

SPIDER MITE INSECTICIDE PERFORMANCE AND RESISTANCE IN LOUISIANA FIELD CROPS

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SPIDER MITE OUTBREAKS AND MANAGEMENT

Factors that influence spider mite outbreaks

- *Poor or late burn down of weeds preplant*
- *Hot/dry weather conditions*
- *Insecticide applications targeting other pests (namely acephate and pyrethroids)*
- *Ability of the plant to defend itself*
 - *Affected by pest pressure*
 - *Seed treatments*



INITIAL SOURCES OF MITES INFESTING COTTON

- Overwintering
 - Induced by day length and temperature
 - Adult female (red form)
 - Seek out dark, humid areas such as leaf litter
- Weeds
 - Morning glory
 - Palmer amaranth
 - Many more
- Other crops
 - Soybeans
 - Corn



GREEN BRIDGE CONCEPT

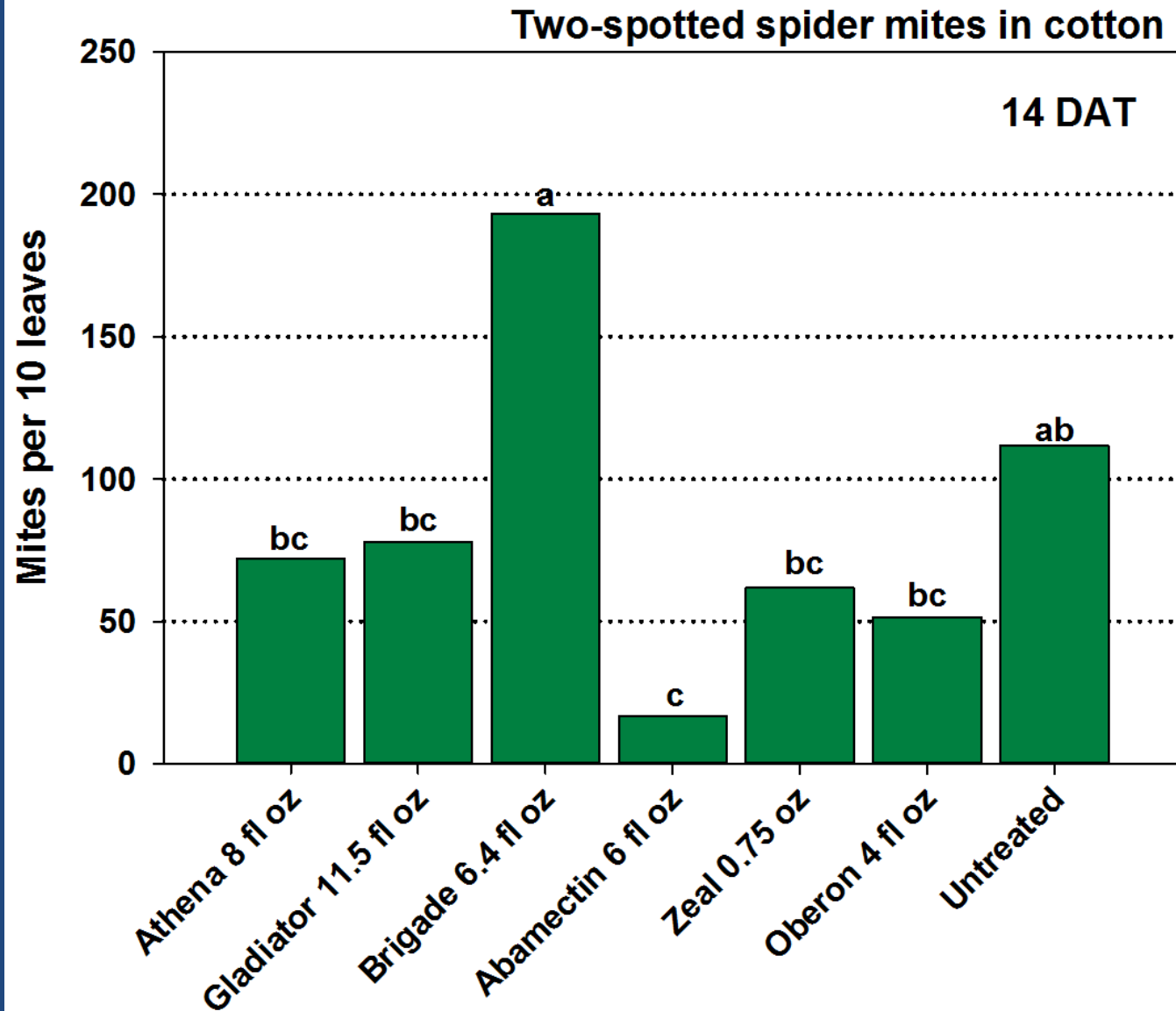
- *Mites developing on spring weeds will move into adjacent cotton*
 - *Crowding*
 - *Host deterioration*
 - *Disperse by crawling or slight wind*



