SORGHUM: THE SMART CHOICE®

Managing sorghum-sugarcane aphid in forage sorghum

Sorghum Silage for CA Dairies

Madera 3/7/17 & Tulare 3/9/17

Nick Clark, Agronomy Advisor in Kings, Tulare, & Fresno Counties

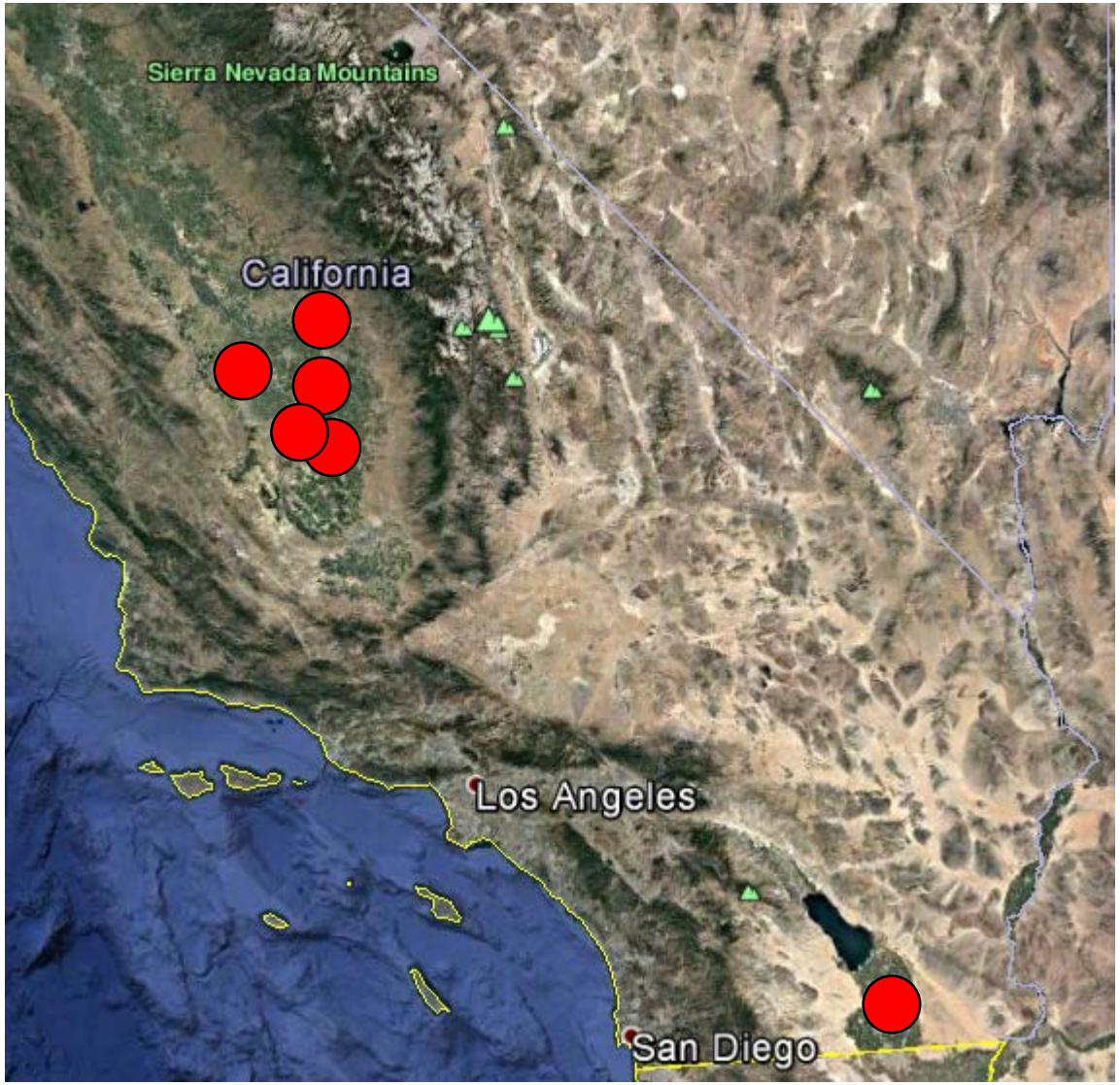
UC CE

University of California
Agriculture and Natural Resources

2016 CA Reports of Sugarcane Aphid

- KAREC, WSREC, and DREC ***
- Tulare County (Tipton/Pixley area)
- Kings County (Hanford area)

- July-August, reports of aphid not controlled by malathion, dimethoate, or chlorpyrifos.



