A Research Driven Extension Cotton Entomology Program in the Texas High Plains

David Kerns

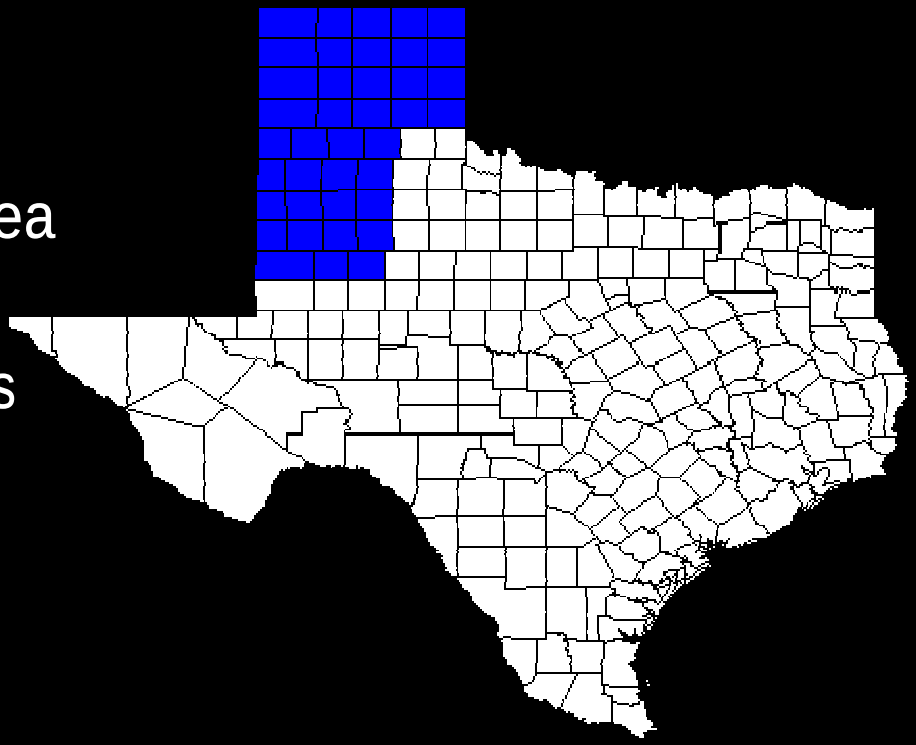
Professor and Extension Entomologist - Cotton

Texas AgriLife Research and Extension Center, Lubbock

LSU AgCenter Research & Extension

Texas High Plains Cotton

- 40 counties
- 3-4 million acres of cotton
- Largest cotton production area in the world
- Agricultural landscape ranges from near monoculture to somewhat diverse
- 60:40, irrigated:dryland
- 50:50, Bt:non-Bt



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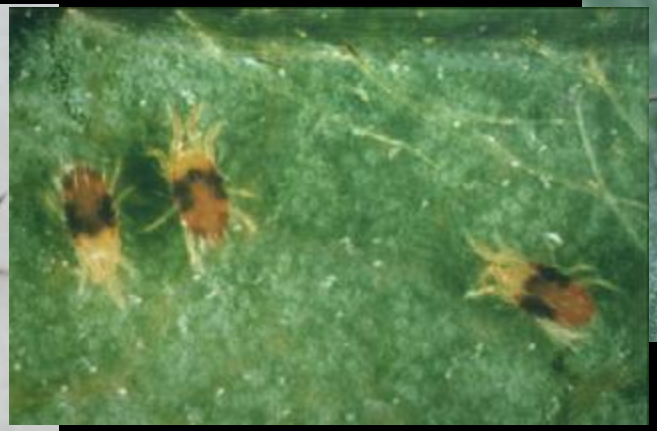
Applied Research Projects



Thrips Research Projects

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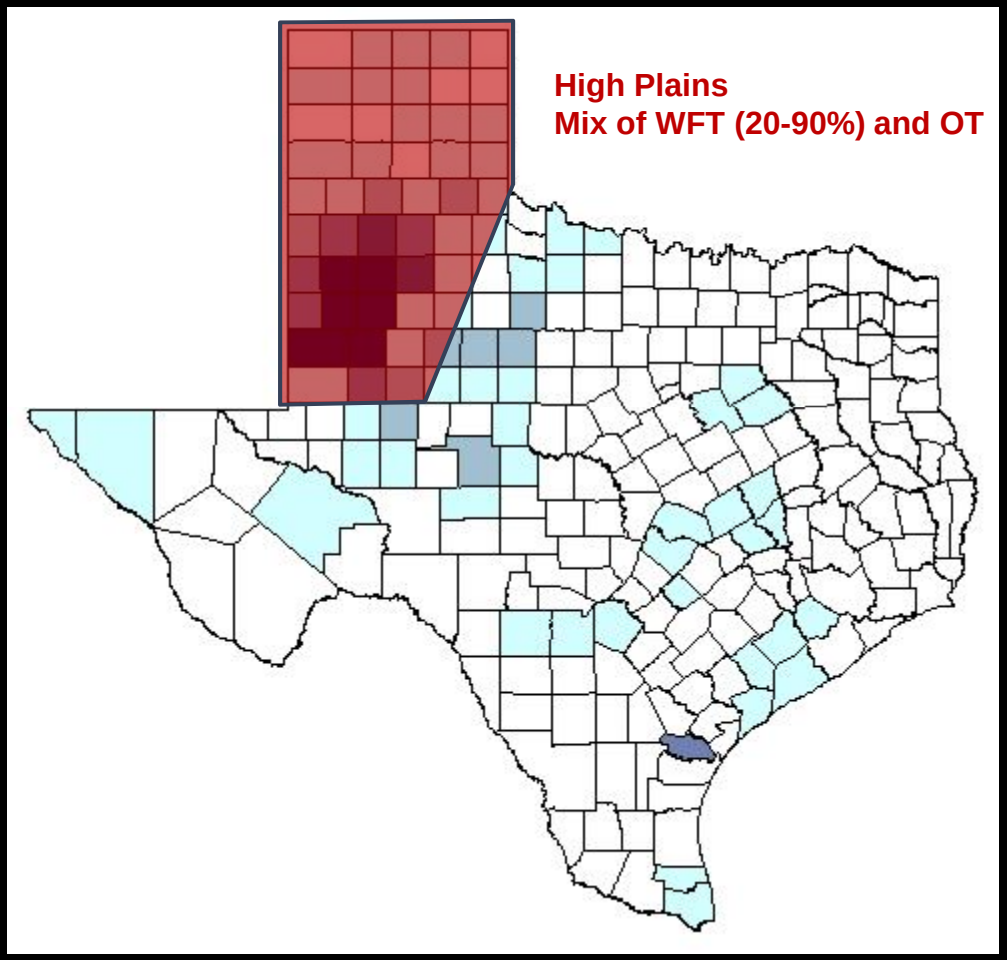
Predominant Species Involved



Onion thrips
Thrips tabici

Tobacco thrips
Frankliniella fusca

Western flower thrips
Frankliniella occidentalis

Flower thrips
Frankliniella tritici

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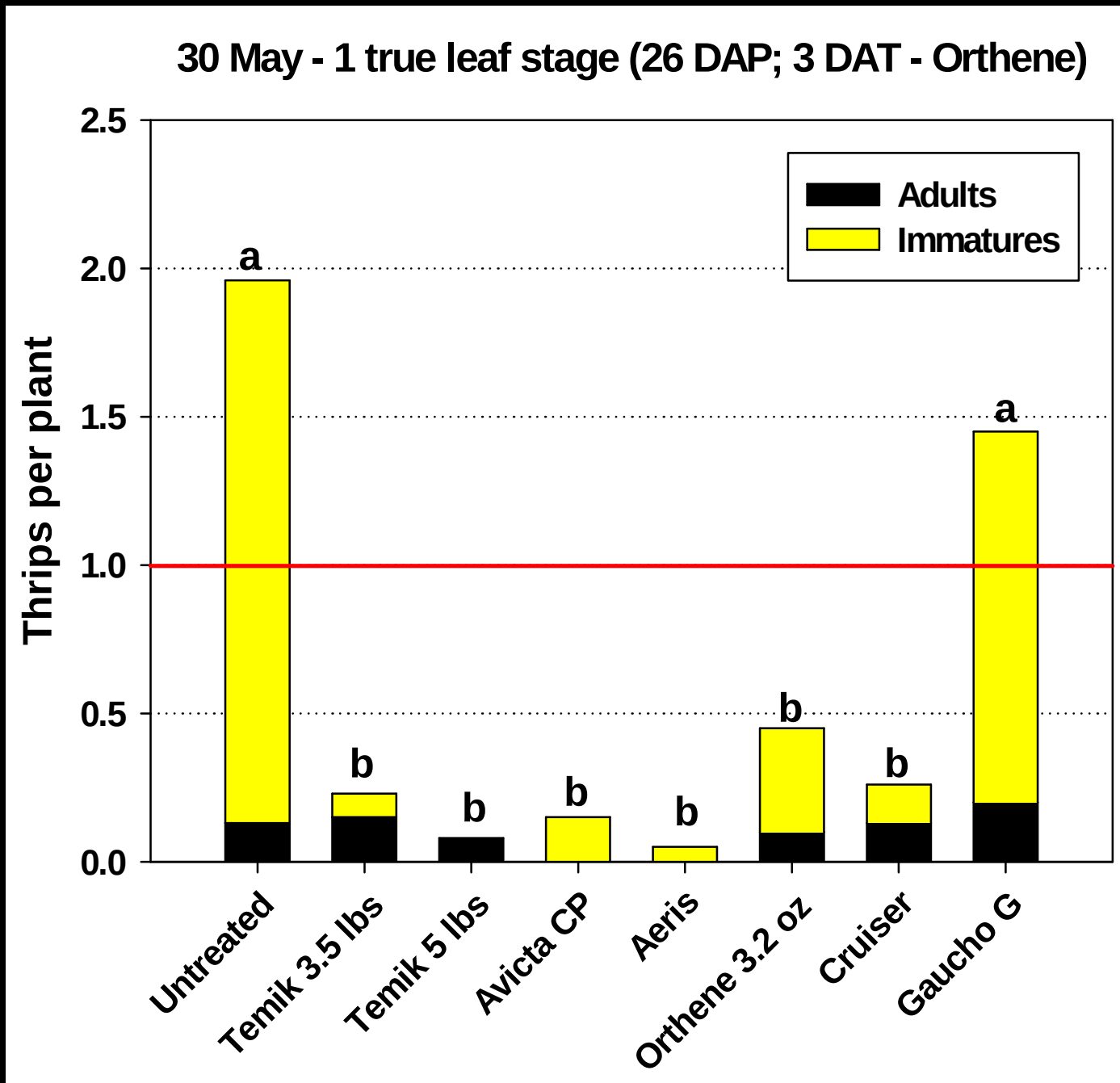