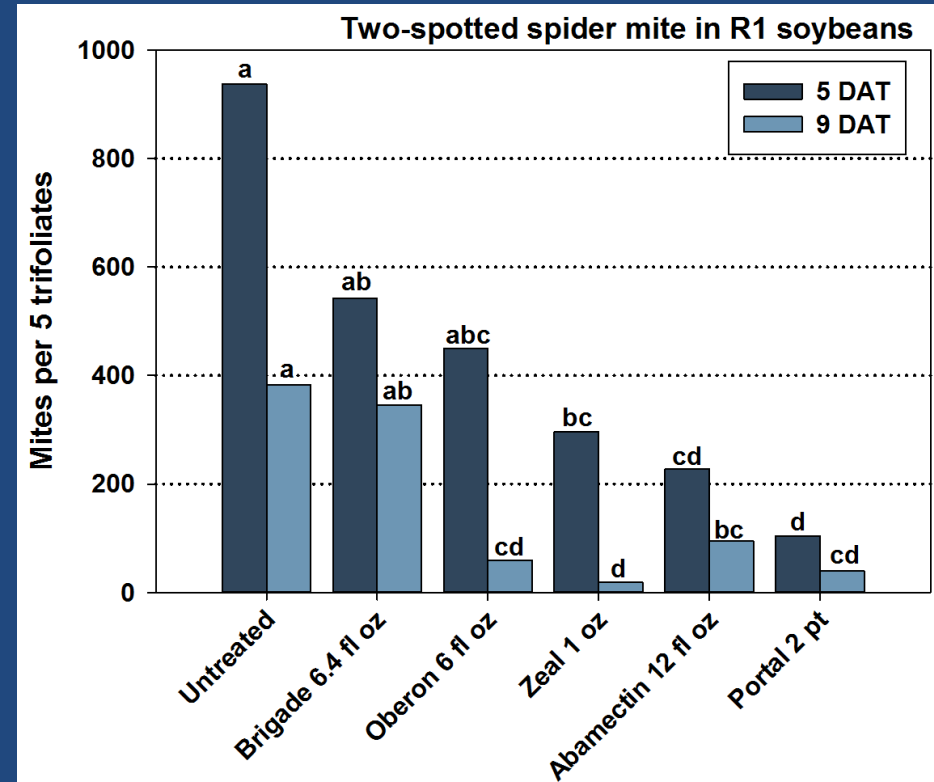
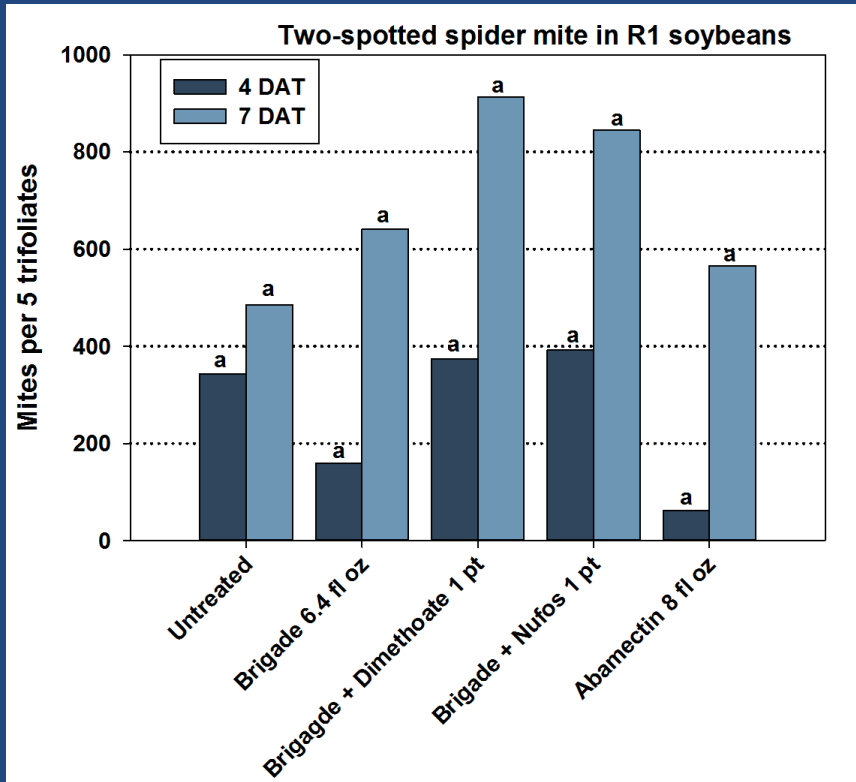
CURRENT LOUISIANA THRESHOLD

Louisiana Threshold: Treat when mite infestations cause areas where plants have discolored leaves. Anticipate repeating applications in 5 days.

