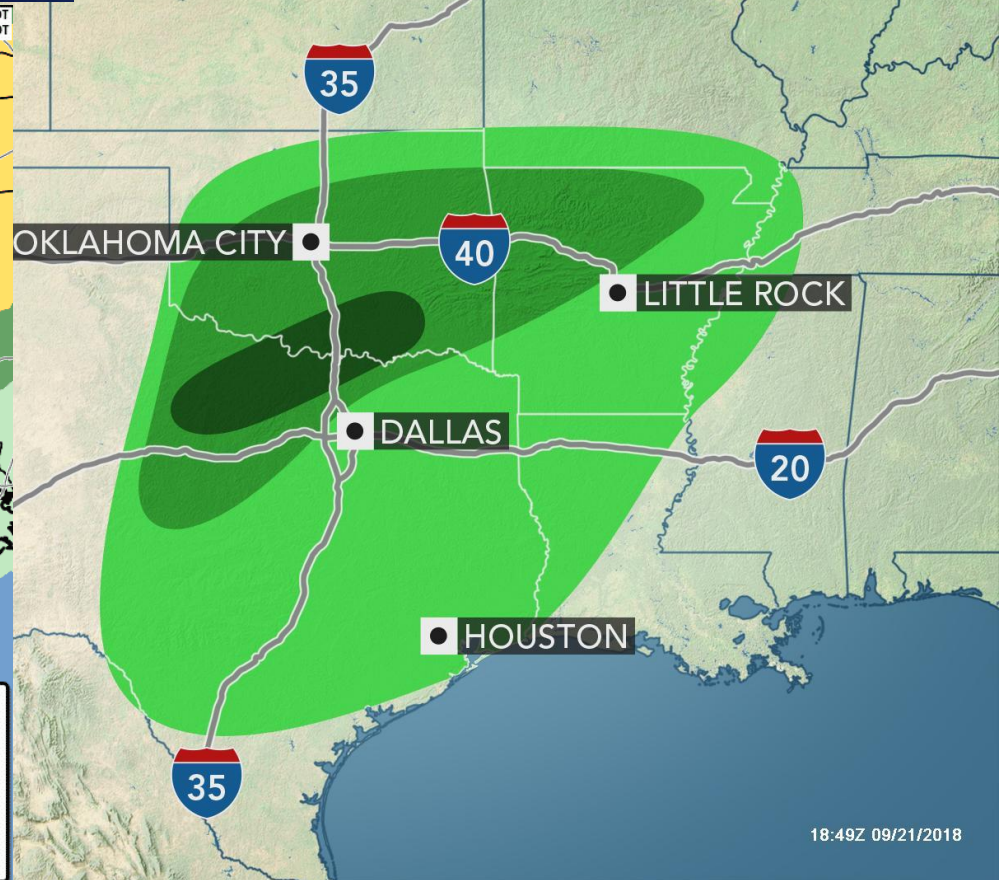
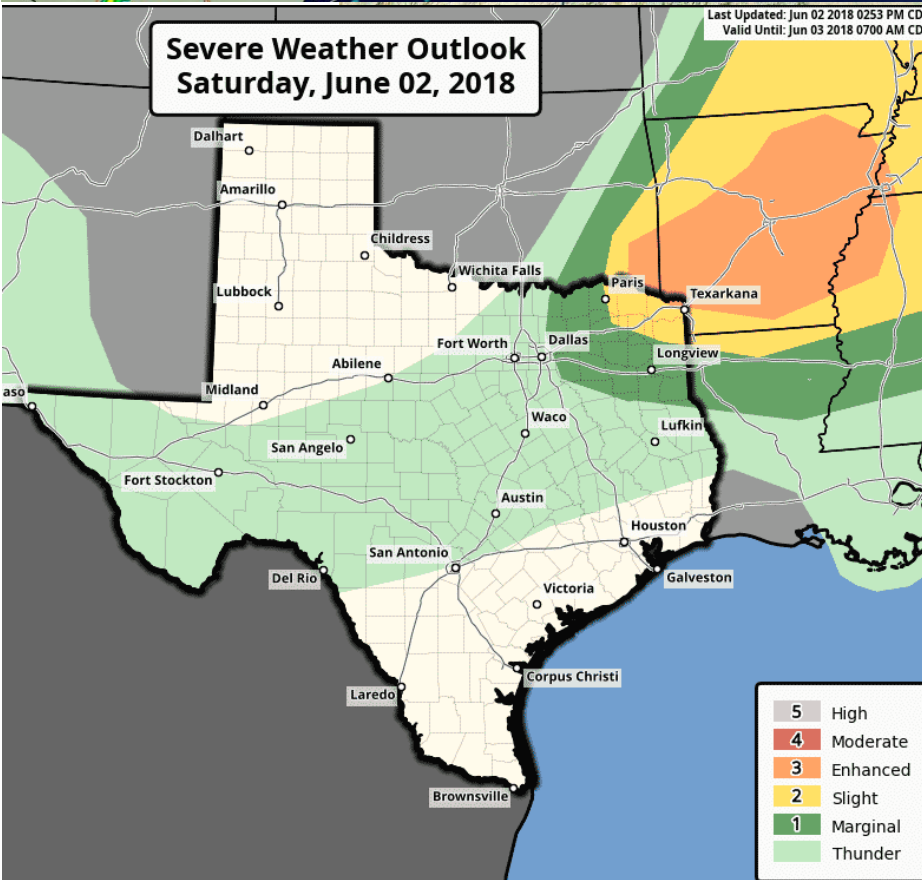
# TORNADO OUTBREAK WARNINGS

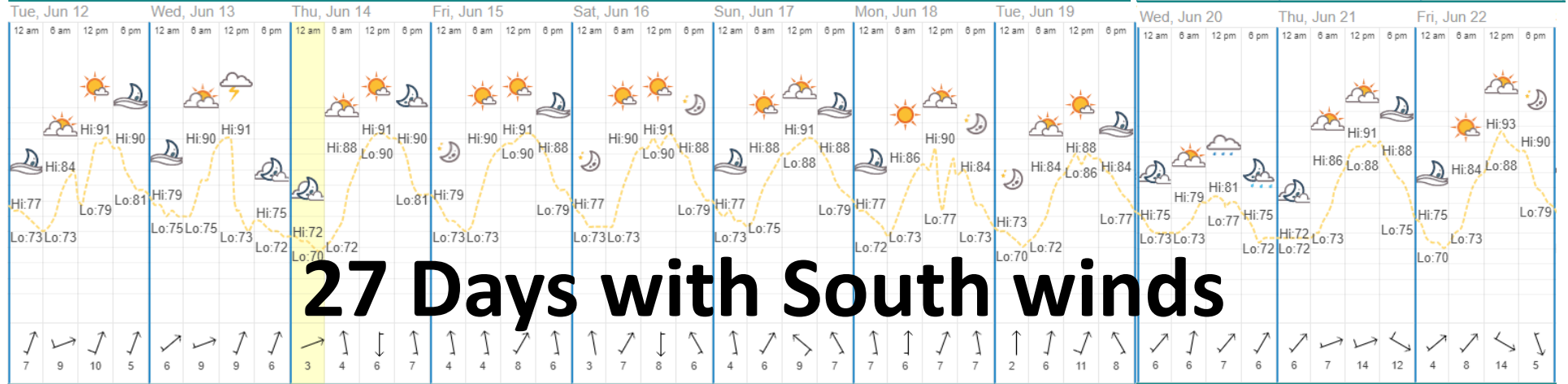
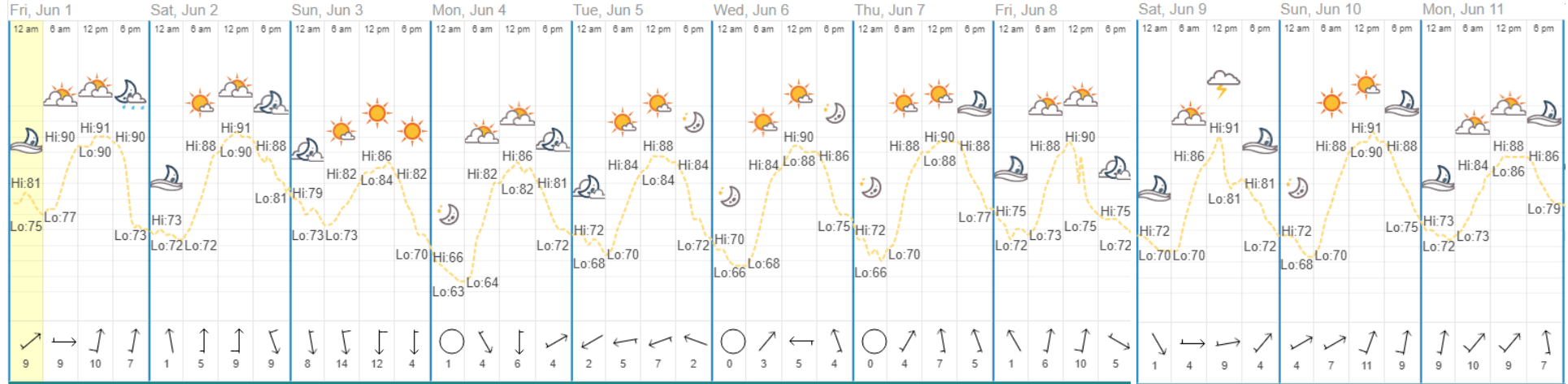
## ARKANSAS N.WEST LA N.EAST TX