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IDENTIFICATION

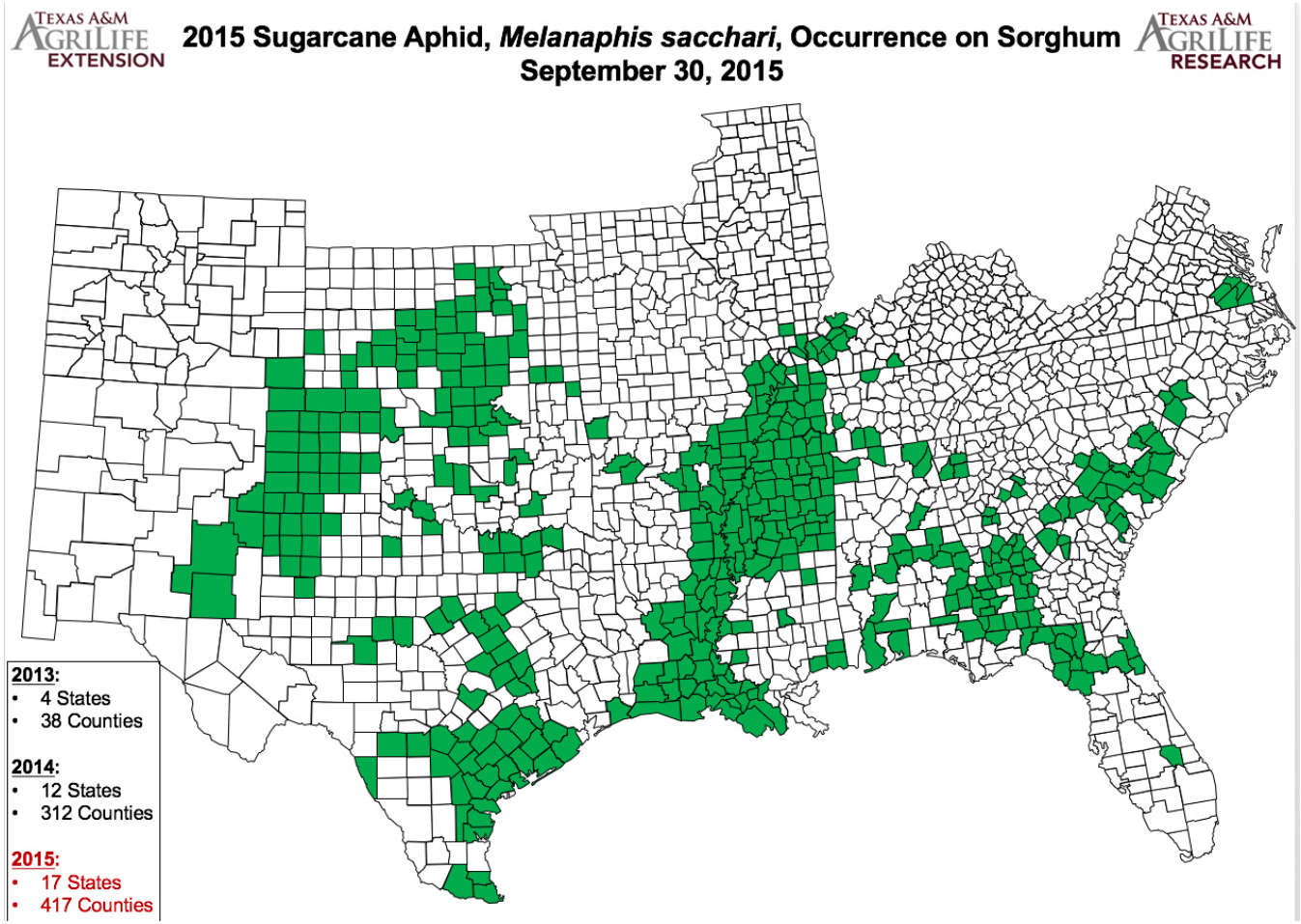
AMS Approved

KSU Scouting Card

Source: USCP

US Distribution of SCA

Ryan Gilreath, (LSU)



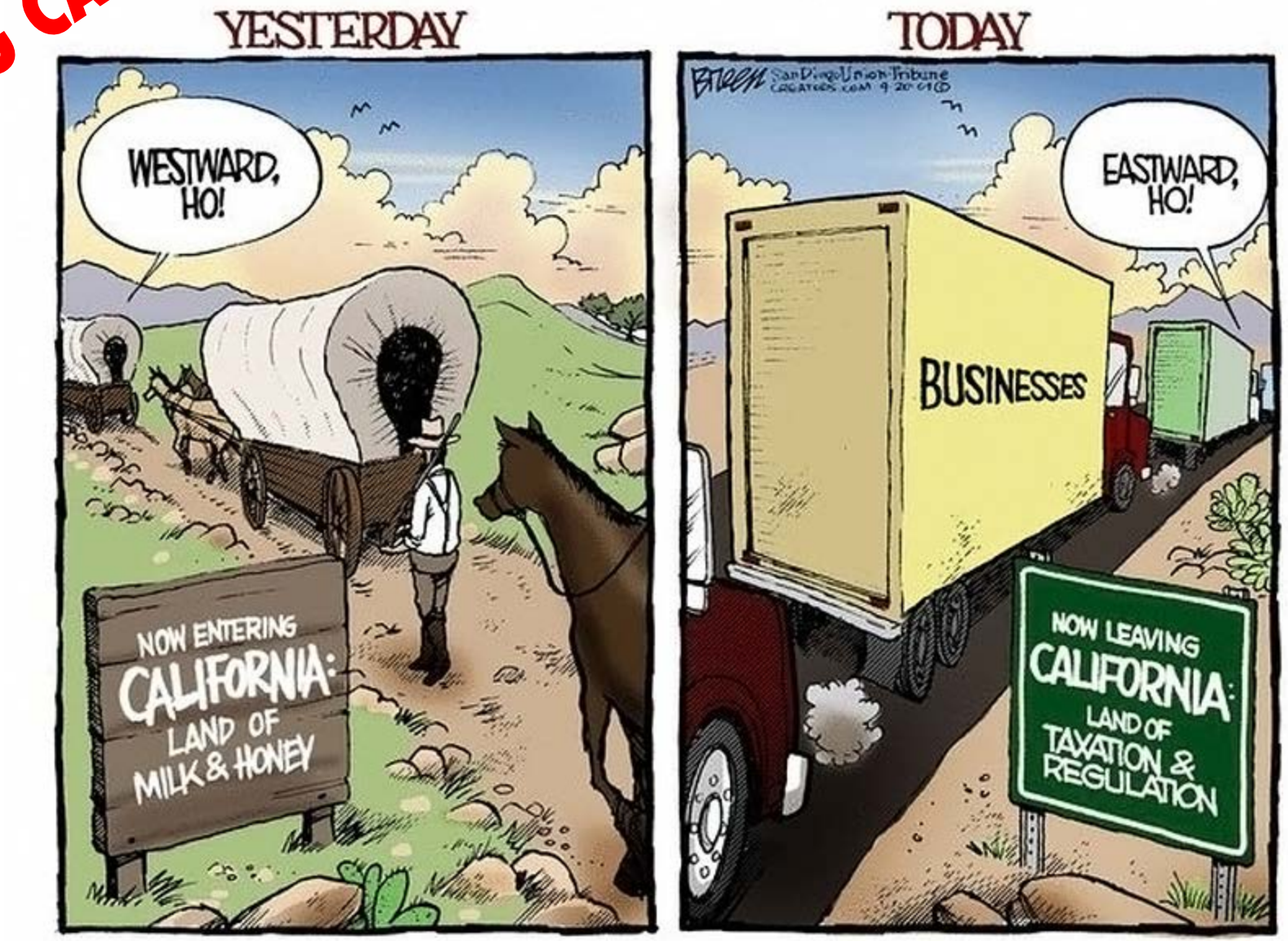
Sugarcane Aphid Hosts

- Reproduces on sorghum, Sudan, sorghum-Sudan, & Johnson grass
- Feeds, but won’t reproduce on corn
- Will not feed on small grains

Damage

- Types of damage
  - Honeydew production/sooty mold growth
    - Reduced p-synth and difficulty harvesting
  - Sap flow reduction
    - Reduced sugars to new leaves and grains, stunting/grain production failure
  - Early senescence
    - Dryer leaves, plant death
- Grain yield is depressed more with early crop stage, untreated infestations
- Effect on quality…some research on hay (Robert Bowling et al., Texas A&M), inconclusive about quality

DISCLAIMER: NOW LEAVING CALIFORNIA



In all sincerity, very many thanks are owed to the Sorghum Checkoff Program and all of the researchers cited in this presentation for their quick, frontline work to provide the information we have to date.

