

SPIDER MITE MANAGEMENT AND ABAMECTIN 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*



Winter Host Study

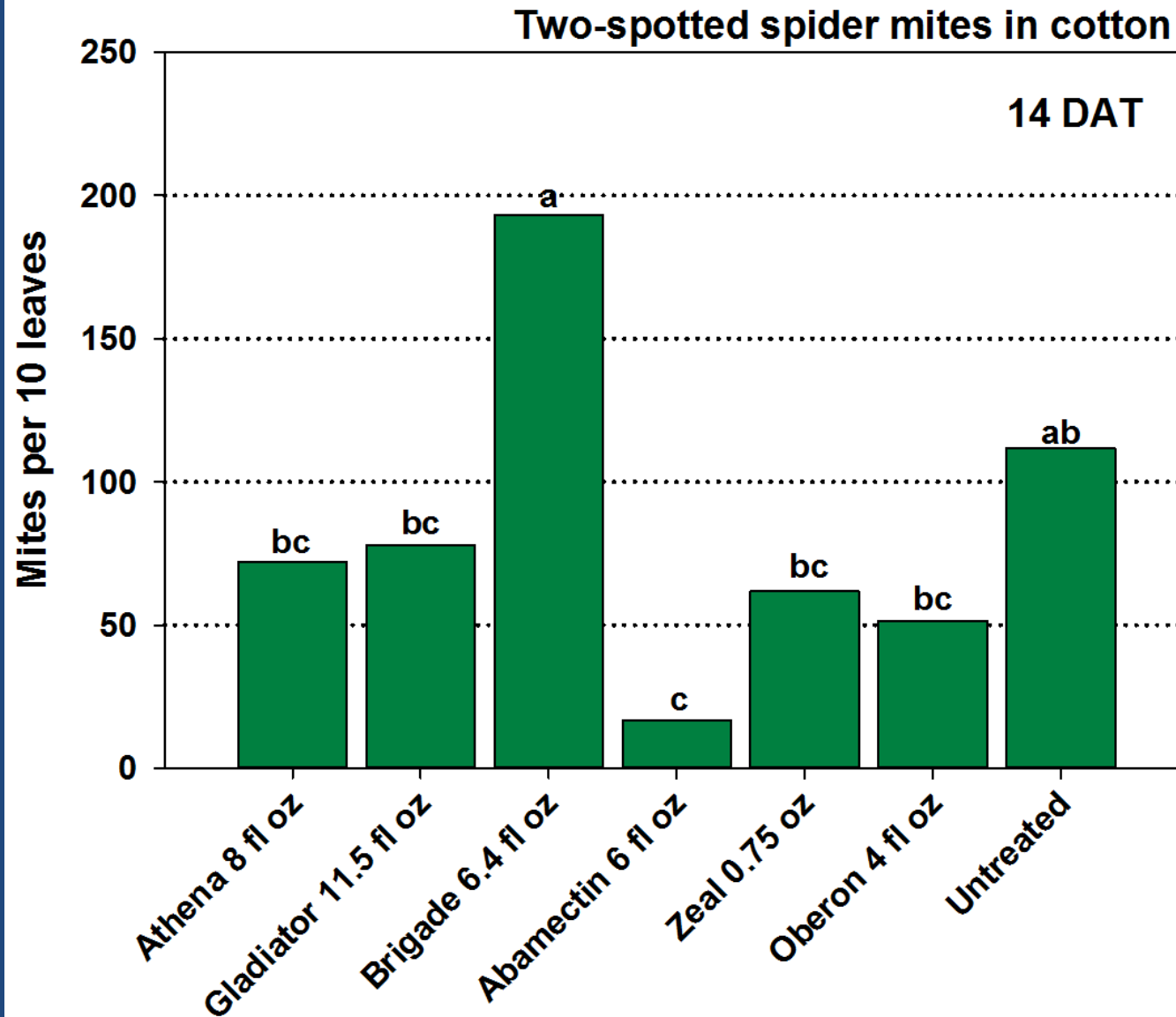
- Study initiated in January
- Samples randomly collected from henbit, white clover, rye grass, wheat in and around field edges
- Preliminary results indicate spider mites prefer henbit and clover
- Individual patches of clover appear to be “mite sinks”