### LIGHTNING

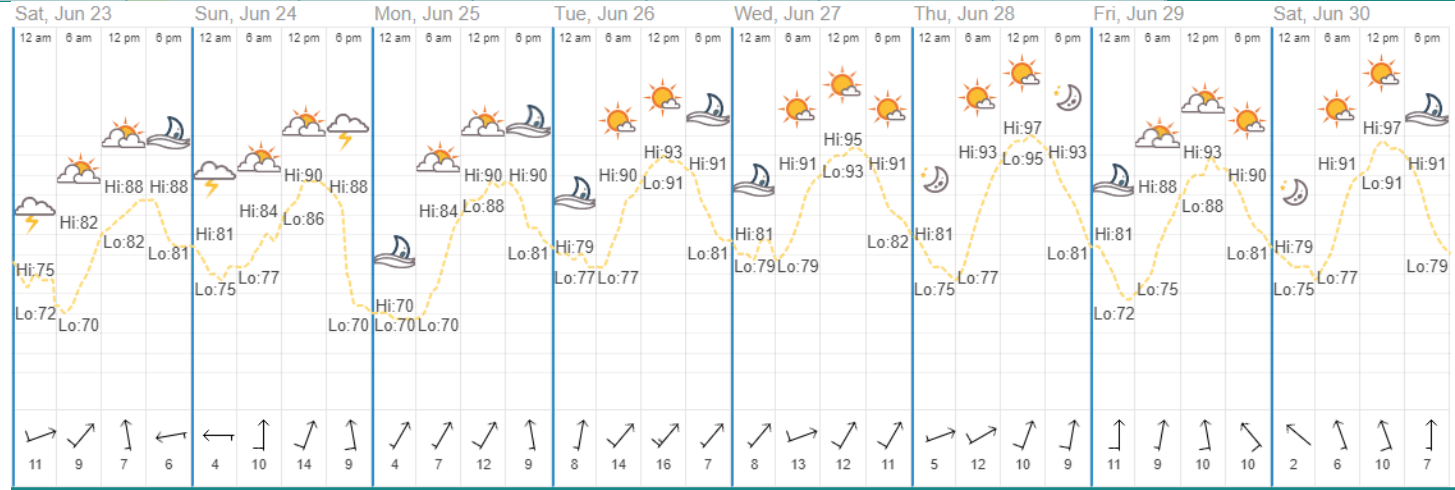
### 2/24

### STORM THREAT



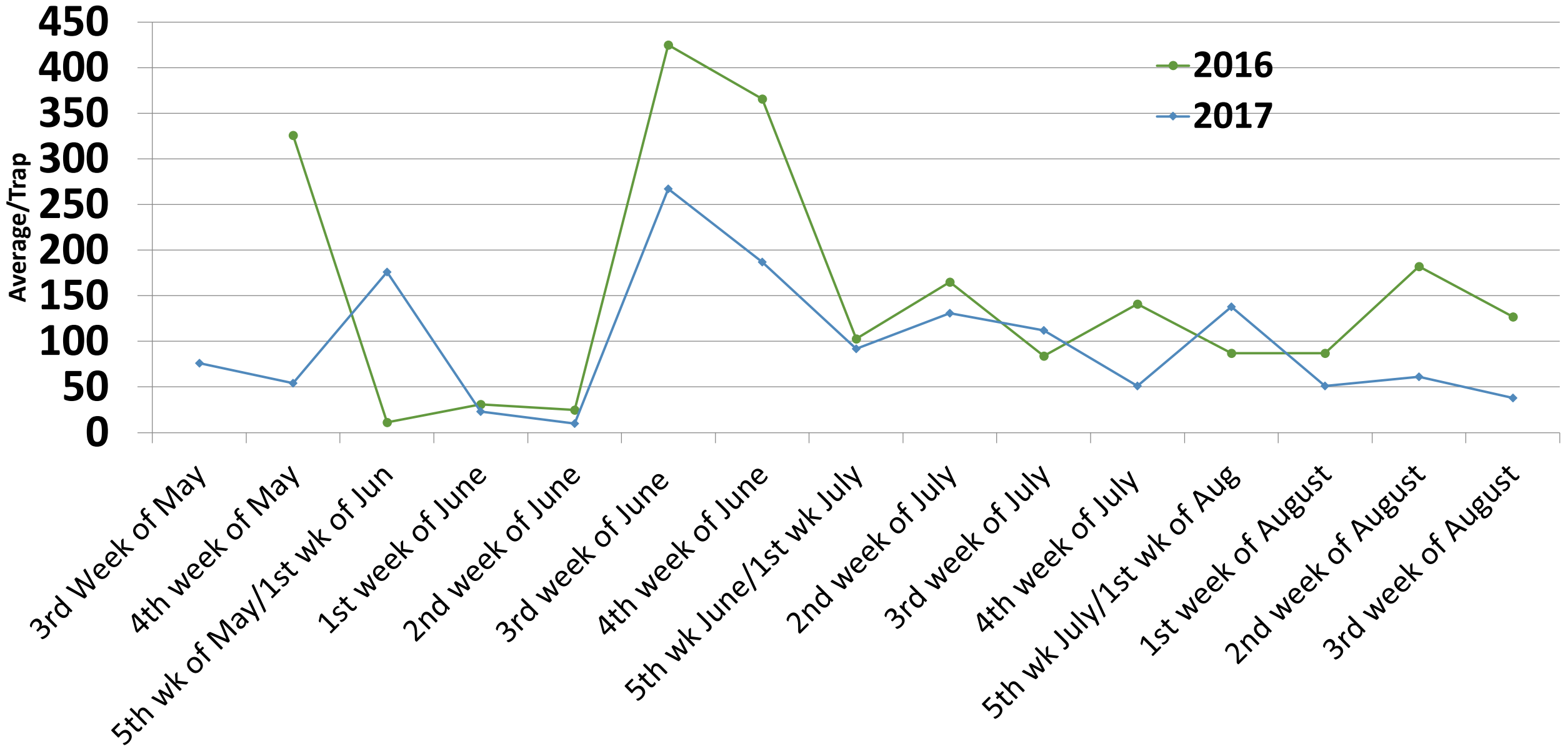


**27 Days with South winds**



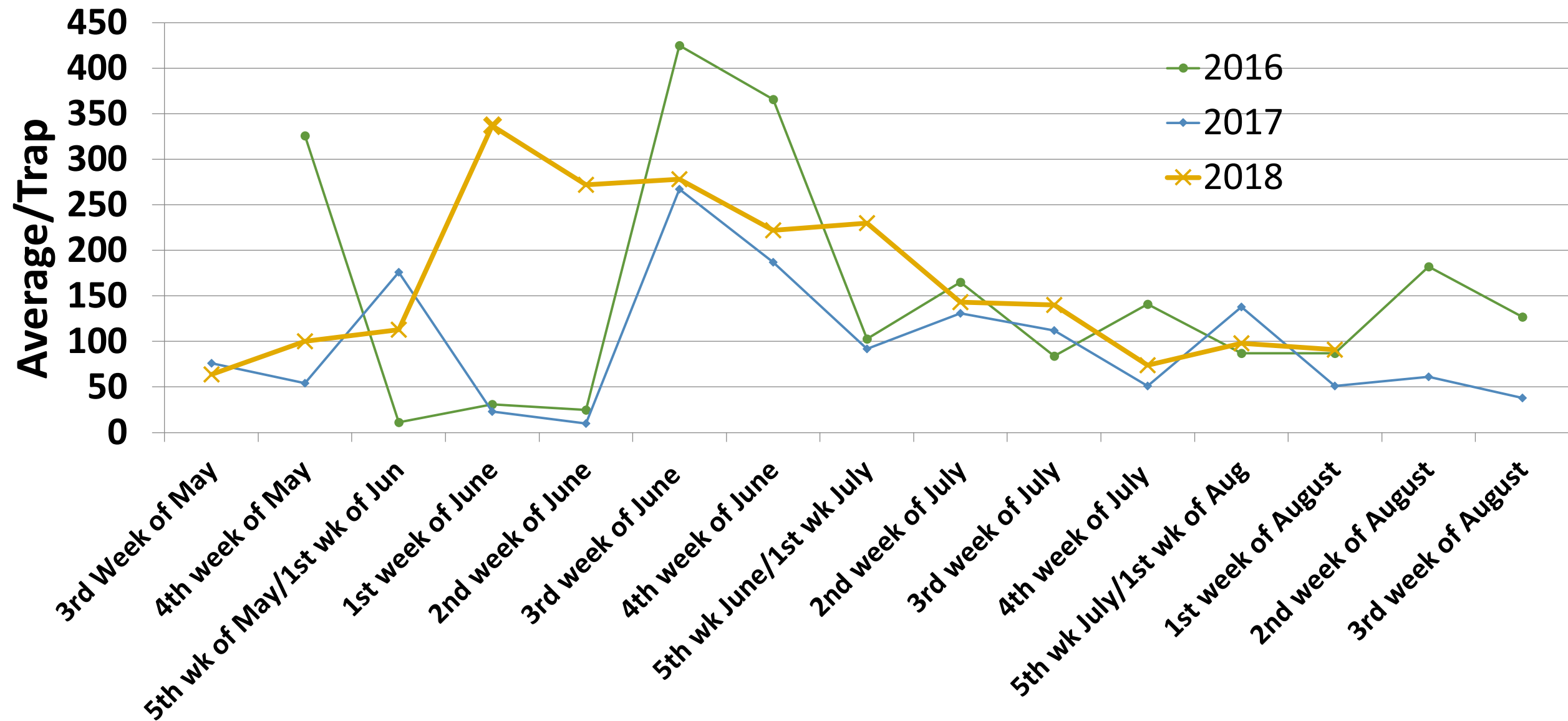


# Weekly Average Trap Count Lonoke County





# Weekly Average Trap Count Lonoke County











# Feeding and Damage

- Corn earworm feed on flowers and leaves through all instars
- Most damage occurs during the last two instars (5<sup>th</sup> and 6<sup>th</sup>) by feeding on the developing pods
- “Hey Gus I got a bunch of worms but they’re all big so I think I’ll let ‘em cycle out....”





## Factors Affecting Insecticide Choice

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- In 2018, many growers experienced multiple flights of corn earworm in soybean which can result in being re-infested and additional yield loss.
- Insecticides that provide residual control of succeeding populations can become a very important factor in the selection of an insecticide.