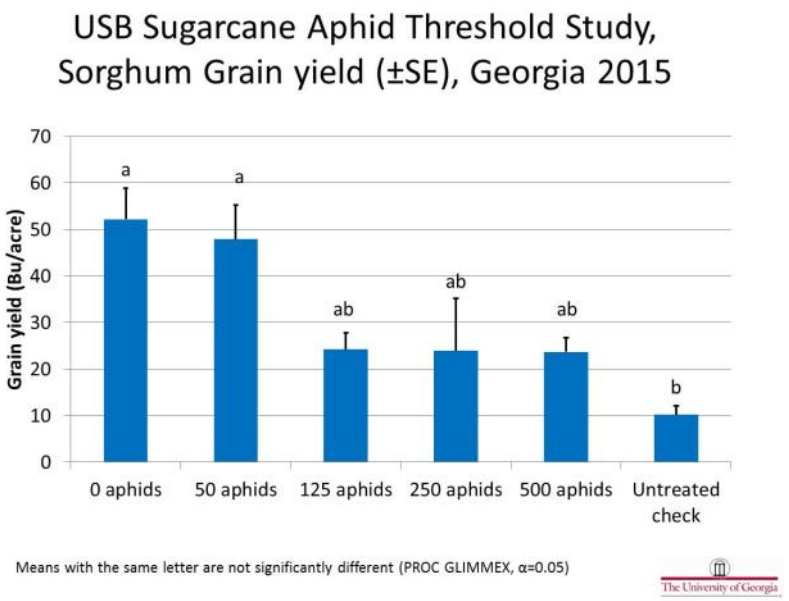
Yield Loss

Jeff Gore, Miss. SU

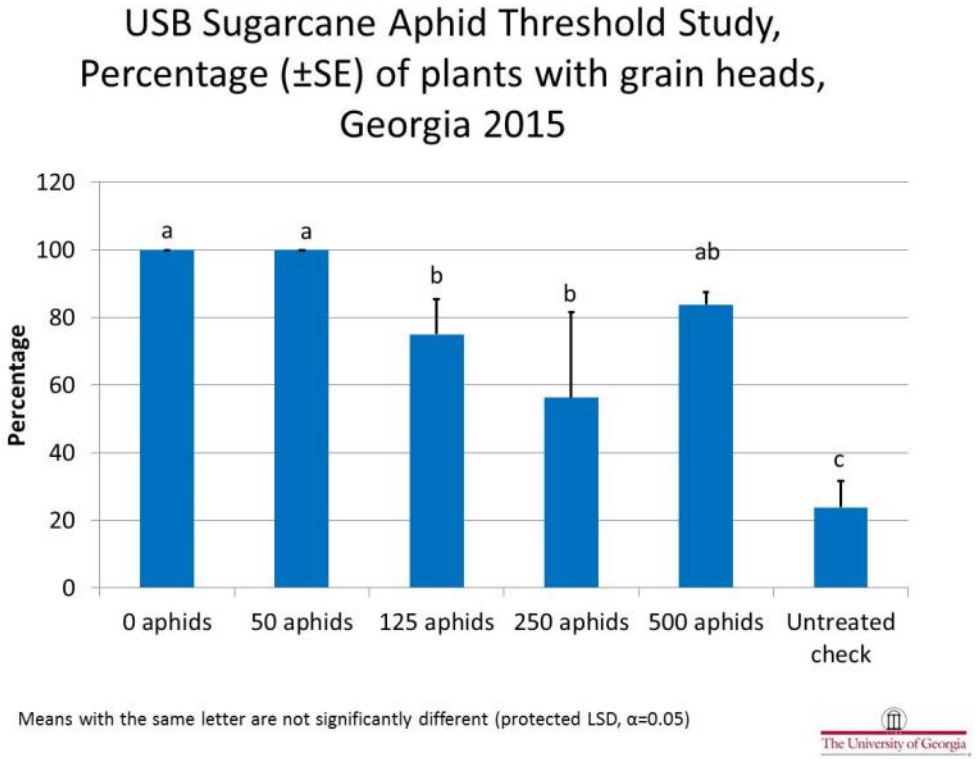
Crop Stage at 20% Infestation	Percent Yield Loss with no Treatment
Pre-boot	81-100%
Boot	52-69%
Panicle Emergence	67%
Soft Dough	21%