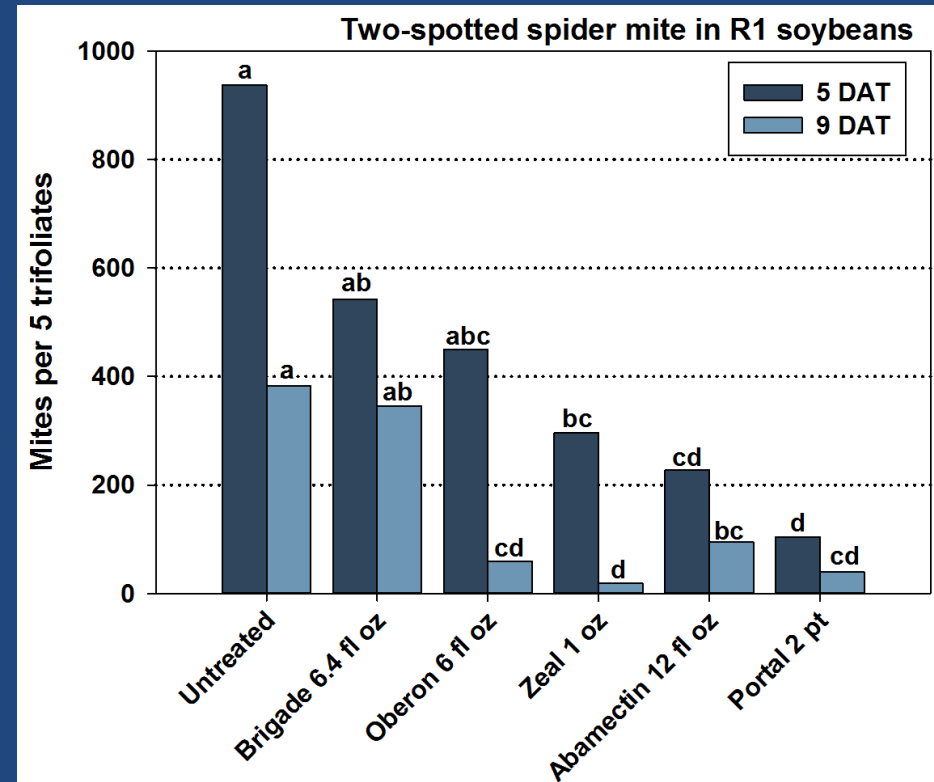
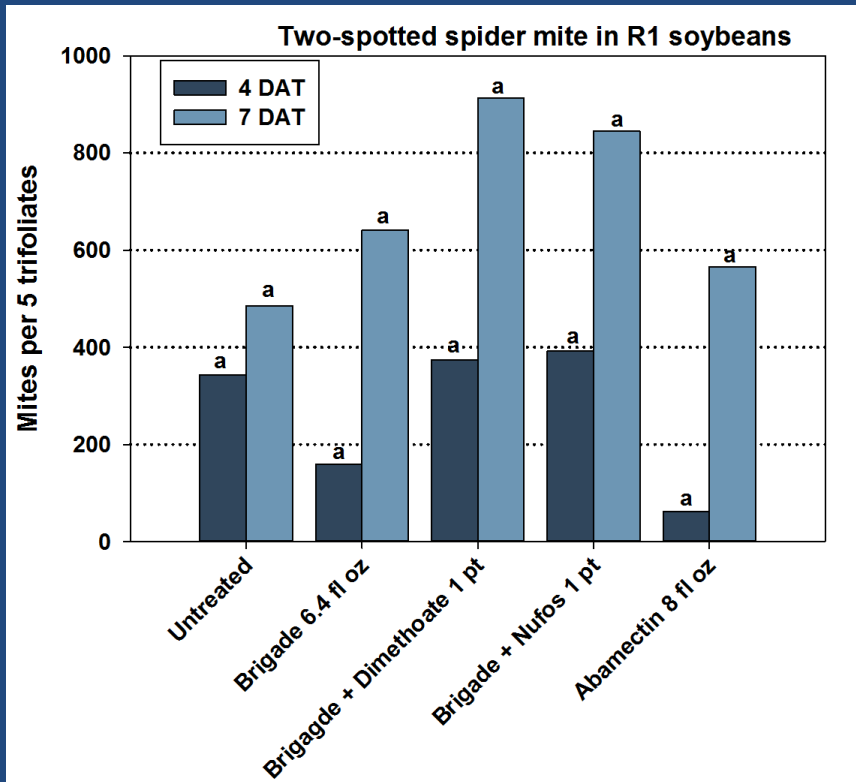
CURRENT LOUISIANA THRESHOLD