MITICIDE PERFORMANCE



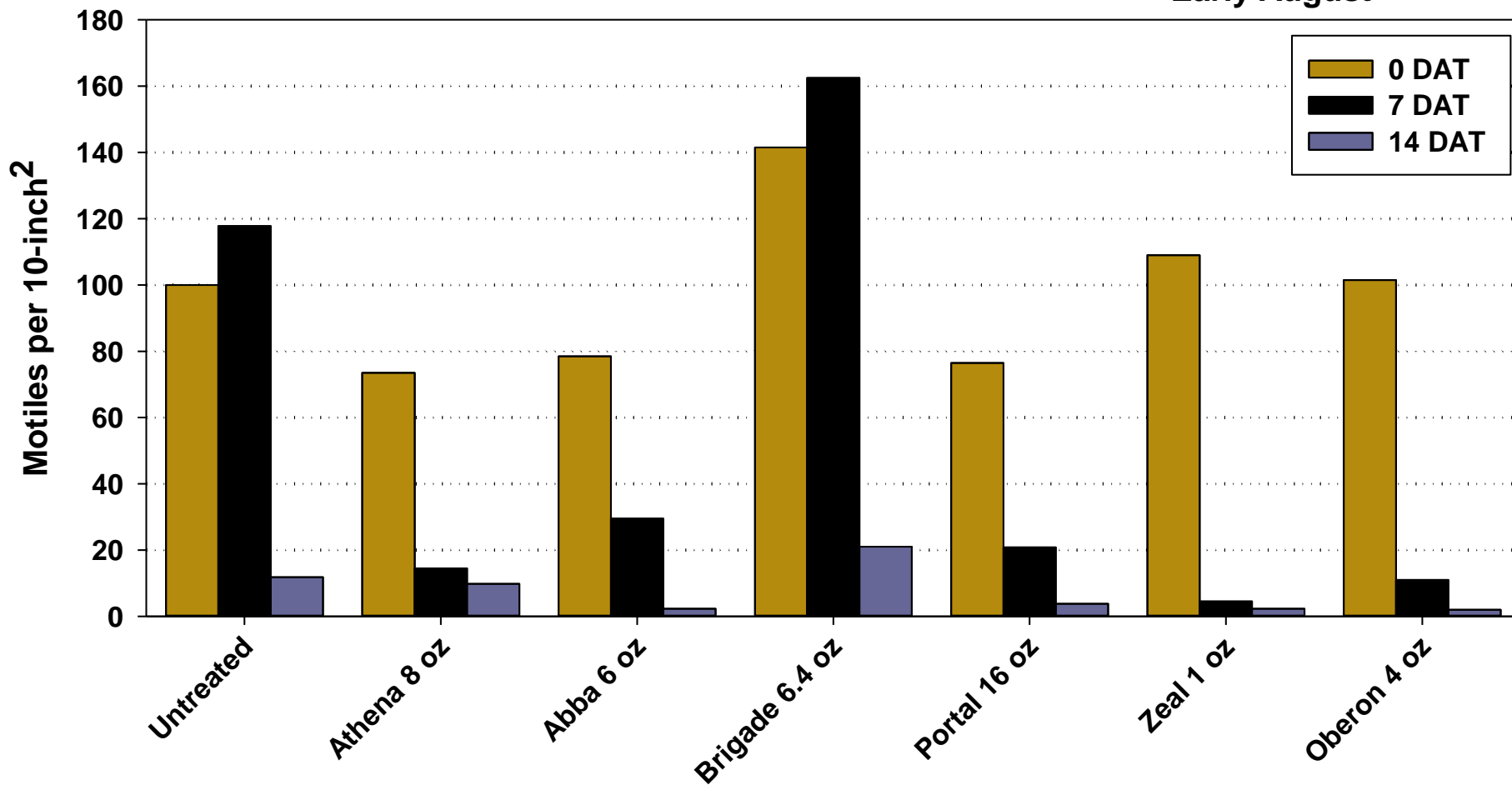
SEEING CONTROL ISSUES WITH ABAMECTIN



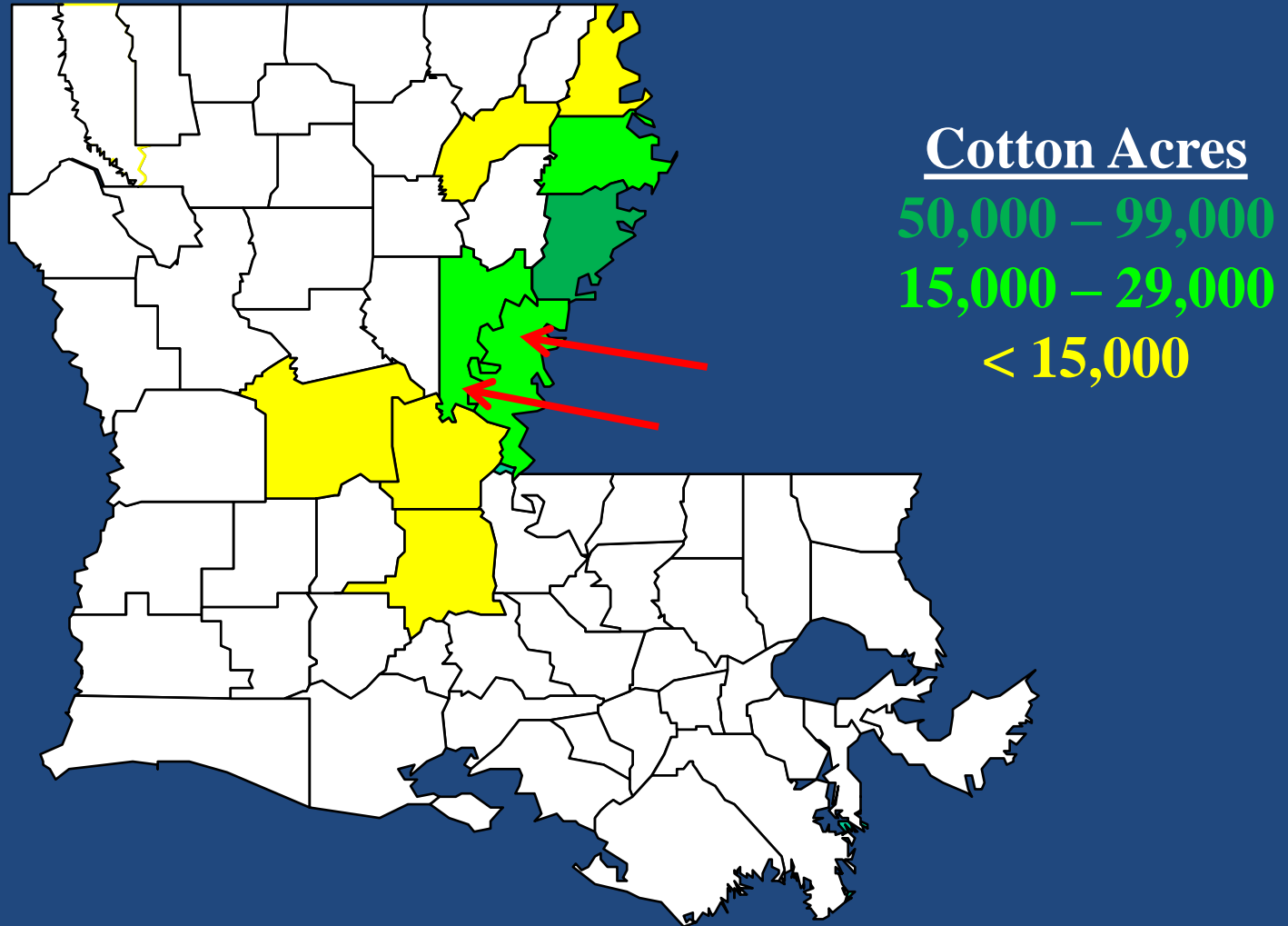
MITICIDE EFFICACY

MATURE COTTON – HIGH MITE POPULATION

Bossier City, LA 2012
Early August



2013 Abamectin Failures



Screening spider mites for resistance to abamectin

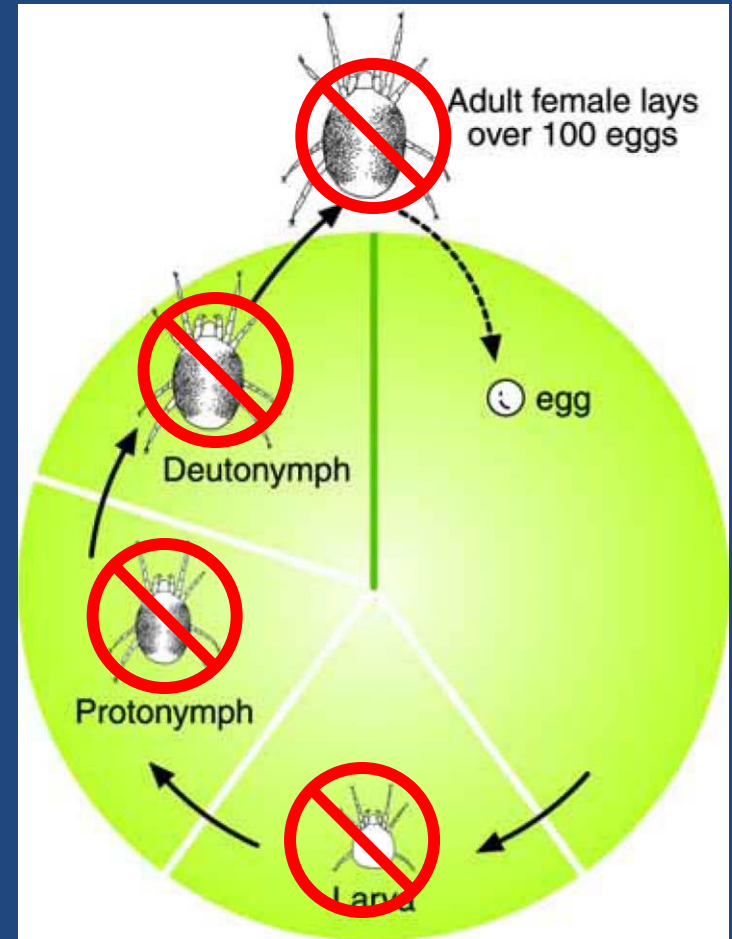
Two-spotted spider mite resistance in Mid-South

Strain	<i>n</i>	Gen	LC ₅₀ (95% CL) ^c	RR
SUS	600	---	0.00013 (0.00004 - 0.00024)	1