Week 2

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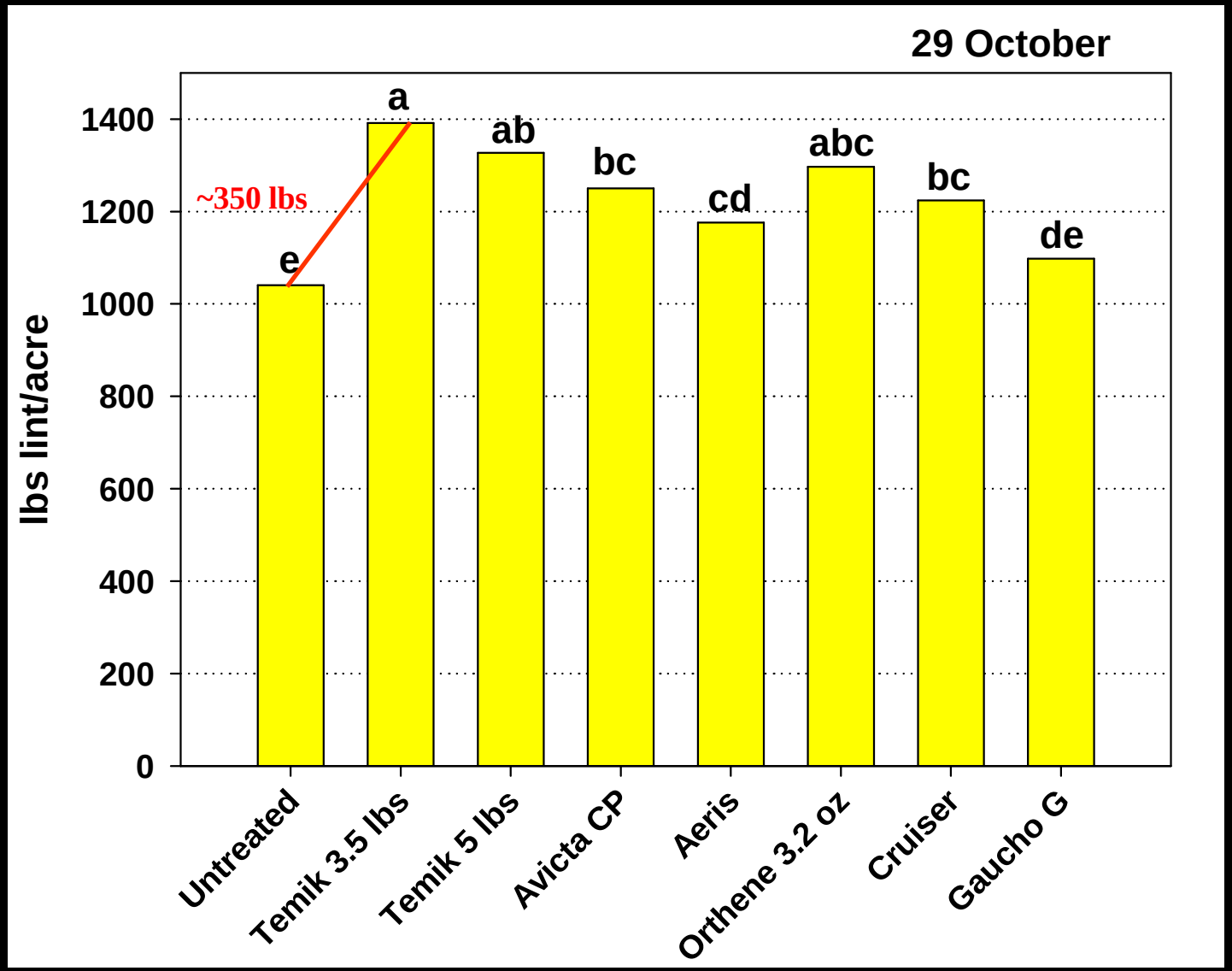
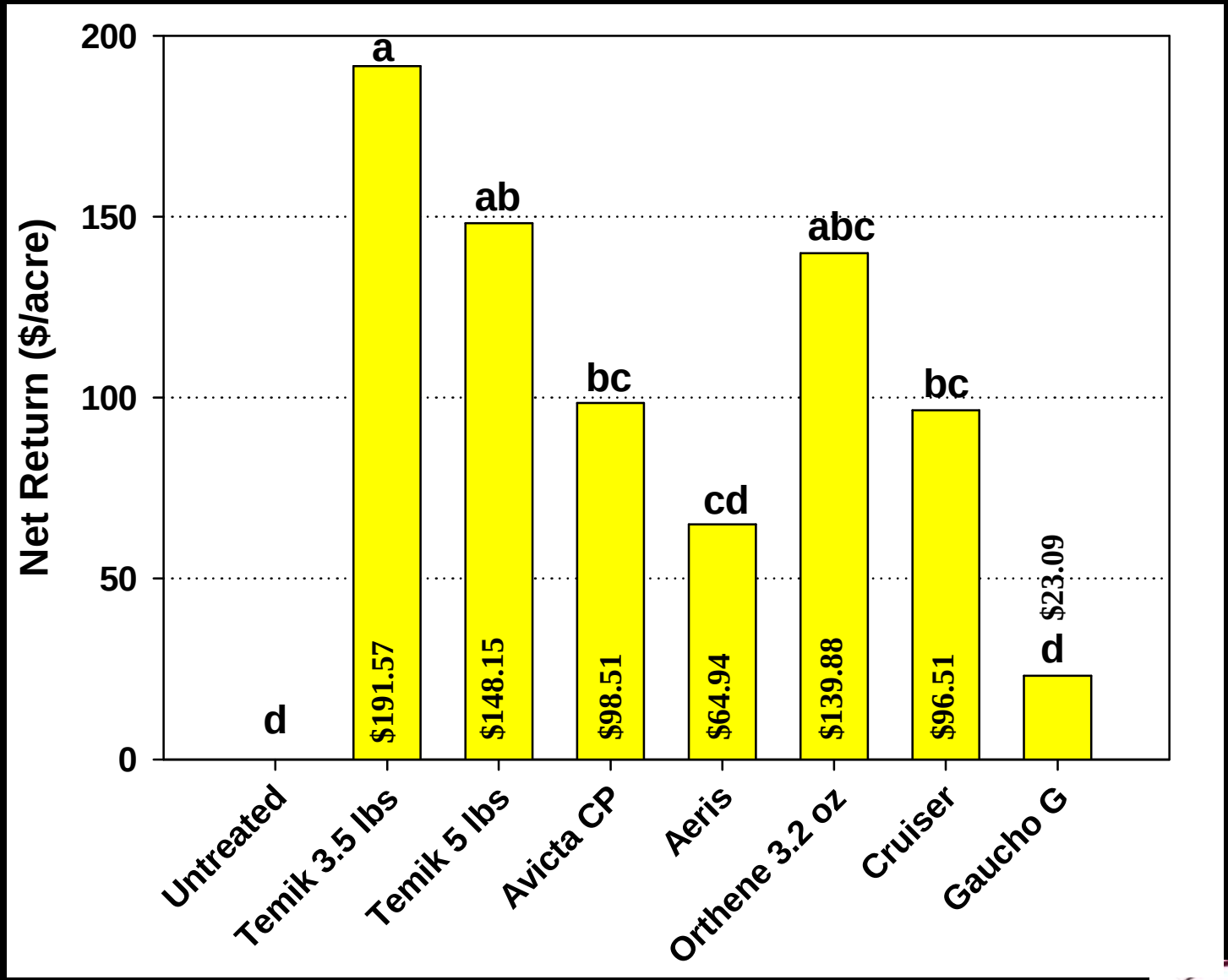
Yield


29 October
lbs lint/acre
1400
1200
1000
800
600
400
200
0
~350 lbs
e
a
ab
bc
cd
abc
bc
de
Untreated
Temik 3.5 lbs
Temik 5 lbs
Avicta CP
Aeris
Orthene 3.2 oz
Cruiser
Gaucho G

Net Return


Net Return ($/acre)
200
150
100
50
0
a
ab
bc
cd
abc
bc
d
$191.57
$148.15
$98.51
$64.94
$139.88
$96.51
$23.09
Untreated
Temik 3.5 lbs
Temik 5 lbs
Avicta CP
Aeris
Orthene 3.2 oz
Cruiser
Gaucho G

MEYMIK 15G

Replacing Temik

1. Joint venture by Ag Logic LLC and the MEY Corporation, both from NC
2. Made and probably formulated in China
3. Will be a corn cob grit formulation initially with gypsum and Lock n Loads coming in 2014
4. Not available until 4th quarter of 2012
5. Will be in short supply in 2013, should be plenty beyond that
6. No one in the US has tested this material
7. No idea regarding price
8. Will not have to adhere not the Bayer/EPA phase out plan. Open ended registration.
9. Is expected to go through reregistration as it relates to impact on pollinators and pesticides in cotton

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Early Season Interactions

Thrips & nematodes stunt growth above and below ground

Renders plants weaker and more susceptible to seedling diseases & greater probability of death

Halfway 2010, Cool/Wet

Thrips Disease Interaction

Table 1. Products, rates and application methods for insecticides evaluated		
Treatment[a]	**Rate**	**Application**
FACTOR A (Insecticide Treatments)		
Untreated	NA	NA
Temik 15G	3.5 lbs/ac	In-furrow
Orthene 97 (weekly)	3.0 oz/ac	Foliar
FACTOR B (Seed Treatments)		
Untreated	NA	NA
Premium (Base + Stamina + Gaucho 600)	NA	Seed
Base	NA	Seed
FACTOR C (*Rhizoctonia solani*)		
Untreated	NA	NA
Inoculated	3 g	Seed

