Biology, Behavior, and Management of *Helicoverpa zea* in Row Crop Systems

MSEWG
Mid-South Entomologist Working Group

STATE MAFES

STATE EXTENSION

Helicoverpa zea

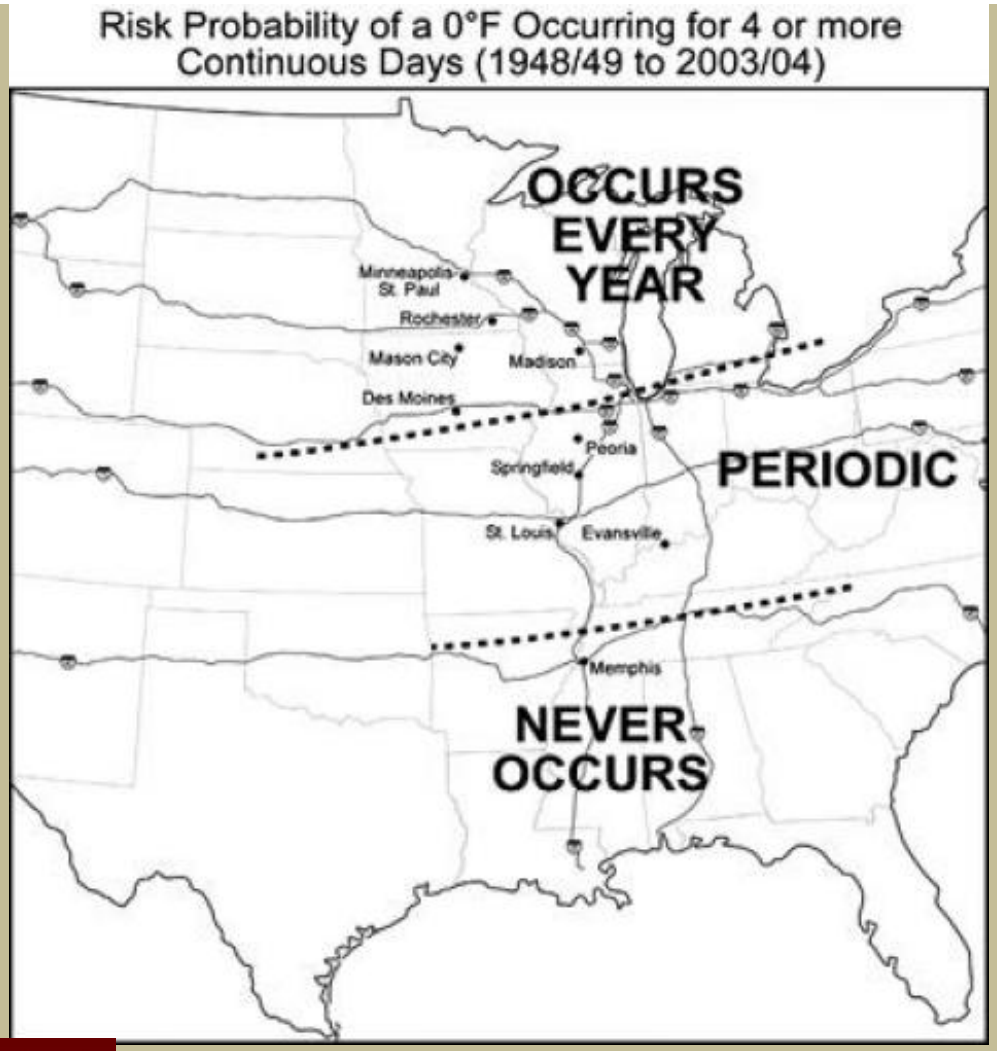
- **Corn Earworm – Corn**
- **Bollworm – Cotton**
- **Podworm – Soybean & Other Beans**
- **Headworm – Grain Sorghum**
- **Tomato Fruitworm - Tomato**

Tries to sound smarter than he really is!

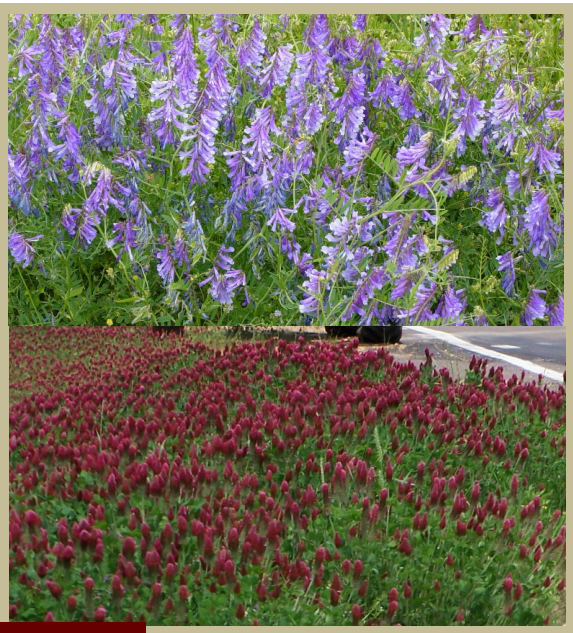
Puts up with him

Crops in the Mid-South

- Cotton
- Soybean
- Corn
- Grain Sorghum
- Peanut
- Rice
- Sugarcane
- Sweet Potato
- Limited Vegetables



Sandstrom and Changnon 2007, Plant Health Progress, doi:10.1094/PHP-2007-0719-08-RV