# Avoiding Bollworms

- Plant part of your crop as early as possible:
  - Late March- Early April in SE AR
  - Early-Mid April in NE AR
- Narrow the row width...avoid wide rows particularly on late-planted beans
- The goal is to achieve canopy closure before bloom
- Avoid unnecessary applications (particularly pyrethroids)



# New Dynamic Threshold for Bollworm in Soybean for Arkansas and Midsouth

Assumes 90% control with application and basement threshold of 5/25

	Larvae/25 sweeps						
	Control costs (\$/acre)						
Crop value (\$/bu)	8	10	12	14	16	18	20
6	6.5	8.2	9.8	11.4	13.1	14.7	16.3
7	5.6	7.0	8.4	9.8	11.2	12.6	14.0
8	5.0	6.1	7.4	8.6	9.8	11.0	12.3
9	5.0	5.4	6.5	7.6	8.7	9.8	10.9
10	5.0	5.0	5.9	6.9	7.8	8.8	9.8
12	5.0	5.0	5.0	5.7	6.5	7.4	8.2
13	5.0	5.0	5.0	5.3	6.0	6.8	7.5
15	5.0	5.0	5.0	5.0	5.2	5.9	6.5





## Objective

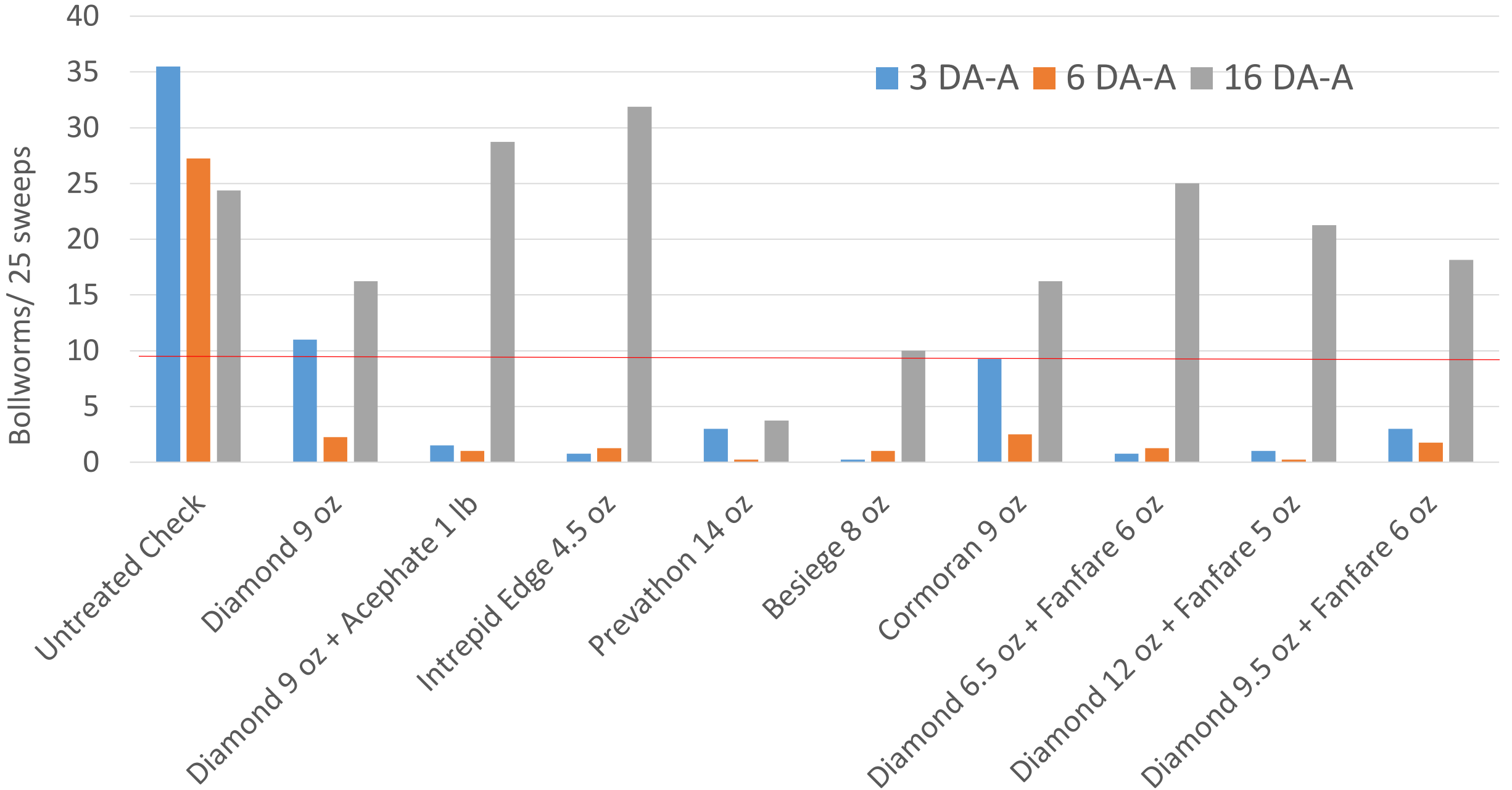
Determine the efficacy of selected insecticides for control of corn earworm in soybeans and evaluate residual control.