MS	600	---	0.007 (0.001 – 0.014)	53.8
TN	600	---	0.002 (0.0008 – 0.011)	15.4
CL	600	---	0.082 (0.055 – 0.115)	630.7
JV	600	---	0.184 (0.122 – 0.267)	1415.2

^cValues expressed in ppm

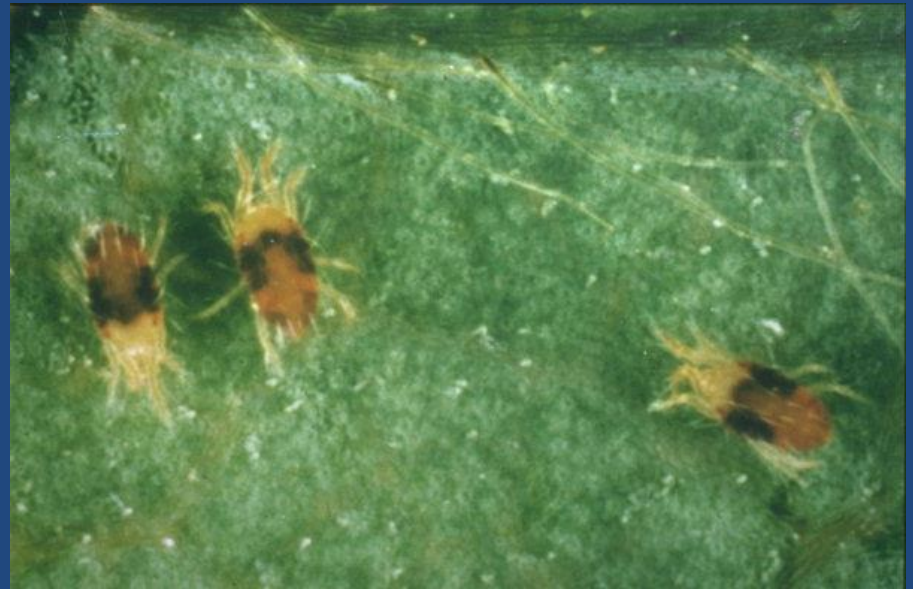
ABAMECTIN ACTIVITY

- *Abamectin is a presynaptic nerve poison (GABA site)*
- *Translaminar*
 - *Has been shown to benefit from addition of crop oil*
- *Soft on beneficials*
- *Fast acting*
- *Short lived*
- *Active towards all motile stages*