Why Yield Loss and Other Considerations

Why the Yield Loss Response



Fewer Heads and Less Grain on the Remaining



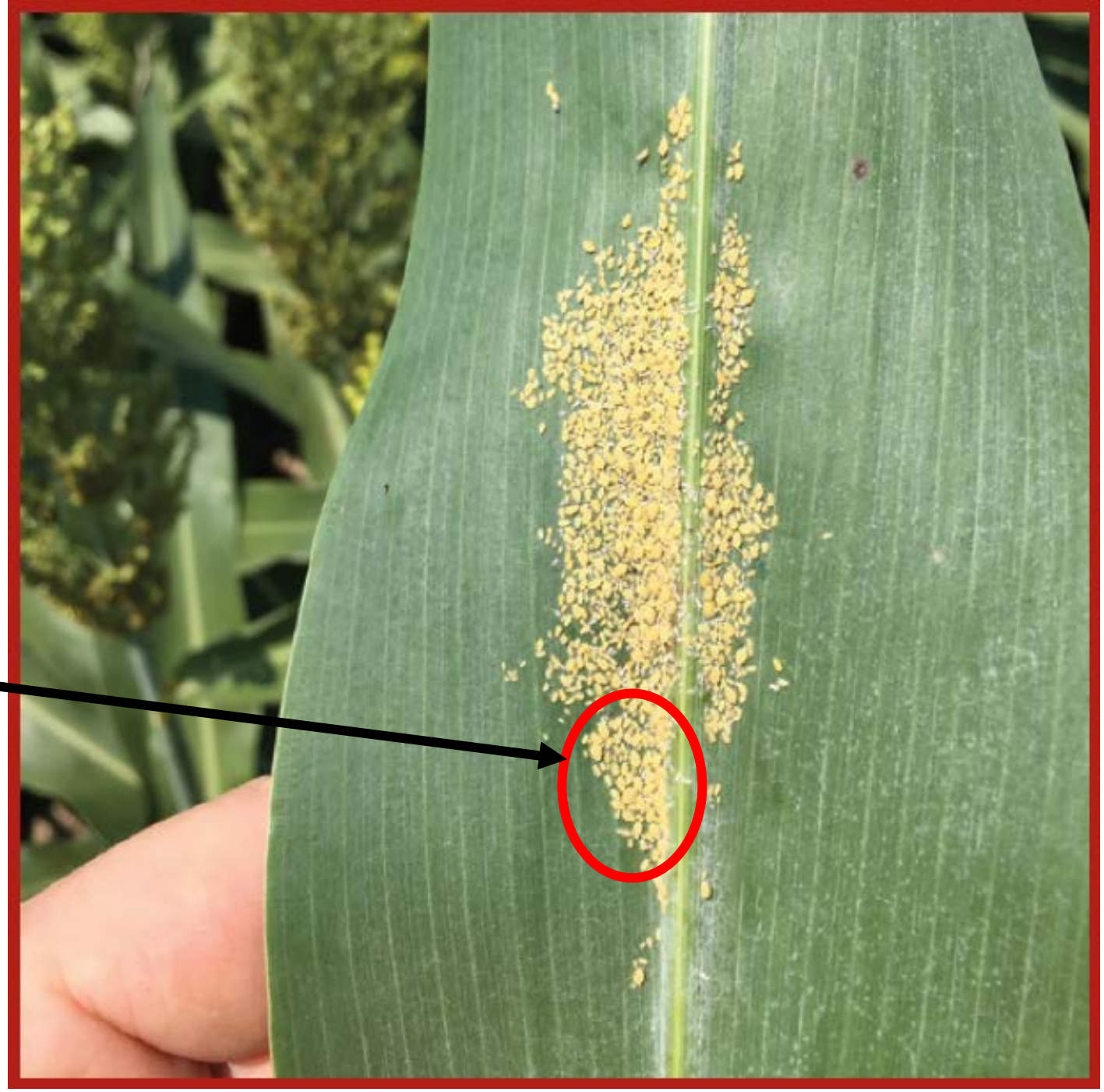
AMS Approved

Source: David Buntin, U of Georgia

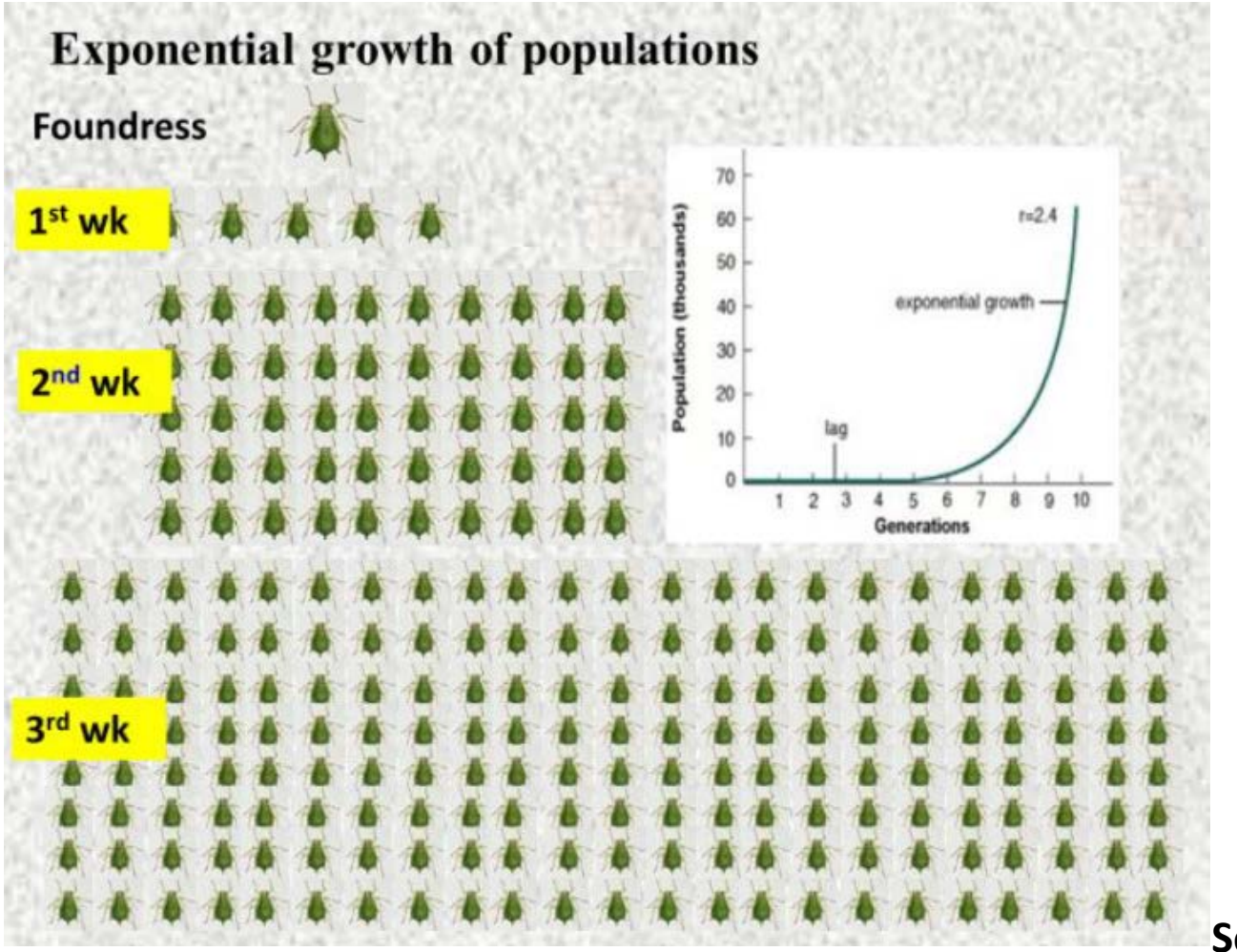
Scouting & Thresholds for Grain Sorghum

- Scouting methods
  - Early July or early vegetative
  - Throughout field (edge effect is location dependent – Tom Royer, OSU)
  - Lower leaves, then moves upward to peduncle or head stalk
  - Weekly until found
  - Twice weekly until treatment threshold (50 aphids/leaf on 25% of plants)
- Numbers to treat?
  - SCA population can double in 2-9 days, largely temperature dependent
  - 50 aphid/leaf if > 1 month to harvest
  - Consider 150 aphid/leaf if < 1 month to harvest