# Treatment List

- Untreated Check
- Diamond 9 oz
- Diamond 9 oz + Acephate 1 lb
- Intrepid Edge 4.5 oz
- Prevathon 14 oz
- Besiege 8 oz
- Cormoran 9 oz
- Diamond 6.5 oz + Fanfare 6 oz
- Diamond 12 oz + Fanfare 5 oz
- Diamond 9.5 oz + Fanfare 6 oz
- Diamond is an Insect Growth Regulator (IGR)
- Acephate is an Organophosphate
- Intrepid Edge is a premix of Methoxyfenozide (IGR) and Spinetoram a spinosyn (similar to Tracer)
- Prevathon is an anthranilic diamide
- Besiege is Prevathon + lambda cyhalothrin a pyrethroid (Karate)
- Cormoran is a premix of acetamiprid a neonicotinoid insecticide and diamond
- Fanfare is bifenthrin a pyrethroid



# Soybean Lep Efficacy 2018

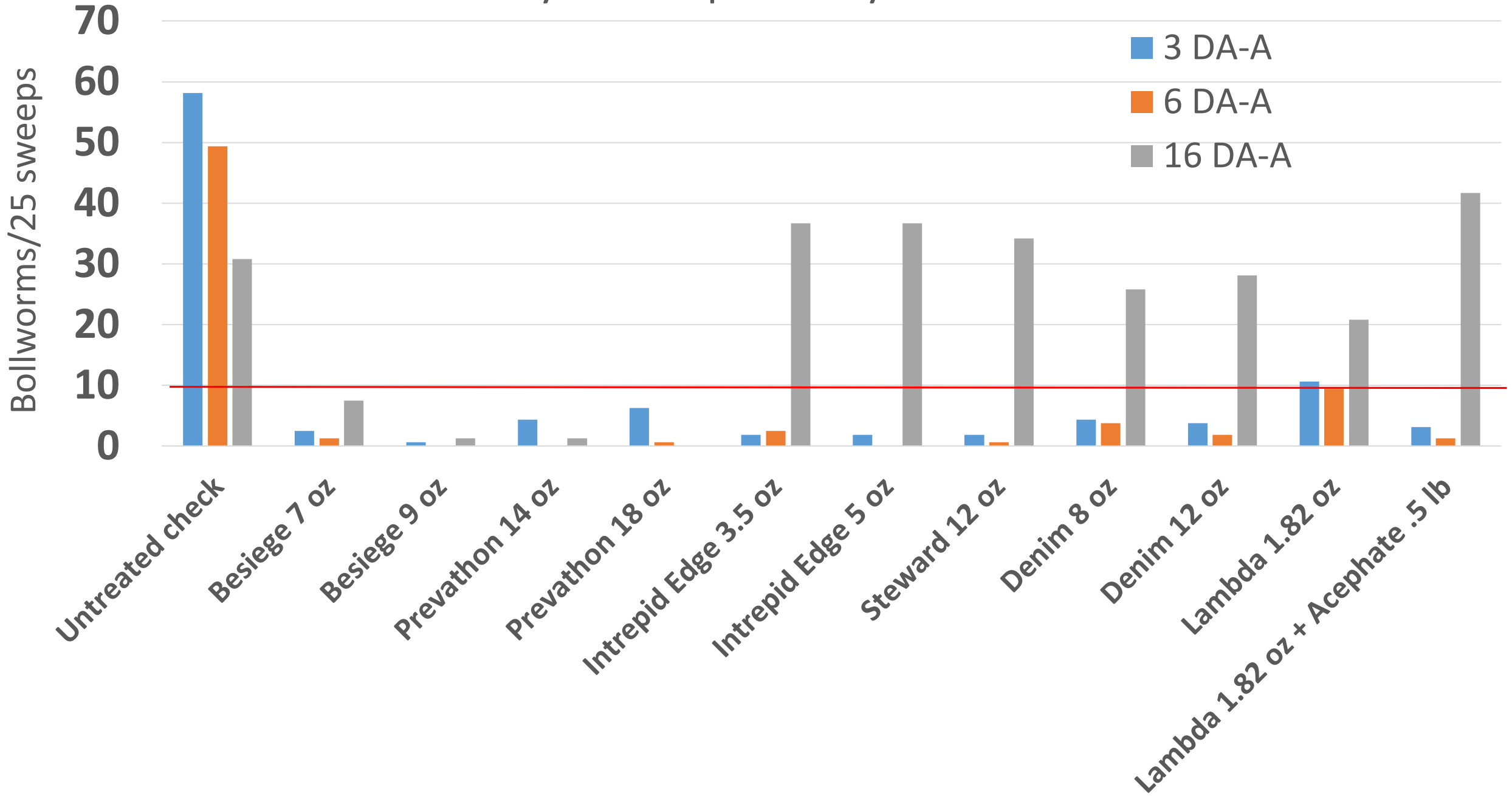


# Treatment List

- Untreated Check
  - Besiege 7 oz
  - Besiege 9 oz
  - Prevathon 14 oz
  - Prevathon 18 oz
  - Intrepid Edge 3.5 oz
  - Intrepid Edge 5 oz
  - Steward 12 oz
  - Denim 8 oz
  - Denim 12 oz
  - Lambda 1.82 oz
  - Lambda 1.82 oz + Acephate .5 Lb
- Steward is indoxicarb, a novel insecticide group
  - Denim is emamectin benzoate an avermectin (sister compound to abamectin)



# Soybean Lep Efficacy 2018-2



# Conclusion

- These studies indicated only Prevathon (chlorantraniliprole) and Besiege (chlorantraniliprole + lambda cyhalothrin) provided residual control of a second infestation of corn earworm.





# NucleoP olyhedro V irus



# *Hear*NPV

- *Hear*NPV is a virus that kills the host while making more virus
- Costs \$3-6/acre
- Only kills budworm and bollworm
  - **IDENTIFICATION IS KEY!**





# Scouting and Target Populations

- Current threshold for Reproductive Soybeans:
  - Averages ~9 larvae per 25 sweeps
- *HearNPV* threshold:
  - 3-5 SMALL larvae per 25 sweeps
- **Remember:** ONLY KILLS BUDWORM AND BOLLWORM!