Wild Hosts

Corn

Soybeans, Cotton
Grain Sorghum, Peanut

April | May | June | July | August | September

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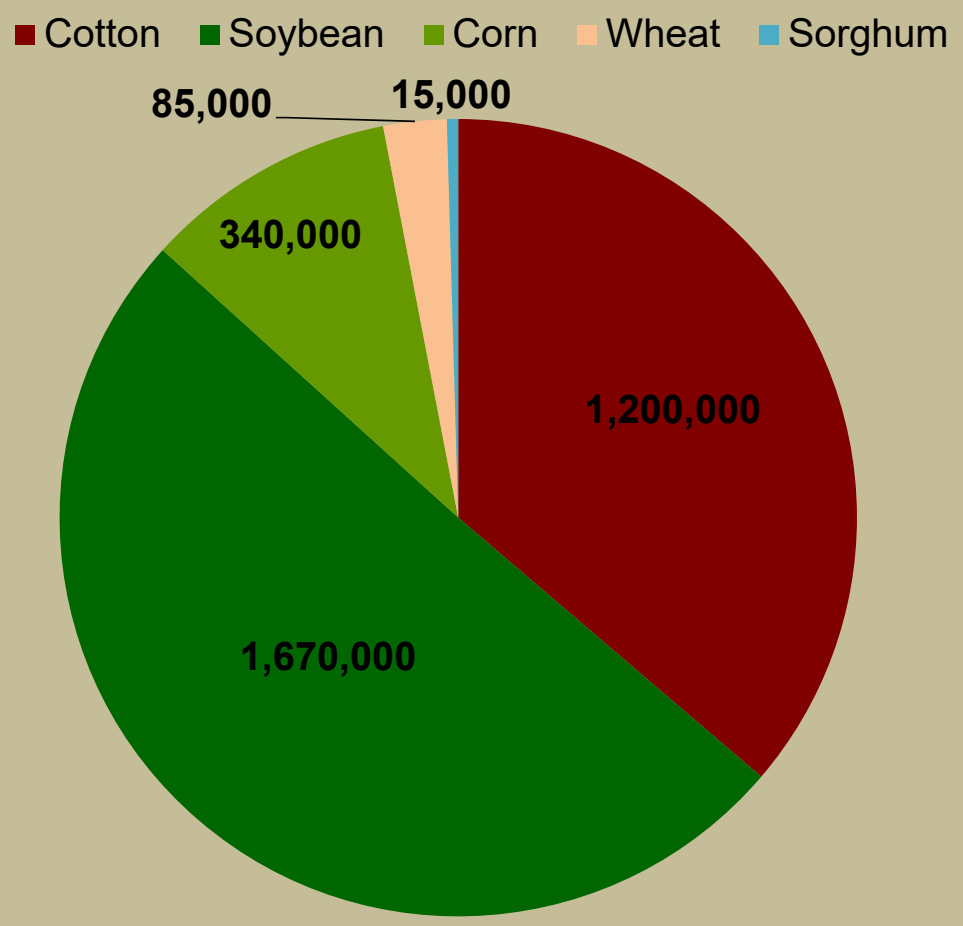
EXTENSION