~ 50 aphids



Can go from 50 to 500 Aphids per Leaf in Two Weeks

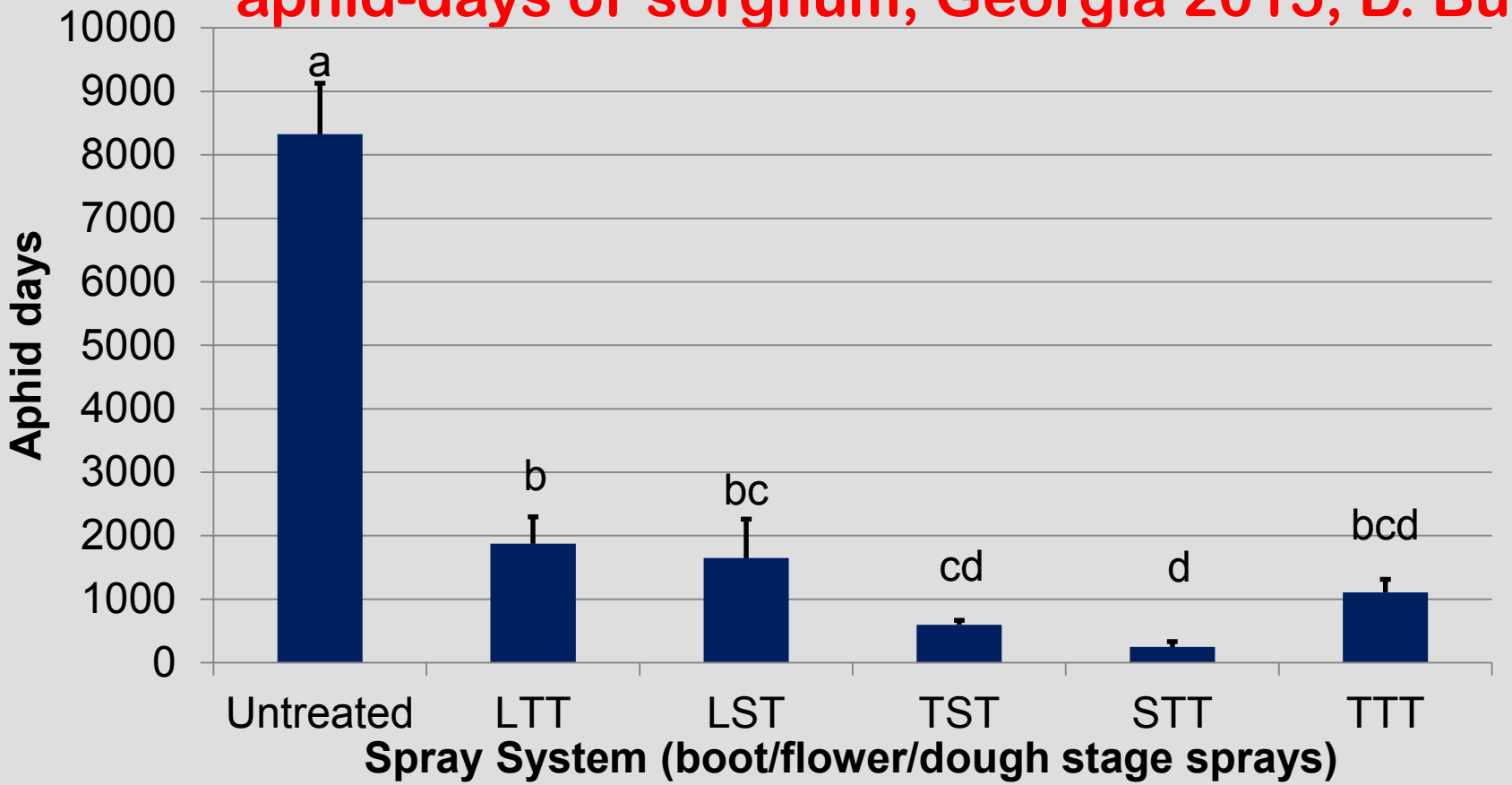


Source: TAMU

Control Methods

- Insecticide
  - Neonicotinoid seed treatment (important for early protection in late planting, best in combination with foliar application of insecticide) – appears to give ~ 24-40 days protection
  - Sivanto Prime (7-14 fl. oz./acre, 20 GPA ground, 10 GPA air – Rick Kochenower, Sorghum Partners)
- Cultural
  - Planting date (plant early if possible)
  - Site avoidance (rotate fields for sorghum planting)
  - Weed management (control Johnson grass, weeds in general for stand establishment and plant vigor)
- Cultivar resistance
  - Resistant cultivars consistently protect yield, especially in combination with early insecticide treatment

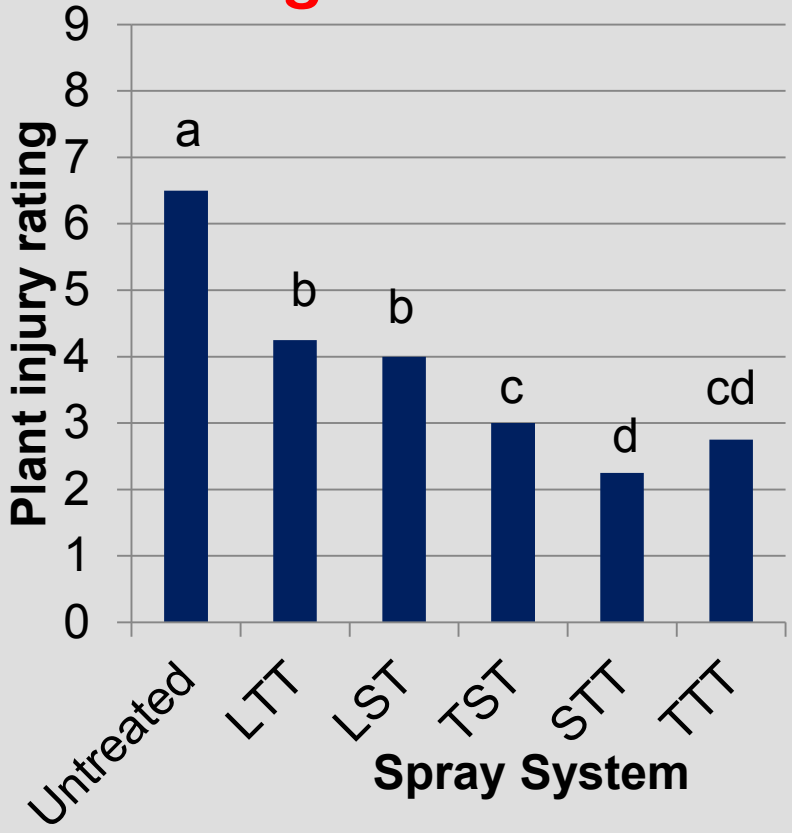
Effect of Sugarcane aphid spray system on aphid-days of sorghum, Georgia 2015, D. Buntin