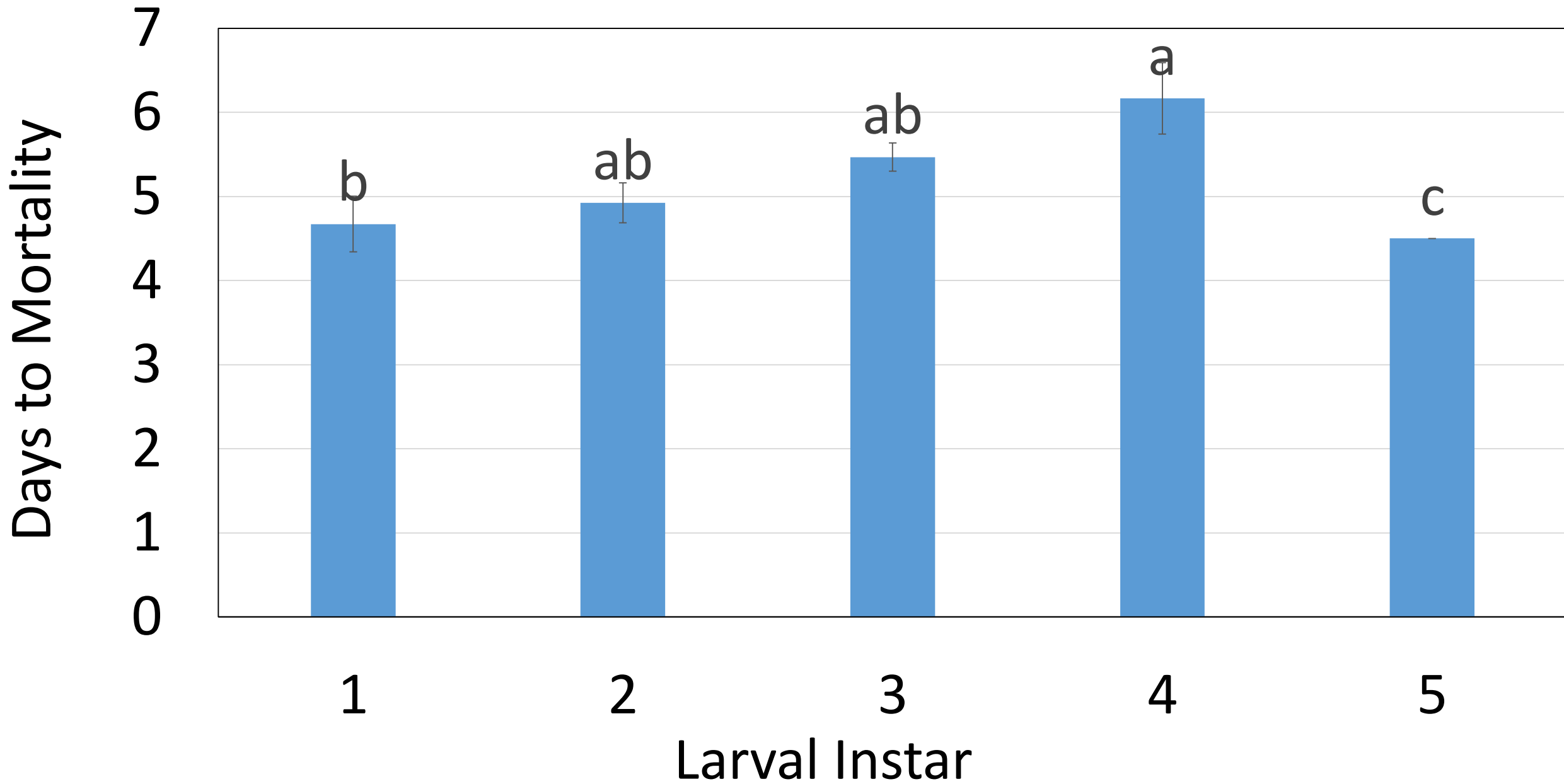
# *Hear*NPV Efficacy

- Most effective against larvae smaller than 0.5 inches
- Death occurs 4-6 days after infection





# Sprayed Instar by Time to Death



# Confidence in an Application

- Prior to 4-6 days post application look for:
  - Reduced damage and feeding
  - Larvae moving to the top of the canopy
  - Decreased larval defense response
- After 4-6 days post application ALSO look for:
  - Sweating larvae
  - Liquefied larvae





# Horizontal Transmission of *Hear*NPV

- Abiotic conditions
- Larva-to-larva
  - Cannibalism
  - Frass consumption
  - Surface contamination
- Parasitoid-to-larva
- Predator-to-larva































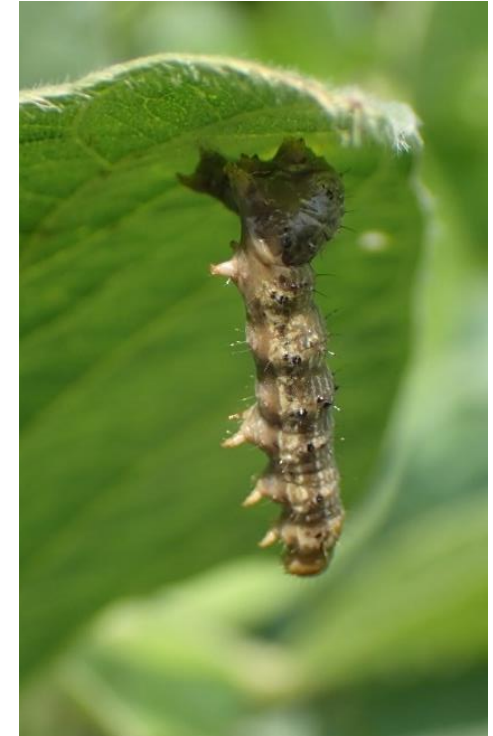






# Keys to Success with *HearNPV*

- *HearNPV* is a live virus – KEEP IT COOL!
- *HearNPV* ONLY kills budworm and bollworm
- Target population: 3-5 SMALL larvae per 25 sweeps
- Target larvae that are less than 0.5 inch long
- It takes *HearNPV* 4-6 days to kill the host larvae
- *HearNPV* can be spread by other insects