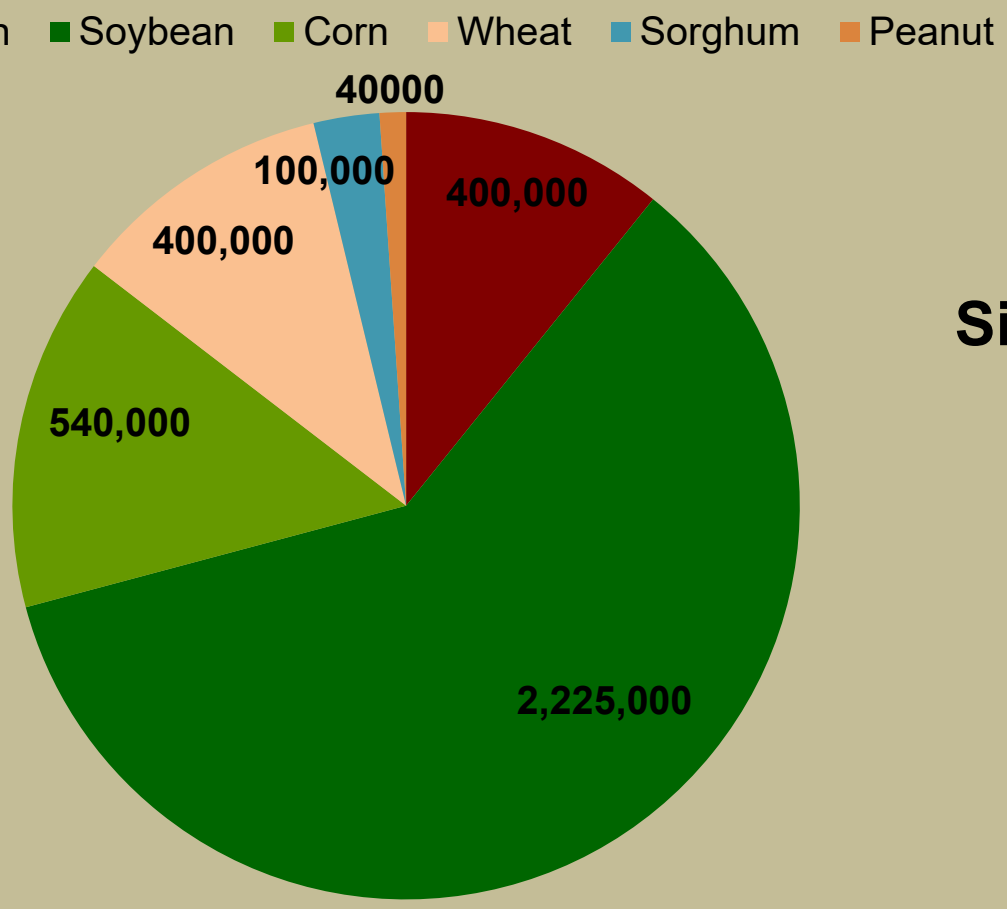
2006 Source:Sink = 1.6:1



Source 2.0 million

Sink 1.2 million

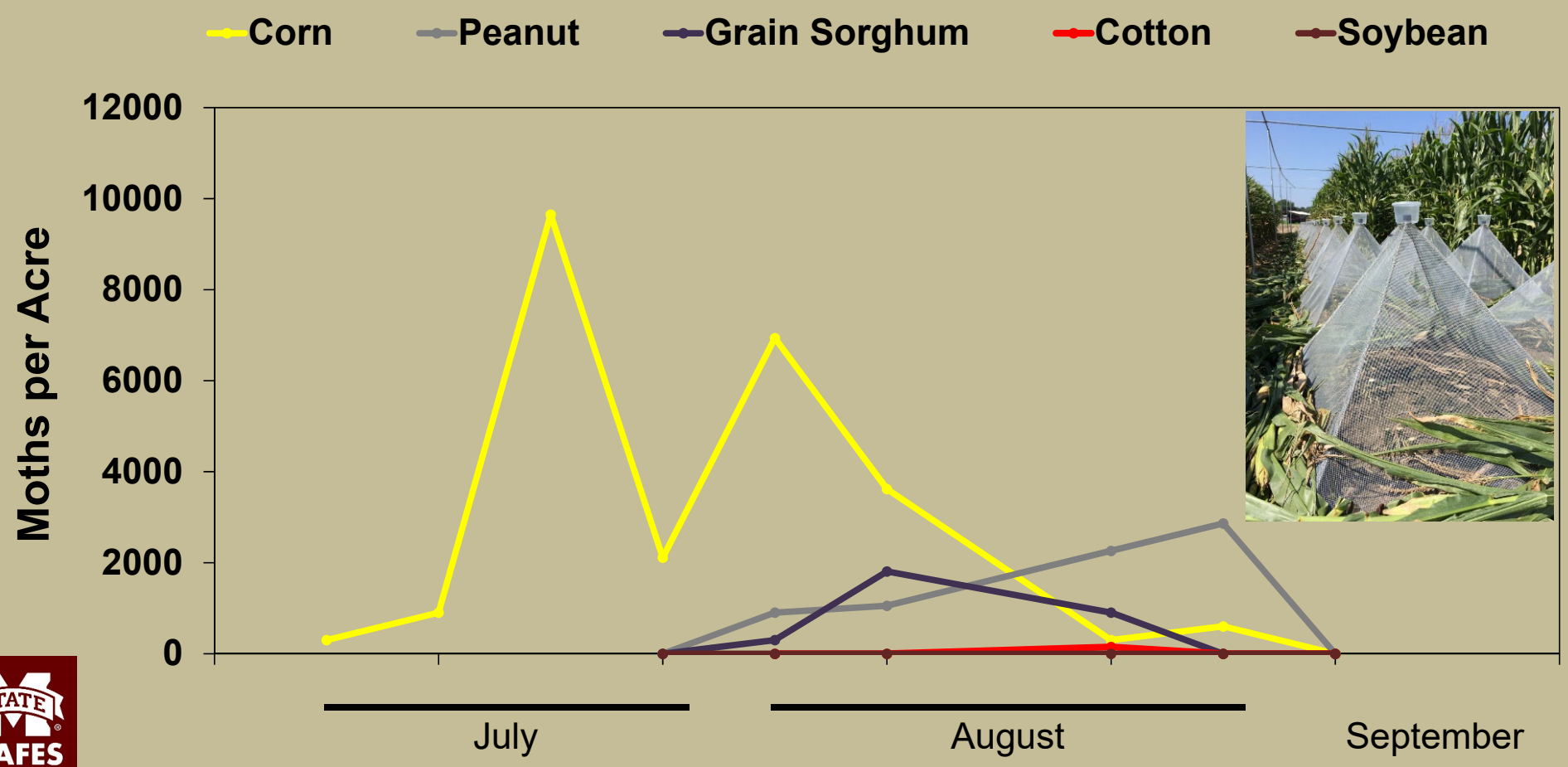
2014 Source:Sink = 7.3:1



Source 2.9 million

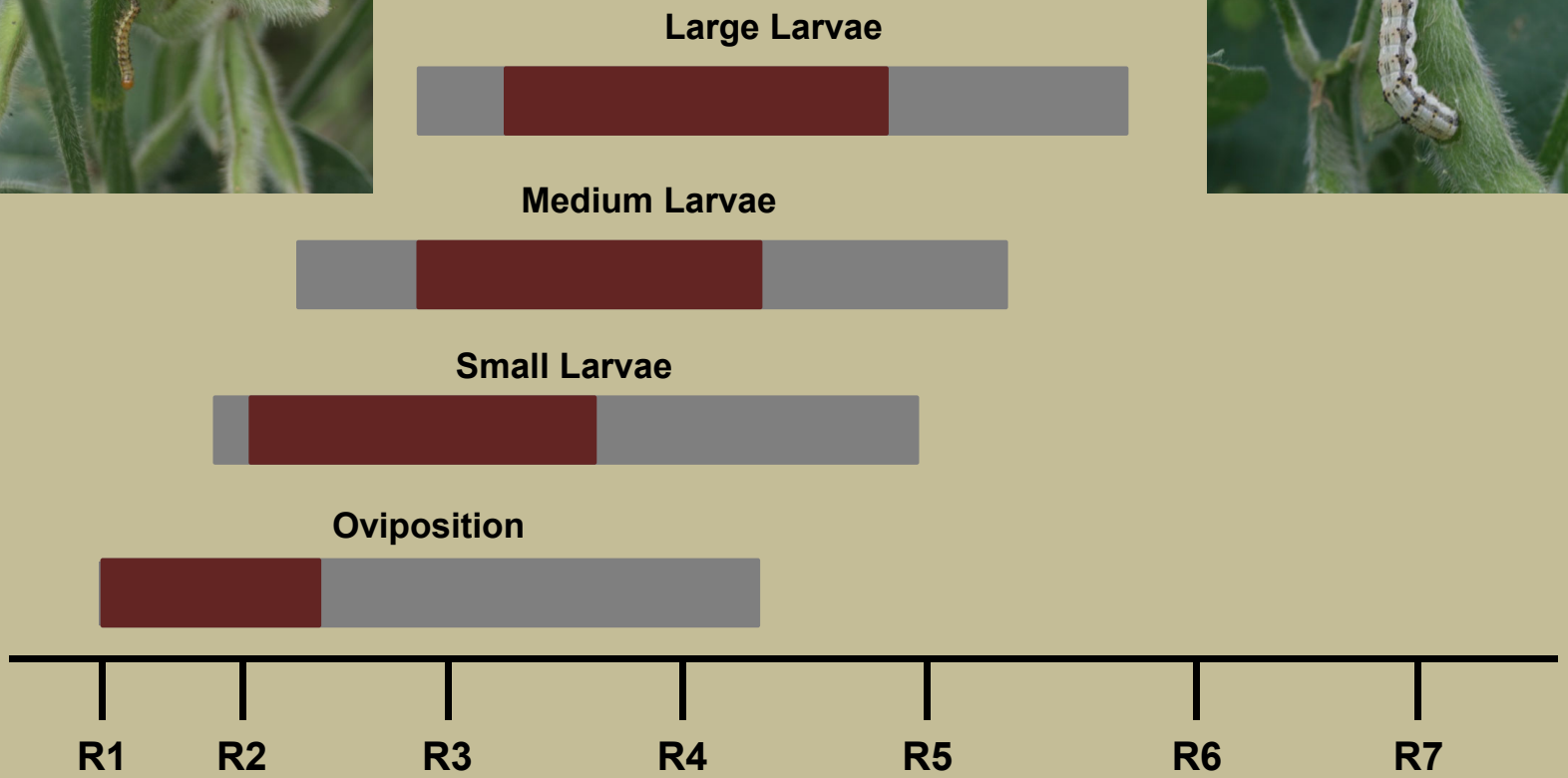
Sink 400 k

Temporal Emergence of Bollworm



St. Louis
MO.
Nashville
TENN
ARK.
Memphis
MISS.
ALA.
Shreveport
Jackson
LA.
New Orleans
ston