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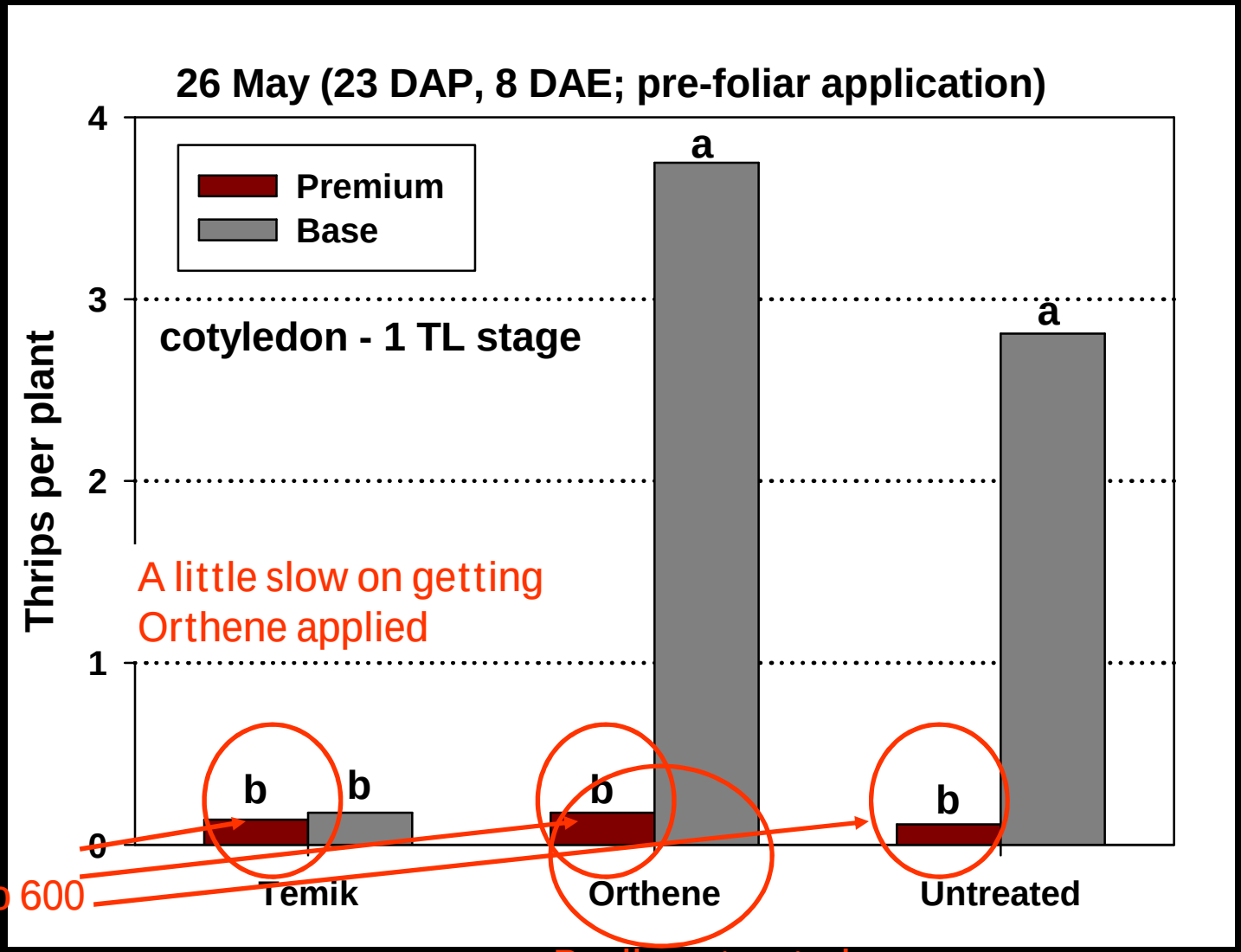
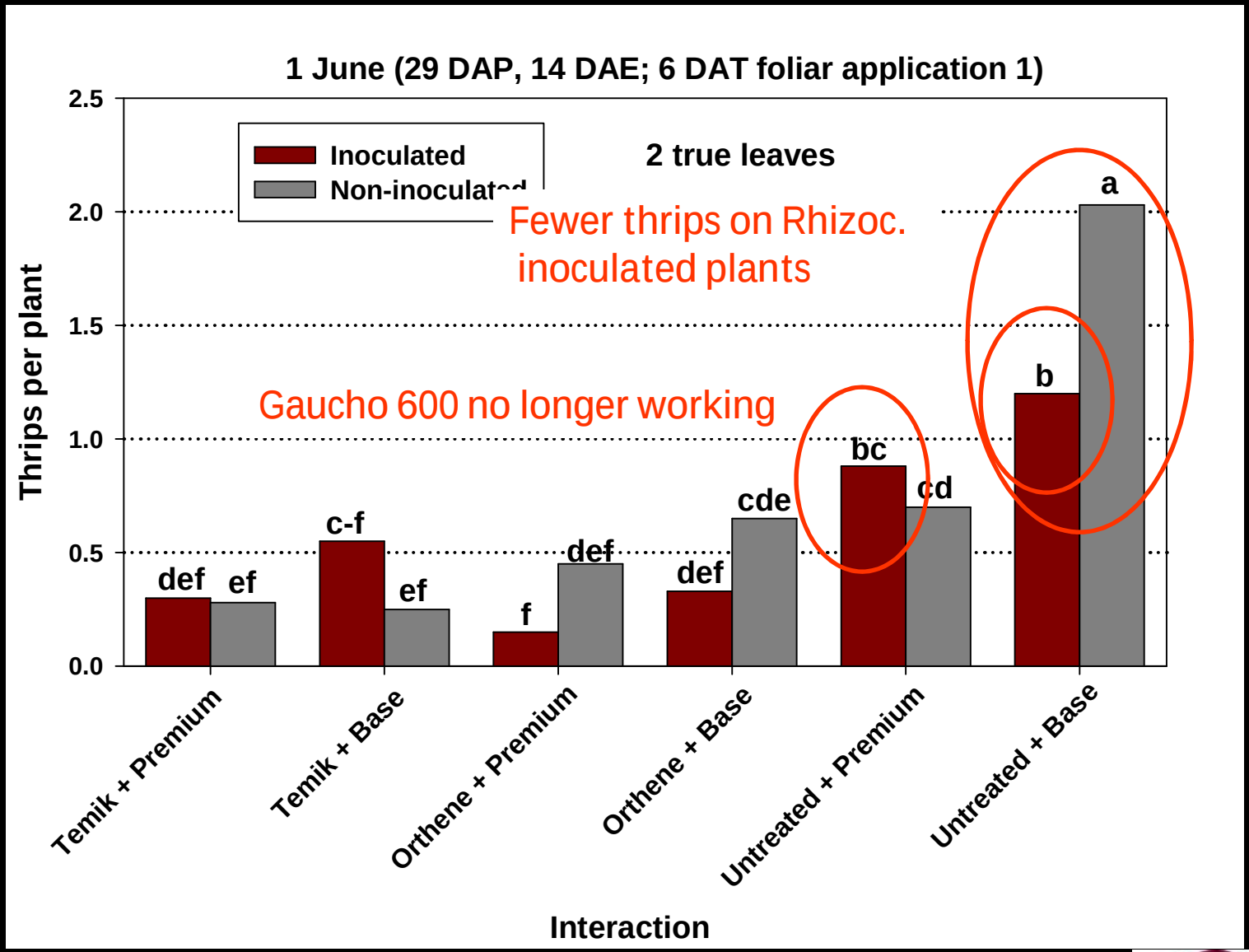
Halfway 2010



Halfway 2010



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Halfway 2010

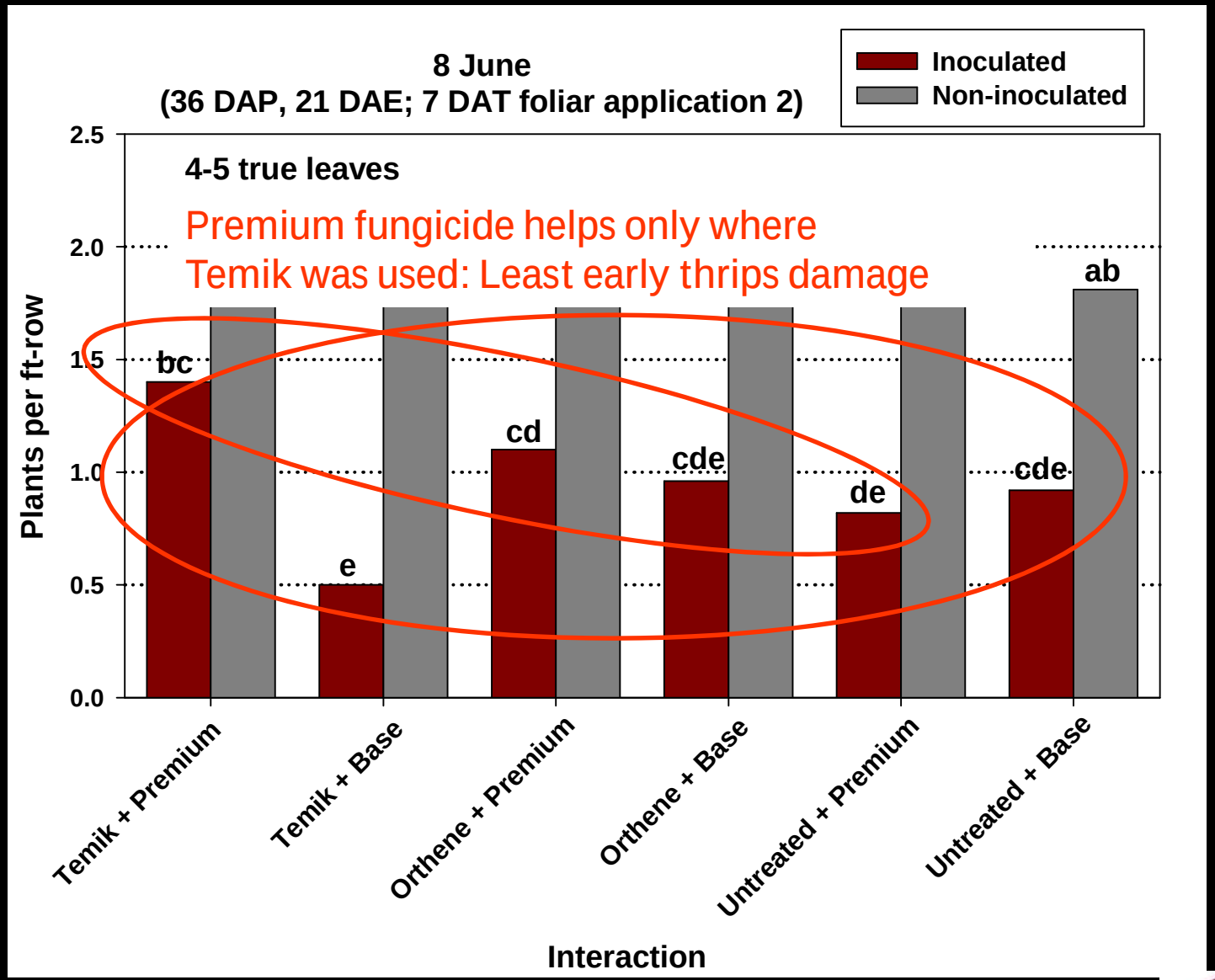

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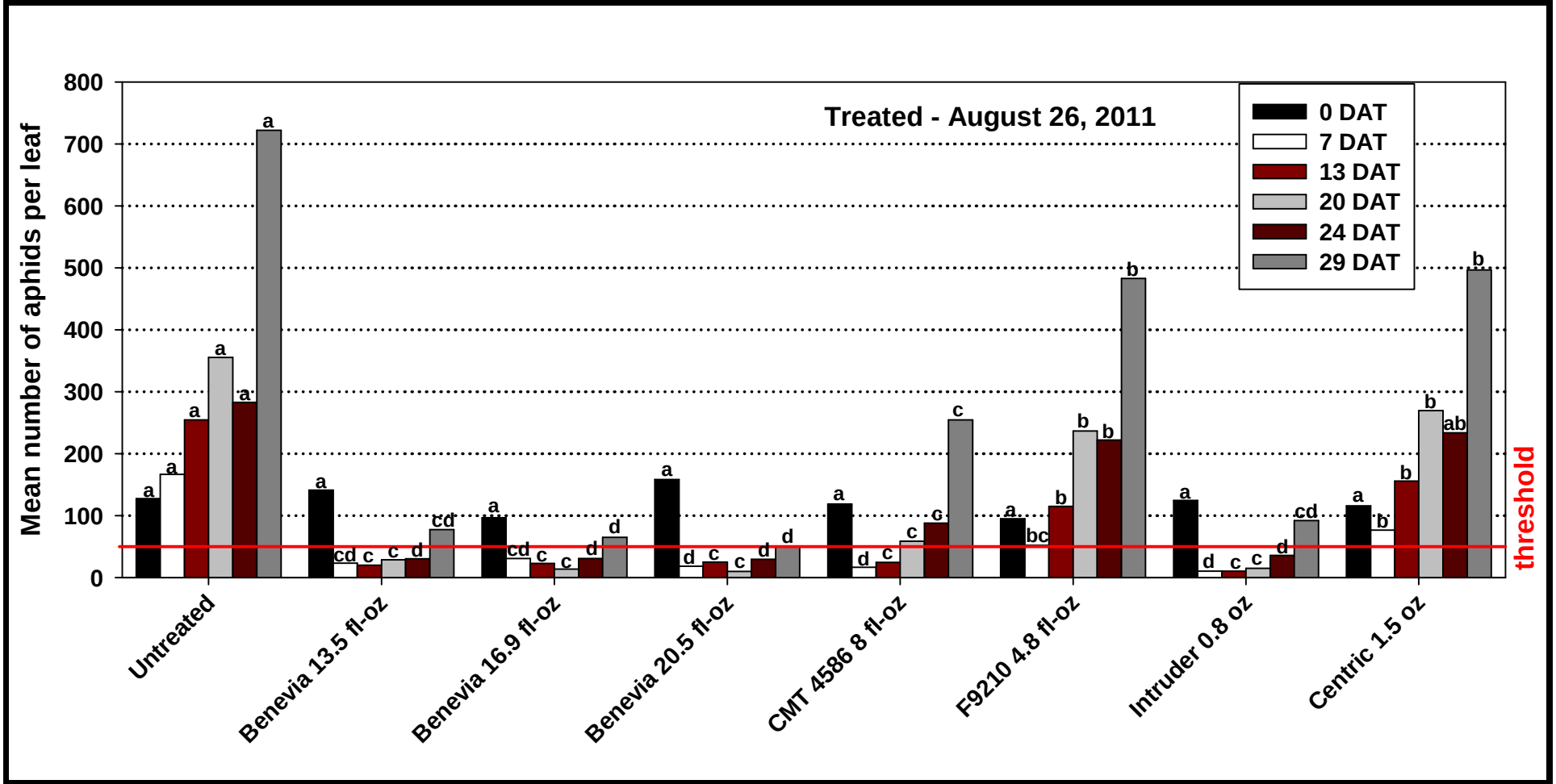
Table 3. Threshold comparison		
Threshold	Cotton Stage	No. Thrips per Plant
Threshold (vigorous growth)	Cotyledon – 1 true leaf	1
	2 true leaves	2
	3 true leaves	3
	4 true leaves	4
Threshold (low vigor)	Cotyledon – 1 true leaf	0.5
	2 true leaves	1
	3-4 true leaves	2