**ON A 78° DAY:**



Car parked in **SHADE** = 90°  
Car parked in **SUN** = 160°  
in minutes

**PLEASE DO NOT LEAVE  
YOUR  IN THE CAR!**

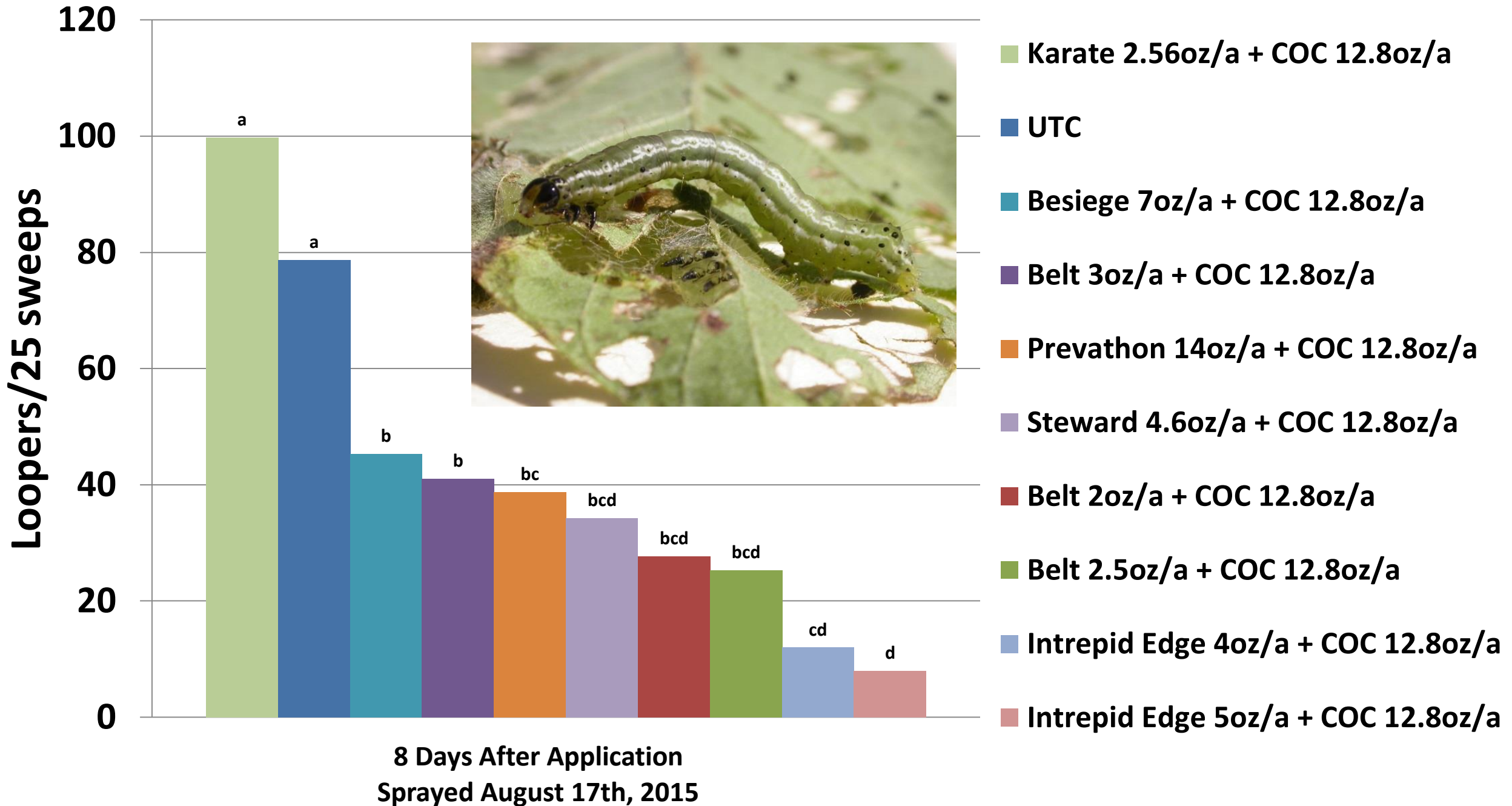




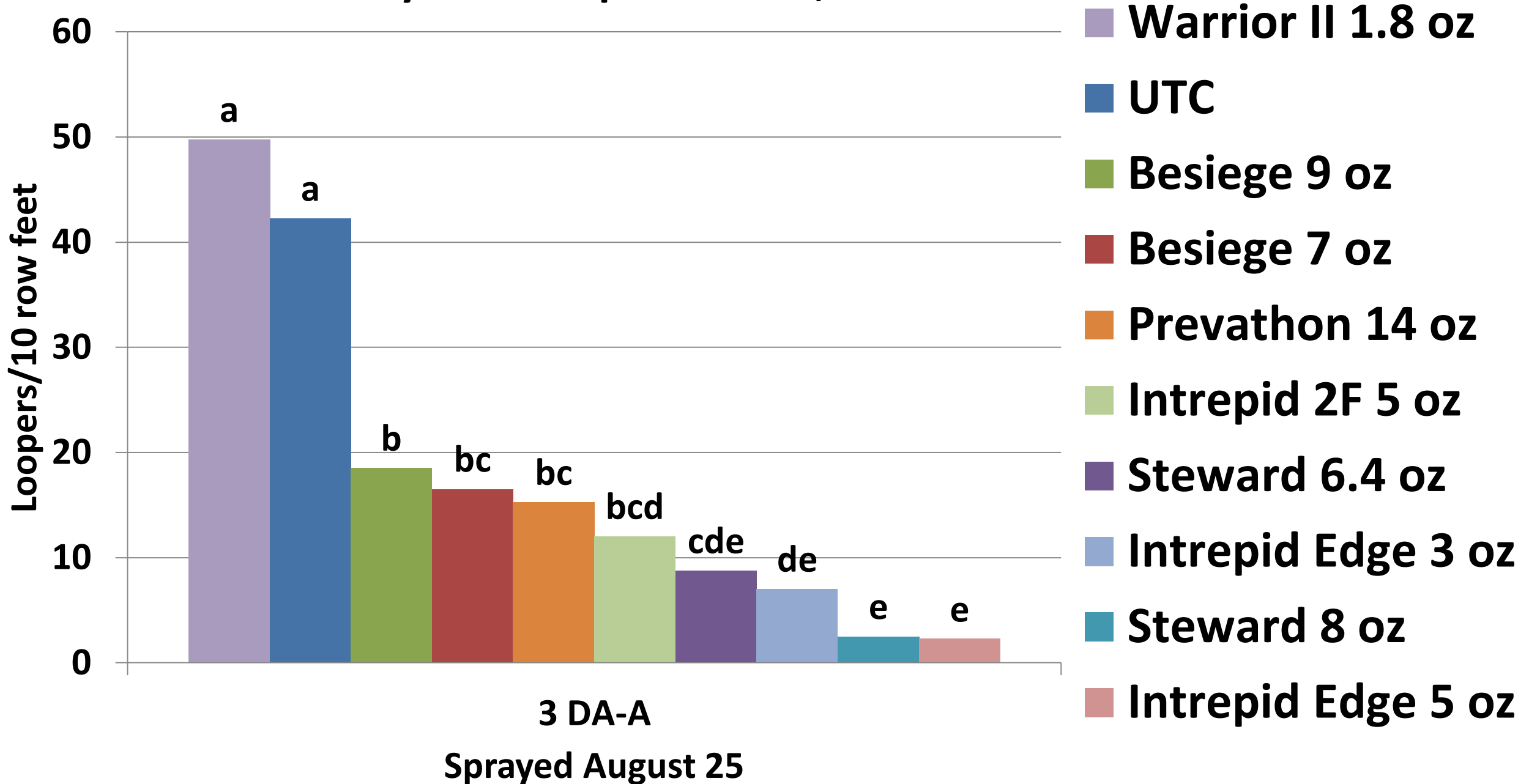
**Soybean Loopers**  
What's working?



# 10 trt Soybean Lep @ Pine Bluff, 2015

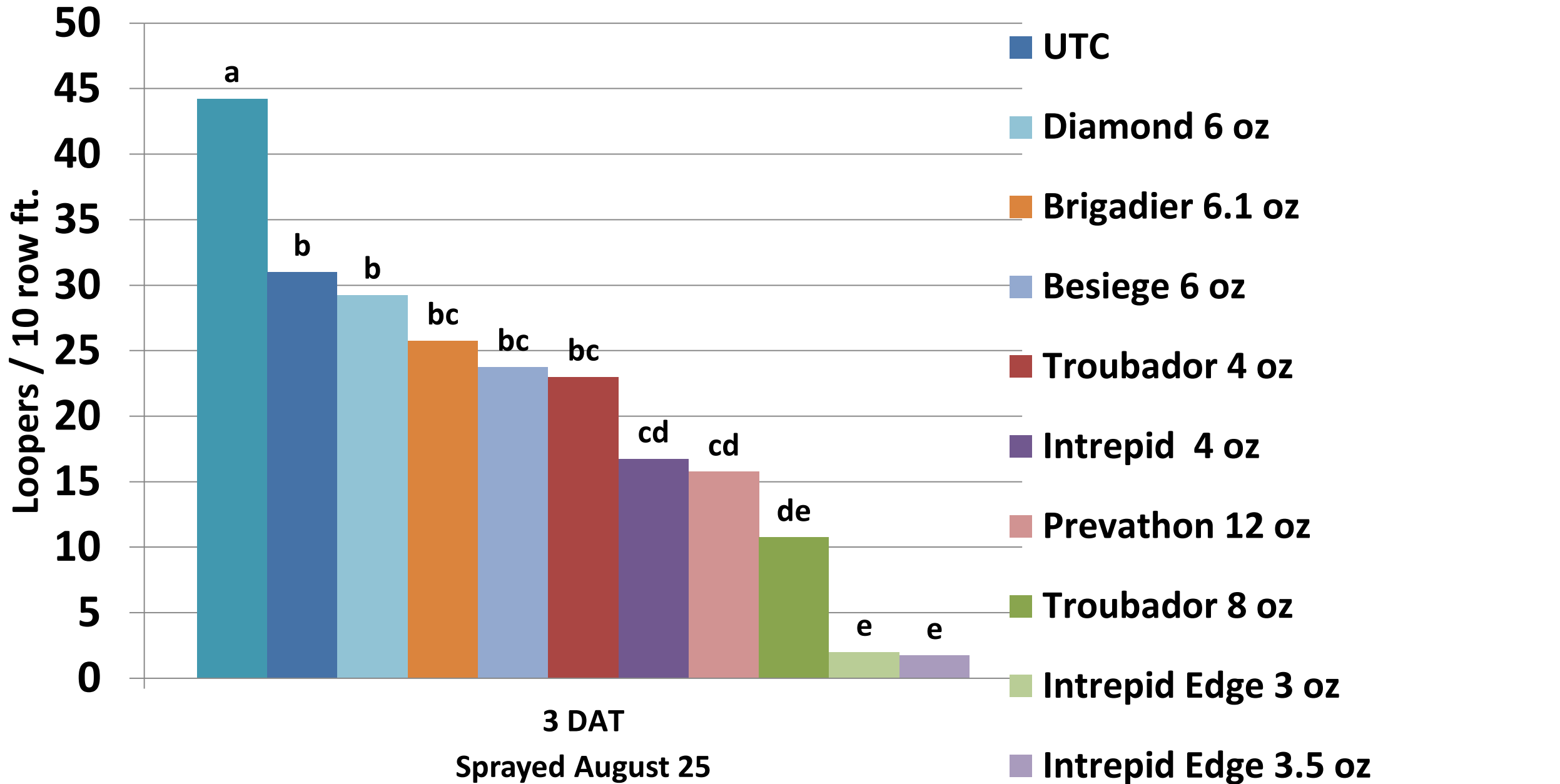


# Soybean Looper Trial #4, 2017





# Soybean Looper Trial #2, 2017







# 2018 Looper Plots

Worms not the  
only issue...