“Typical” vs. 2019 Bollworm Development on Soybeans



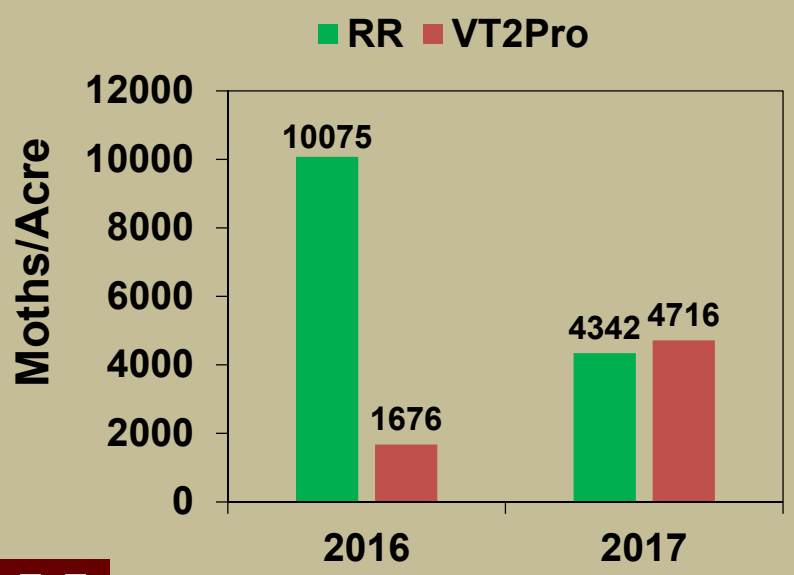
Economic Threshold for Sweep Net Sampling

Adams et al. 2015

	larvae/25 sweeps				
	control costs + application costs ($/acre)				
Crop value ($/bu)	10	15	20	25	30
6	7.4	11.0	14.7	18.4	22.1
7	6.3	9.5	12.6	15.8	18.9
8	5.5	8.3	11.0	13.8	16.5
9	4.9	7.4	9.8	12.3	14.7
10	4.4	6.6	8.8	11.0	13.2
12	3.7	5.5	7.4	9.2	11.0