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

MITICIDE PERFORMANCE



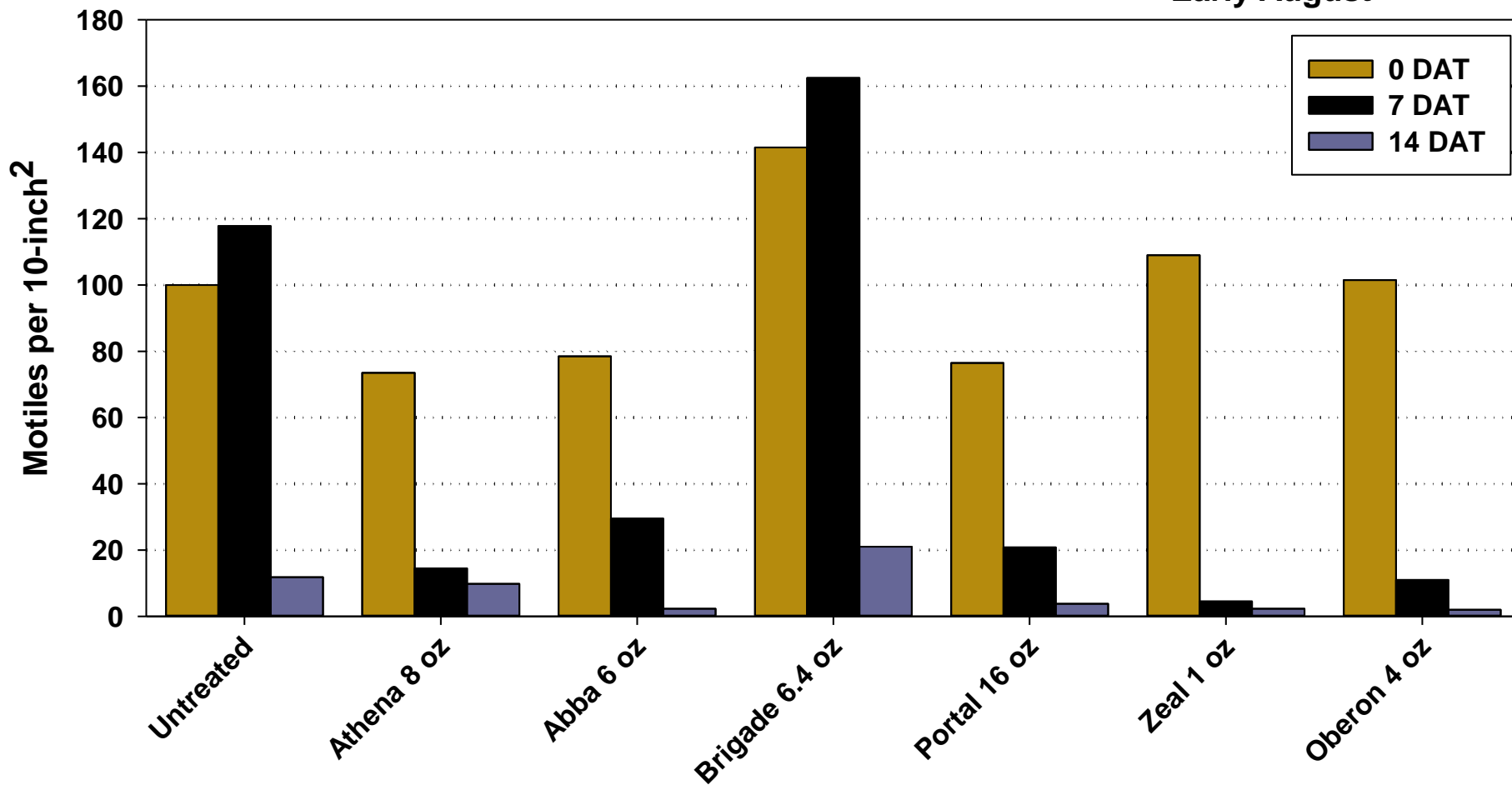
SEEING CONTROL ISSUES WITH ABAMECTIN



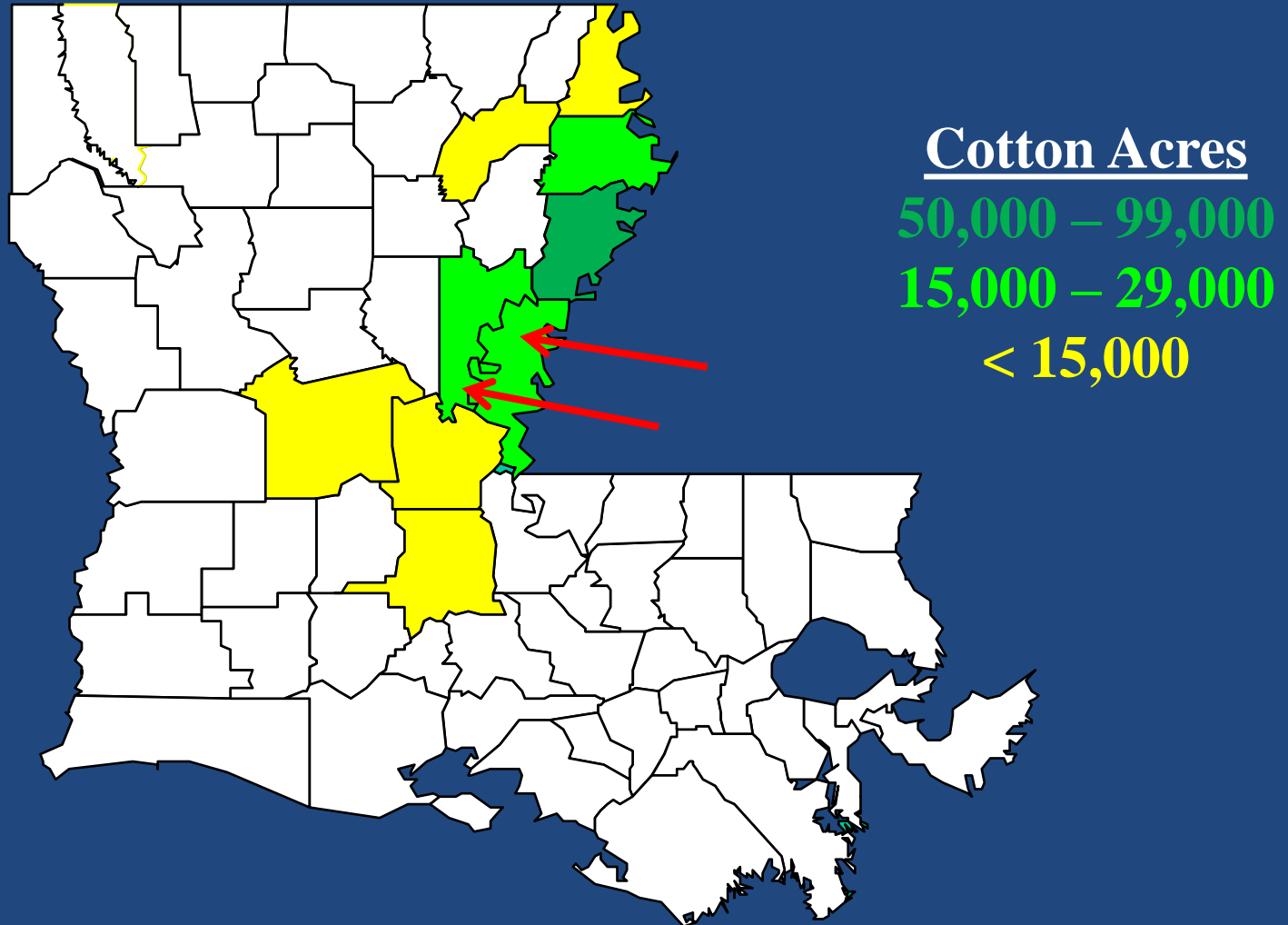
MITICIDE EFFICACY

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

Screening spider mites for resistance to abamectin 2014 Results