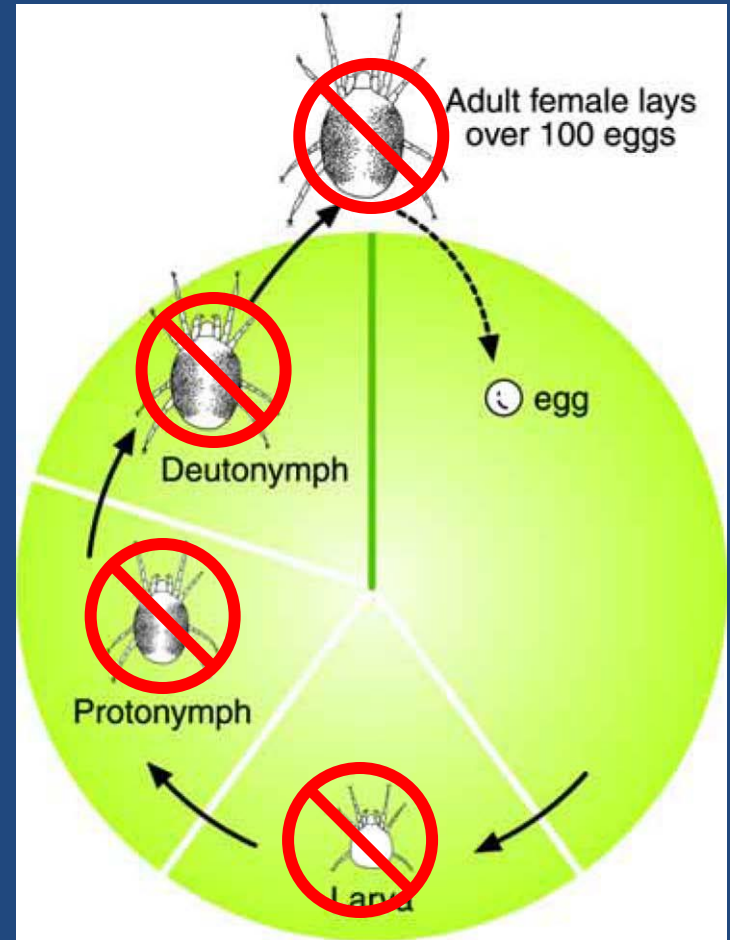
CHANGING HOW WE UTILIZE ABAMECTIN IN COTTON

- *Avoid acephate and pyrethroid use in cotton at least until full bloom*
- *Do not treat incidental mite populations*
- *Do not use less than 8 fl oz of abamectin*
- *Use only one shot of abamectin per season per field*



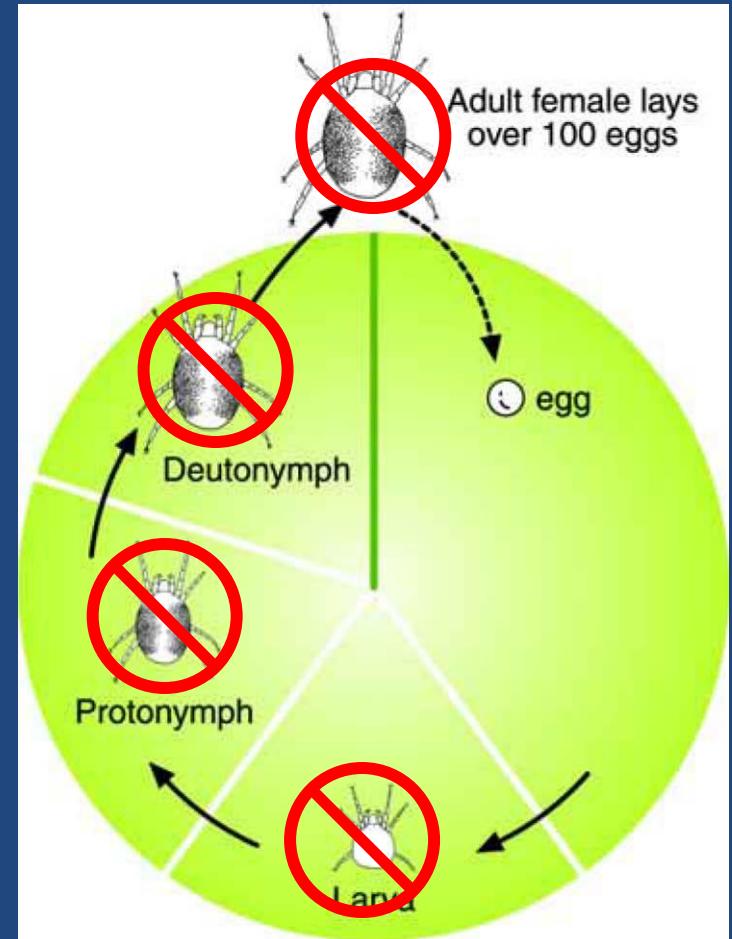
BIFENTHRIN ACTIVITY

- *Bifenthrin is a pyrethroid (nerve poison)*
- *Non-translaminar*
 - *Contact activity*
- *Harsh on beneficials*
- *Fast acting*
- *Short lived*
- *Active towards all motile stages*
- *Resistance issues*
- *Coverage issues*



