

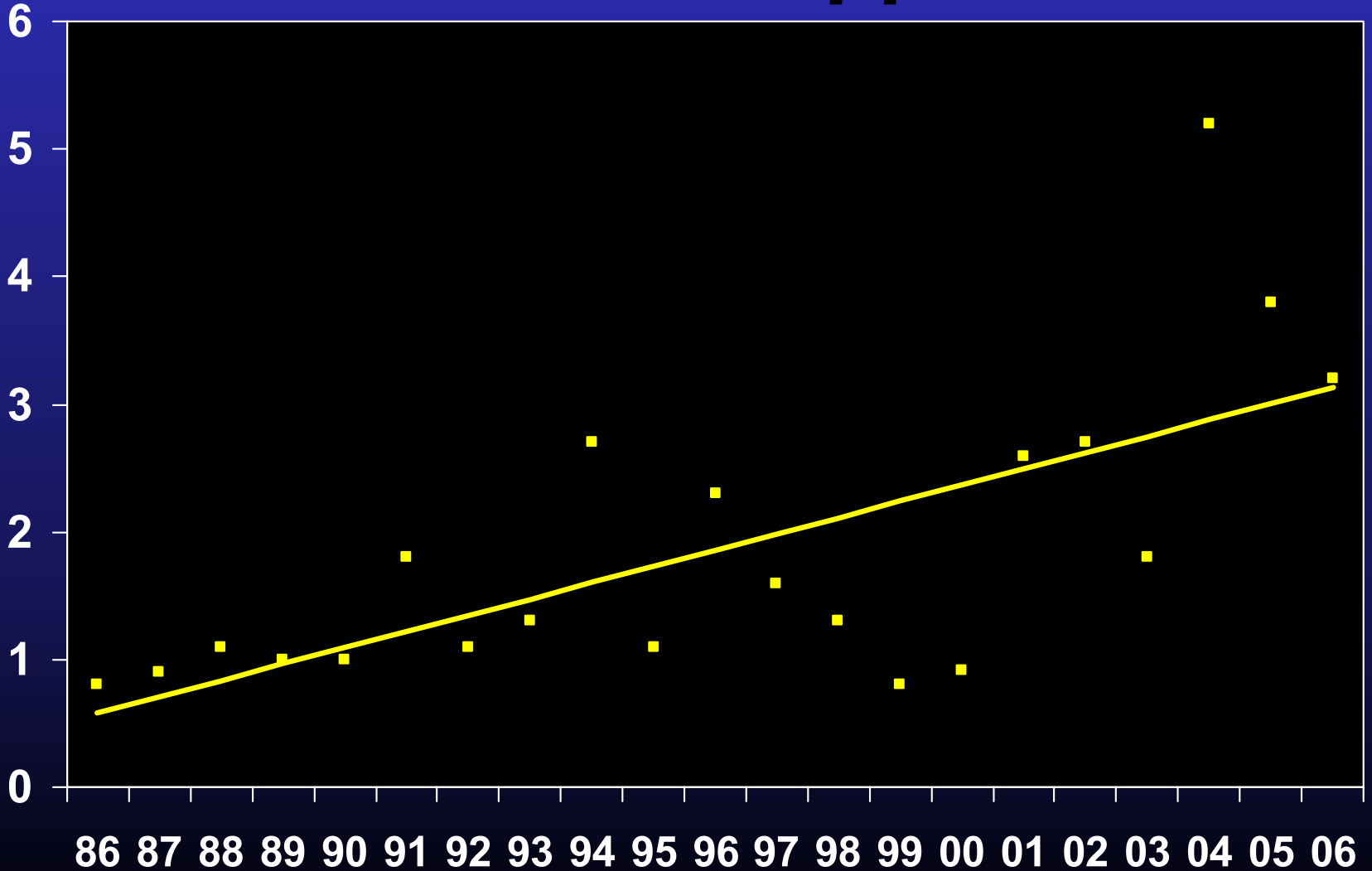
Status of Tarnished Plant Bug Control Strategies