Bollworm Emergence from Bt Corn

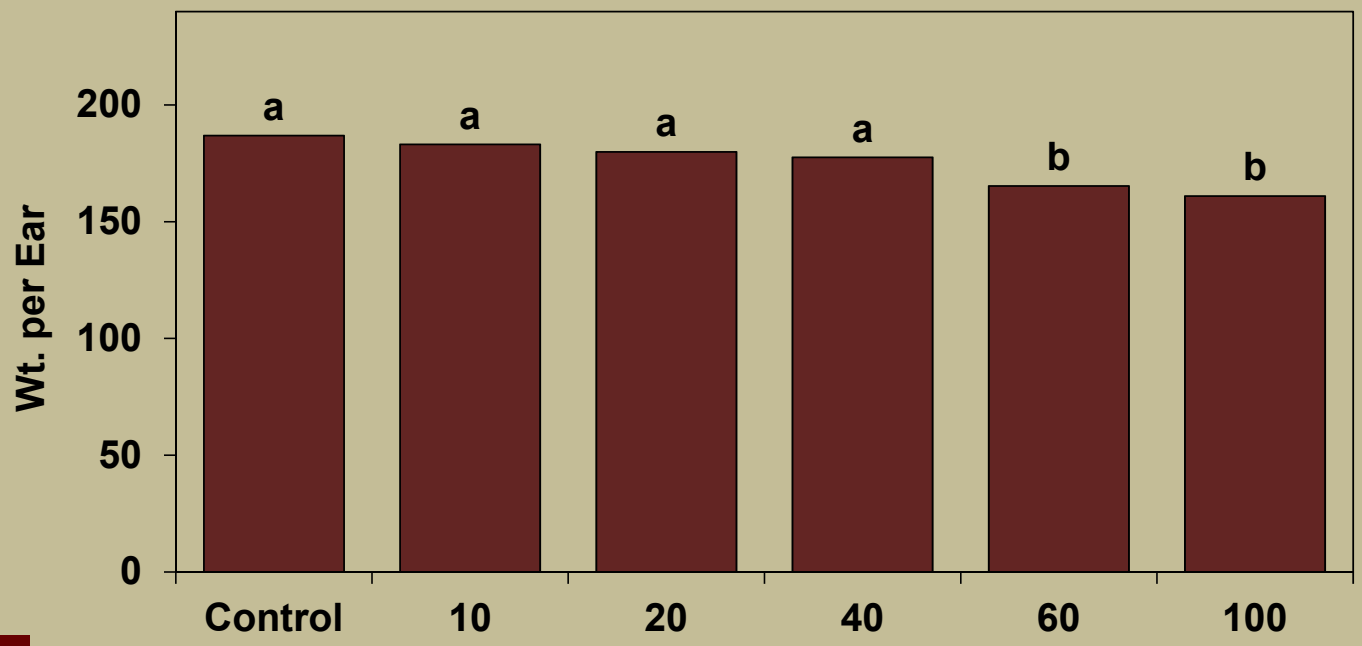
Tyler Towles, Graduate Student



Resistance is Driven by Selection in Corn

- Greater economic burden on cotton farmers
- Very few foliar chemistries
- Adjustment of thresholds (reactive)
- Poor control of secondary pests in cotton (indirectly)
- Diminishing effectiveness for Cry genes in future stacks

Impact of Kernel Damage on Yield



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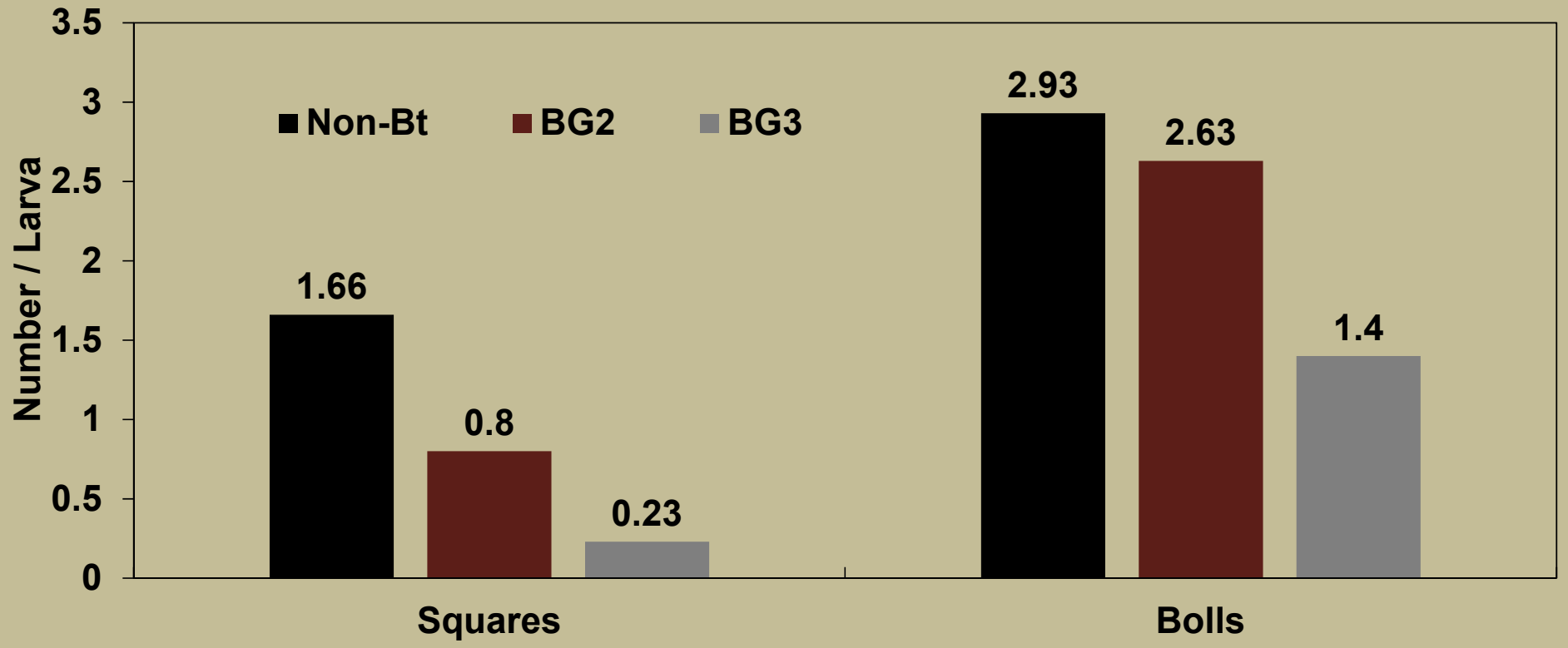
EXTENSION