Aphid Research Projects

Insecticide Efficacy and Thresholds

Threshold is 50 aphids per leaf up to open bolls; then its 10 aphids per leaf

Insecticide Efficacy 2011



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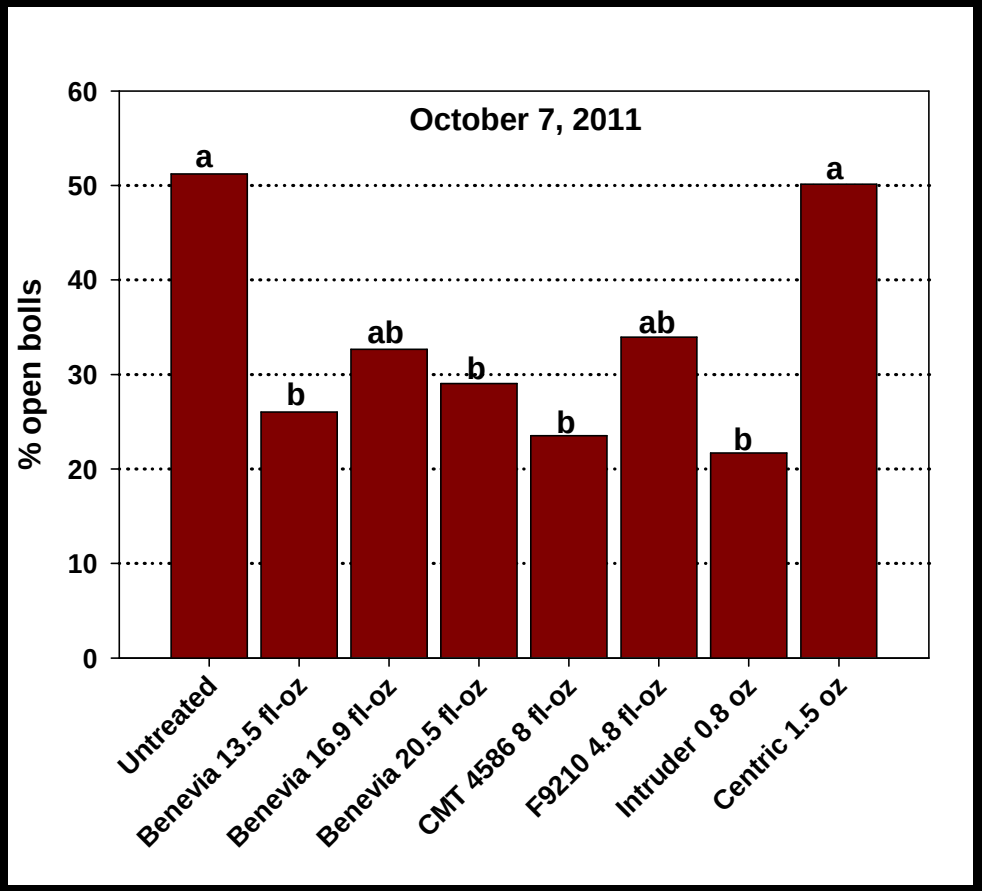
Impact of Aphids on Cotton Development



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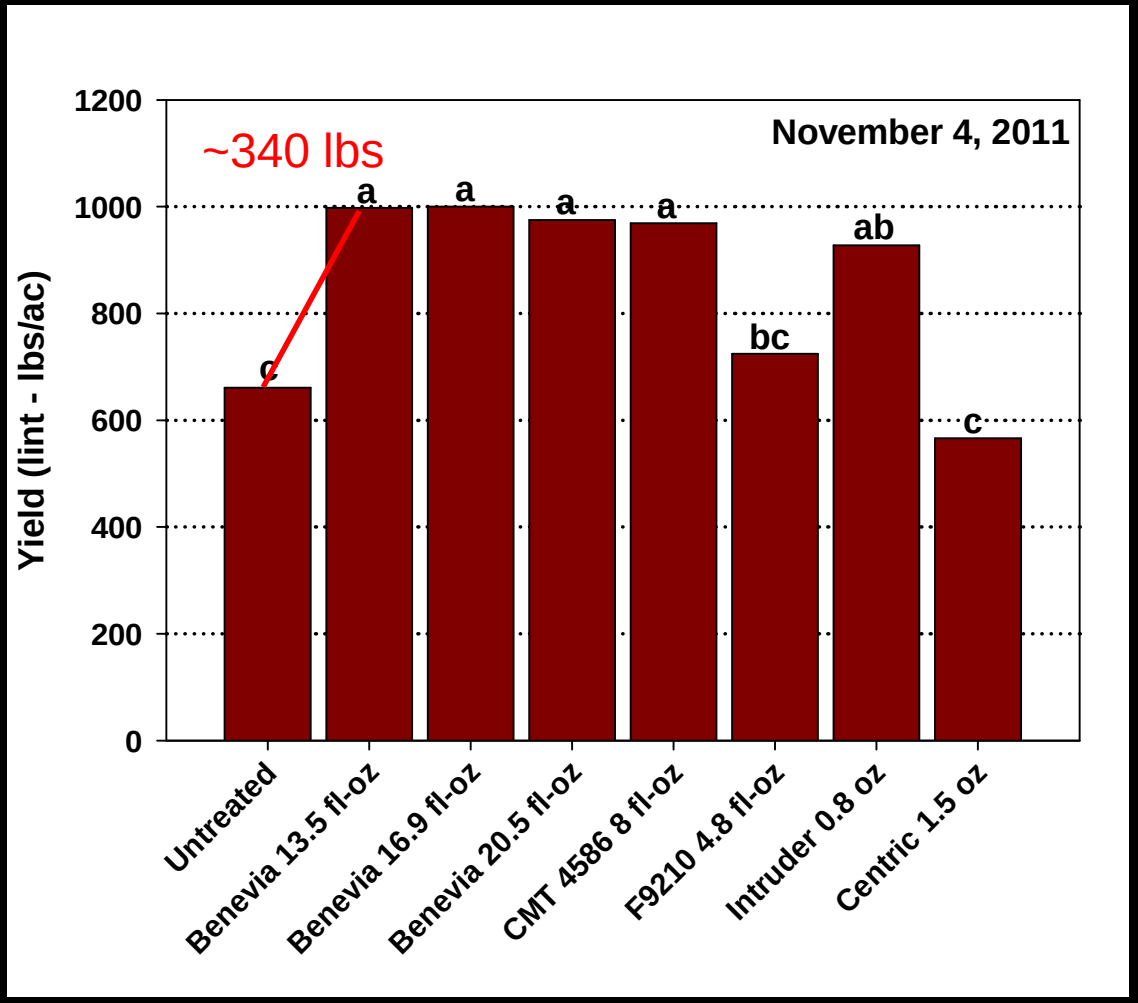
Impact of Aphids on Yield



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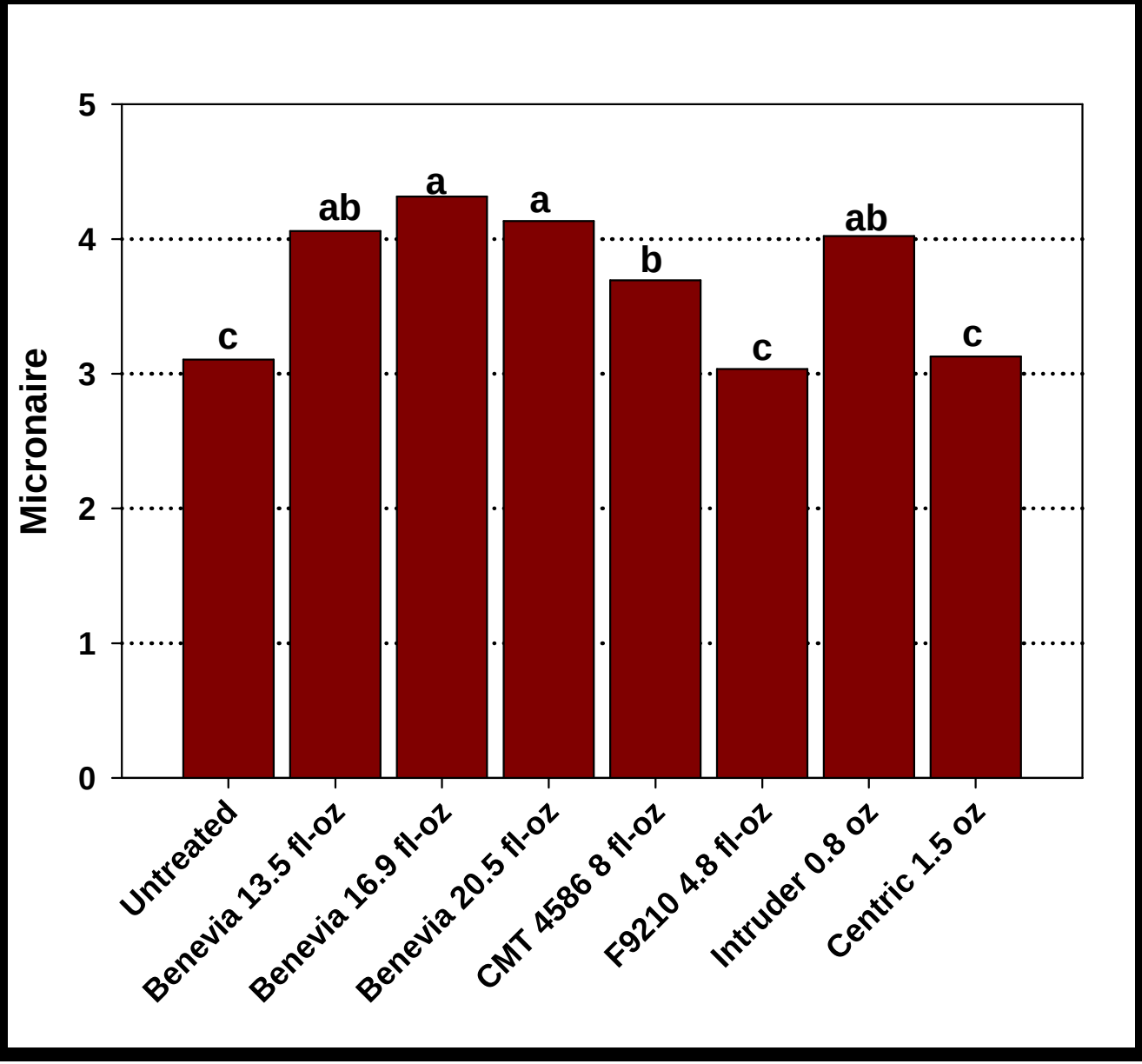
Impact of Aphids on Cotton Quality