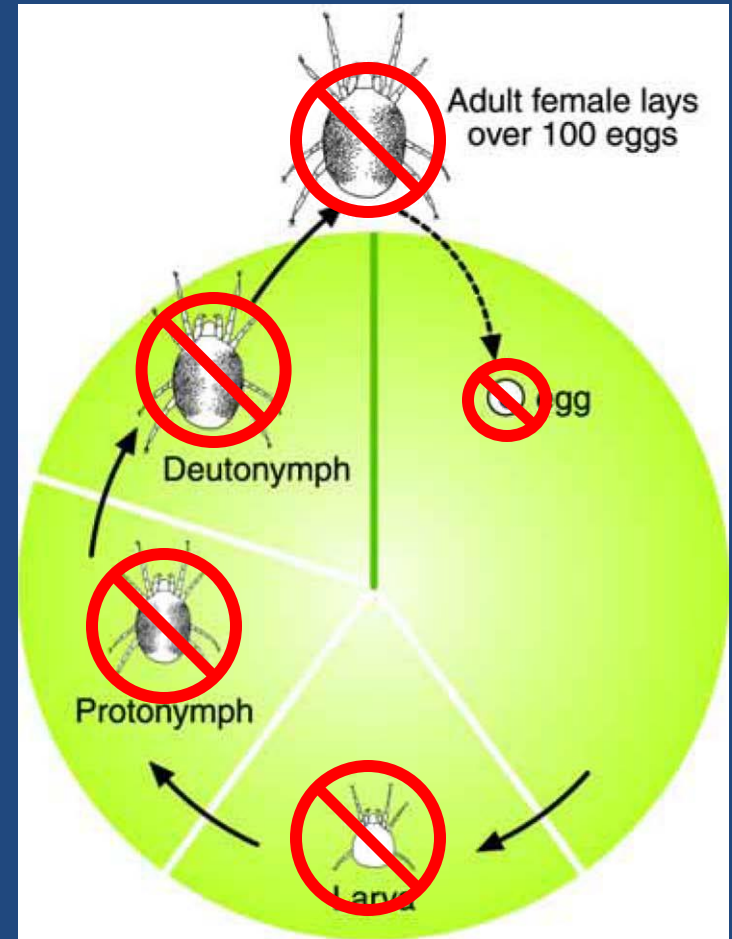
Portal Activity

- Portal is a mitochondrial poison
- Non-translaminar
 - Contact activity
- Soft on beneficials
- Fairly fast acting
 - Temperature dependent
- Good residual activity
- Active towards all motile stages
 - Intoxicated adults cease feeding and laying eggs
 - Intoxicated immatures die during molting
 - Essentially the intoxicated mites are like non-feeding zombies



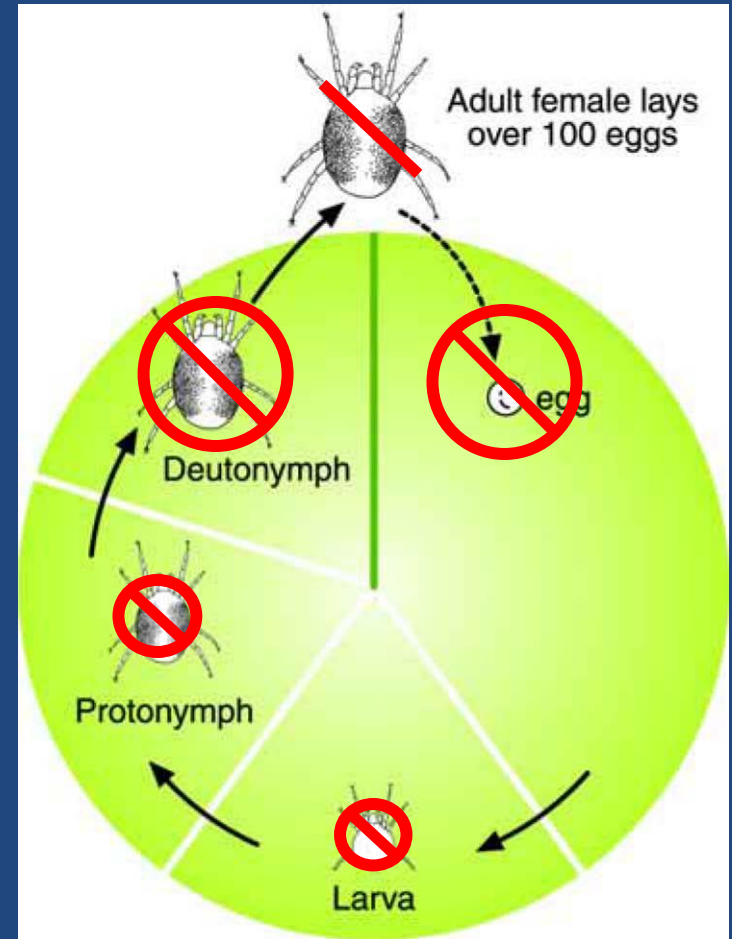
Oberon Activity

- Oberon inhibits lipid biosynthesis
- Translaminar
- Soft on most beneficials
- Can work fairly fast
 - Temperature dependent
 - Addition of COC can increase activity
- Good residual activity
- Most immediate activity occurs on motile stages-immature stages
 - Some sterility of females
 - Some ovicidal activity