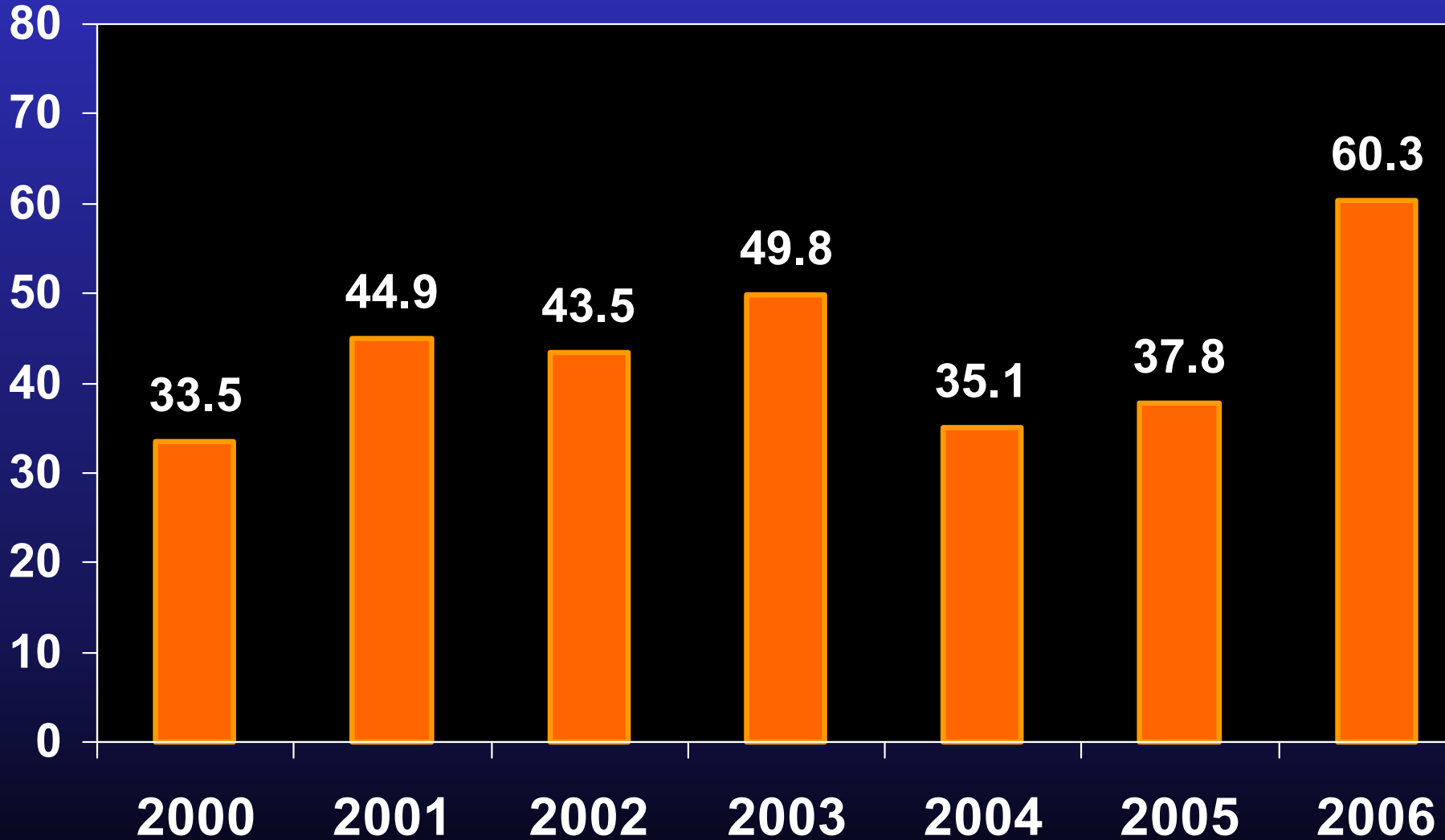
Jeff Gore – USDA-ARS, Stoneville

Tarnished Plant Bug Control: Mississippi

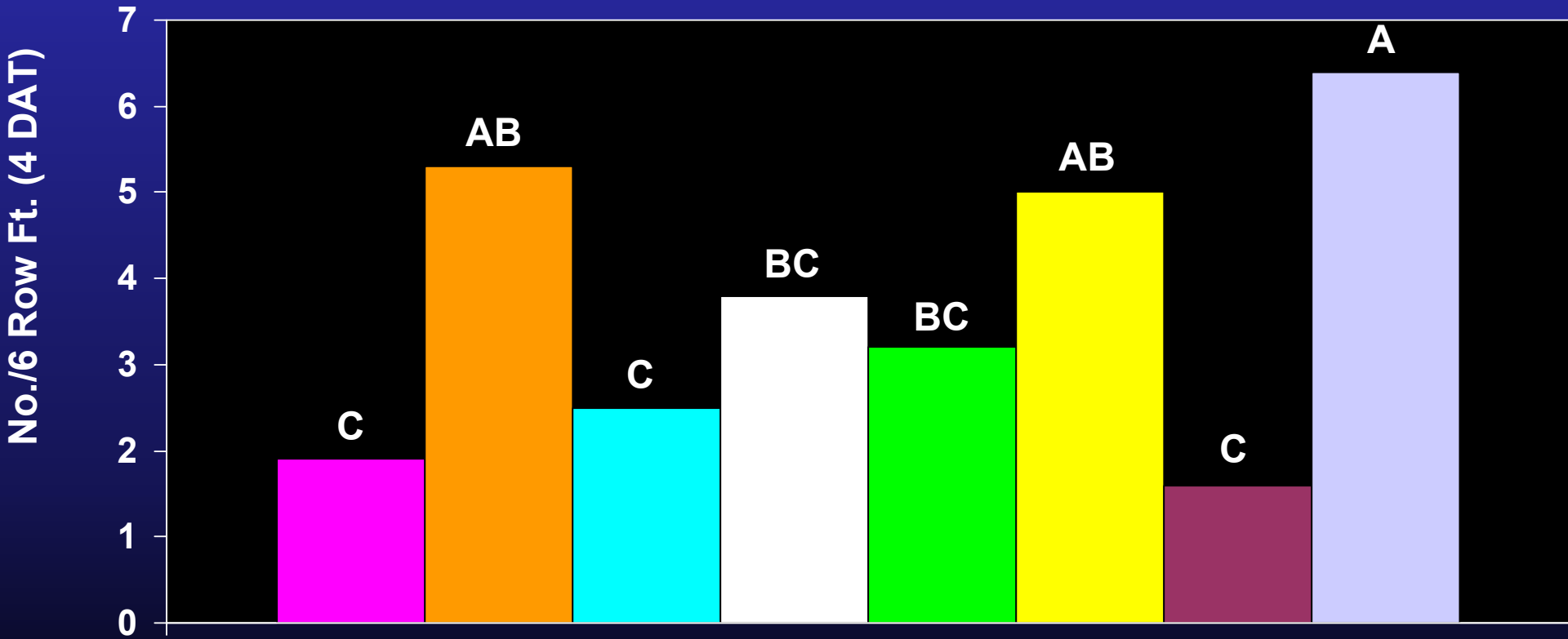
NO. APPLICATIONS



Pyrethroid Resistance



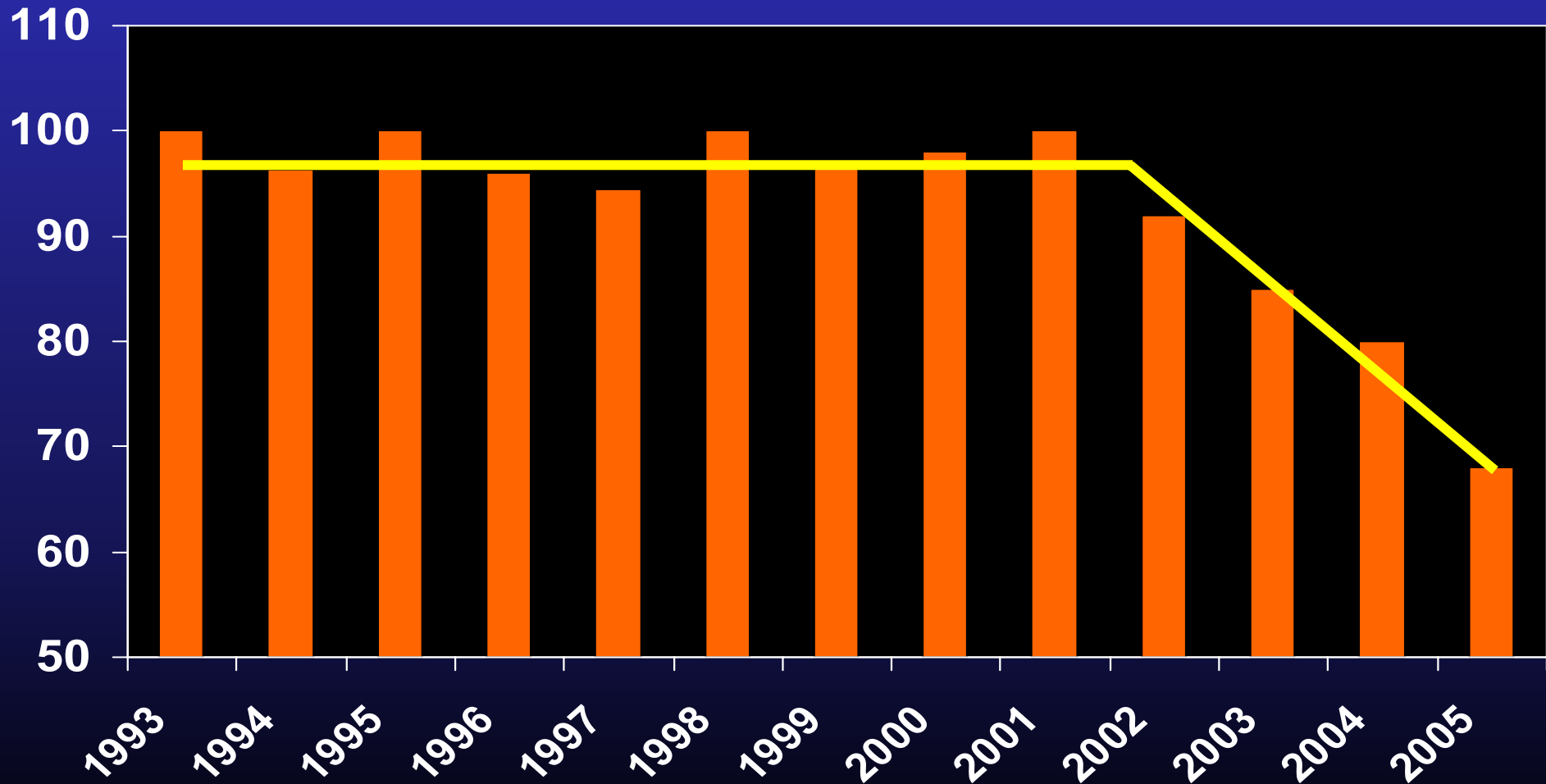
Foliar Plant Bug Control



Tarnished Plant Bug Control

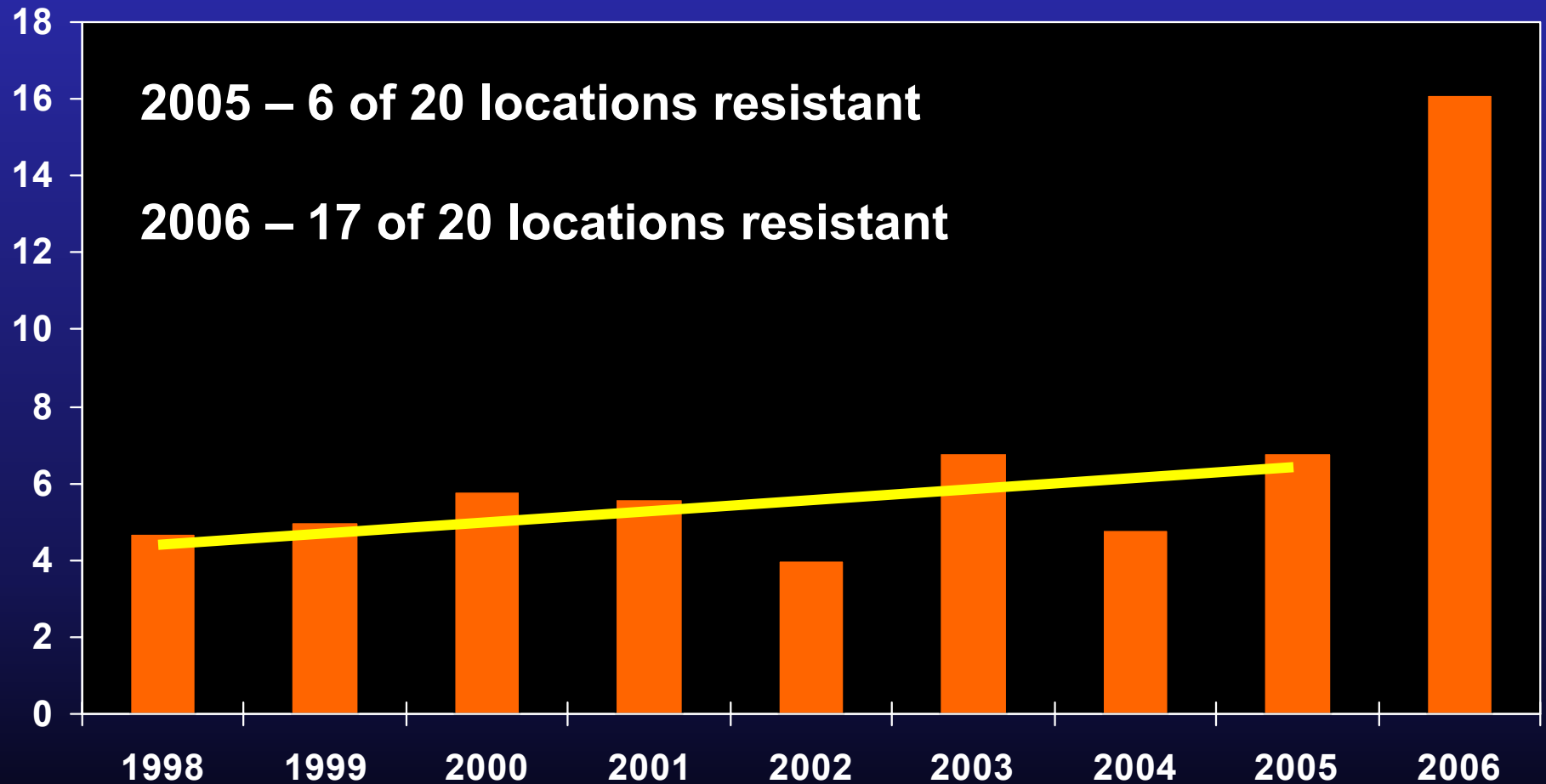
Mid-South States – 110 Tests

Orthene and Bidrin

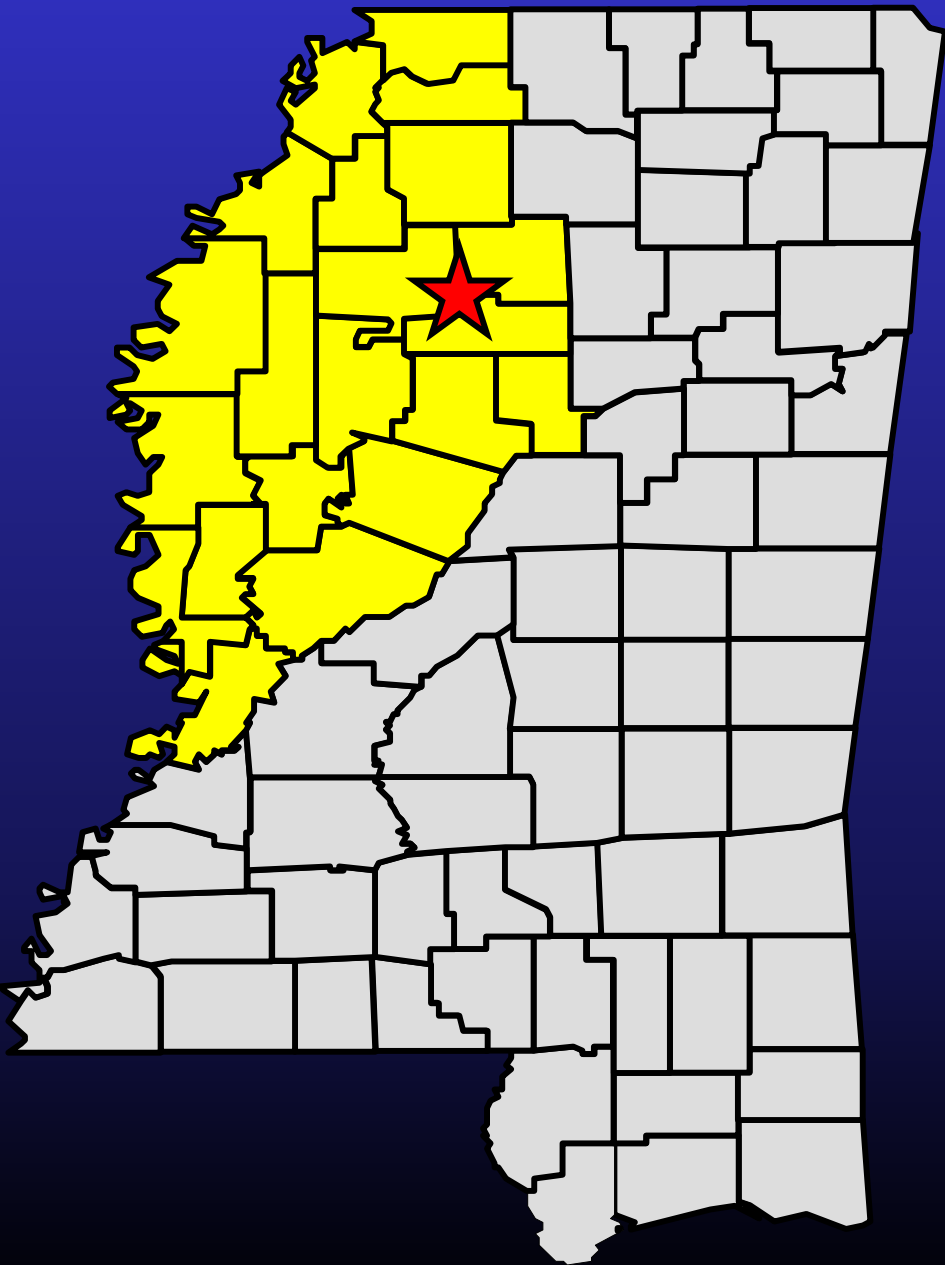


Data adapted from Arthropod Management Tests 1994-2005

Acephate Resistance Survey



Plant Bugs Collected from Vance, MS



Sprayed 10 - 12 times

Centric, Diamond 21 oz., Bidrin,
Orthene, Capture, Trimax, Vyda

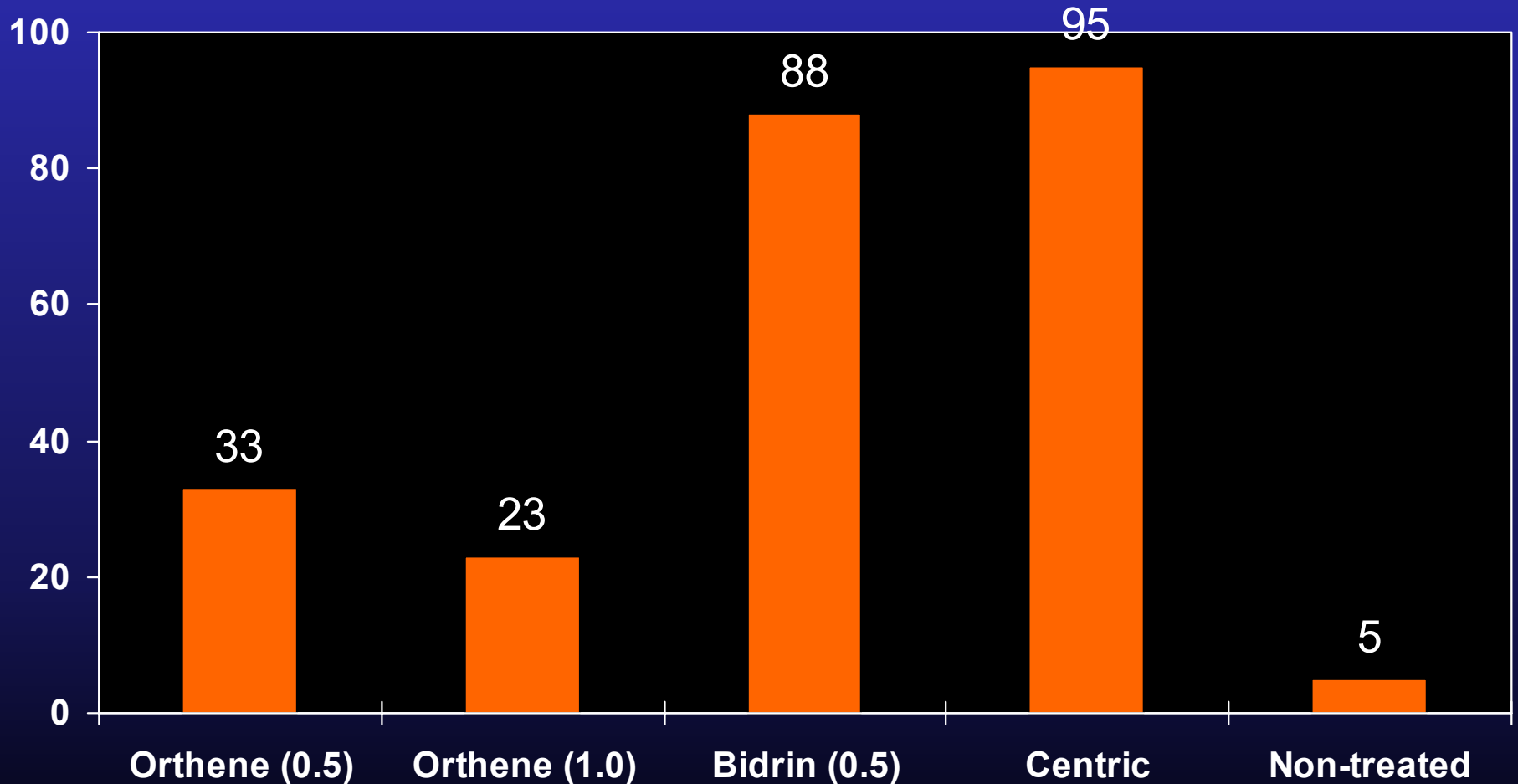
1 person, 2 hrs ~500 Adults

3 people, 1.5 hrs ~500 Adults

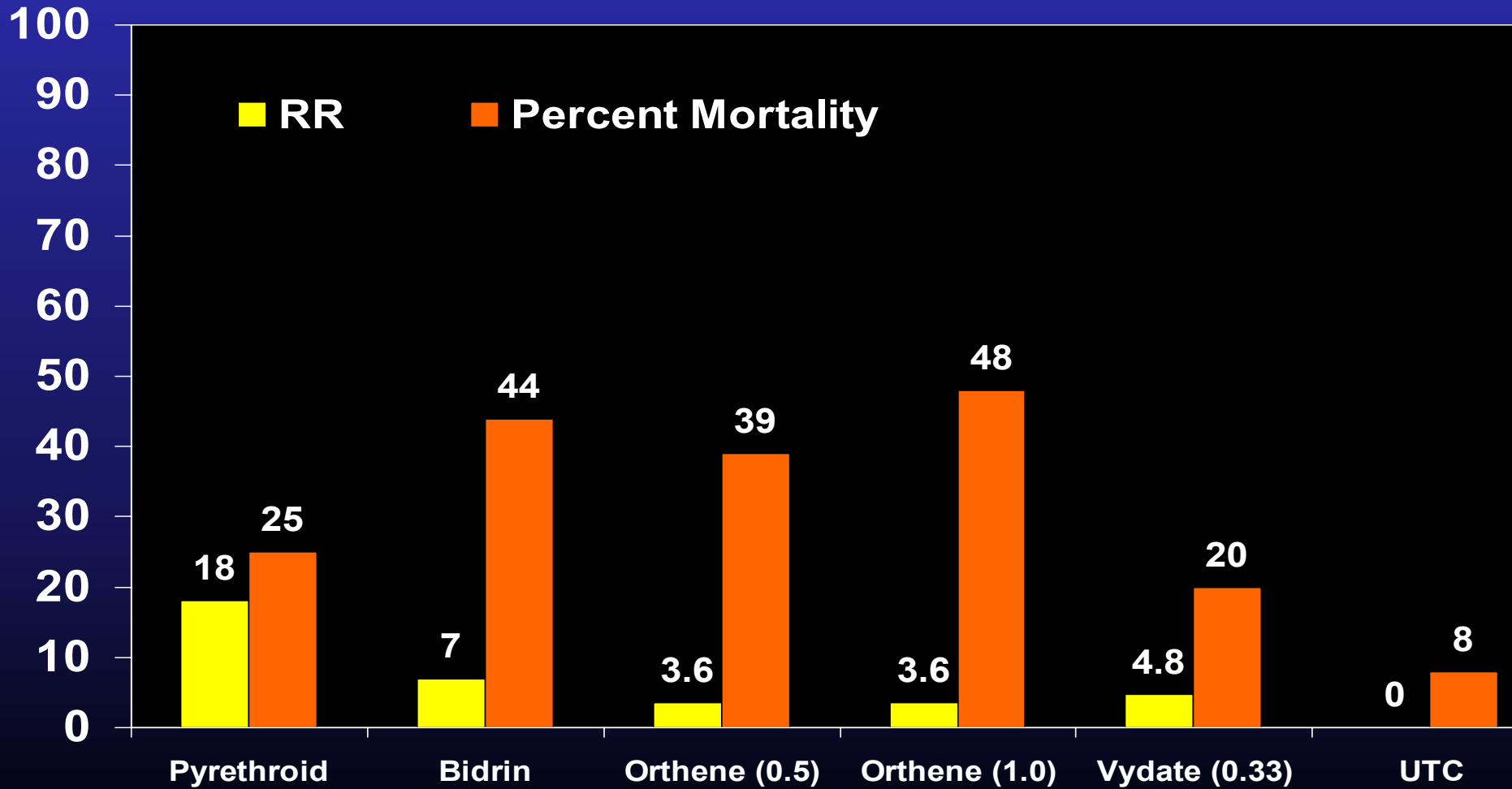
3 people, 45 min. ~1500 Adults

Vance Mississippi

Acephate LC50 = 22.14 μg , RR = 7.1