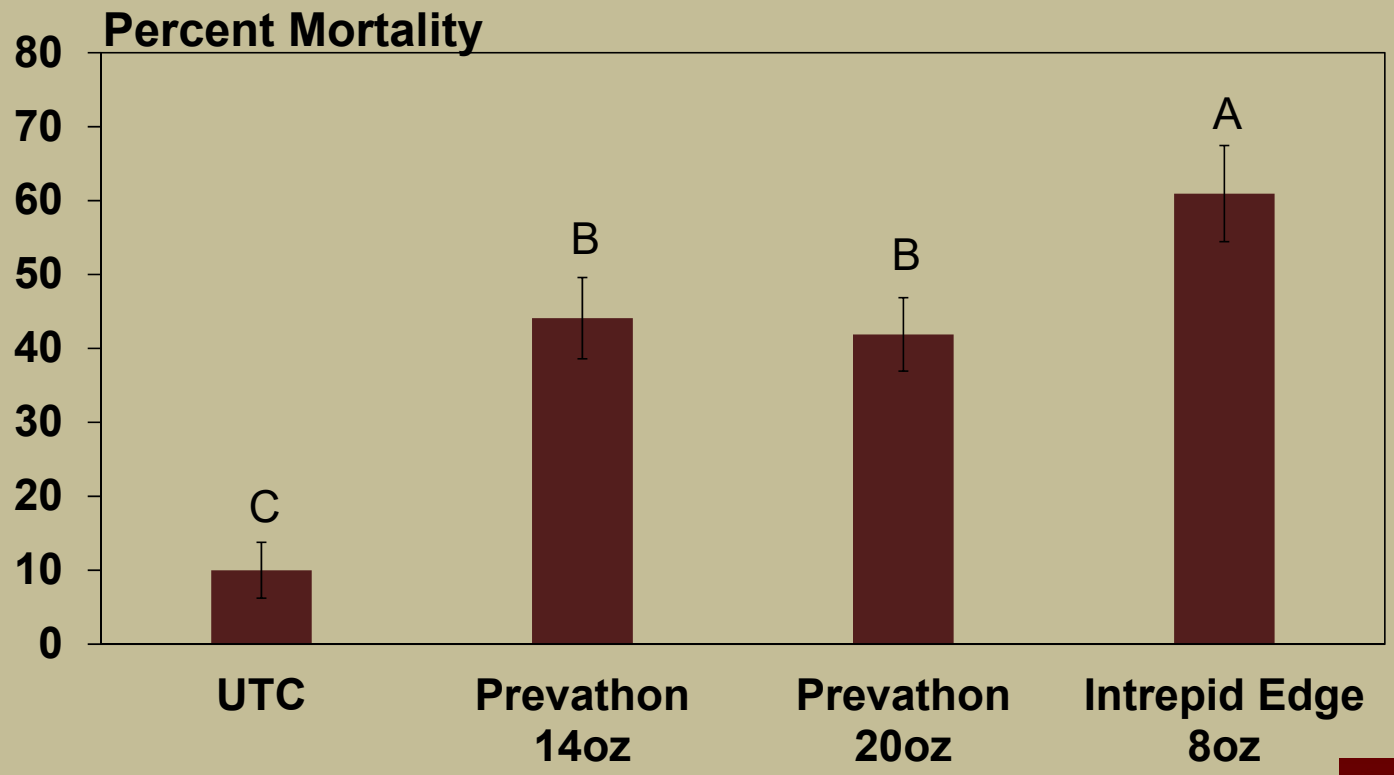
Bollworm Damage in Cotton

Mr. Russ Godbold, M.S. Student



Bollworms Under Bloomtags

Mr. Russ Godbold



Percent Fruit Damage Over Time

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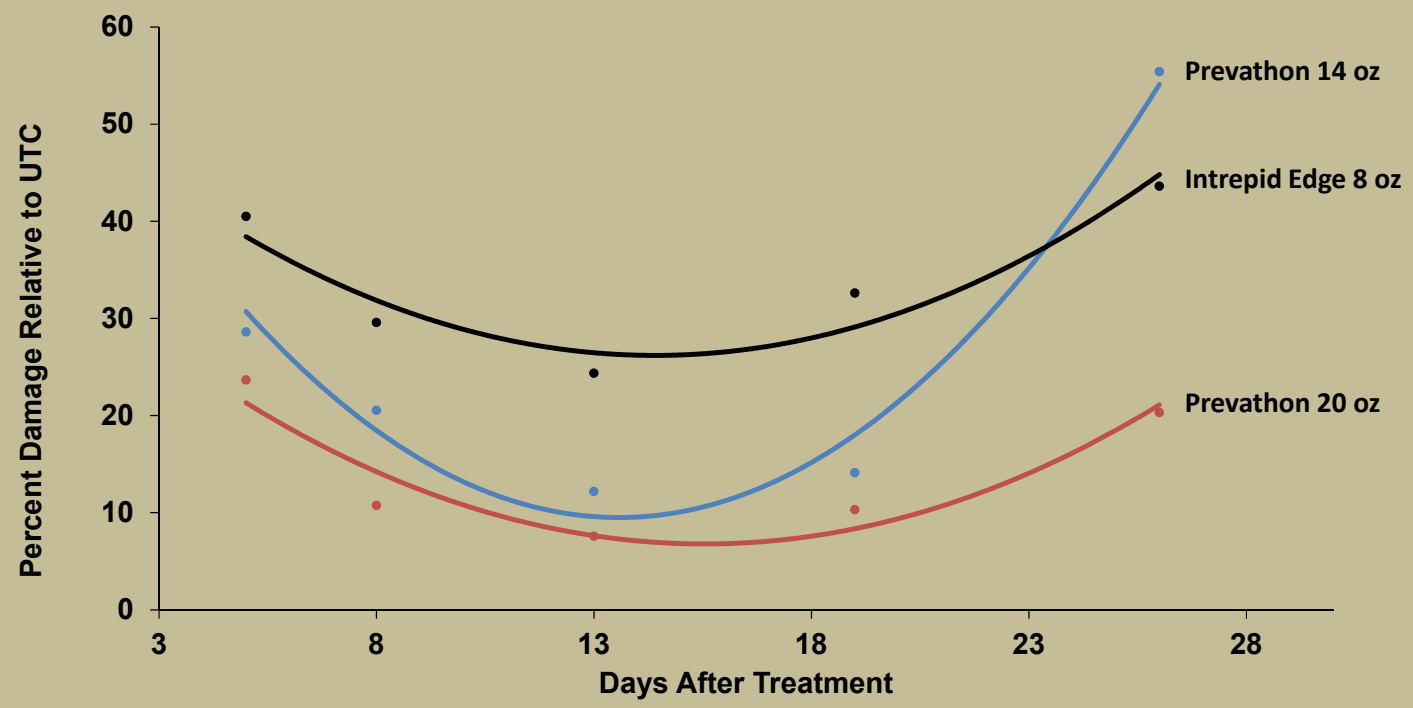
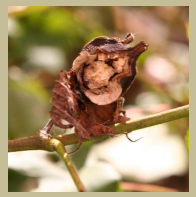
University of Arkansas System