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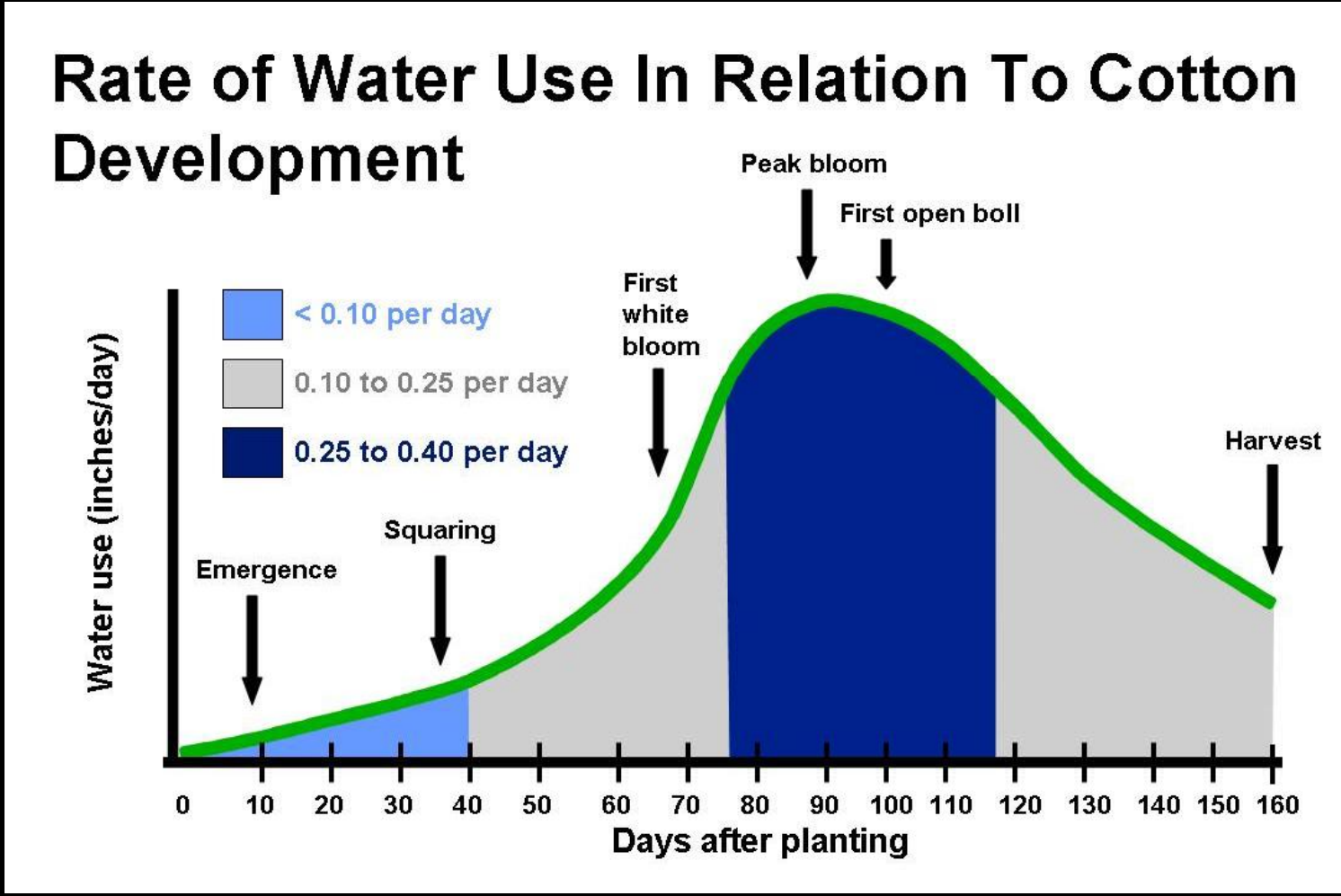
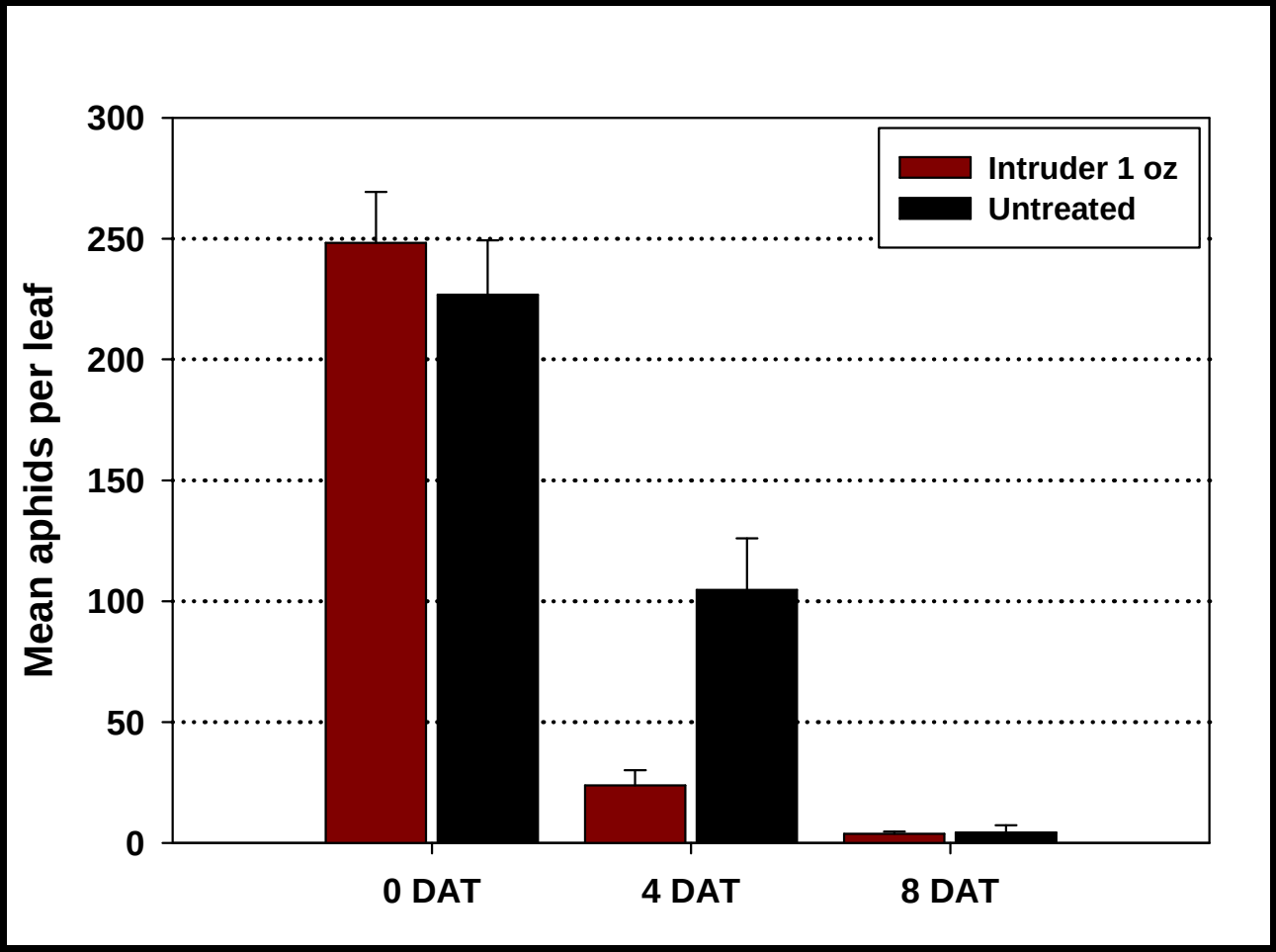
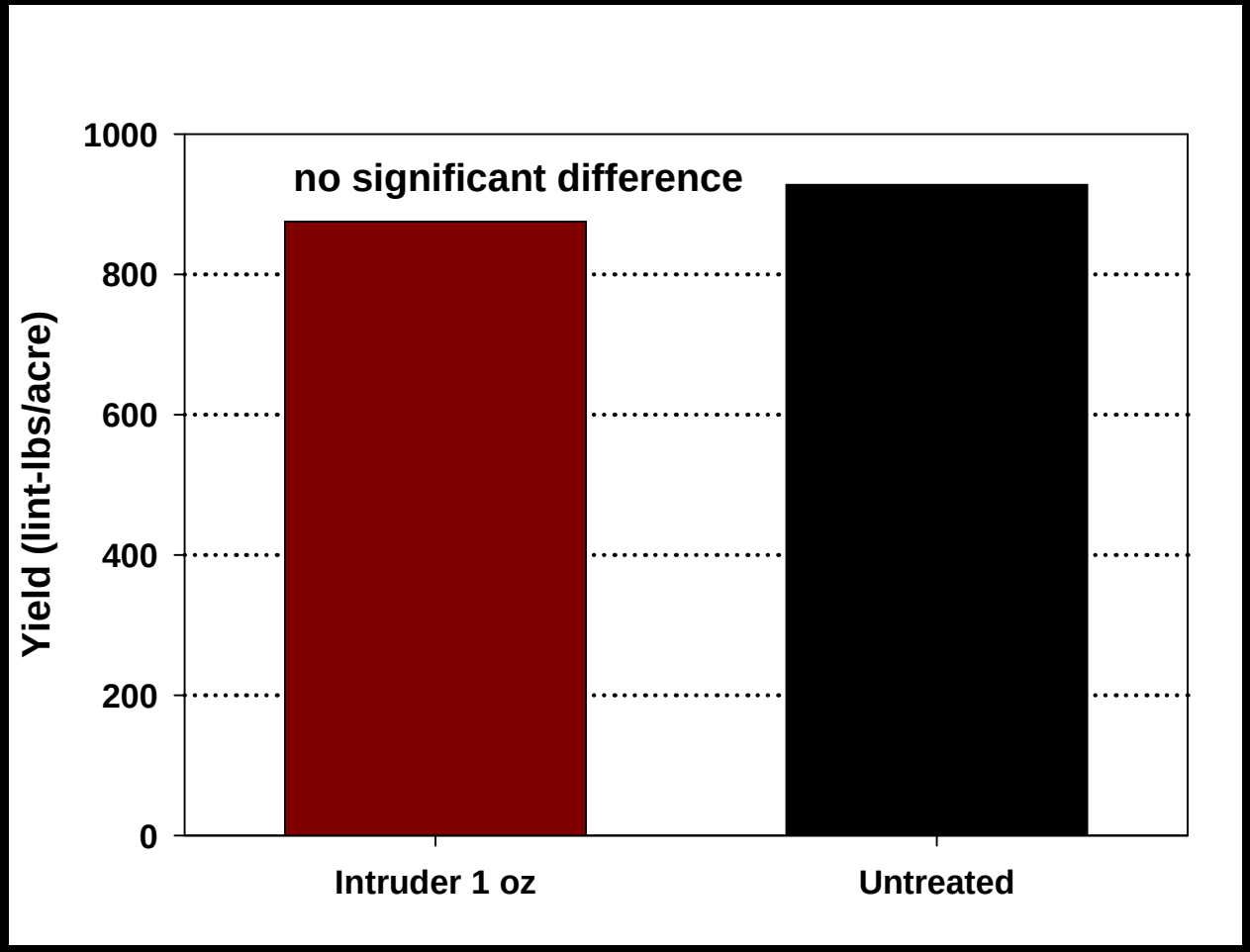
Alter aphid threshold in accordance with plant stress



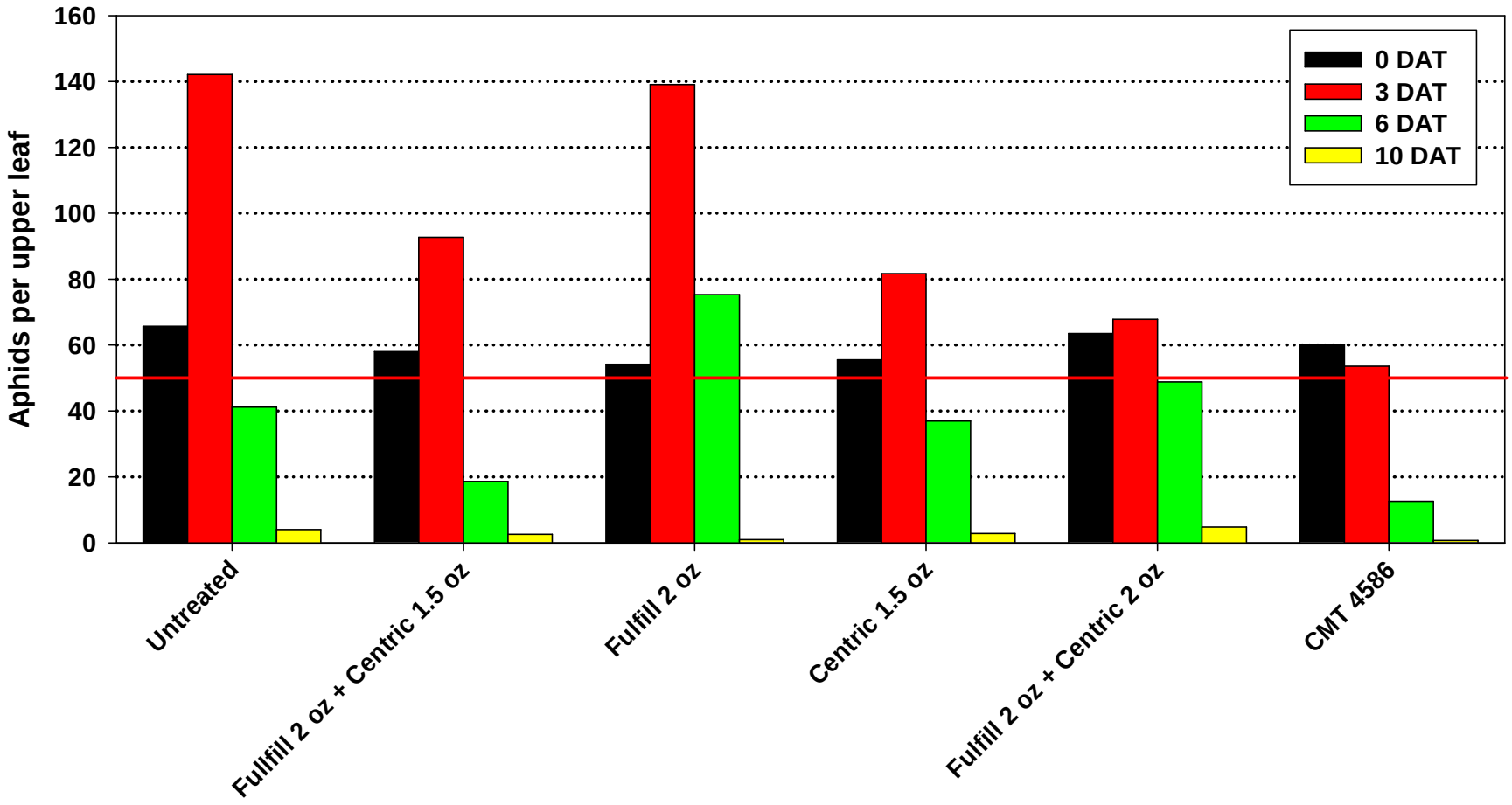
Eastern Gaines Co – 2010 Dryland Pre-bloom