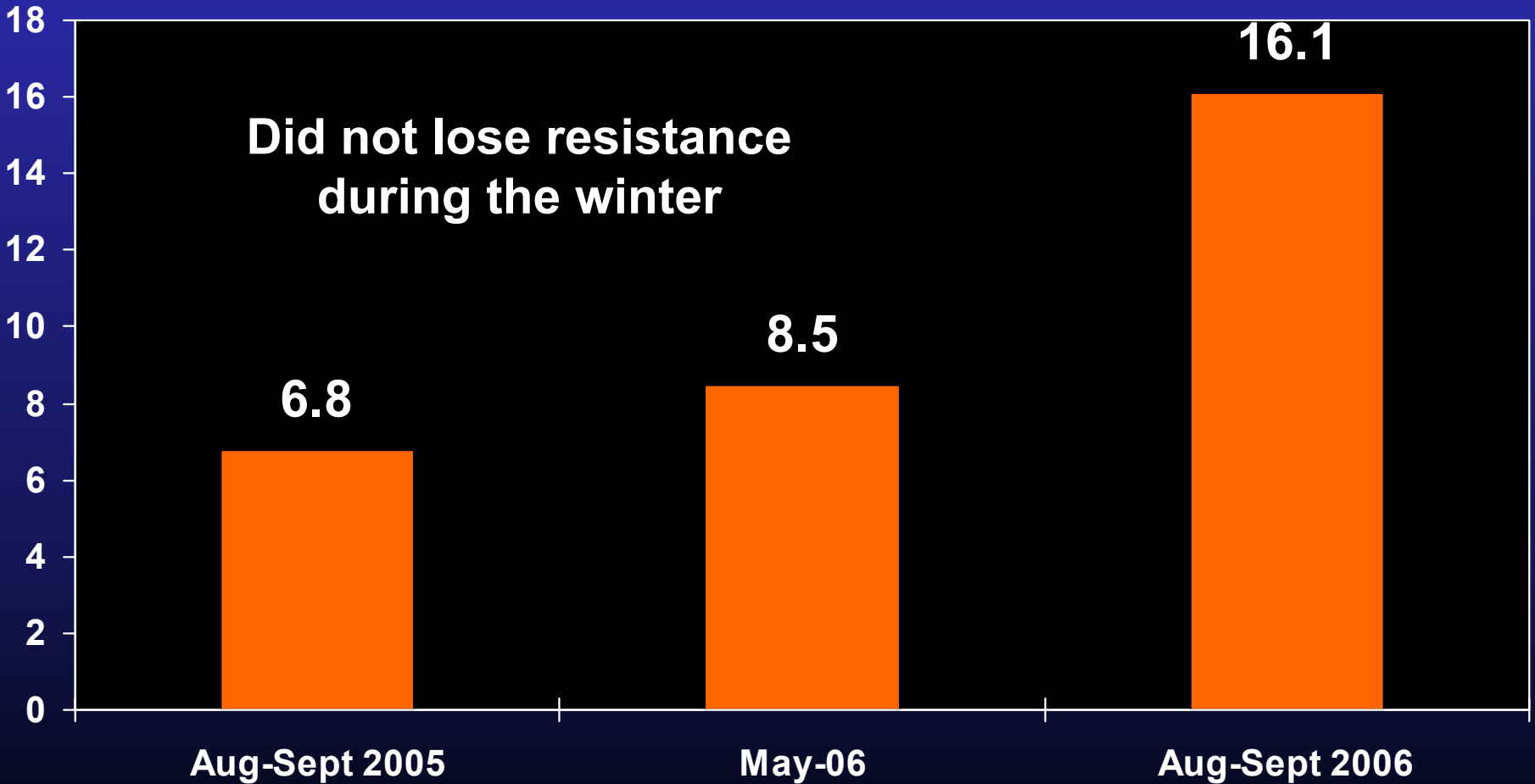


Rolling Fork, MS

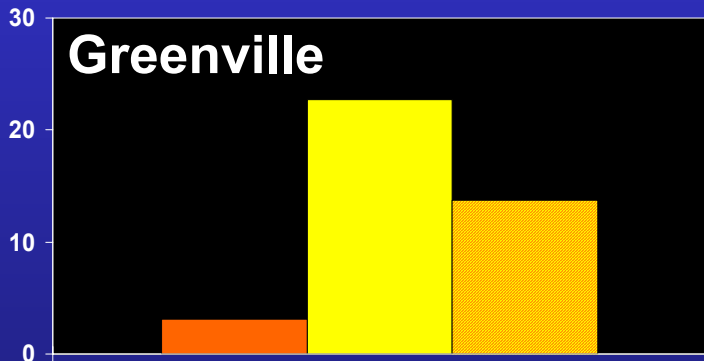


Acephate Resistance Survey

Did not lose resistance
during the winter



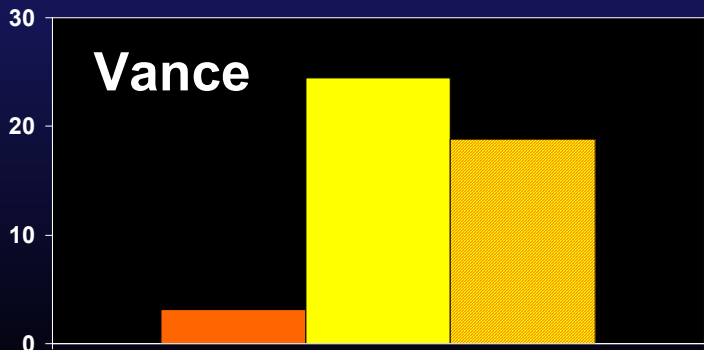
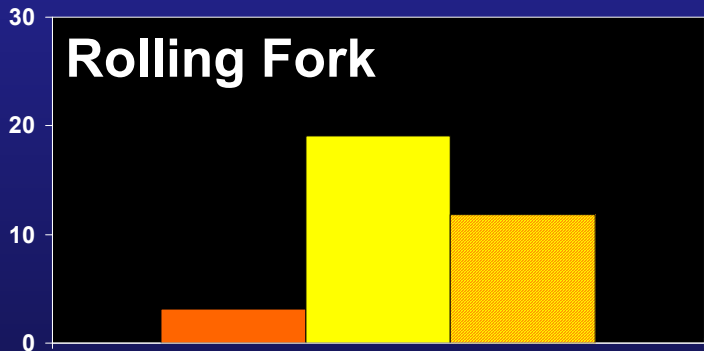
Inheritance of Resistance



 Susceptible

 Resistant

 Susceptible x Resistant



Inheritance is NOT Recessive

What does this mean?

Recessive

RR = Resistant

Rr = Susceptible

rr = Susceptible

Dominant

RR = Resistant

Rr = Resistant

rr = Susceptible

What does this mean?

Recessive

RR = Resistant

Rr = Susceptible

rr = Susceptible

Dominant

RR = Resistant

Rr = Resistant

rr = Susceptible

RR

Rr

rr

What does this mean?

Recessive

RR = Resistant

Rr = Susceptible

rr = Susceptible

Dominant

RR = Resistant

Rr = Resistant

rr = Susceptible

secticide



RR

~~Rr~~

~~r~~

What does this mean?