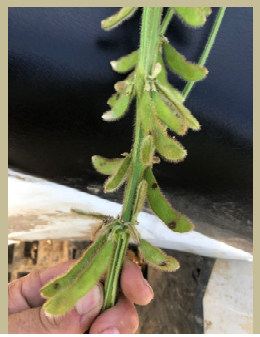
4 Trials - Gus Lorenz

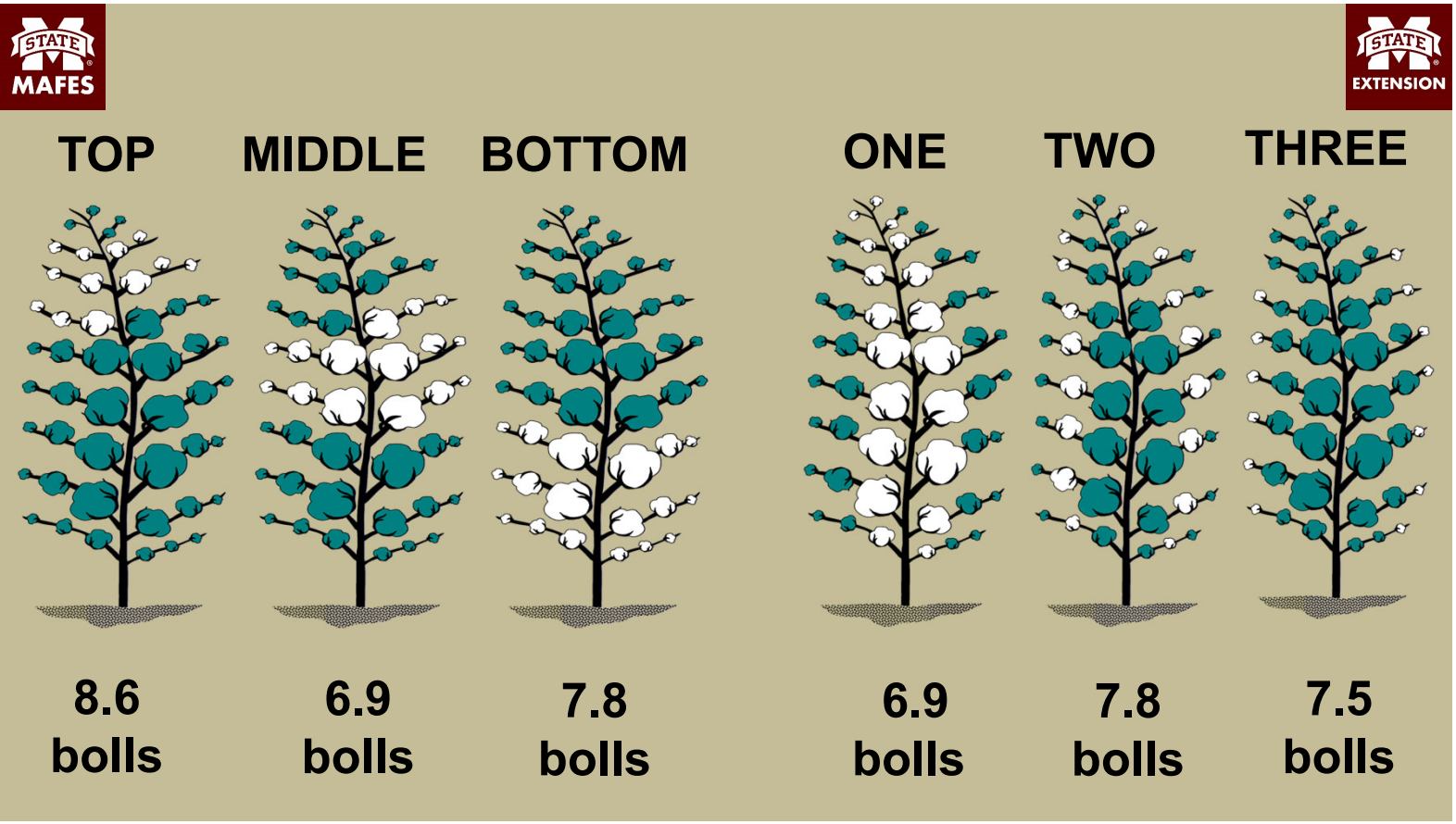


What to do if you suspect a failure

SLOW DOWN!!!