Did not appear  
to affect  
Caterpillar feeding

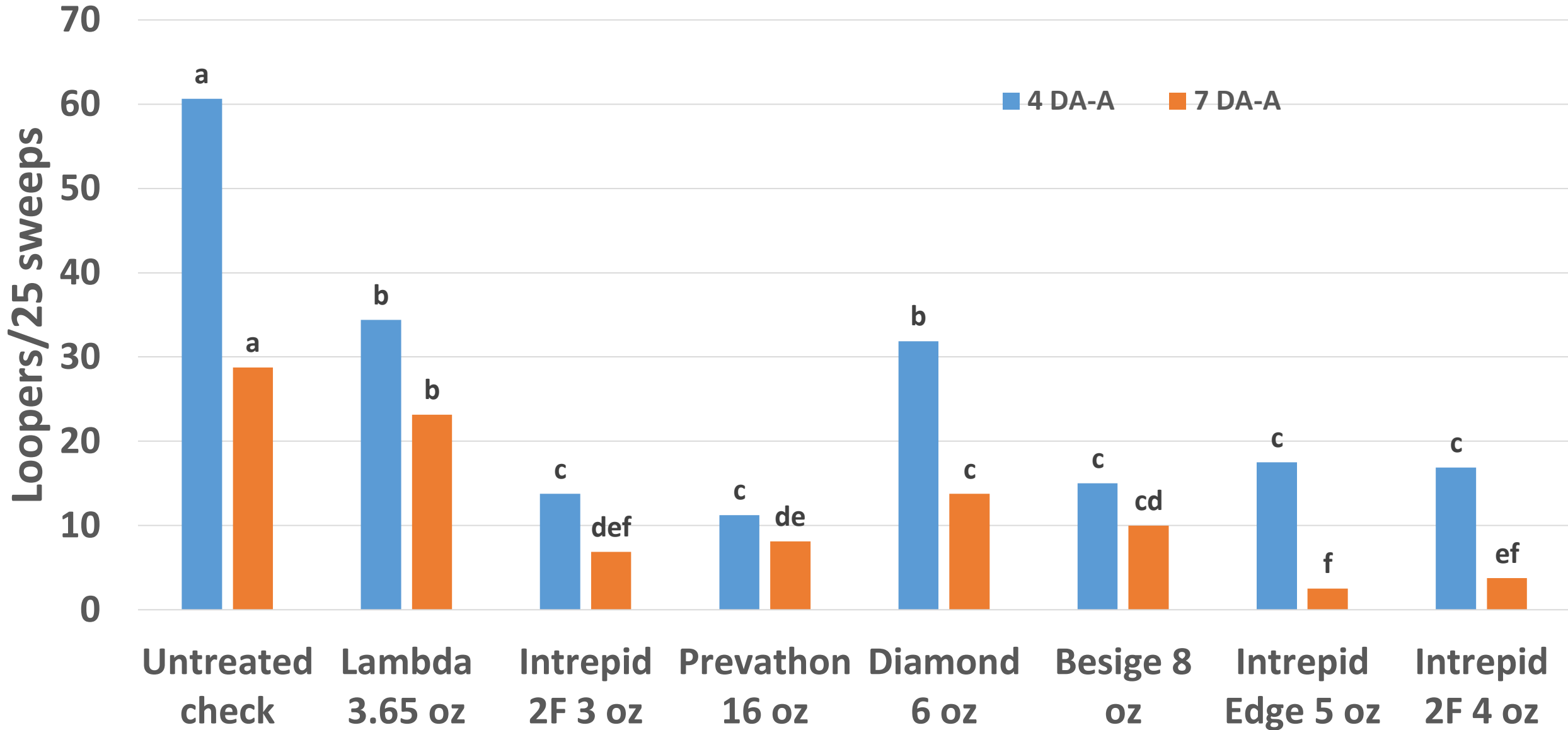




**Drop me a pin...**

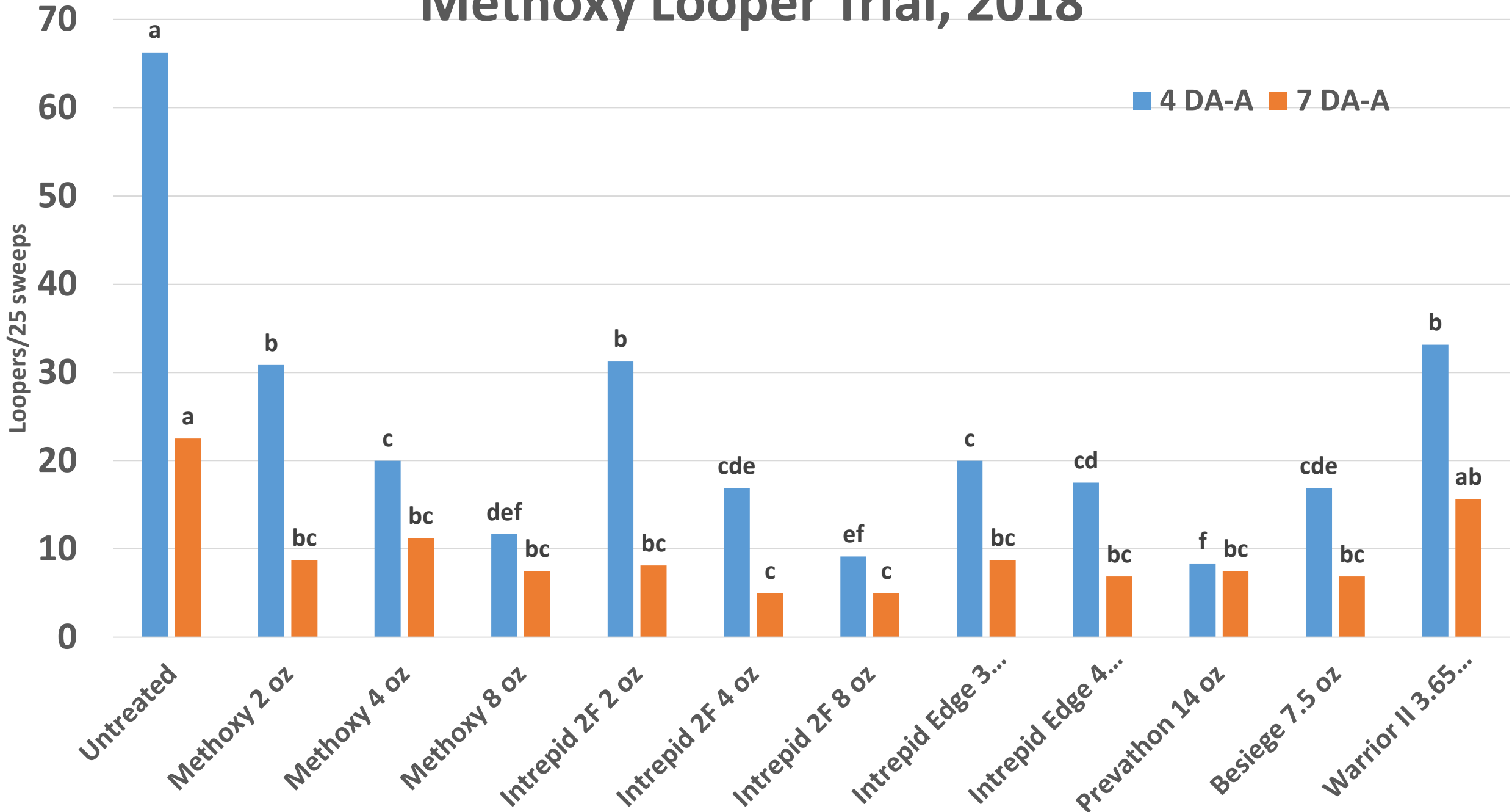


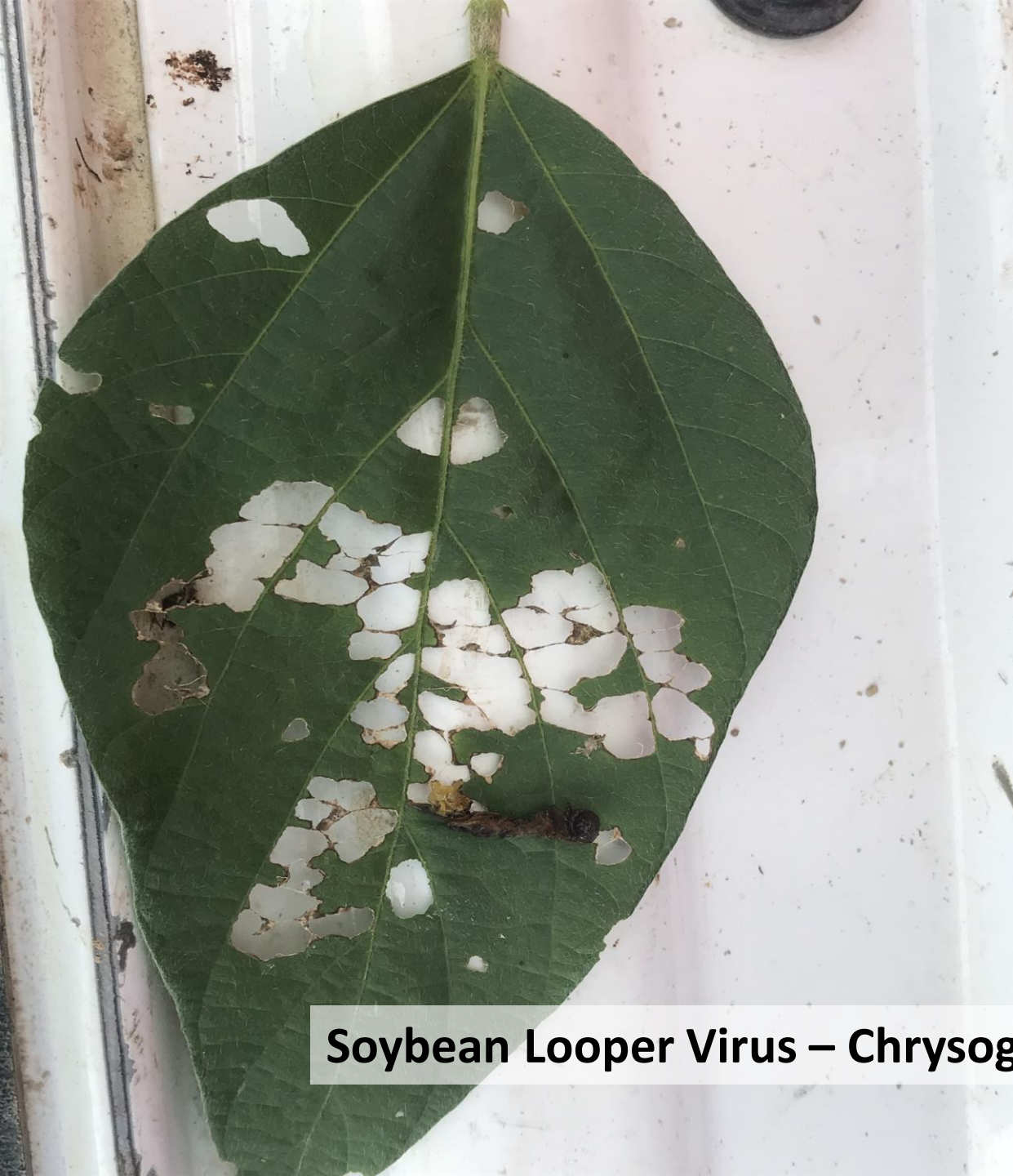
# Looper Efficacy Trial @ Barton





# Methoxy Looper Trial, 2018





**Soybean Looper Virus – Chrysogen coming soon to a field near you!