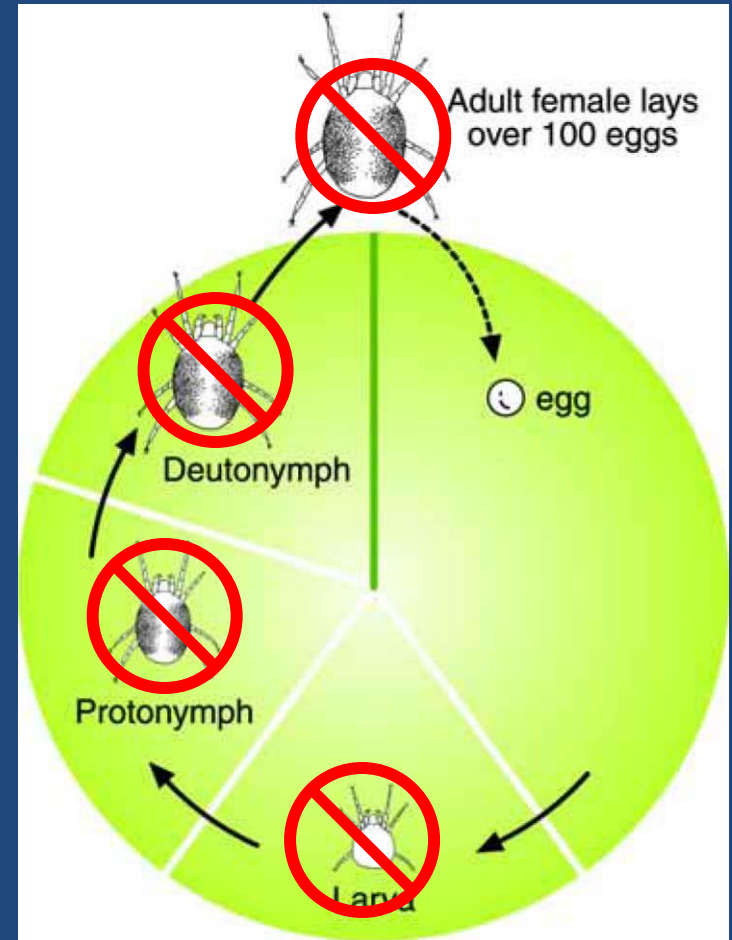
Two-spotted spider mite resistance in Louisiana

Strain	<i>n</i>	Gen	LC ₅₀ (95% CL) ^c	RR
SUS	600	---	0.00018 (0.00004 - 0.00024)	1
Cata. Ct	600	---	0.017 (0.010 – 0.028)	94.4
Cata. P	600	---	0.0021 (0.0010 – 0.0030)	11.1
Avoyell	600	---	0.0029 (0.0015 – 0.0044)	16.1
MRRS Corn	600	---	0.0024 (0.0014 – 0.0037)	13.3