Eastern Gaines Co – 2010 Dryland Pre-bloom



Tom Green Co – 2010
Peak bloom



Data from Dr. Chris Sansone and Rick Minzenmeyer

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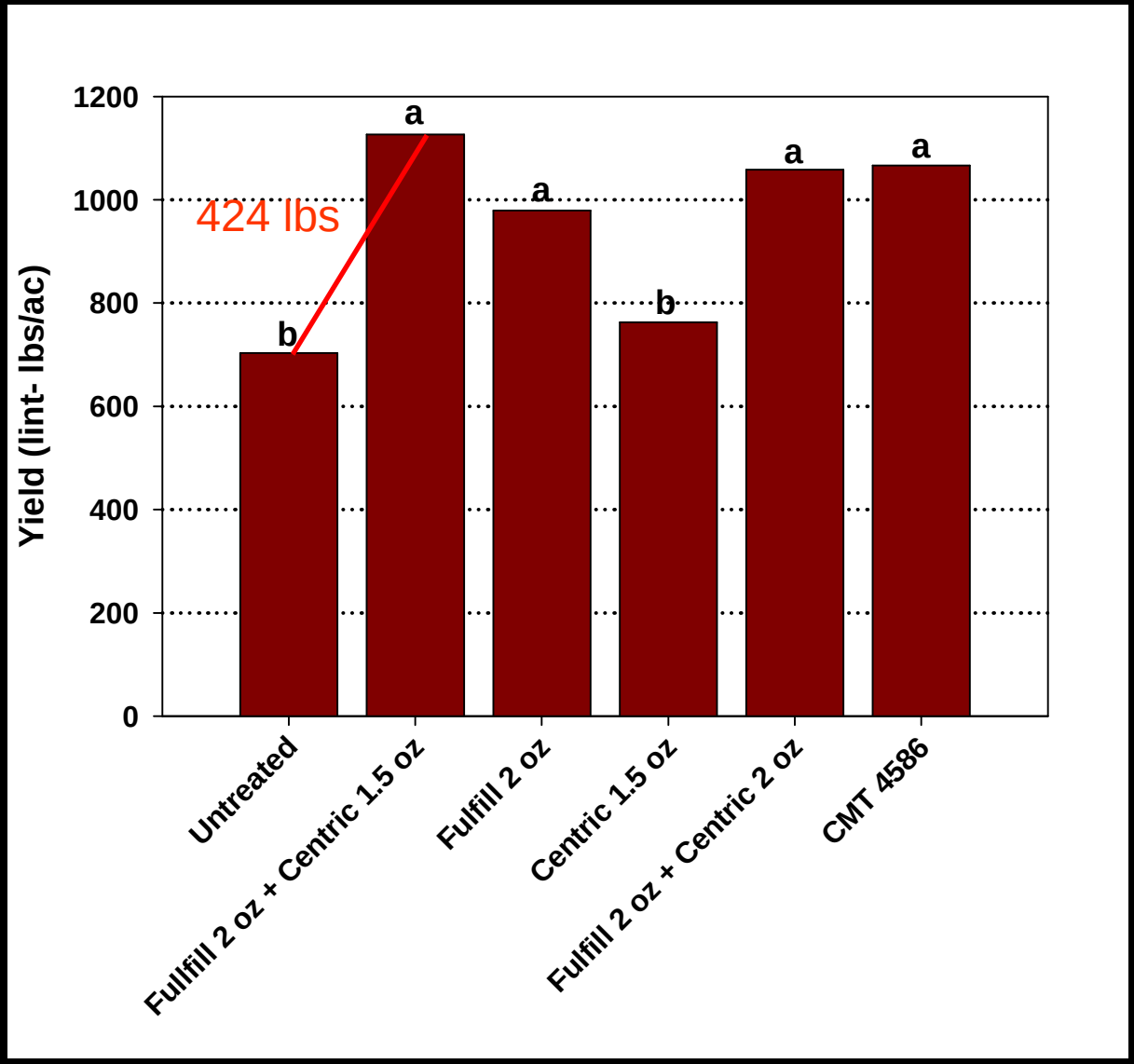
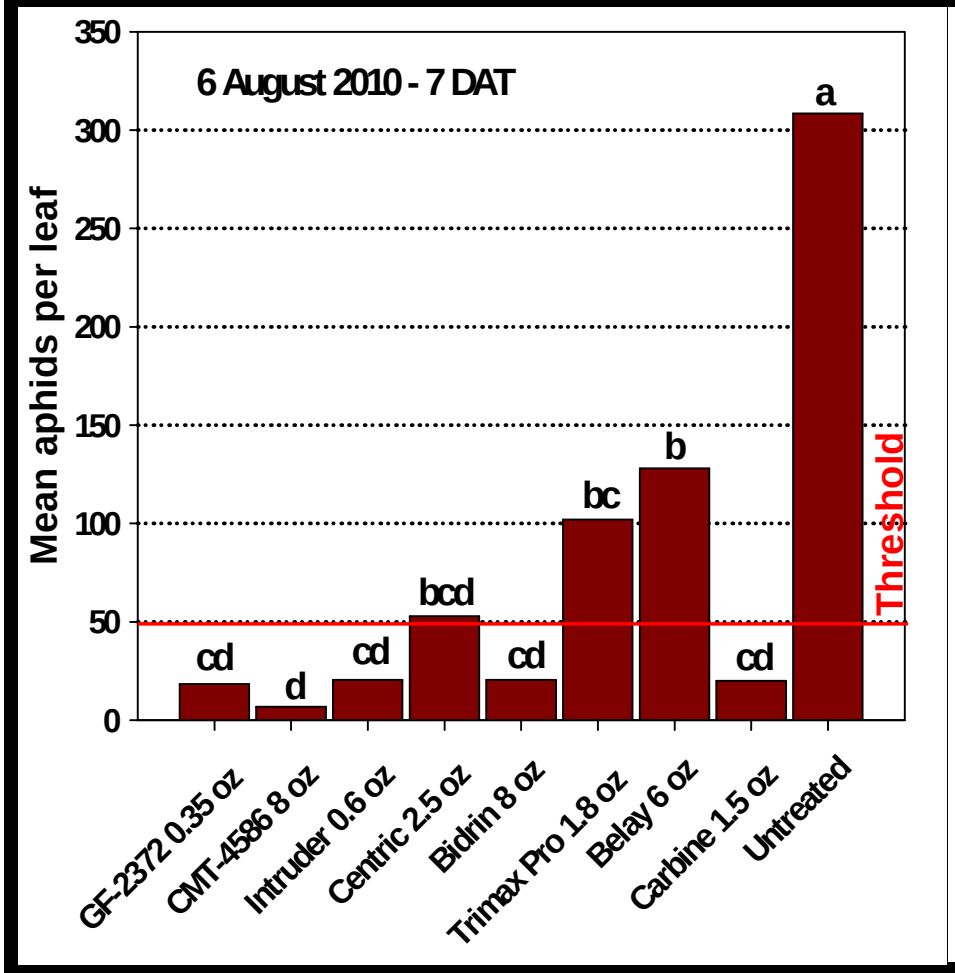
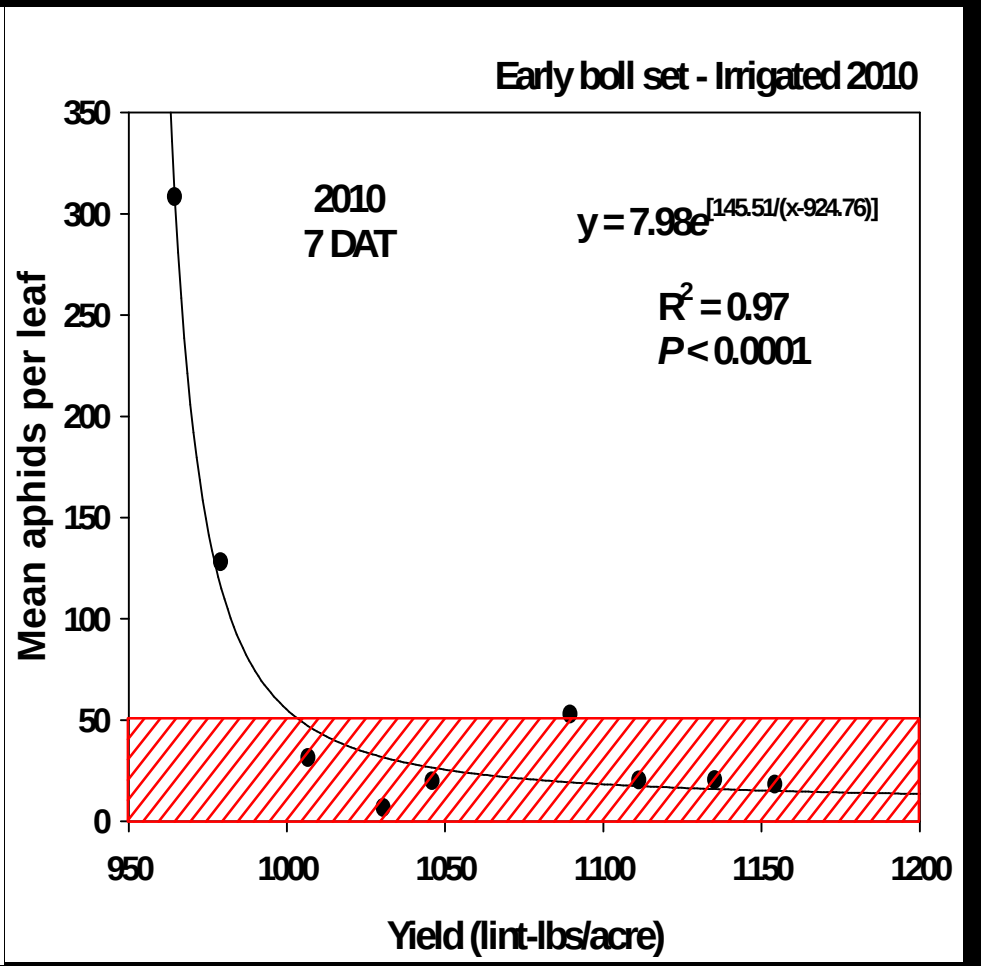
Tom Green Co - 2010