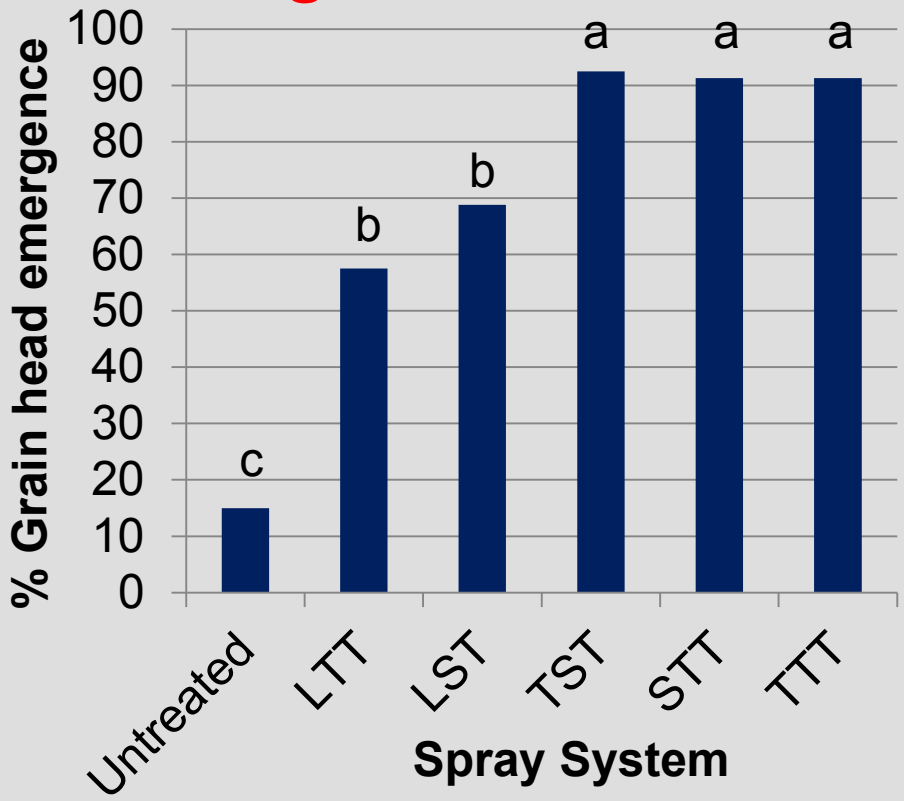


Means with same letter not significantly different (LSD (α = 0.05) of LSmeans)

Unt = Untreated, L = Lorsban @ 2pt, T = Transform @ 1 oz, S = Sivanto @ 4 fl. oz.

Effect of SCA spray systems on Sorghum plant injury and grain head emergence, Georgia 2015, D. Buntin



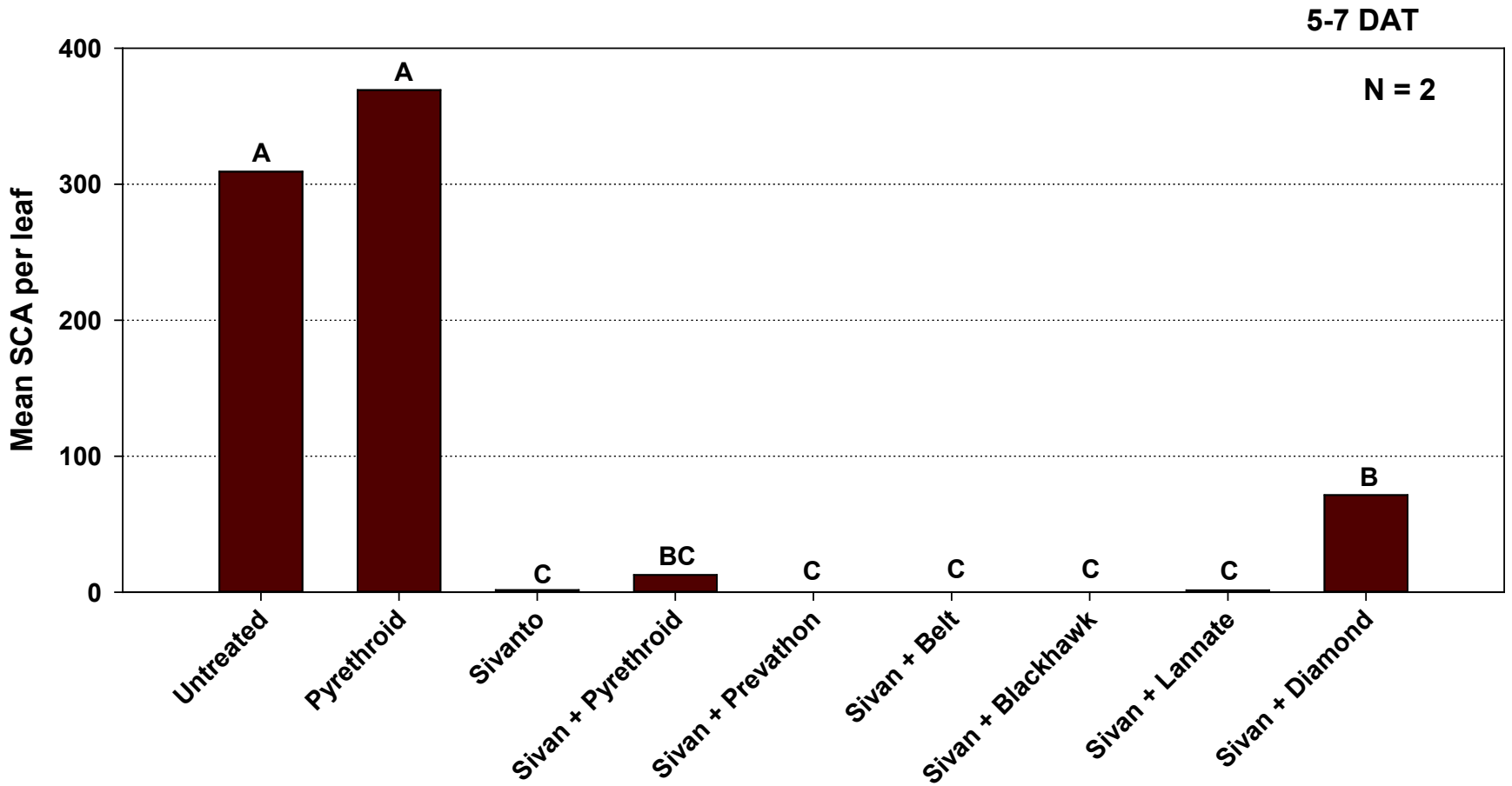


Unt =Untreated, L = Lorsban @ 2pt, T = Transform @ 1 oz, S = Sivanto @ 4 fl. oz.

Means with same letter not significantly different (LSD (α = 0.05) of LSmeans)

SCA
Sivanto Prime (4oz./acre)