^cValues expressed in ppm

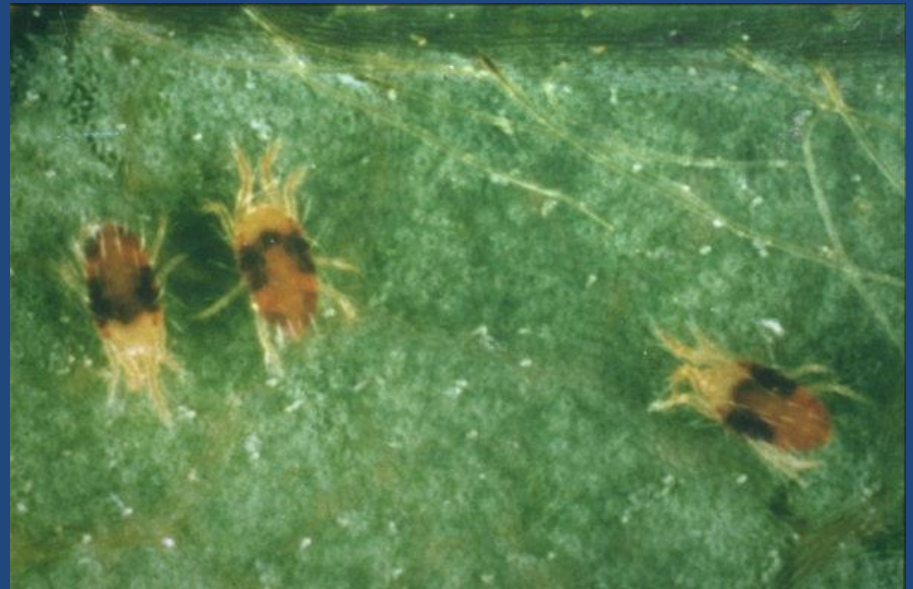
ABAMECTIN ACTIVITY

- *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*



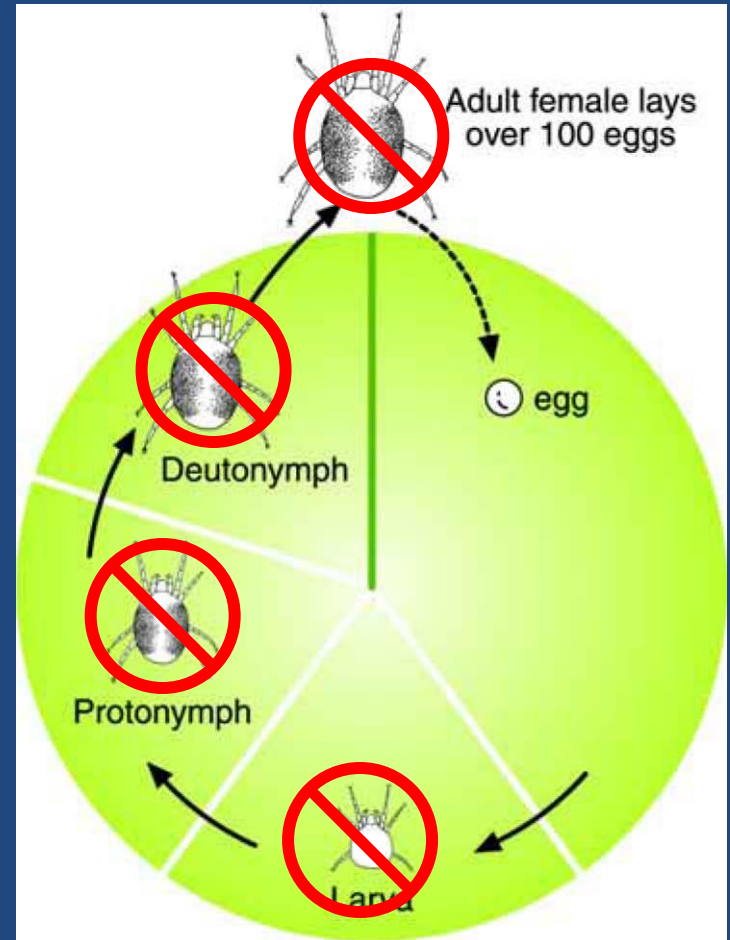
CHANGING HOW WE UTILIZE ABAMECTIN IN COTTON