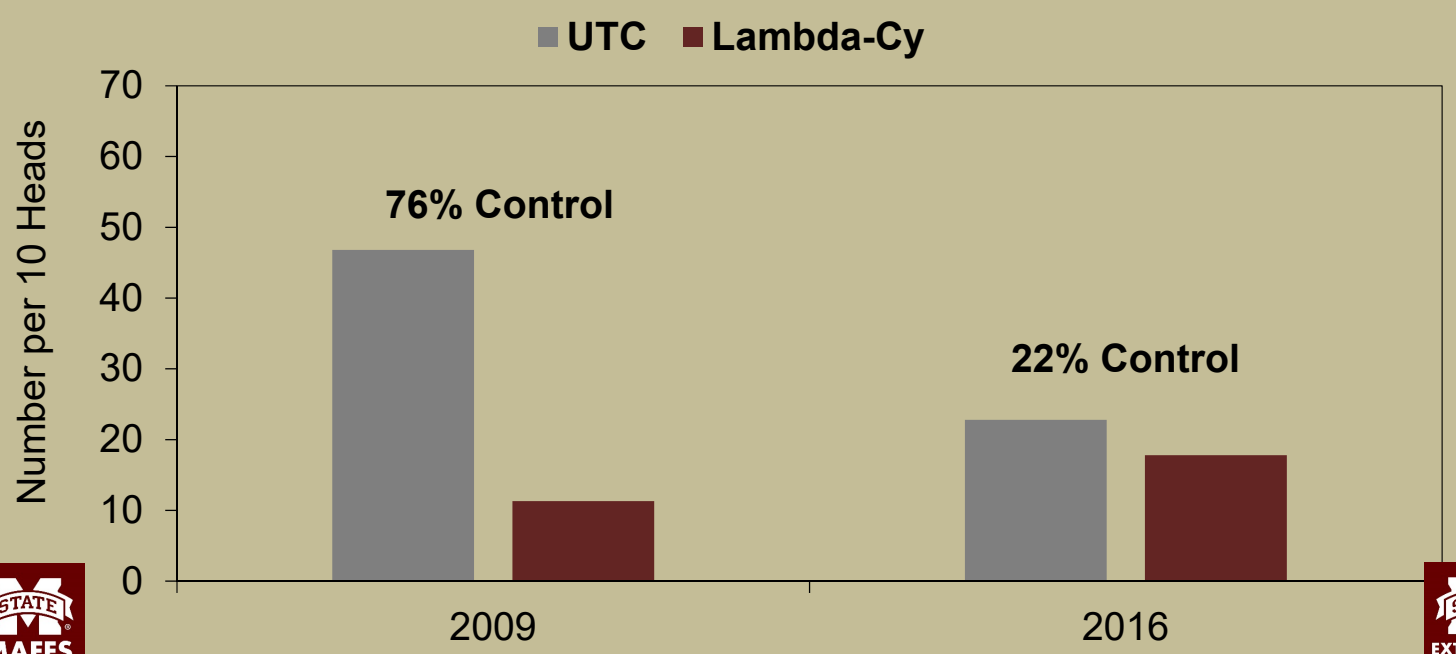


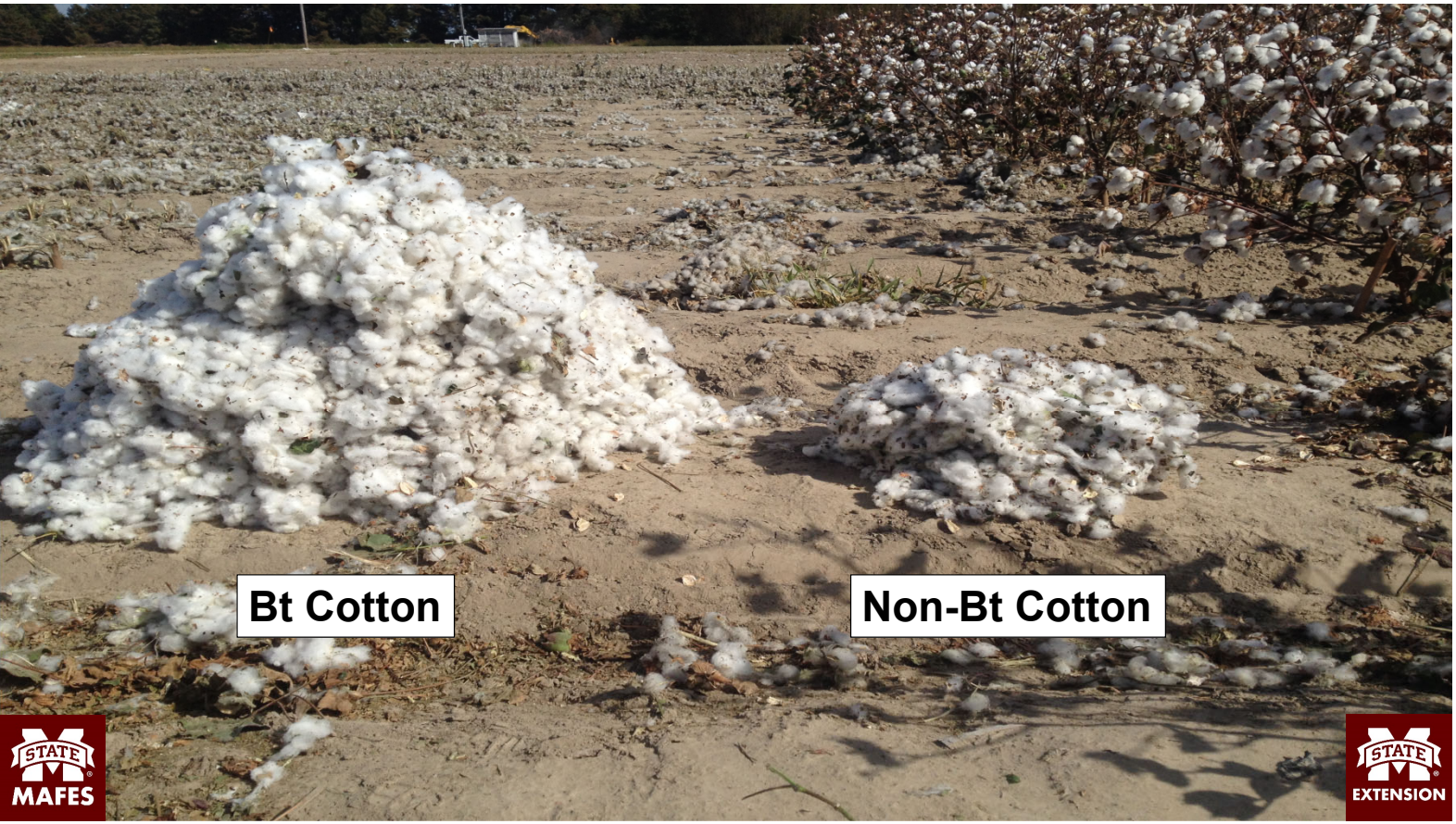



MAFES
EXTENSION
TOP
MIDDLE
BOTTOM
ONE
TWO
THREE
8.6 bolls
6.9 bolls
7.8 bolls
6.9 bolls
7.8 bolls
7.5 bolls

Changes in Bollworm Susceptibility

Pyrethroids in Grain Sorghum




Bt Cotton
Non-Bt Cotton

(662)820-9969
jgore@drec.msstate.edu
@JeffGore99