David Kerns &
Gus Lorenz



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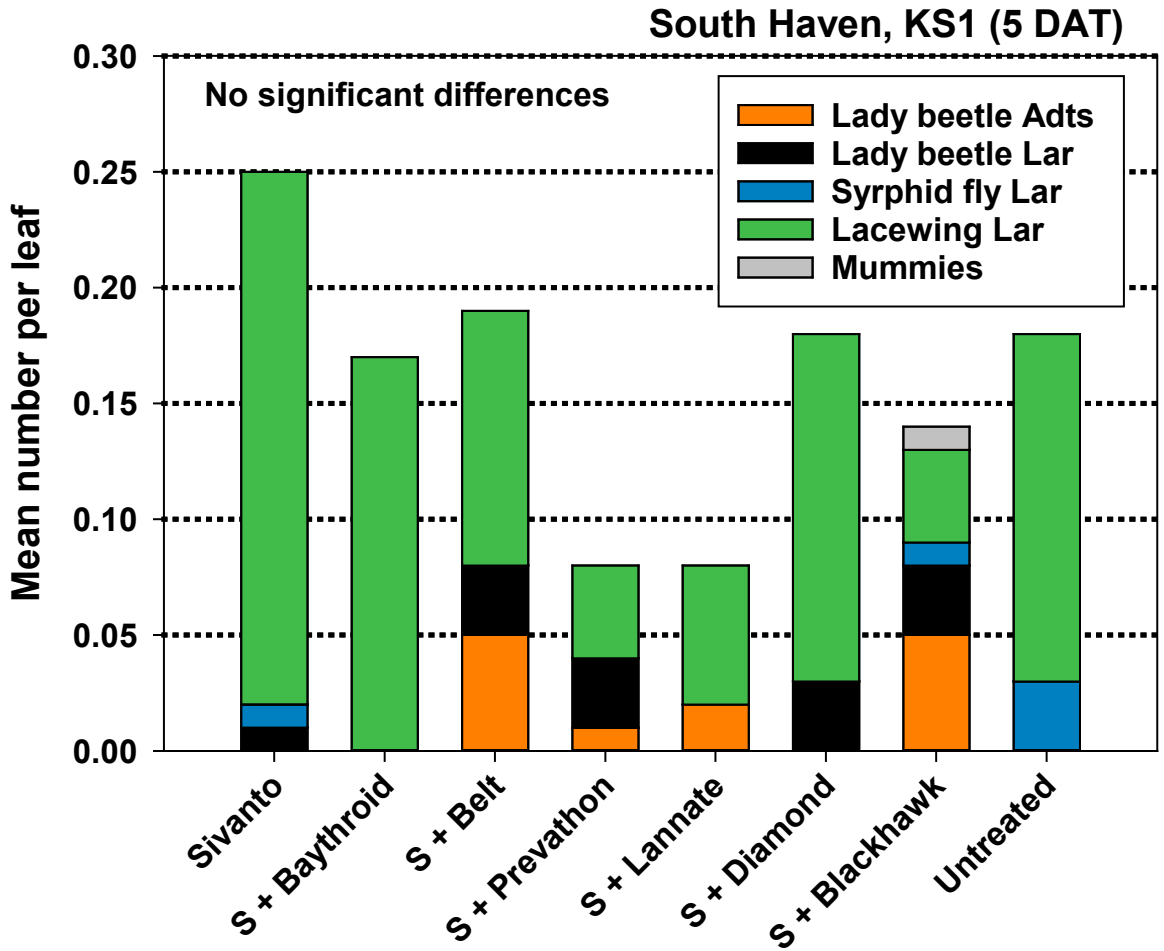
Beneficials
Sivanto Prime

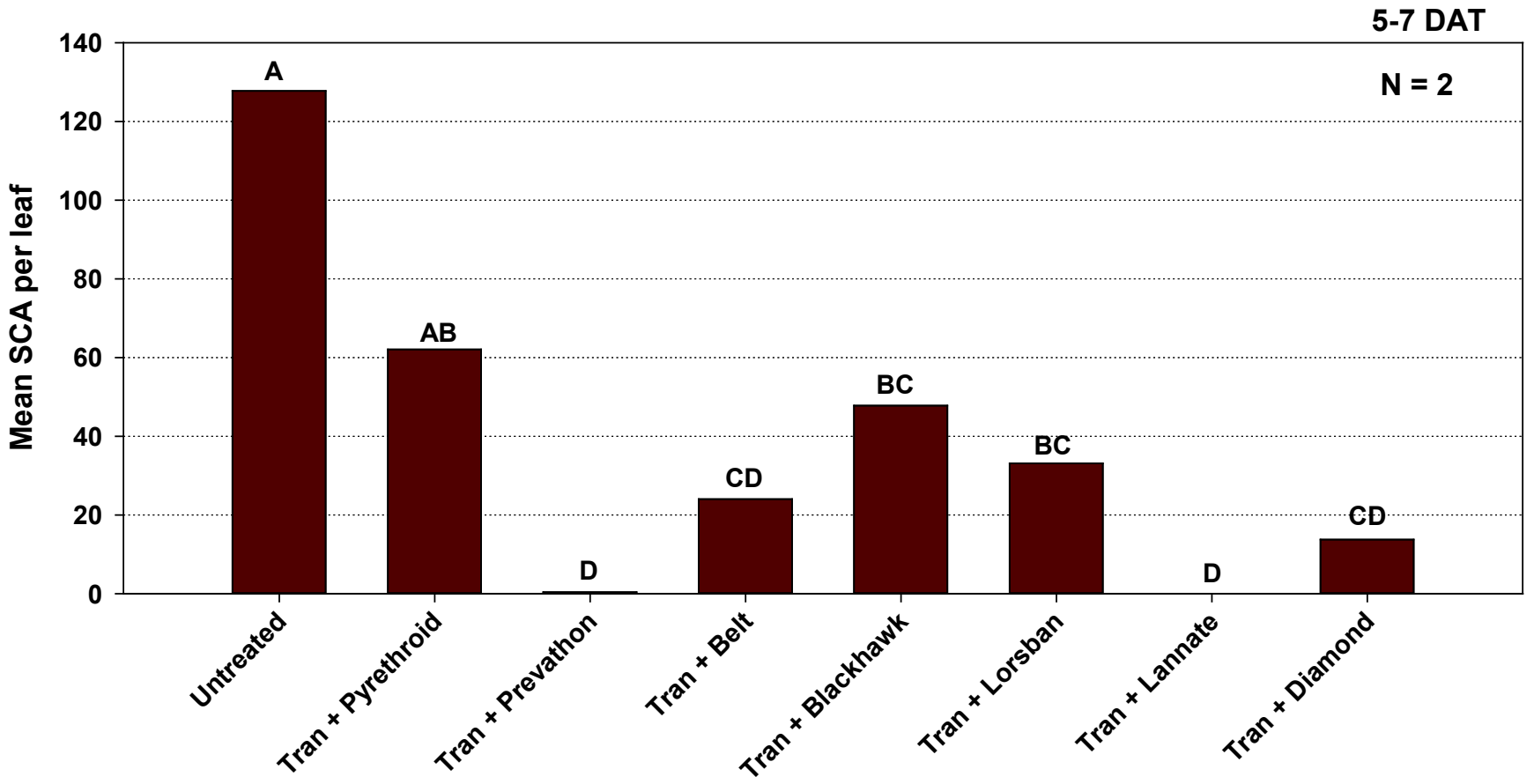
David Kerns &
Gus Lorenz



SORGHUM: THE SMART CHOICE

SCA
Transform (1 oz./acre)