- *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*



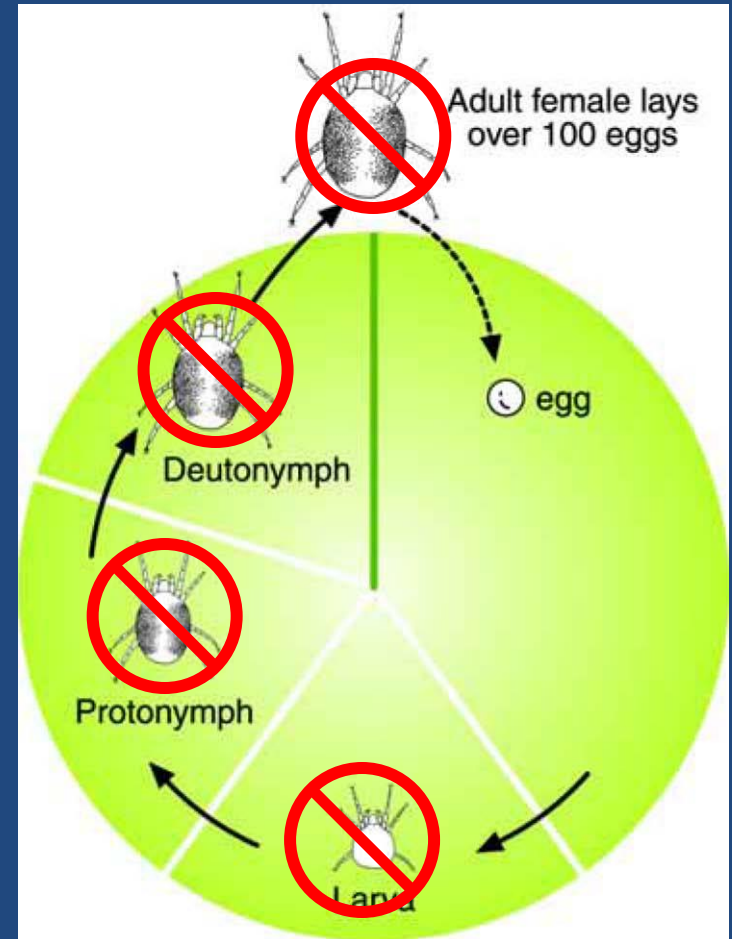
BIFENTHRIN ACTIVITY

- *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*



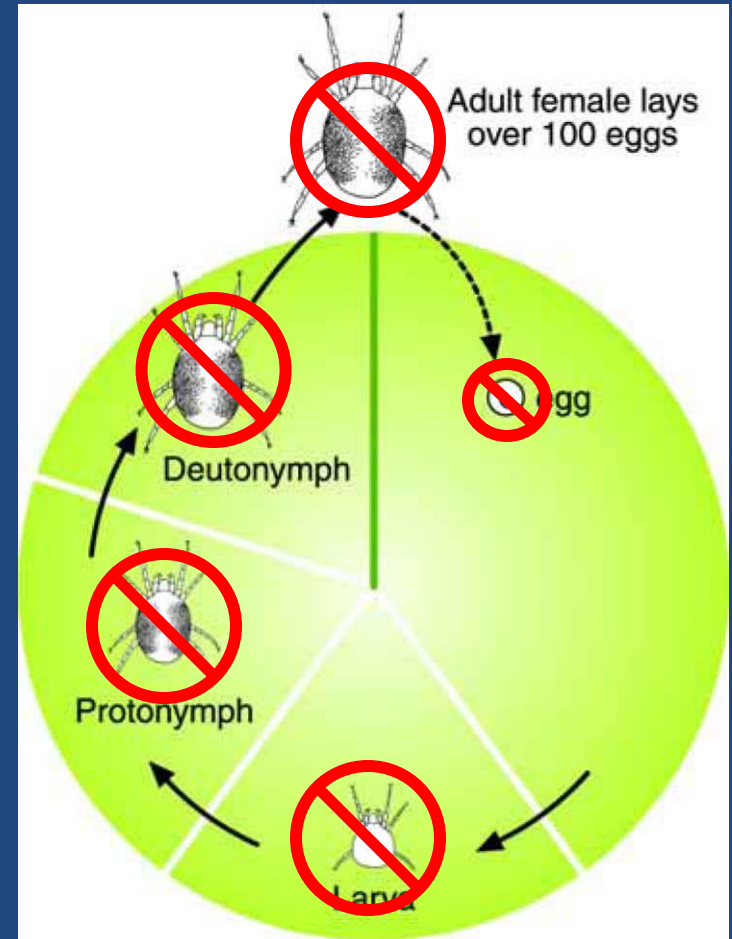
Portal Activity

- 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



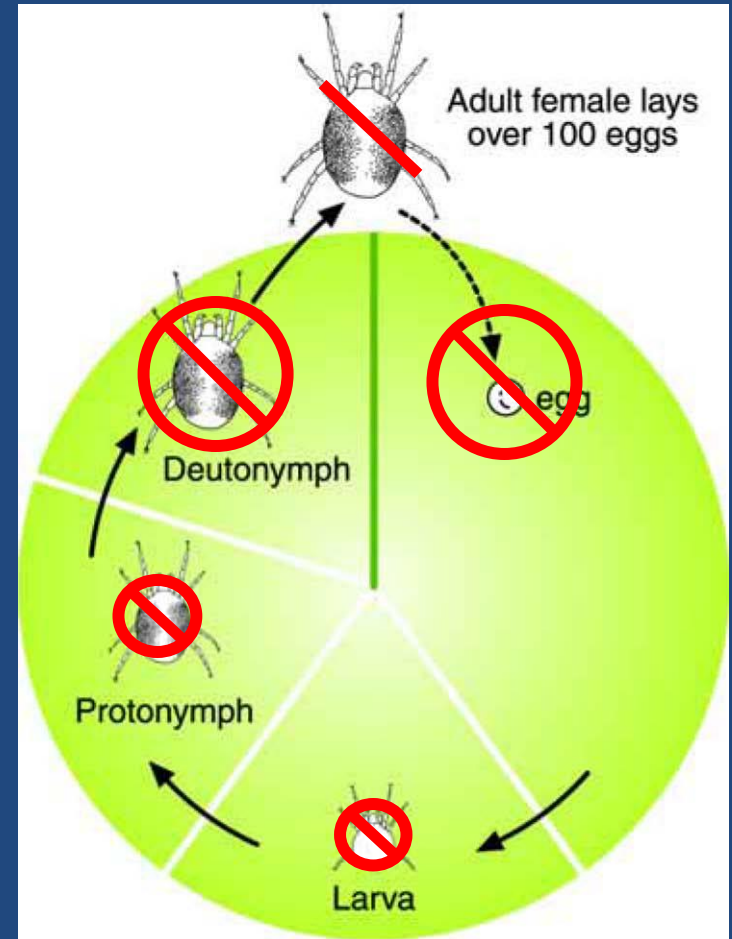
Oberon Activity

- 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

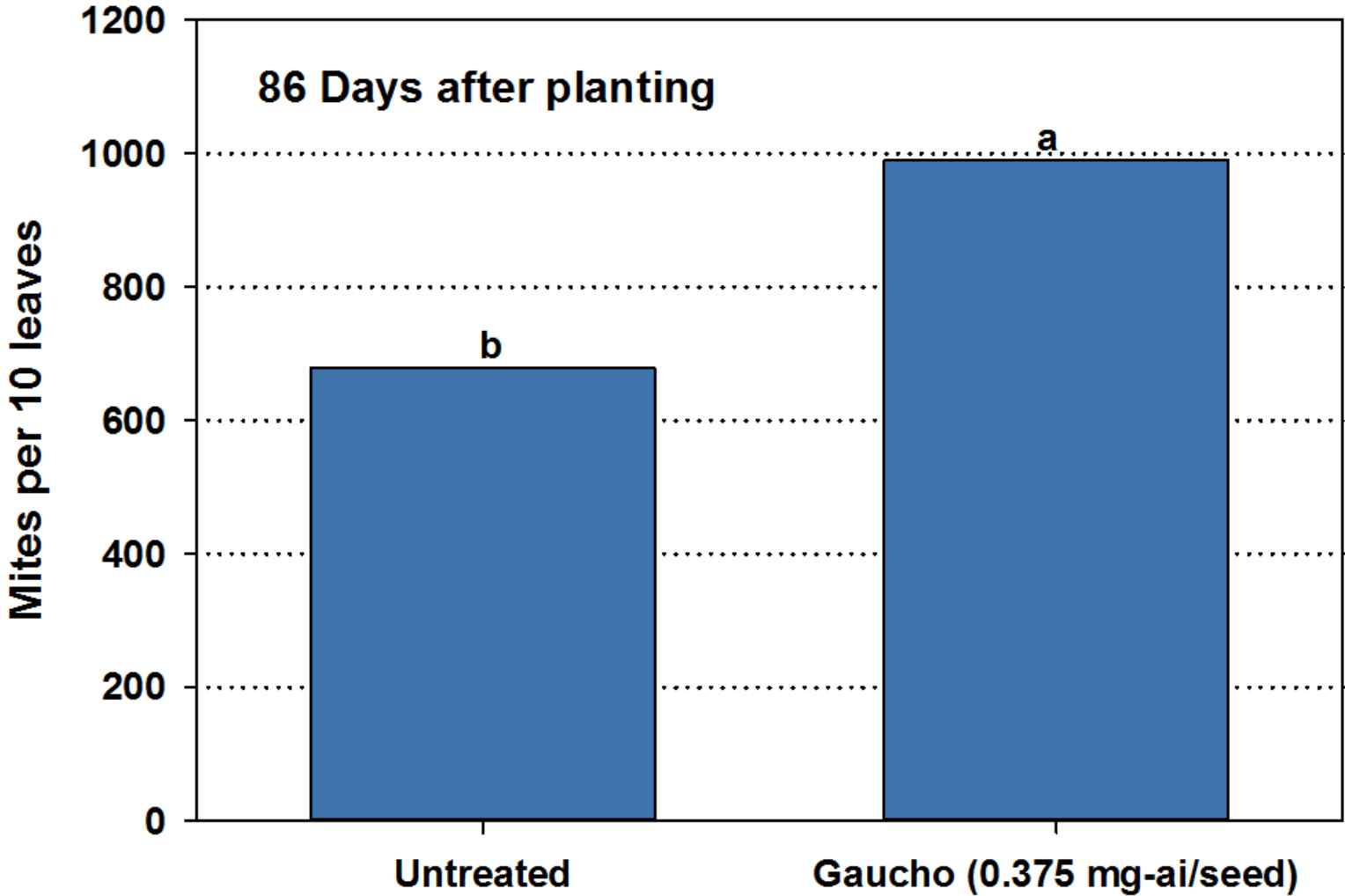