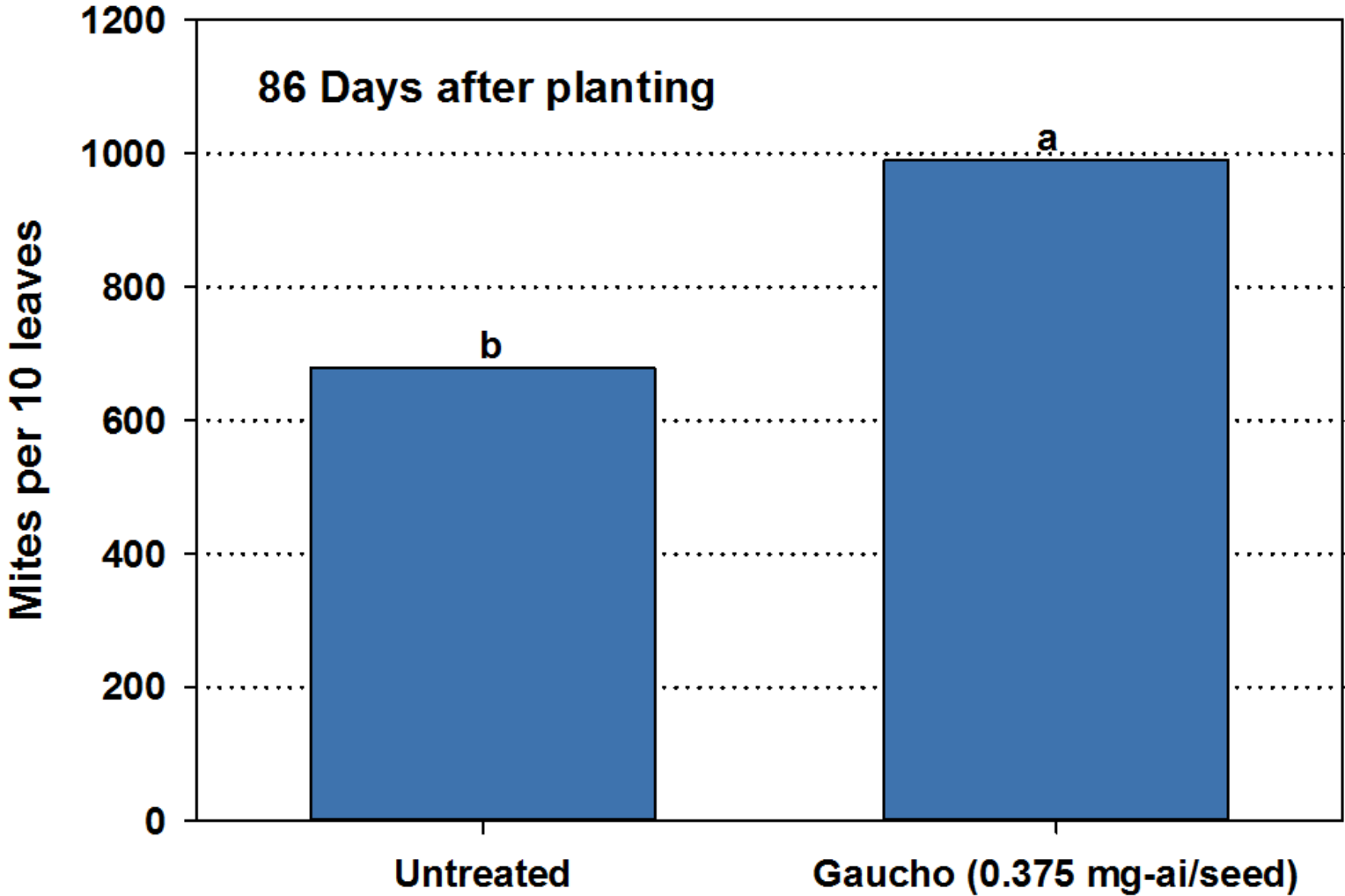


Zeal Activity

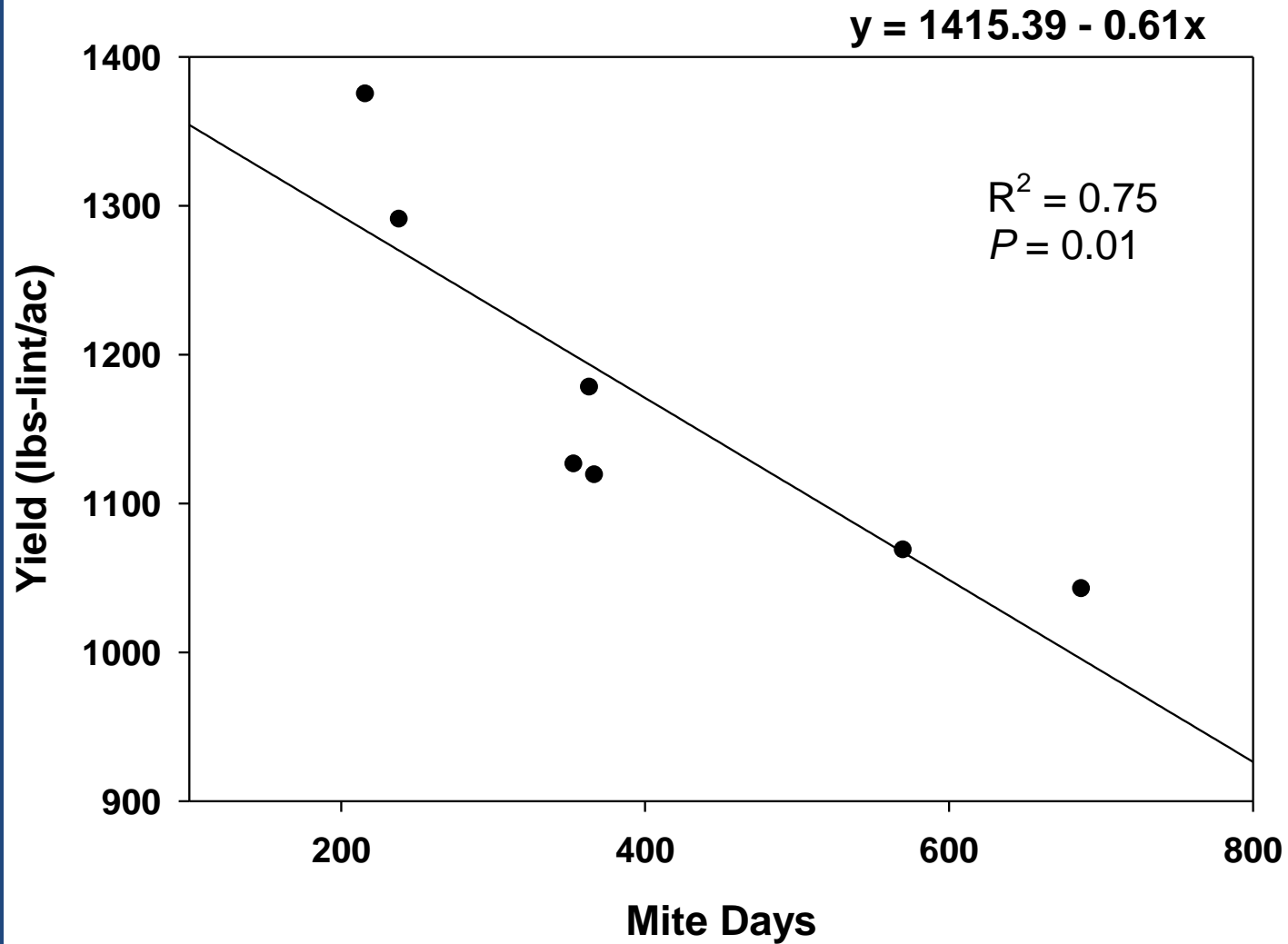
- Zeal is a mite growth regulator
- Translaminar
- Soft on beneficials
- Can work surprisingly fast for a MGR
 - Temperature dependent
- Good residual activity
- Most activity occurs on late-immature stages (inhibits molting)
- Sterilizes adults
 - Lay in viable eggs
 - This is where long residual control comes from