Recessive

RR = Resistant

Rr = Susceptible

rr = Susceptible

Dominant

RR = Resistant

Rr = Resistant

rr = Susceptible

secticide



RR



RR

~~Rr~~

~~r~~

What does this mean?

Recessive

RR = Resistant

Rr = Susceptible

rr = Susceptible

Dominant

RR = Resistant

Rr = Resistant

rr = Susceptible

secticide



RR

Overwinter



~~RR~~



~~Rr~~

~~r~~

What does this mean?

Recessive

RR = Resistant

Rr = Susceptible

rr = Susceptible

Dominant

RR = Resistant

Rr = Resistant

rr = Susceptible

secticide

Overwinter



RR



~~RR~~

RR

Rr

rr

~~Rr~~

~~rr~~

What does this mean?

Recessive

RR = Resistant

Rr = Susceptible

rr = Susceptible

Dominant

RR = Resistant

Rr = Resistant

rr = Susceptible

Insecticide



RR



Overwinter



~~RR~~

Insecticide



RR

Rr

~~Rr~~

~~rr~~

~~rr~~

What does this mean?

Recessive

RR = Resistant

Rr = Susceptible

rr = Susceptible

Dominant

RR = Resistant

Rr = Resistant

rr = Susceptible

Insecticide



RR



Overwinter



~~RR~~



Insecticide



RR



RR

Rr



Rr



What does this mean?

Recessive

RR = Resistant

Rr = Susceptible

rr = Susceptible

Dominant

RR = Resistant

Rr = Resistant

rr = Susceptible

Insecticide

Overwinter



RR



~~RR~~

~~Rr~~

~~rr~~

Insecticide

Overwinter



RR



~~RR~~

Rr



Rr

~~rr~~

What does this mean?

Recessive

RR = Resistant

Rr = Susceptible

rr = Susceptible

Dominant

RR = Resistant

Rr = Resistant

rr = Susceptible

Insecticide

Overwinter



RR



~~RR~~

~~Rr~~

~~rr~~

Insecticide

Overwinter



RR



~~RR~~

Rr



Rr



~~rr~~

Examples of early-spring broadleaf hosts of tarnished plant bug



Buttercup



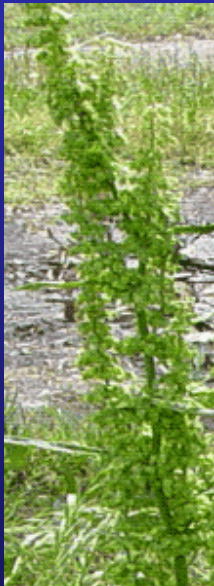
**Evening
Primrose**



Butterweed



**Annual
Fleabane**



Sourdock



Vetch



Crimson Clover



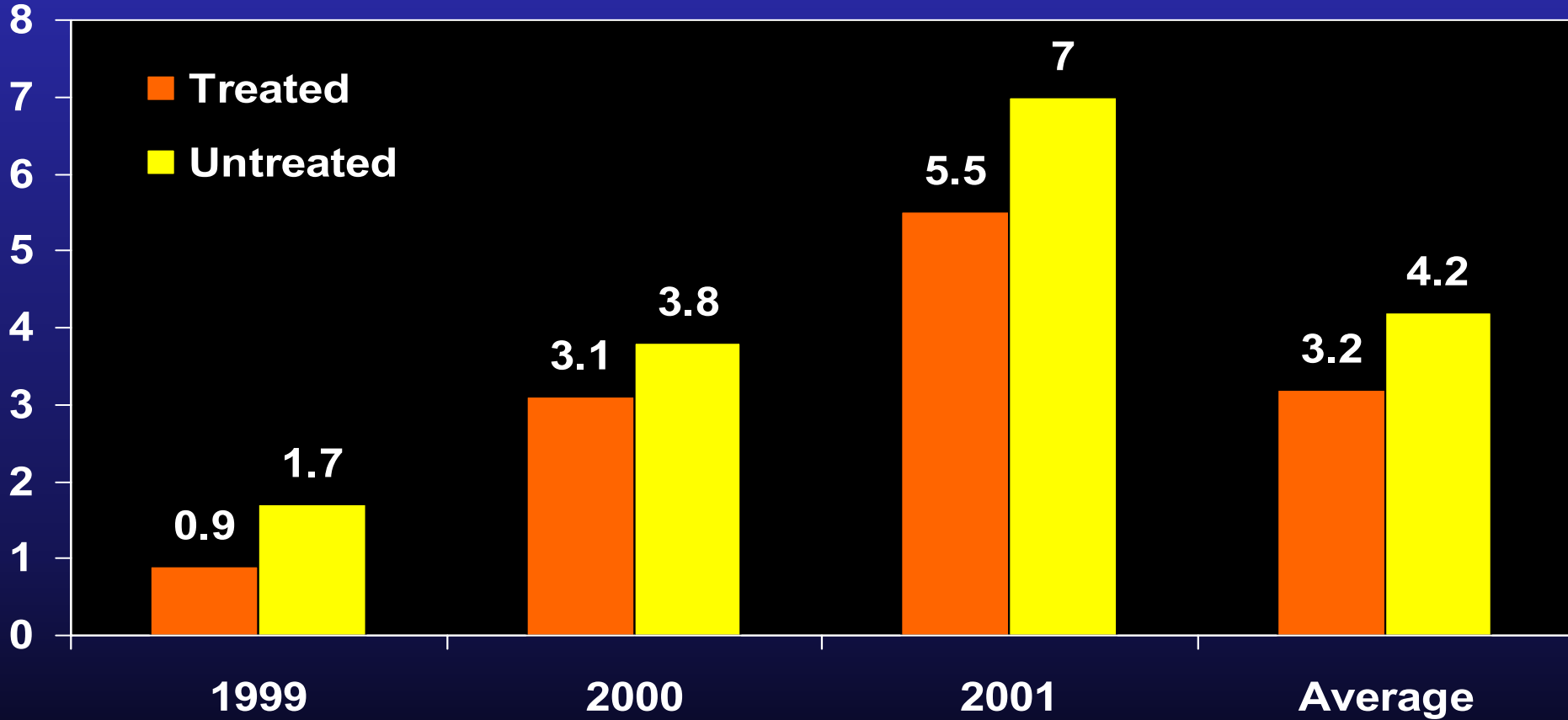
Cutleaf Primrose

Area-wide Plant Bug Management



One herbicide application from late-Feb. through March.