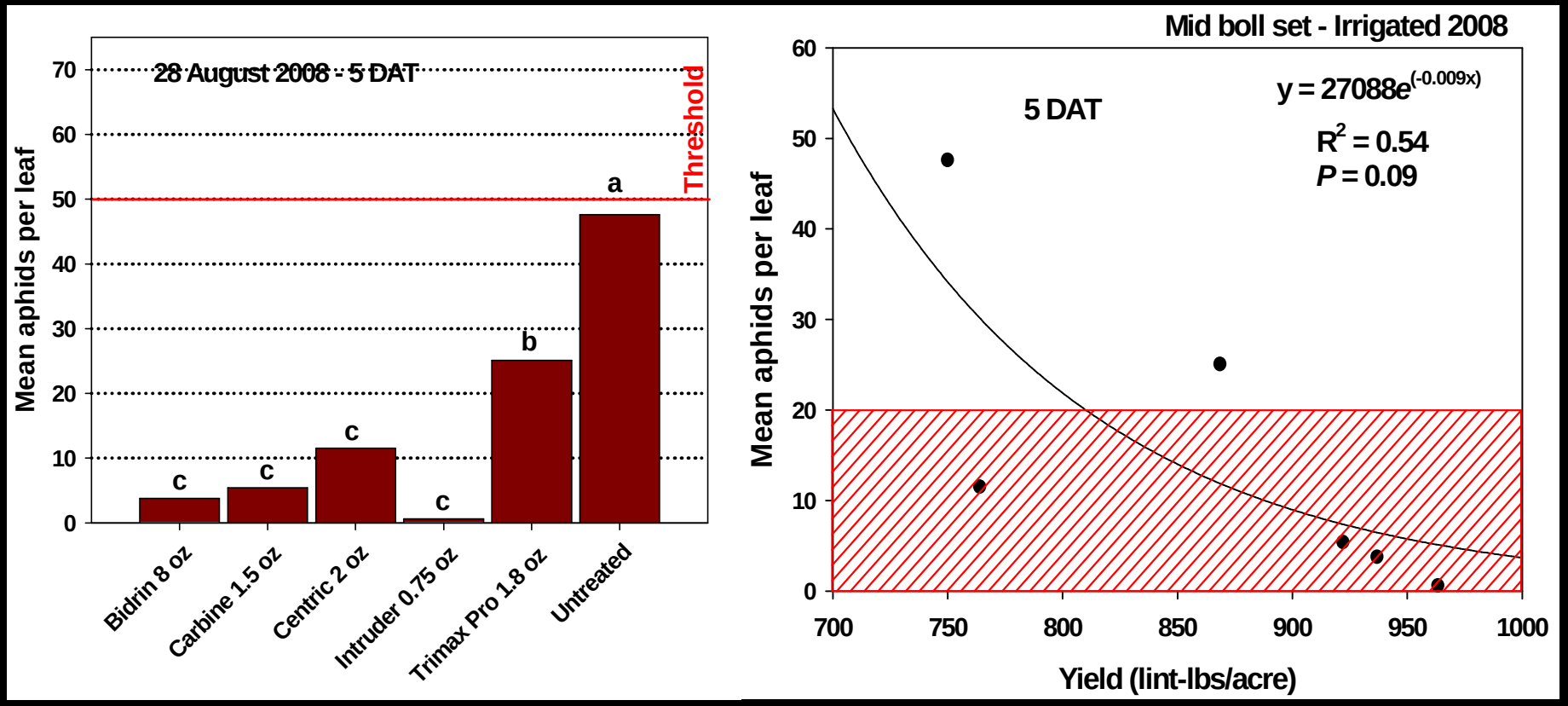


Moderately Stress Cotton - Early bloom





Highly Stressed Cotton - Heavy boll load



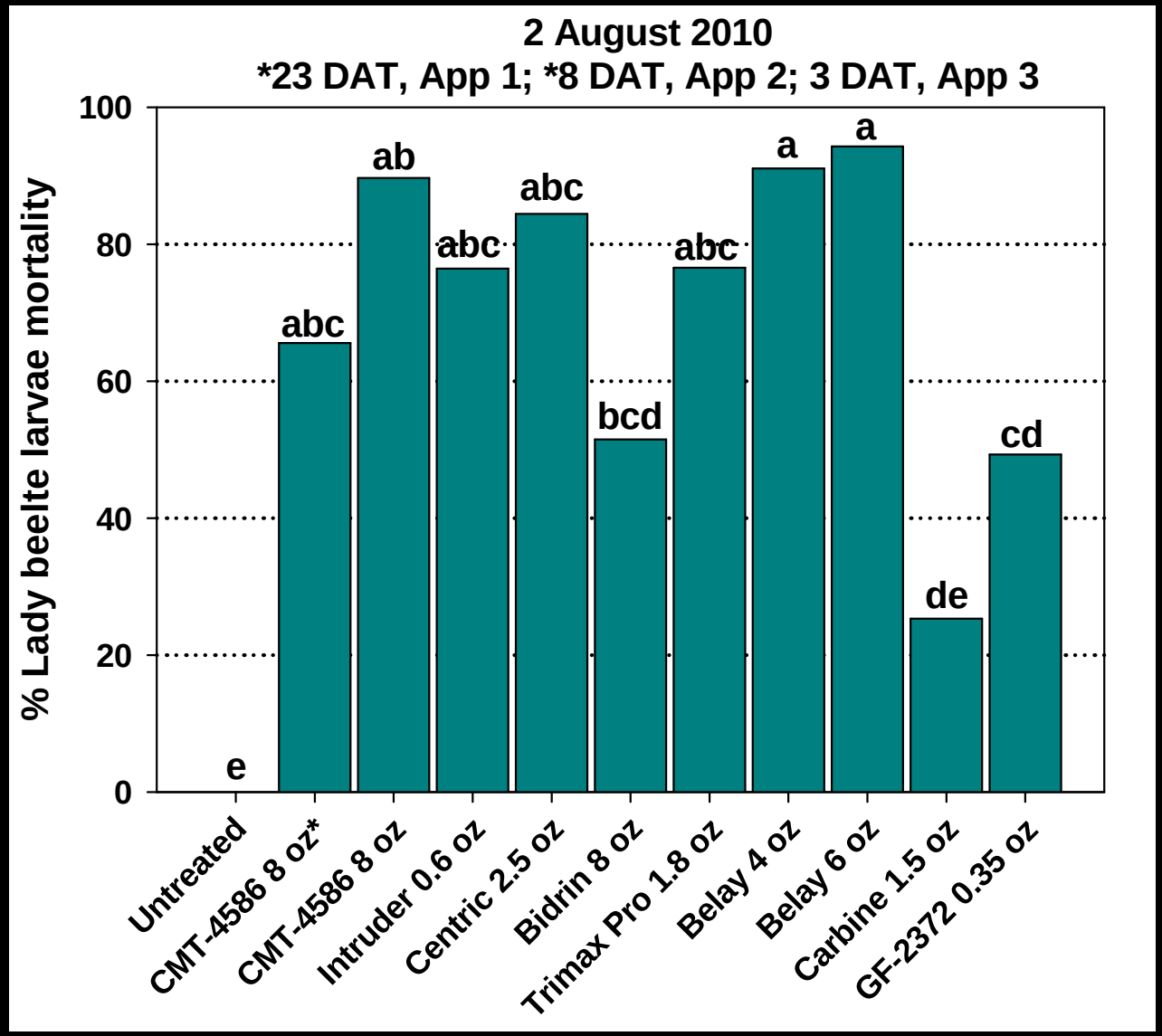
Aphid Thresholds

Currently 50 aphids per leaf

Based on plant stress

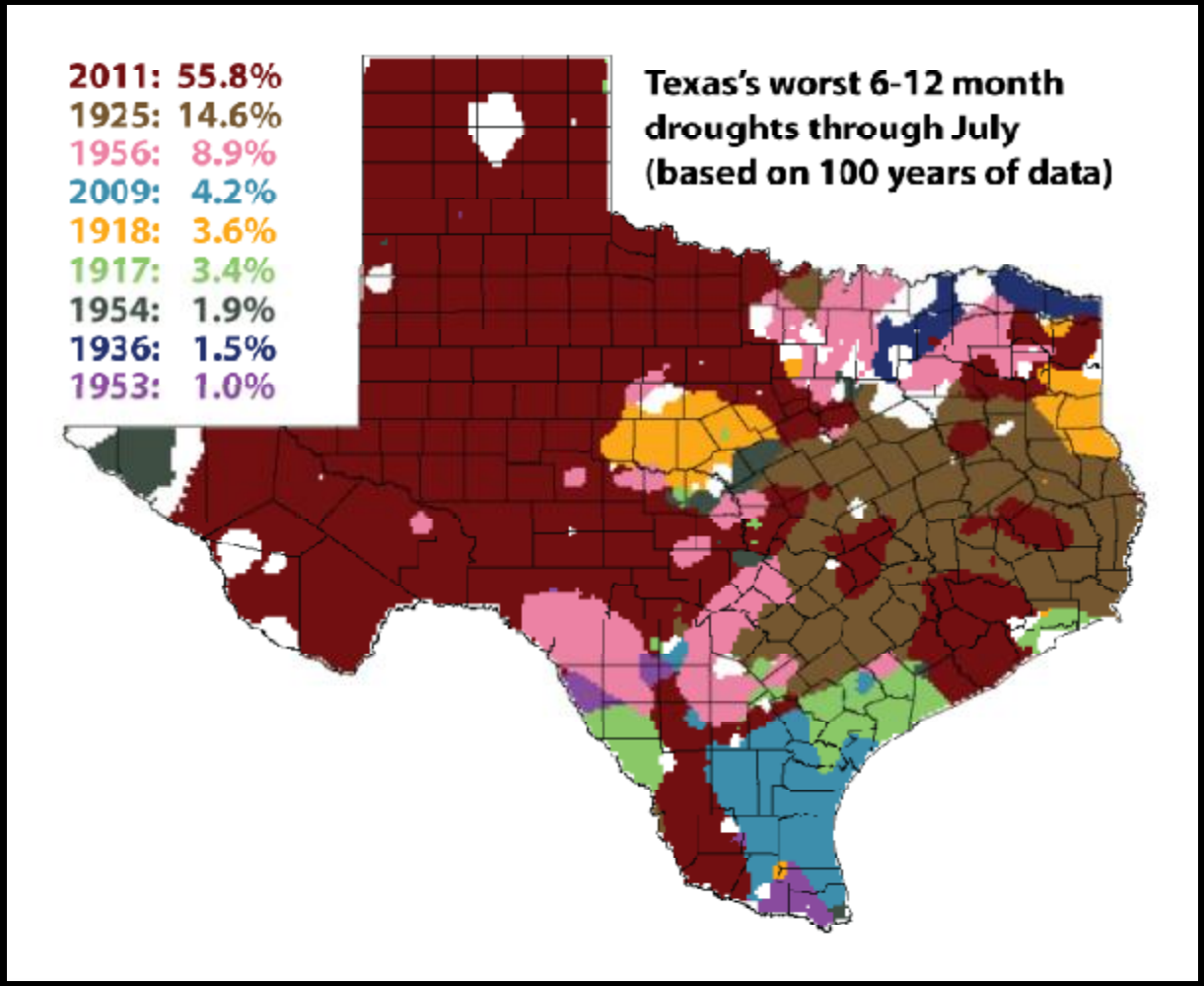
- Pre-bloom/low stress - treatment rarely justified
  - May see some stunting
- Early bloom/moderate stress – 50 aphids per leaf
- Heavy boll filling/high stress – 20 aphids per leaf
- More data is needed