Zeal Activity

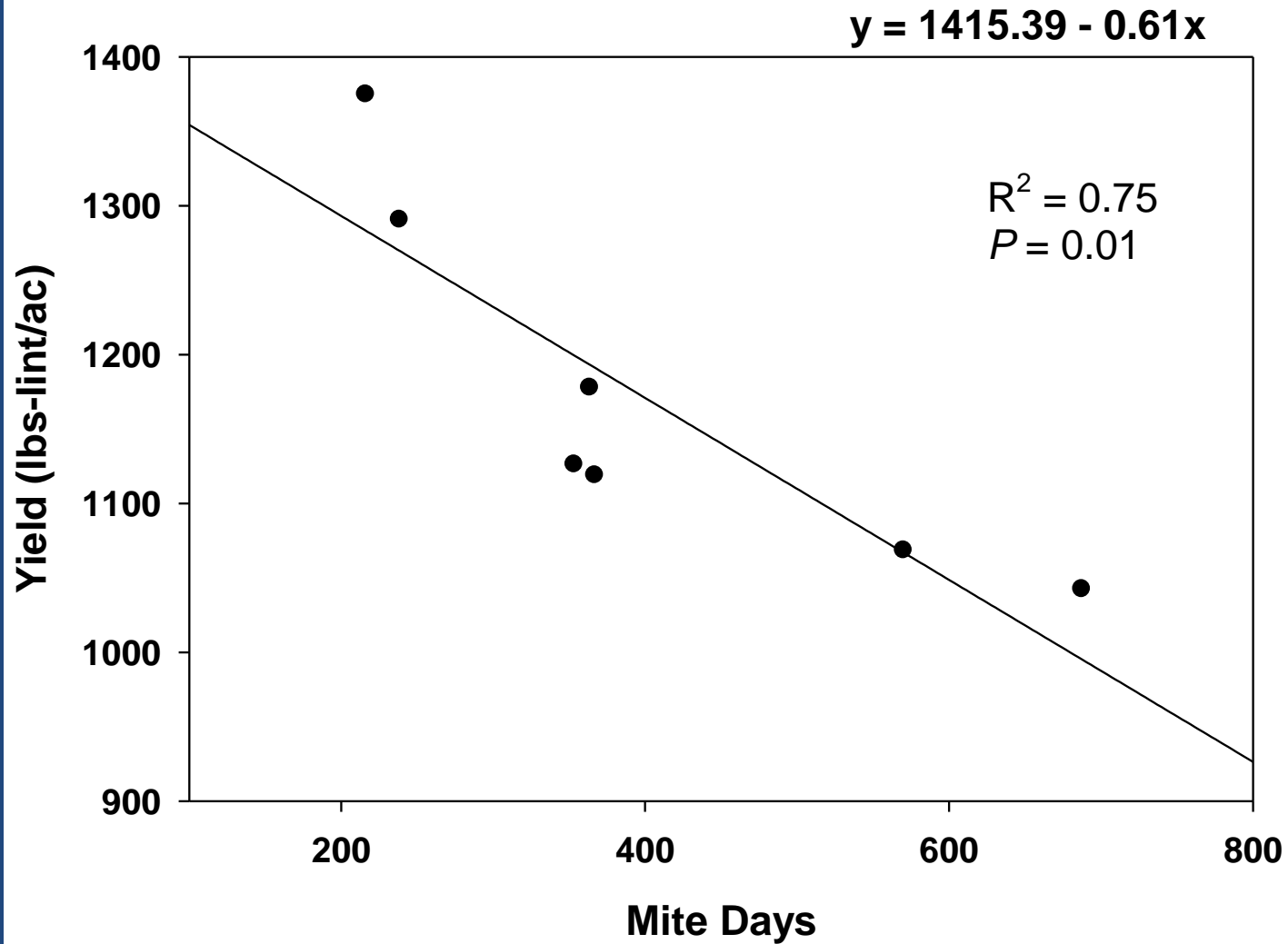
- Zeal is a mite growth regulator
- Translaminar
- Soft on beneficials
- Can work surprisingly fast for a MGR
 - Temperature dependent
- Good residual activity
- Most activity occurs on late-immature stages (inhibits molting)
- Sterilizes adults
 - Lay in viable eggs
 - This is where long residual control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