No. Plant Bug Applications





Untreated

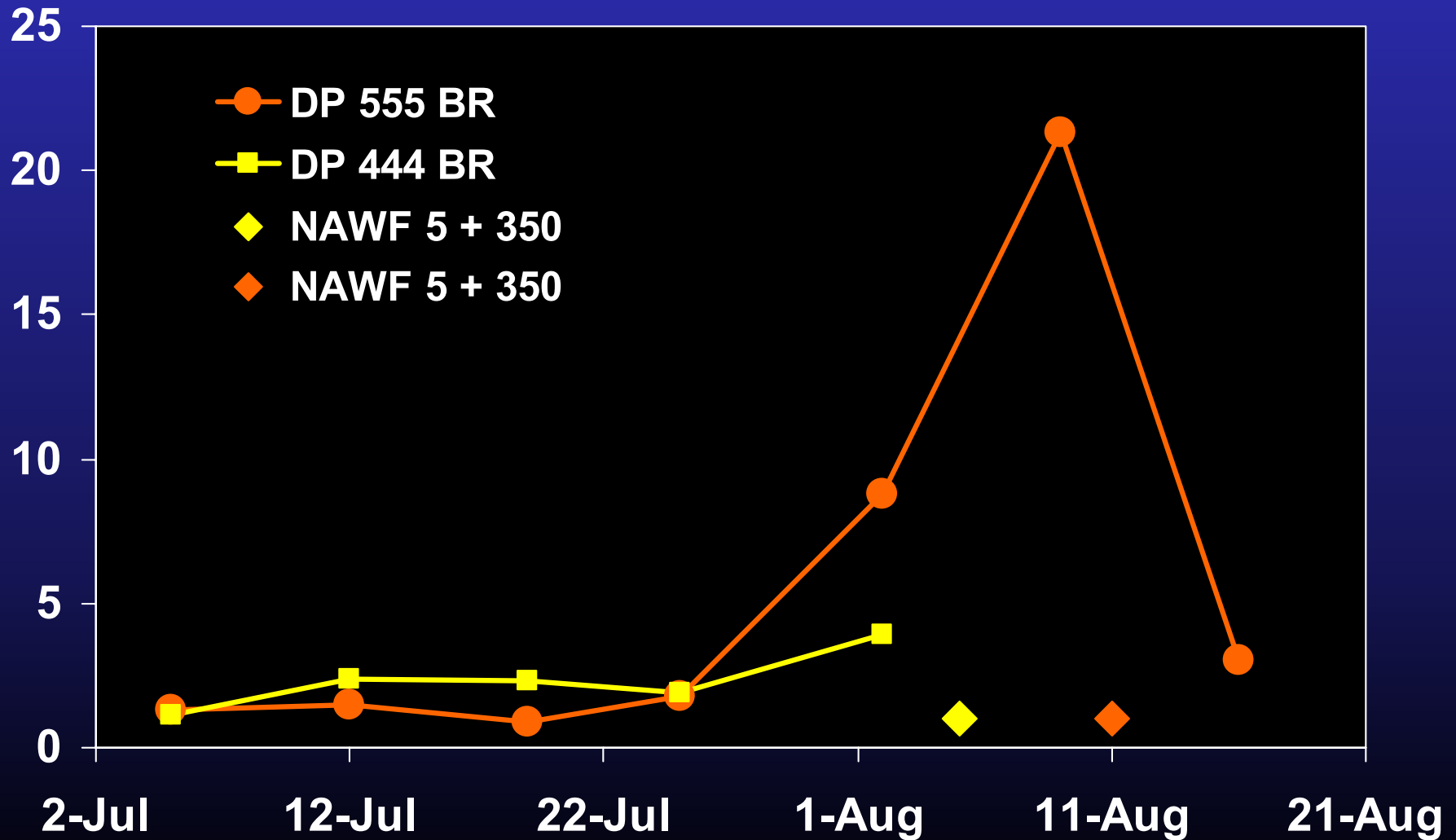


Treated

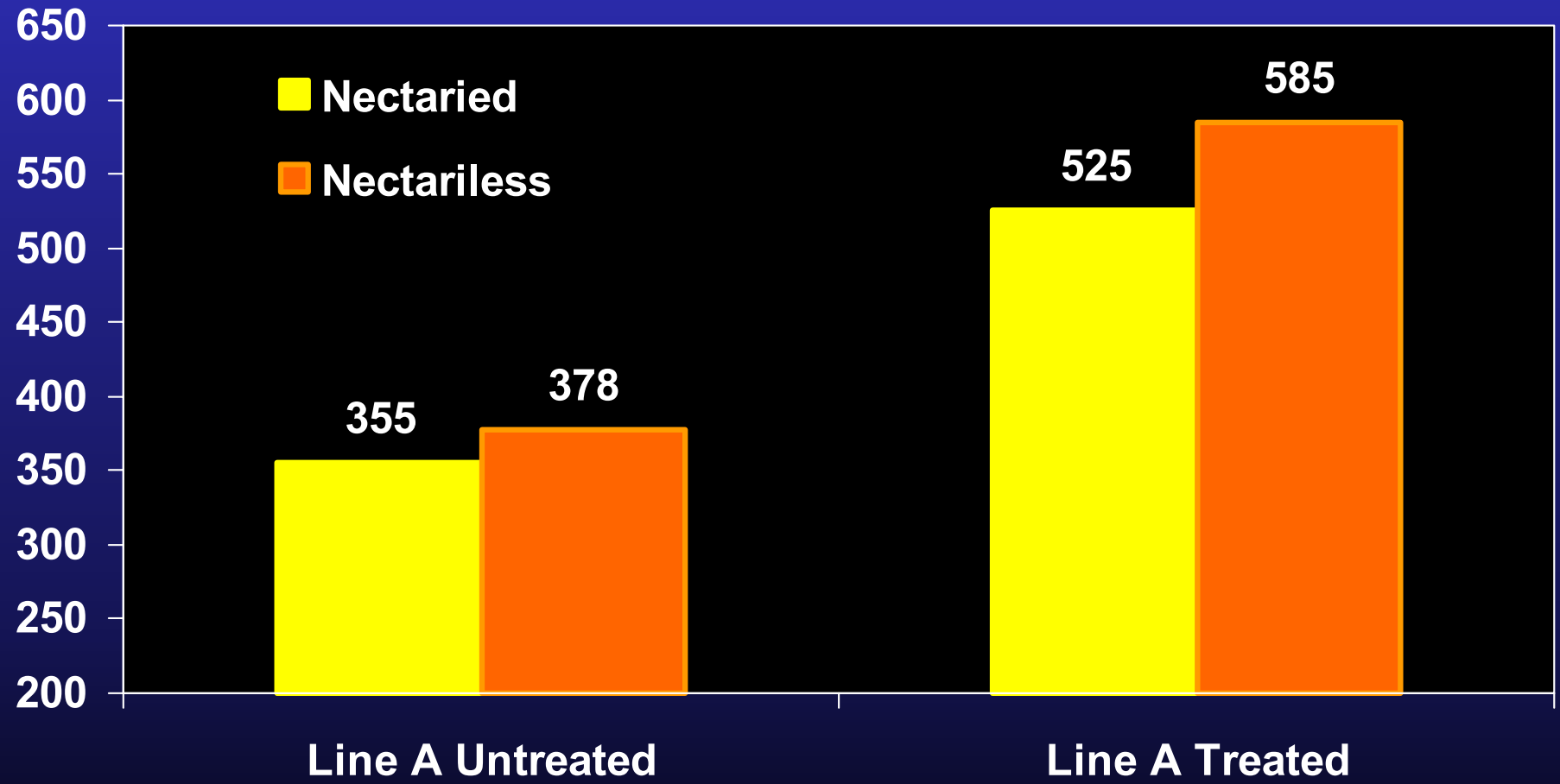


Treated with Roundup at Burndown

Plant Bugs in DP 444 vs 555

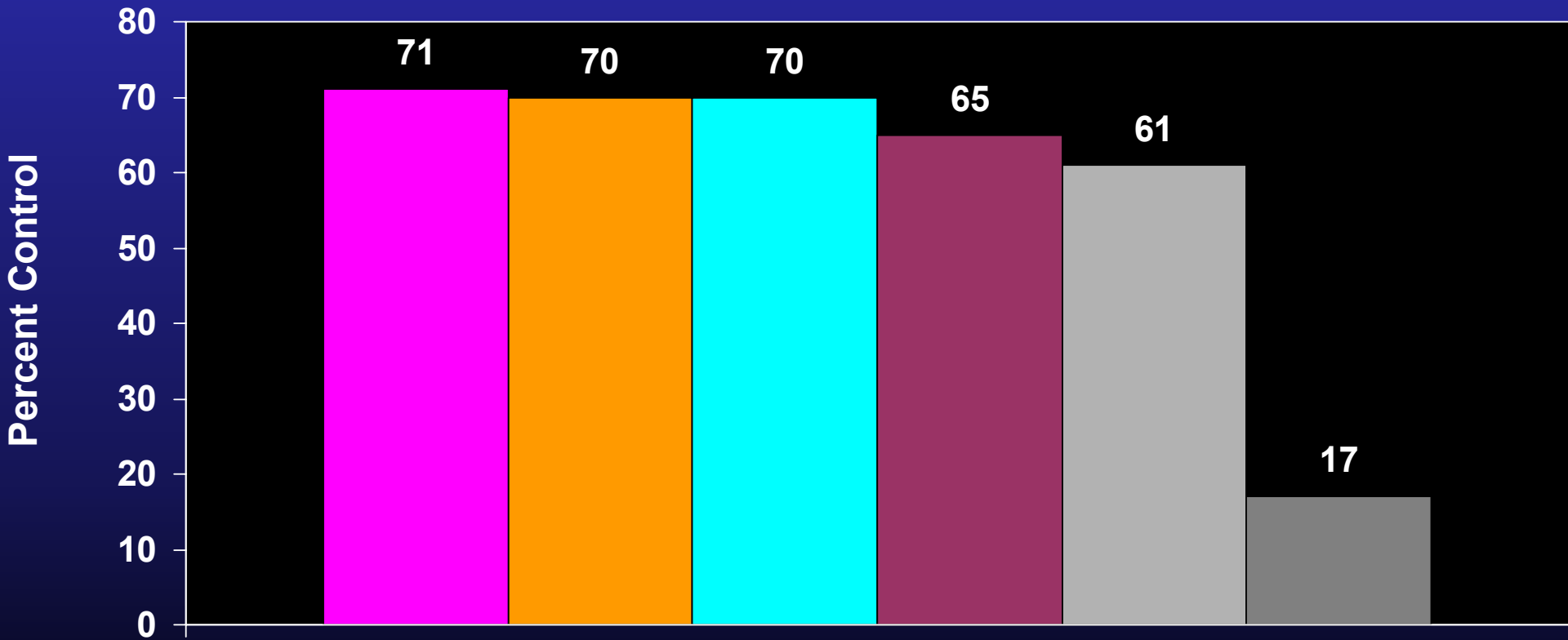


Nectariless Cotton



Foliar Plant Bug Control

Carbine Bidrin Orthene Trimax Centric Capture



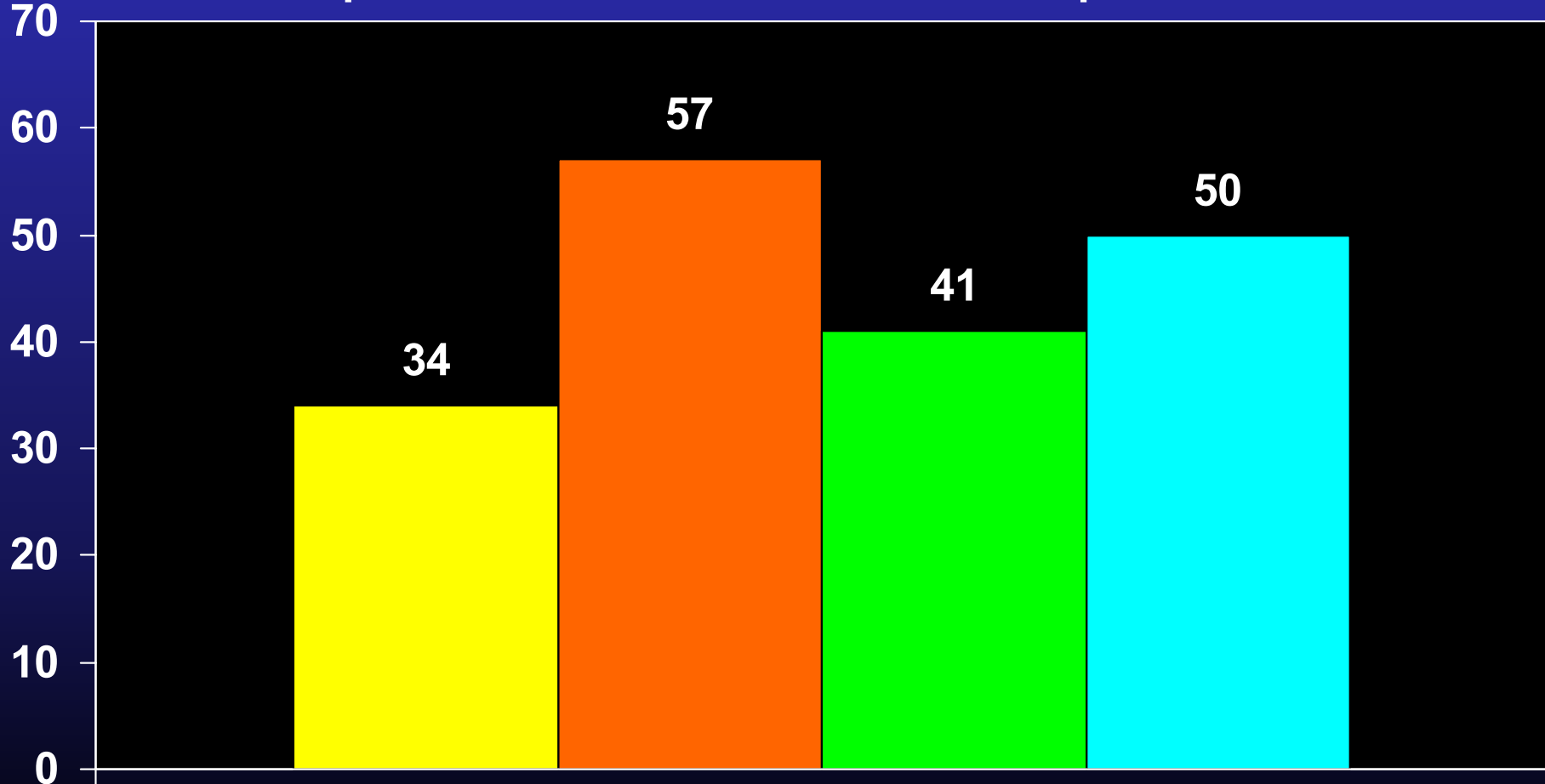
Plant Bug Control With Experimentals

■ Experimental A

■ Experimental B

■ Experimental C

■ Experimental D



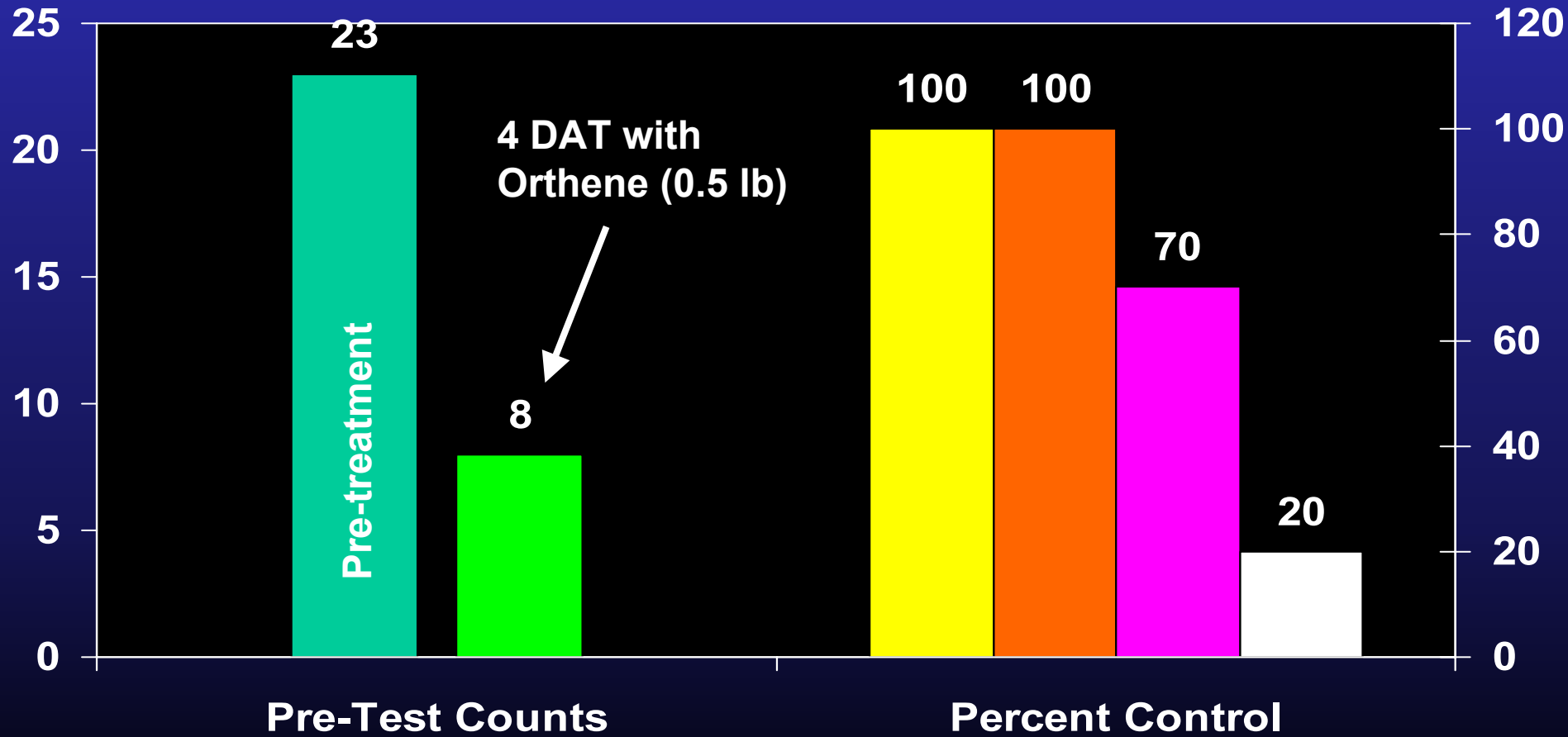