**

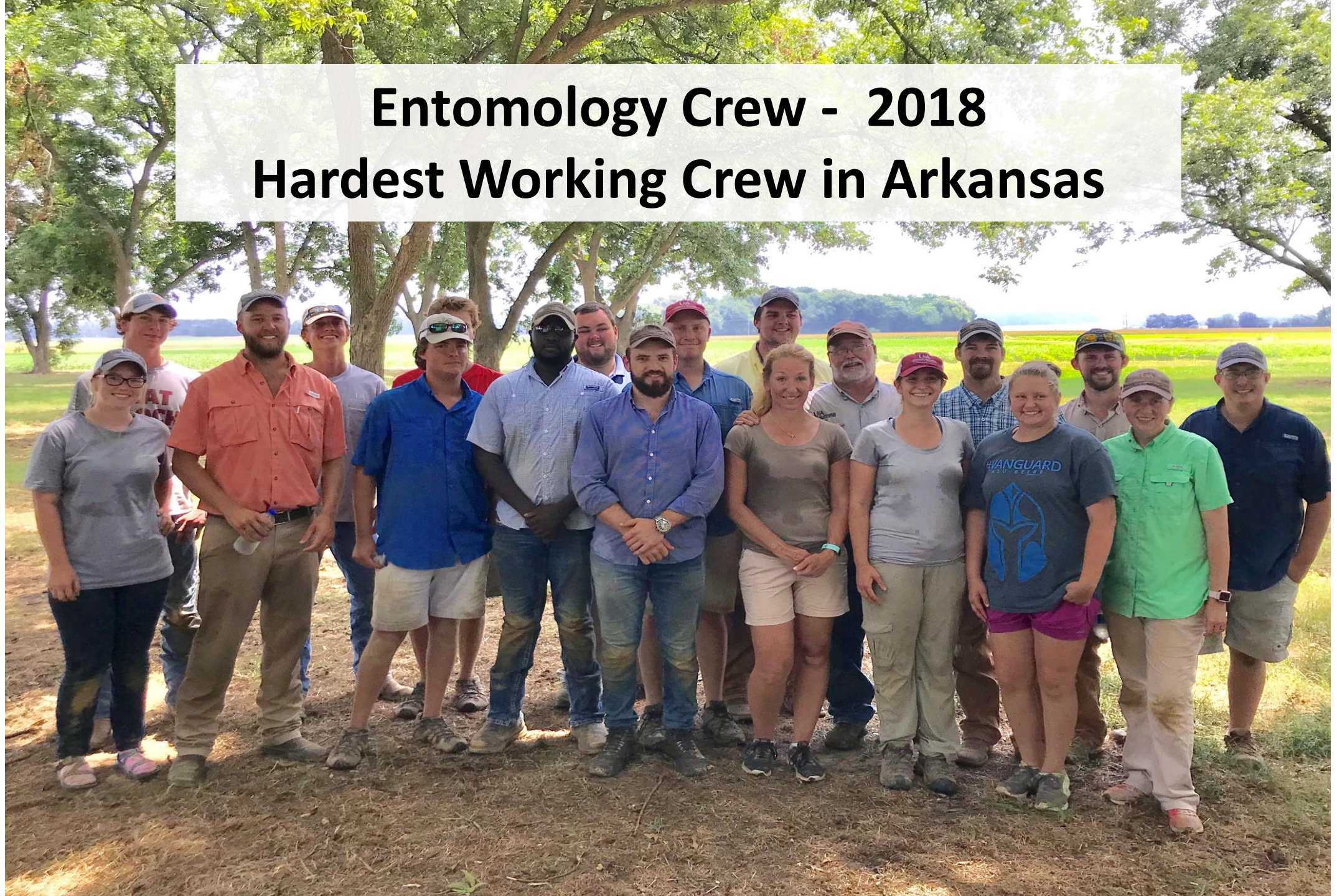






# Entomology Crew - 2018

## Hardest Working Crew in Arkansas





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Twitter: [@guslor77](https://twitter.com/guslor77)

Pest Patrol Hotline: To: 97063 Text: Pestpat6

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