ROLE OF NEONICOTINOID SEED TREATMENTS



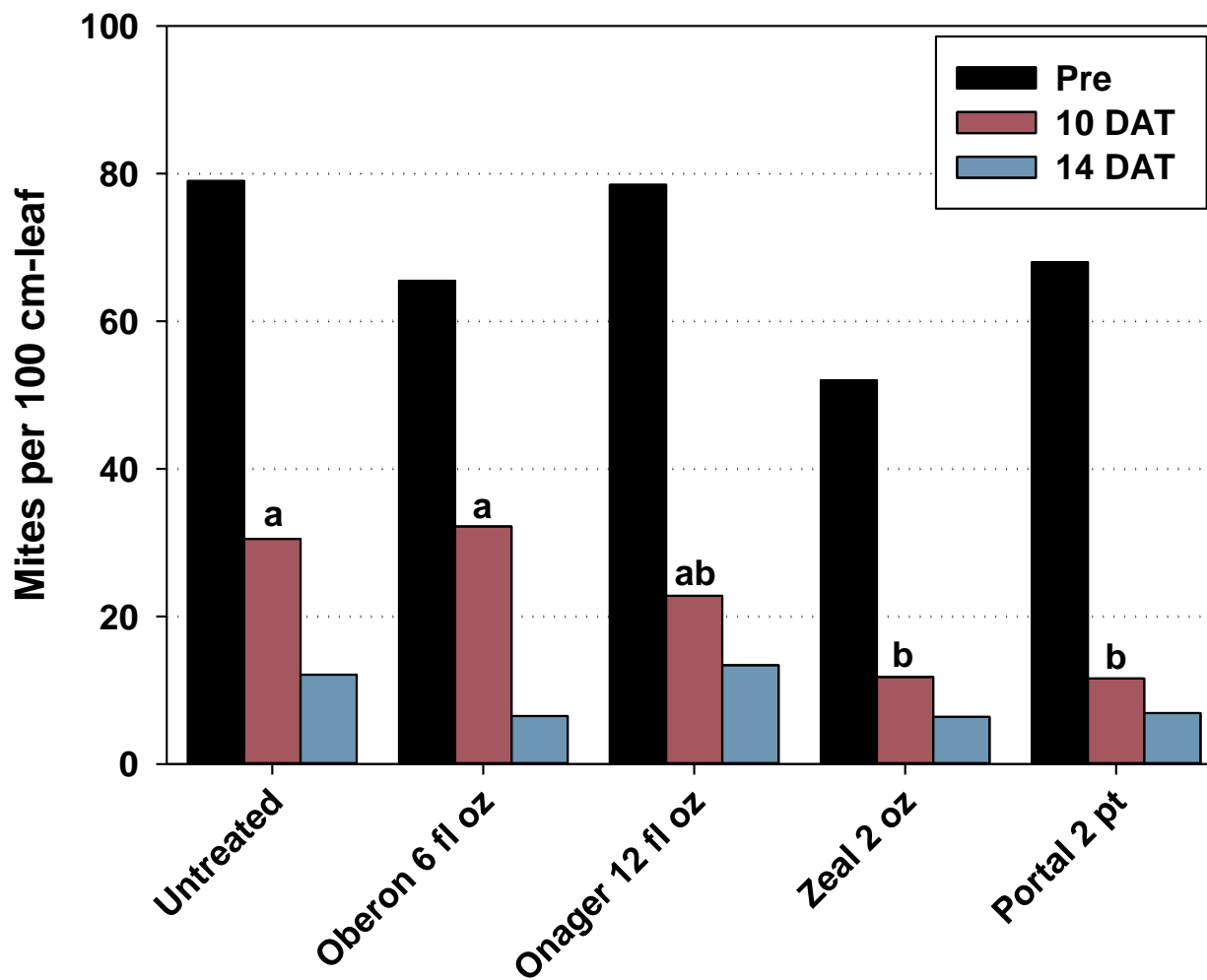
DURATION MATTERS



SPIDER MITES IN CORN



SPIDER MITES IN CORN



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?