Insecticide Application Intervals

■ 4 Days

■ 5 Days

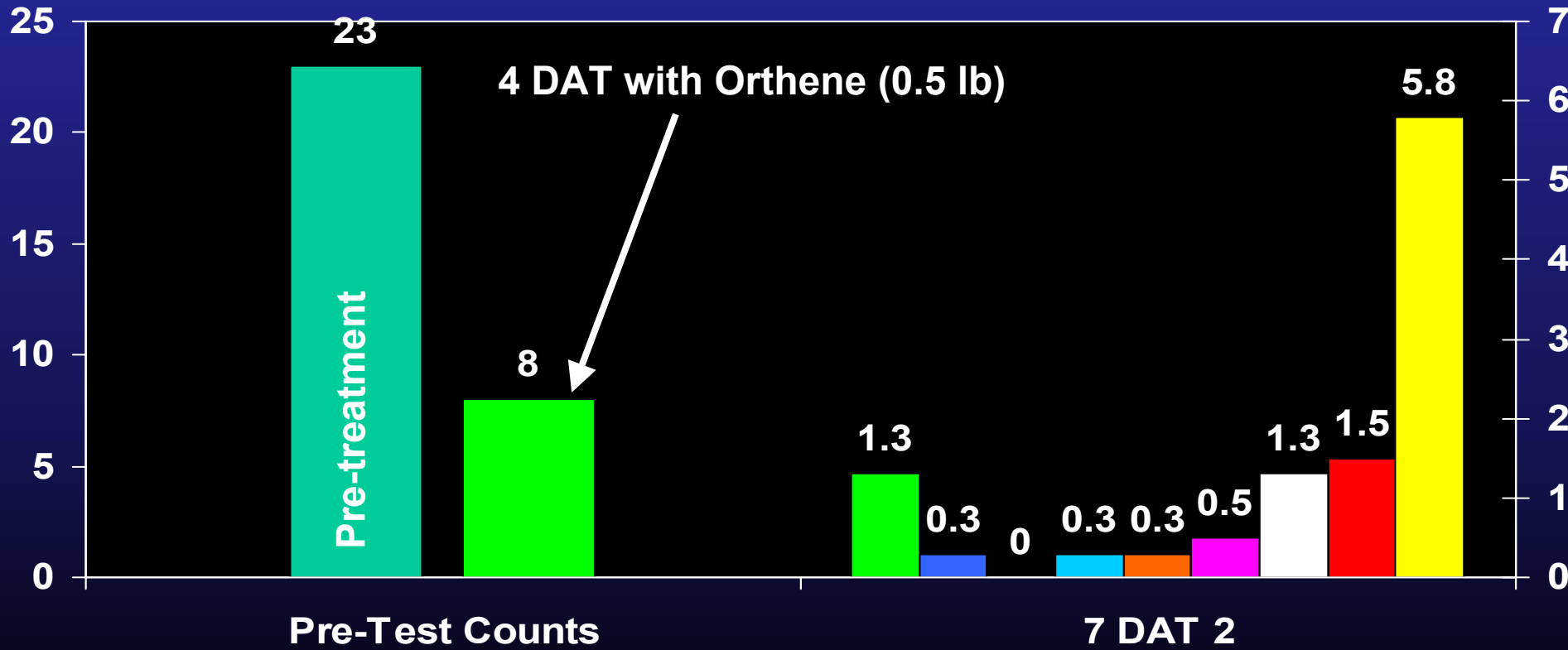
■ 6 Days

■ 7 Days



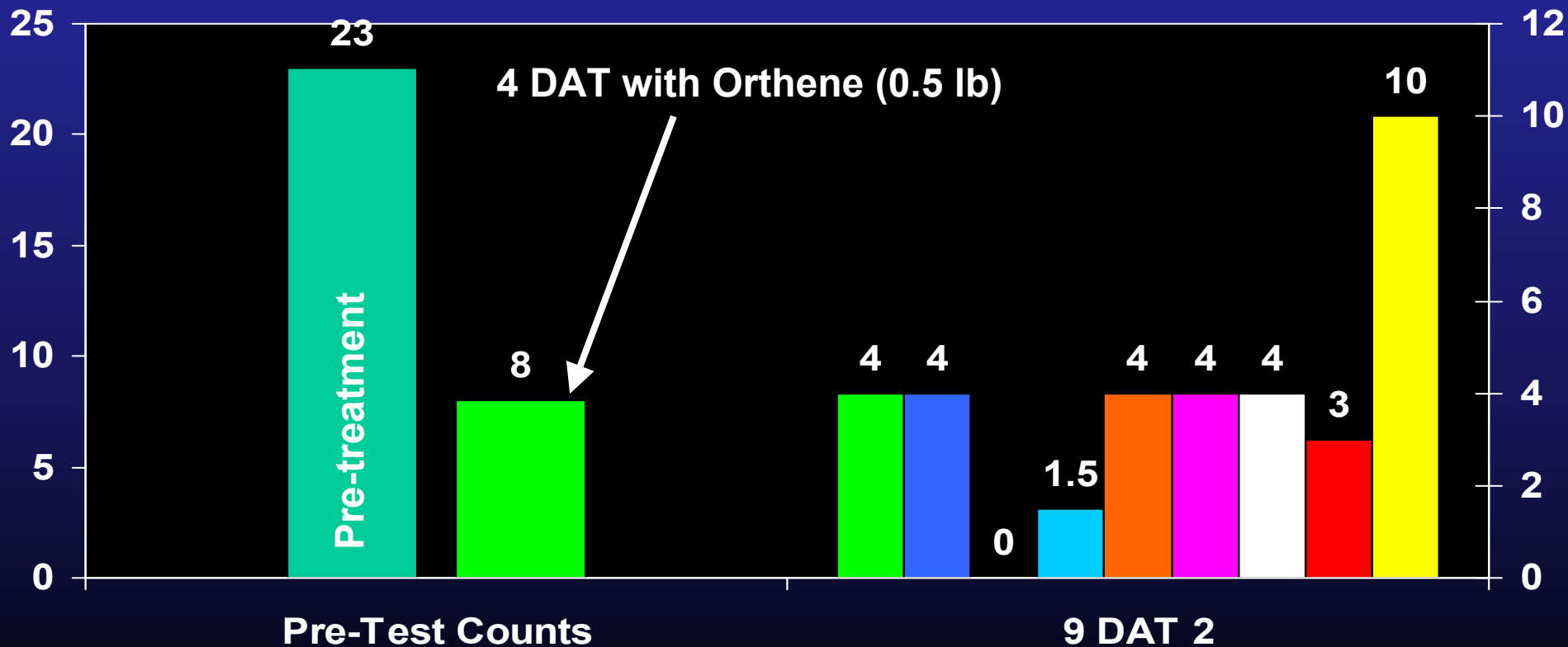
Insecticide Rotations

- Orthene (0.5)
- Orthene (1.0)
- Trimax (1.8 oz)
- Vydate (0.33)
- UTC
- Orthene (0.5) + 6 oz Diamond
- Centric (2 oz)
- Carbine (2.8 oz)
- Bidrin (0.5)



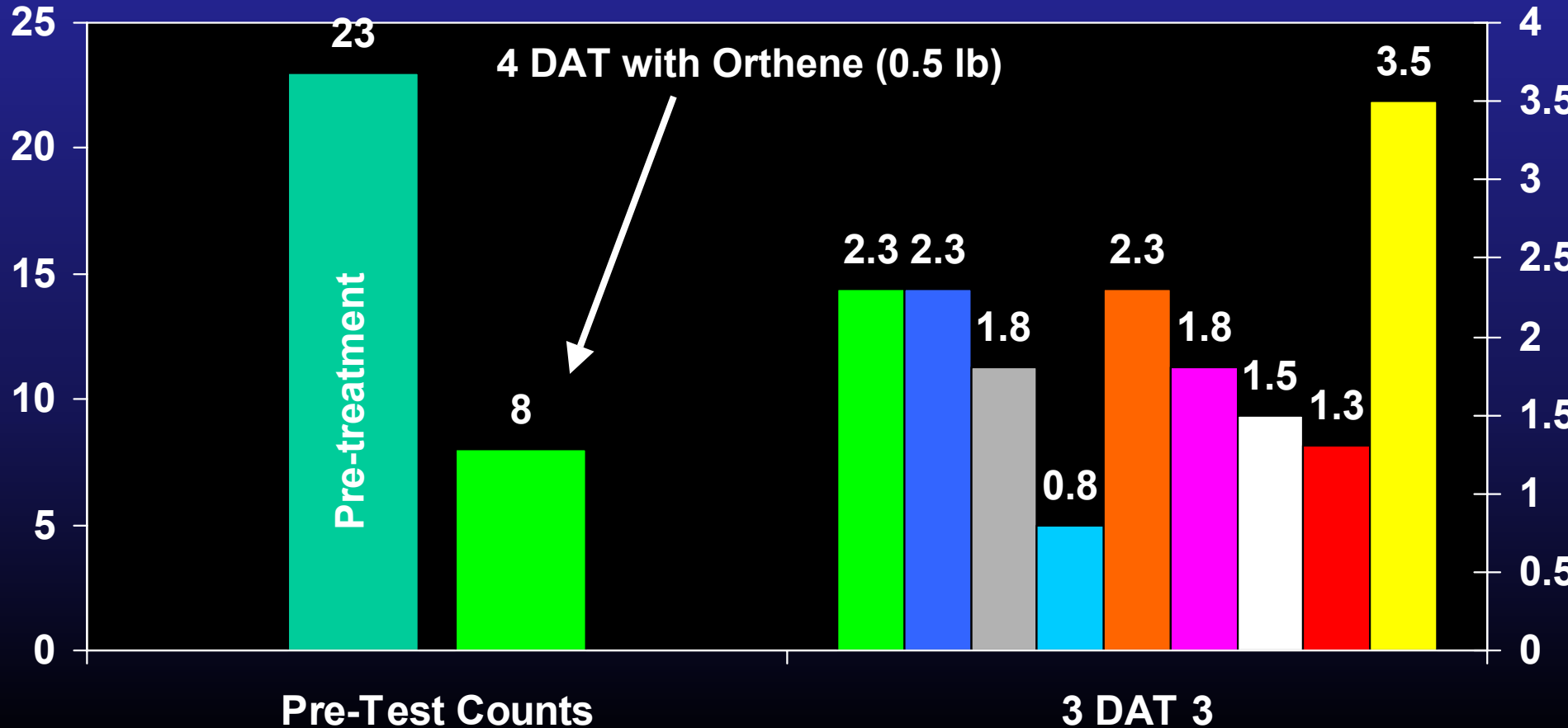
Insecticide Rotations

- Orthene (0.5)
- Orthene (1.0)
- Trimax (1.8 oz)
- Vydate (0.33)
- UTC
- Orthene (0.5) + 6 oz Diamond
- Centric (2 oz)
- Carbine (2.8 oz)
- Bidrin (0.5)