Impact on Lady Beetle Larvae



Emerging Issues

The Drought of 2011



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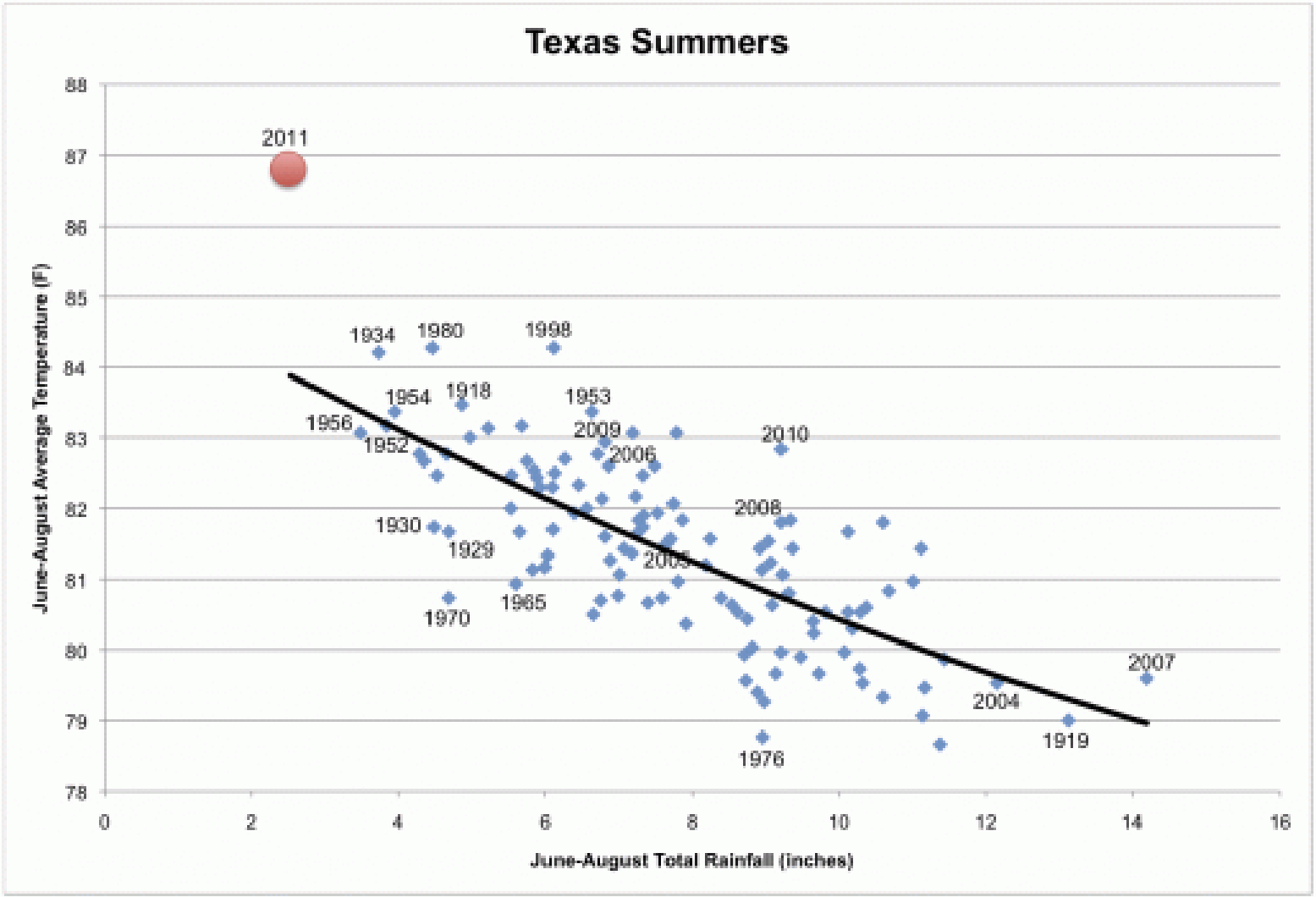
2011 was an anomaly



Kurtomathrips morrilli

Kurtomathrips morilli

- Originally described in Gila Bend, Arizona in 1927; collected from cotton, causing severe damage.
- Second report was from California in 1939 where it was damaging chrysanthemums, and reported on a native bush, mule's ear.
- In the late 1950's it was collected from a number of cultivated and wild hosts including beans, lantana, locust, snapdragon and eggplant.
- In 1961 it was reported as endemic to the southwestern US, but had also been collected in Hawaii, Florida, Jamaica and India.

First reported on July 22, 2011 in Gaines Co., near Seminole

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Damage

- Over 330,000 acres infested
- Approx. 83,000 acres treated
- Est. > $20 million in damages

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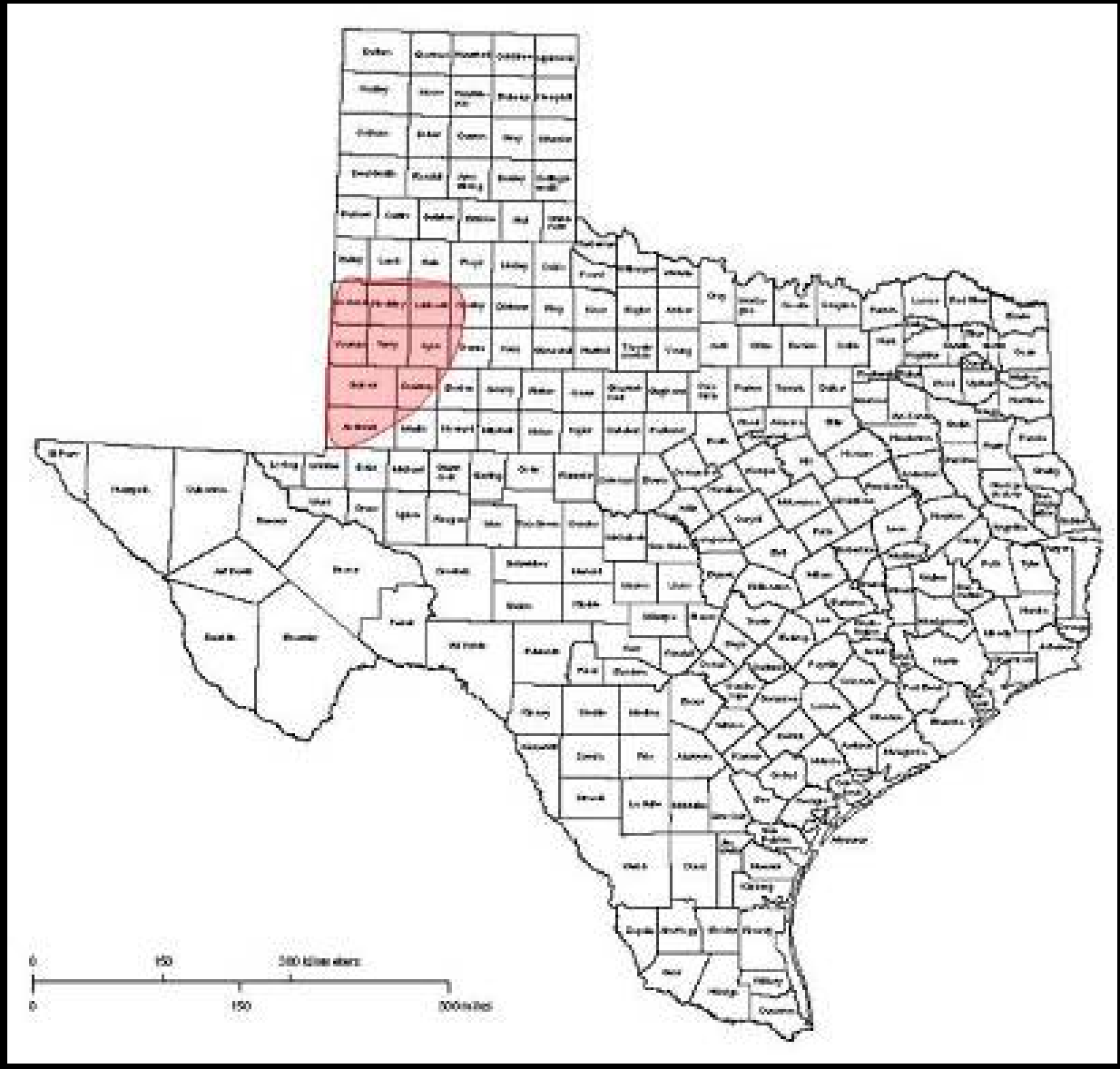

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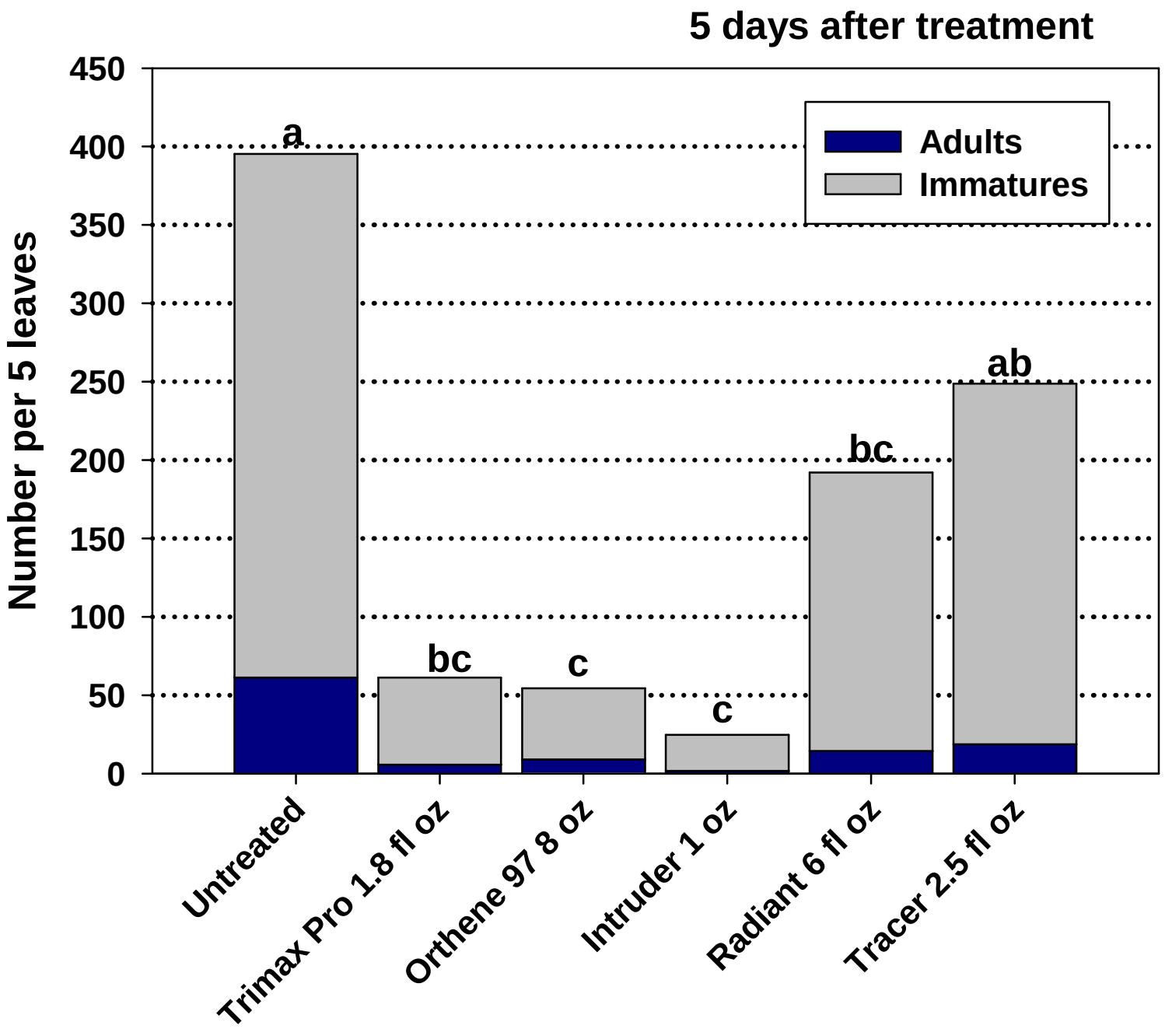
5 days after treatment
Number per 5 leaves
450
400
350
300
250
200
150
100
50
0
Adults
Immatures
a
bc
c
c
bc
ab
Untreated
Trimax Pro 1.8 fl oz
Orthene 97 8 oz
Intruder 1 oz
Radiant 6 fl oz
Tracer 2.5 fl oz


Orthene 8 oz/ac – 7 DAT
Untreated

Questions?