ROLE OF NEONICOTINOID SEED TREATMENTS



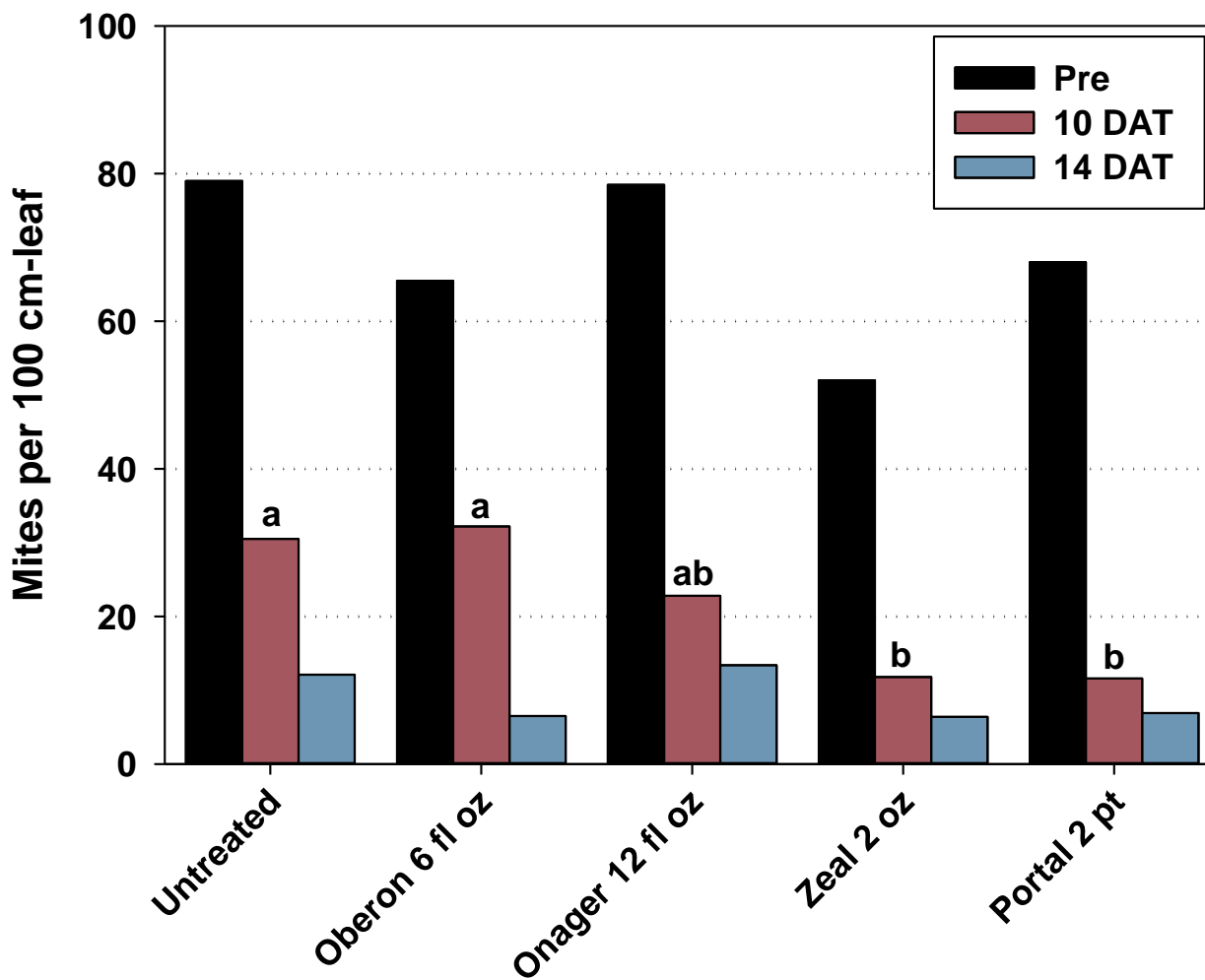
DURATION MATTERS



SPIDER MITES IN CORN



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SPIDER MITE ACTION THRESHOLD RECOMMENDATION



Make applications when spider mite populations are rapidly growing to prevent damage to leaves at ear height or higher

Tydeidae mites

- Yellow mites
- Clear mite
- “Scooters”



Predaceous thrips

RESEARCH SUPPORTED BY:



Questions?