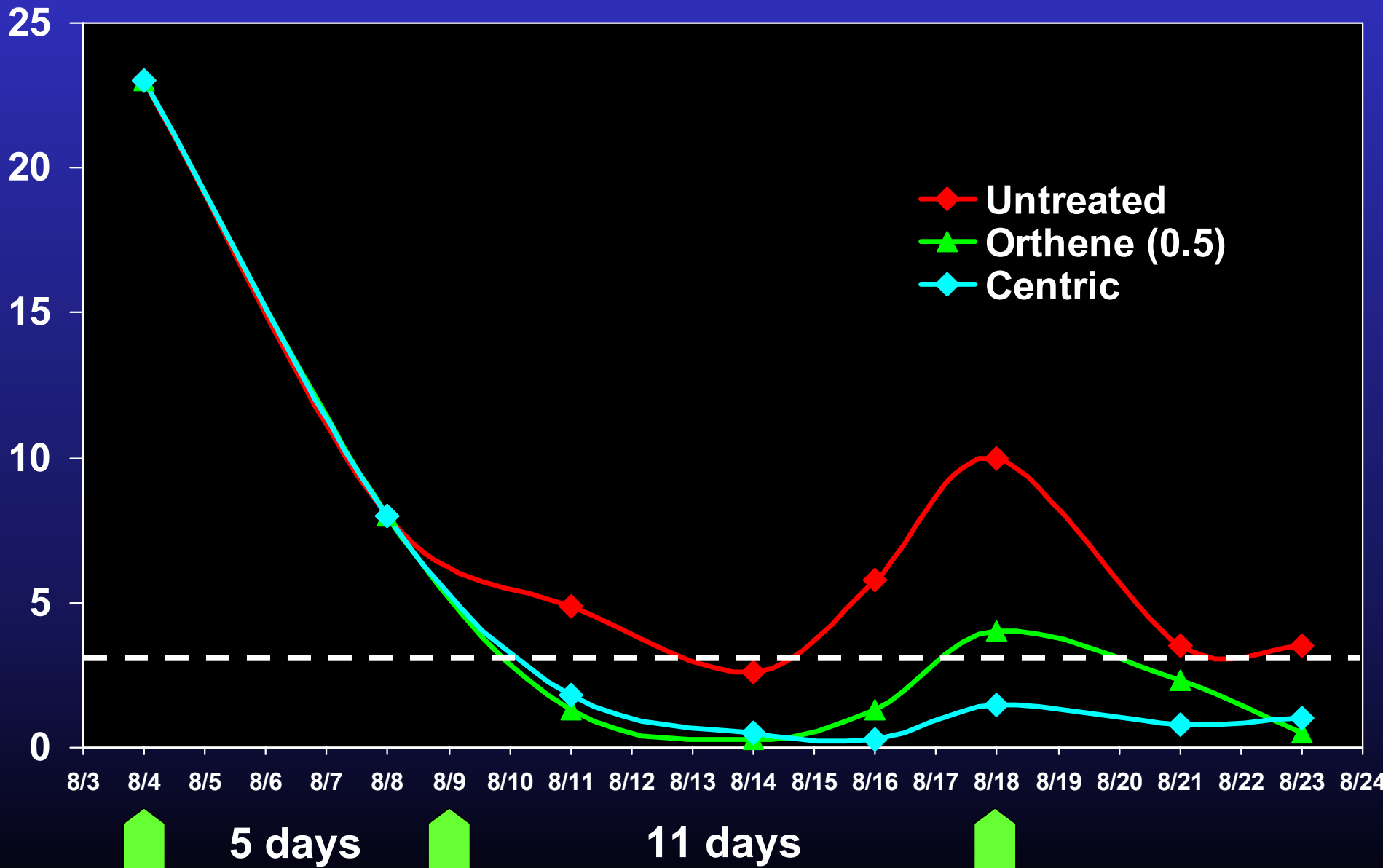


Insecticide Rotations

- Orthene (0.5)
- Orthene (1.0)
- Trimax (1.8 oz)
- Vydate (0.33)
- UTC
- Orthene (0.5) + 6 oz Diamond
- Centric (2 oz)
- Carbine (2.8 oz)
- Bidrin (0.5)



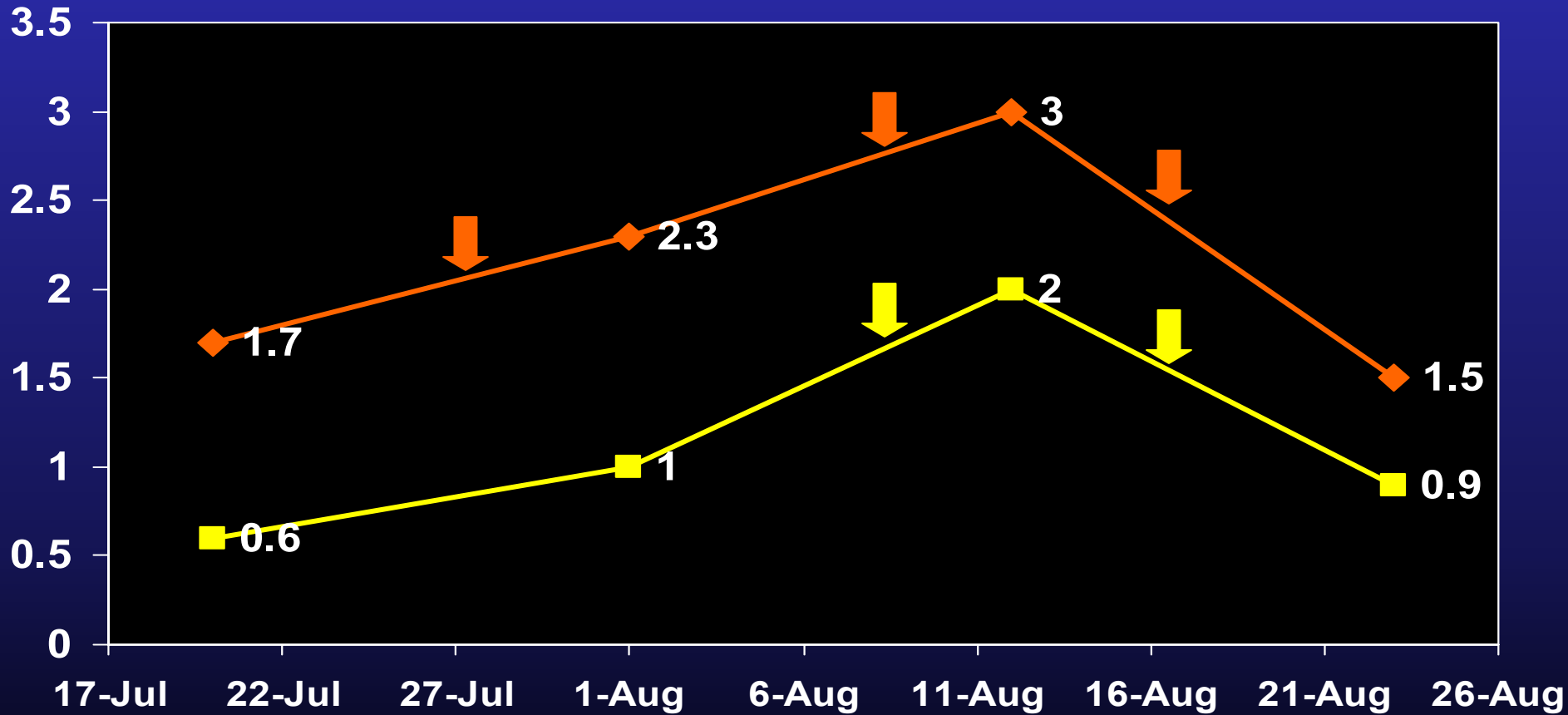
Insecticide Rotations



Tarnished Plant Bug Control

◆ Orthene (0.5)

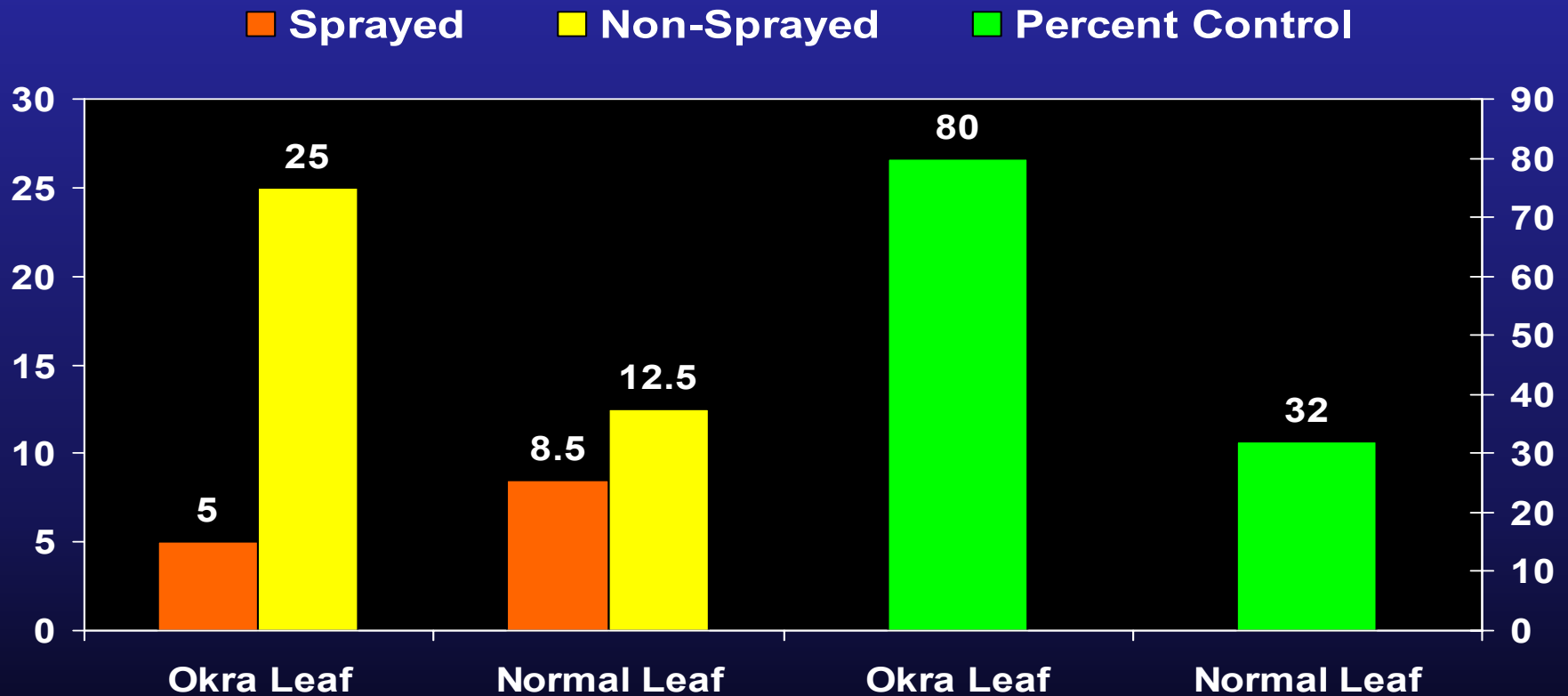
■ Orthene (0.5) + Diamond (6)



st Application 7-14-05

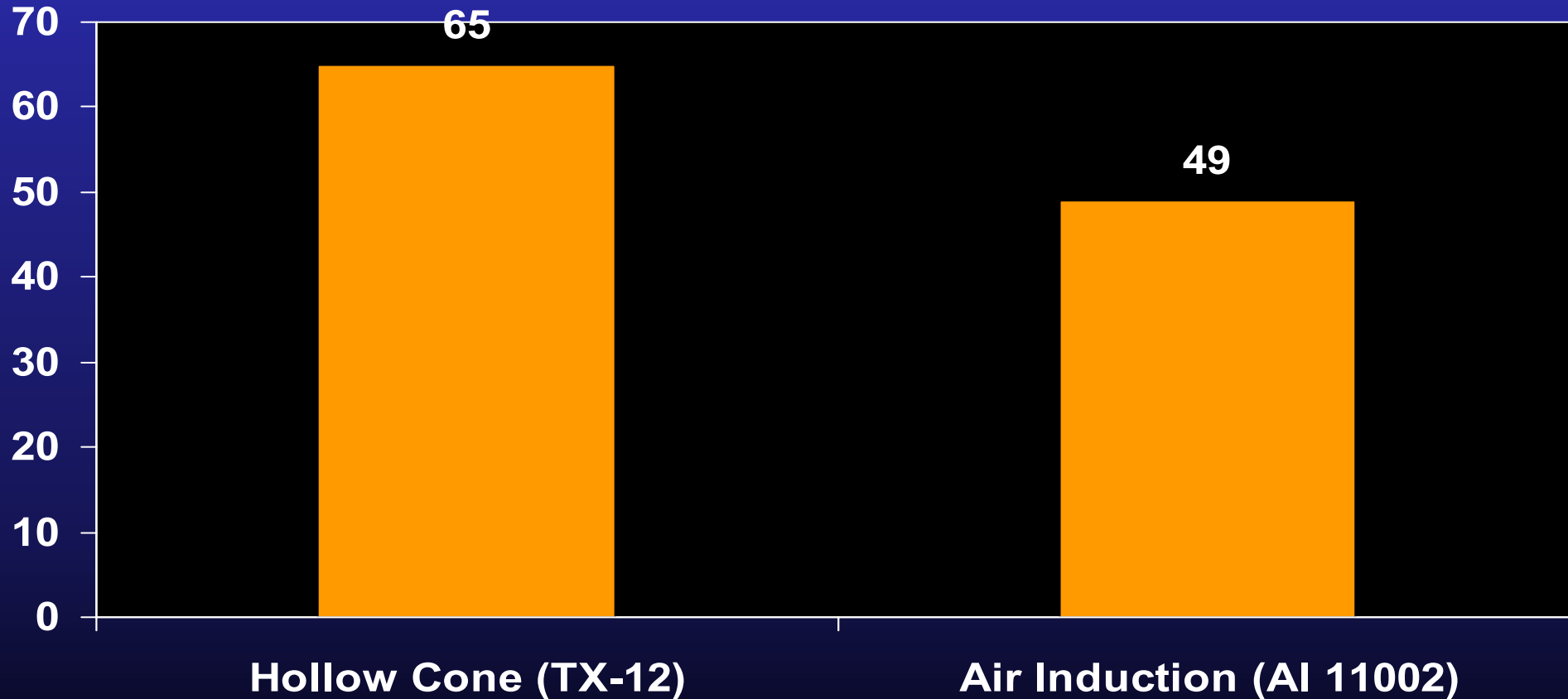
Impact of Leaf Type on TPB Control

4 DAT1 with Orthene (0.5 lb) + Diamond (6 oz.)



Impact of Nozzle Type on Insect Control

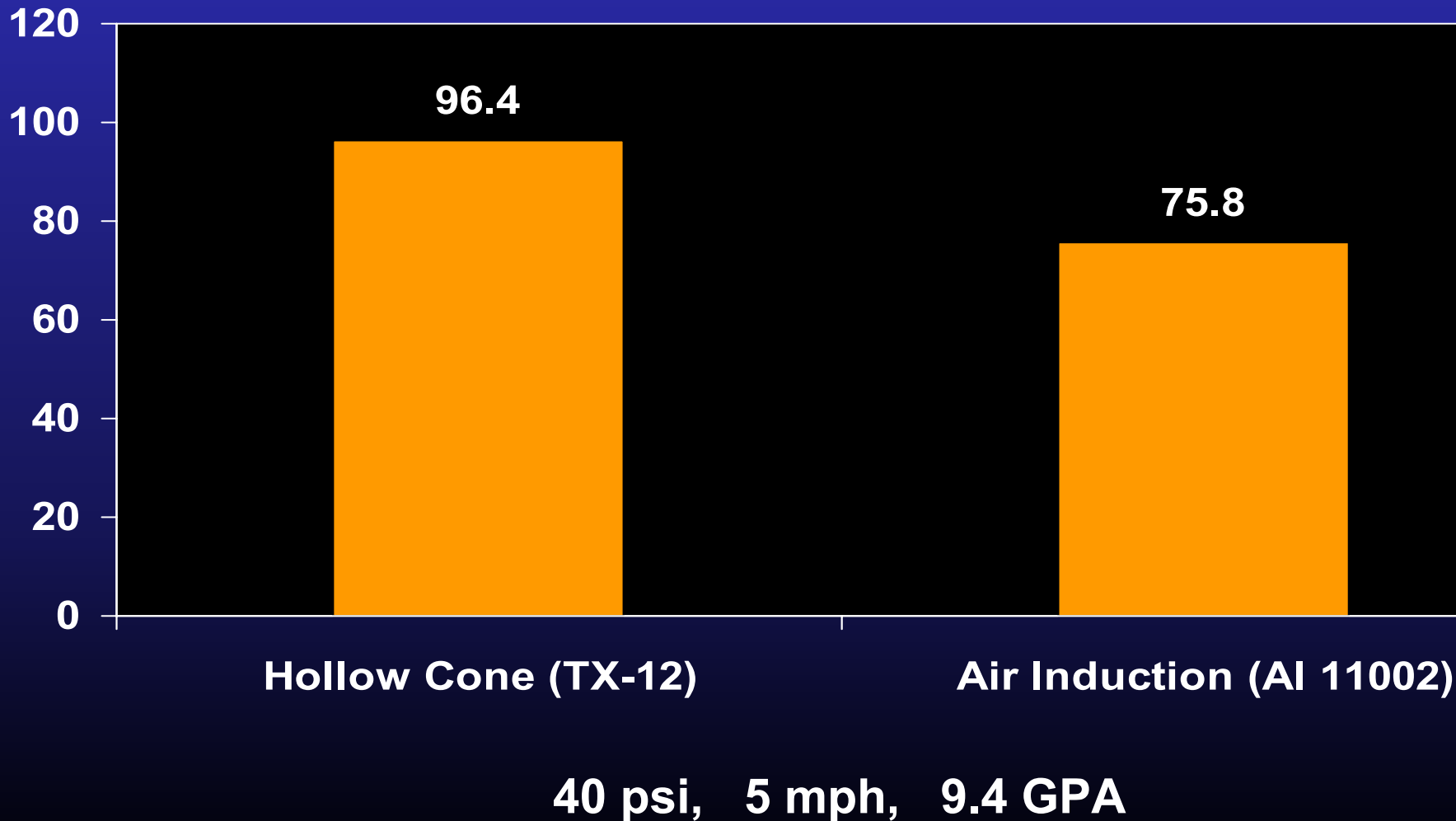
Plant Bug Control, Orthene (0.5 lb)



40 psi, 5 mph, 9.4 GPA

Impact of Nozzle Type on Insect Control

Plant Bug Control, Centric (2 oz.)



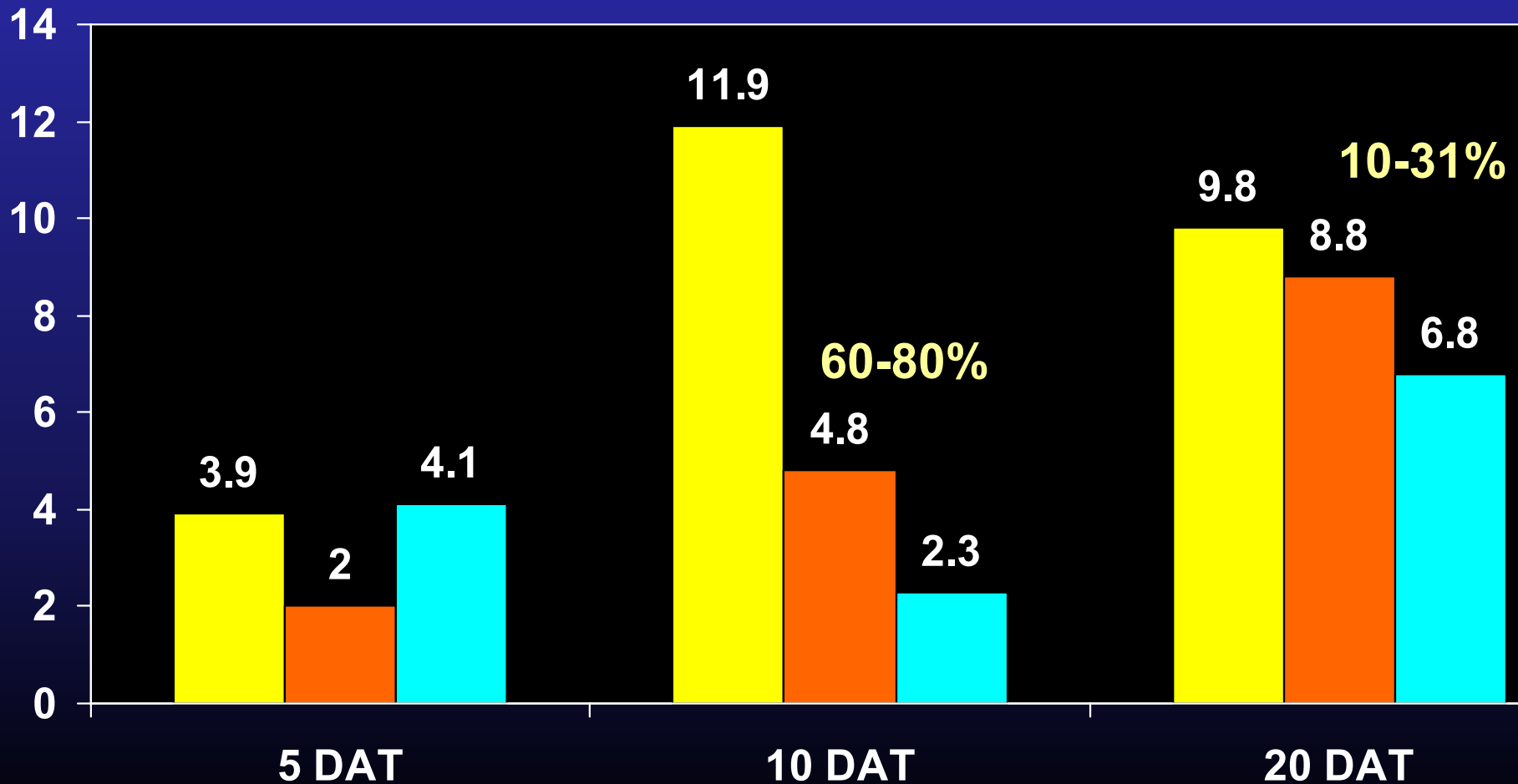


Temik Side Band Applications

■ Non-treated

■ Temik 5 lbs.

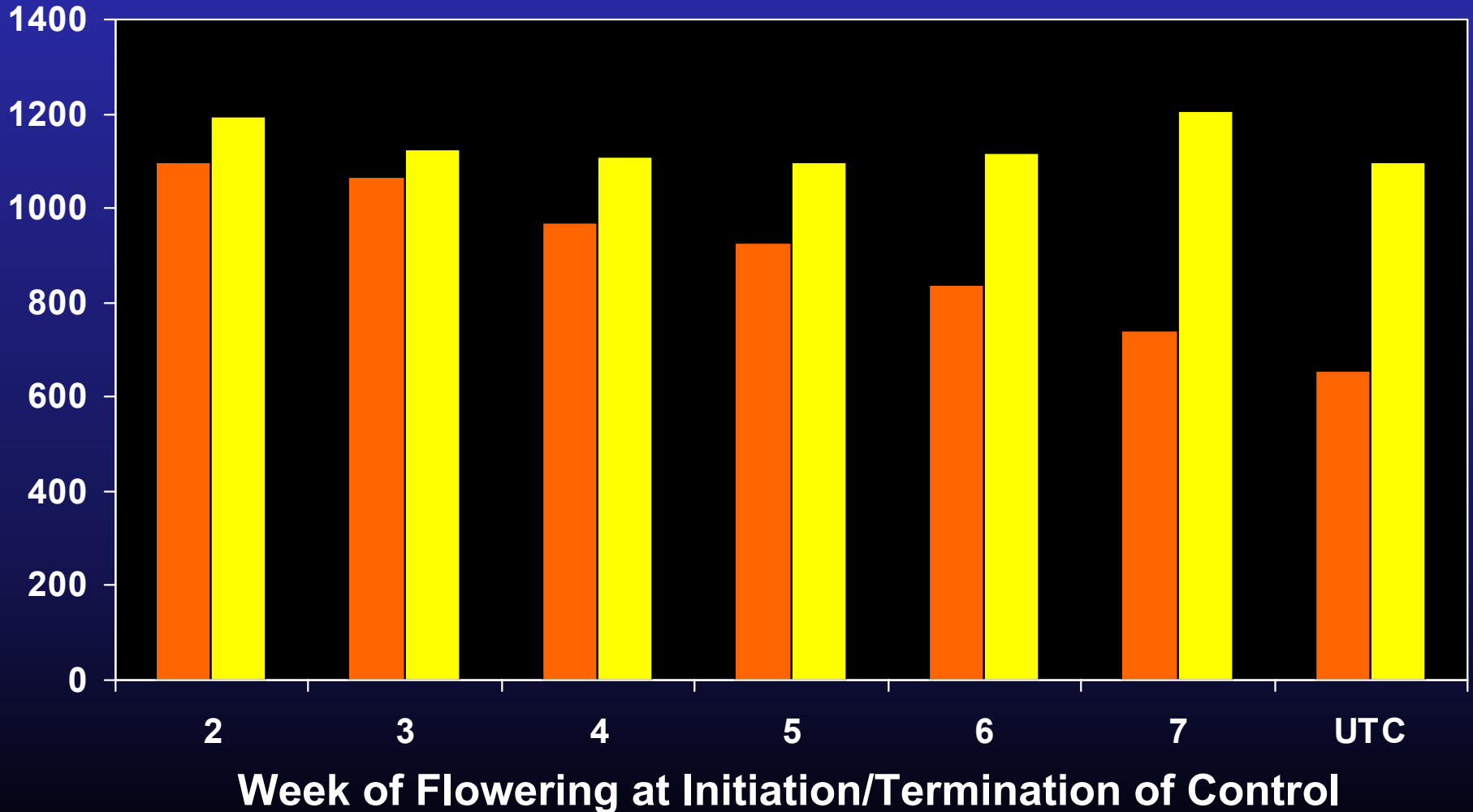
■ Temik 8 lbs.



TPB Impact on Yields

■ Initiate

■ Terminate



Summary and Conclusions

- Resistance is Dominant and not going to go away.
- Control with insecticides will become less consistent.
- Spray intervals and rotations will be important.
- Spray only when absolutely necessary and use accurate scouting methods and thresholds.
- **DON'T CUT RATES!!!!**

Summary and Conclusions

- No alternatives are coming in the near future.
- Other factors that reduce plant bug numbers will need to be considered.
 - Variety selection:
 - short season vs. long season
 - nectaried vs. nectariless
 - Plant bug sources:
 - wild hosts
 - other crops



Jeff Gore, USDA-ARS, Stoneville
(662)820-0610