David Kerns &
Gus Lorenz



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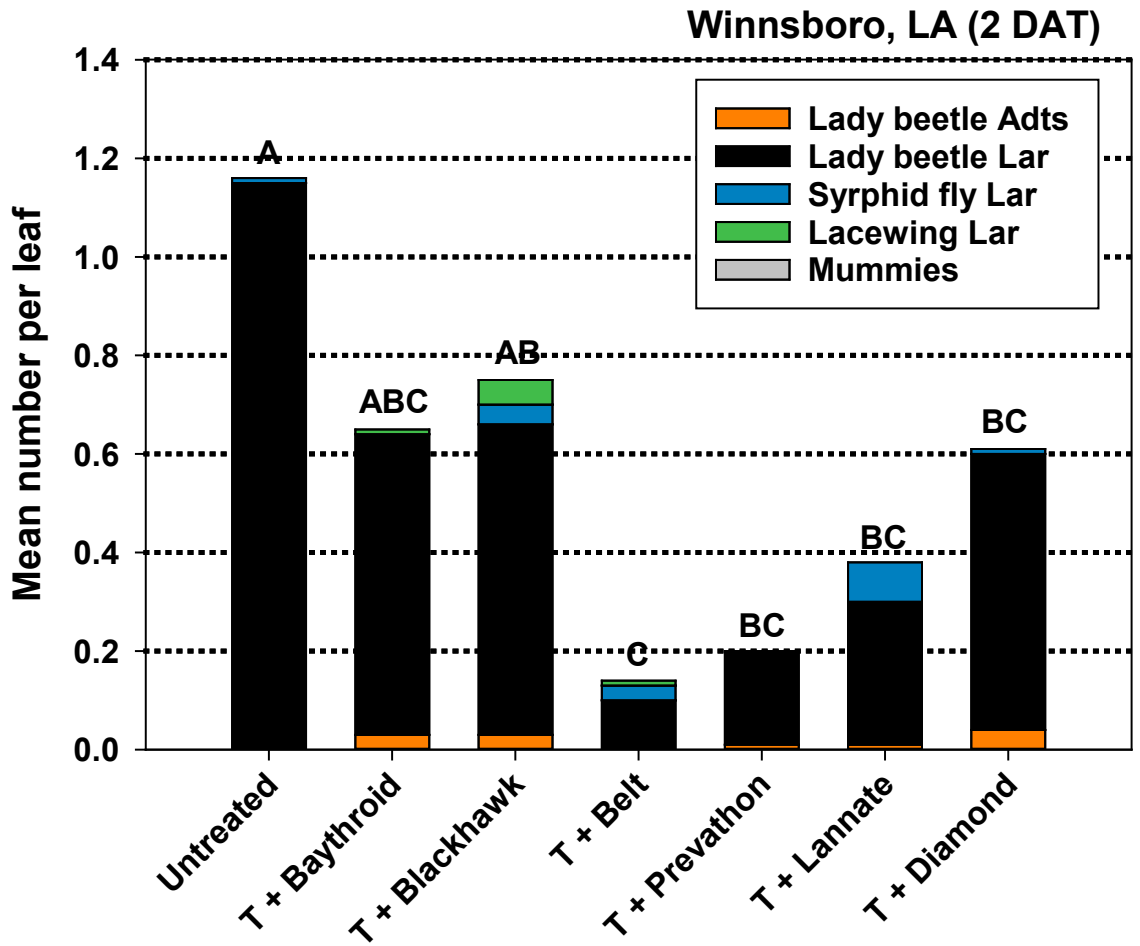
Beneficials Transform

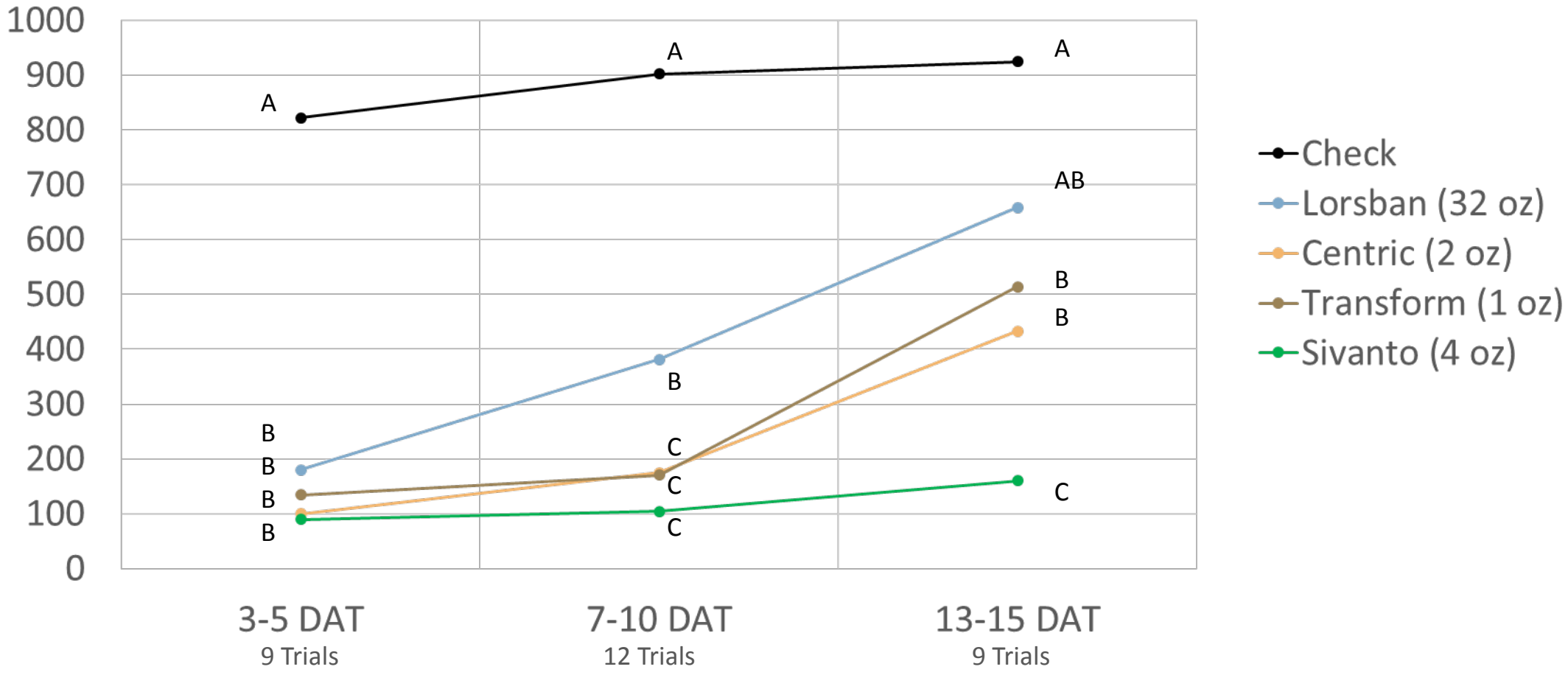
David Kerns &
Gus Lorenz



Parasitized Sugarcane Aphids on Sorghum at UC DREC

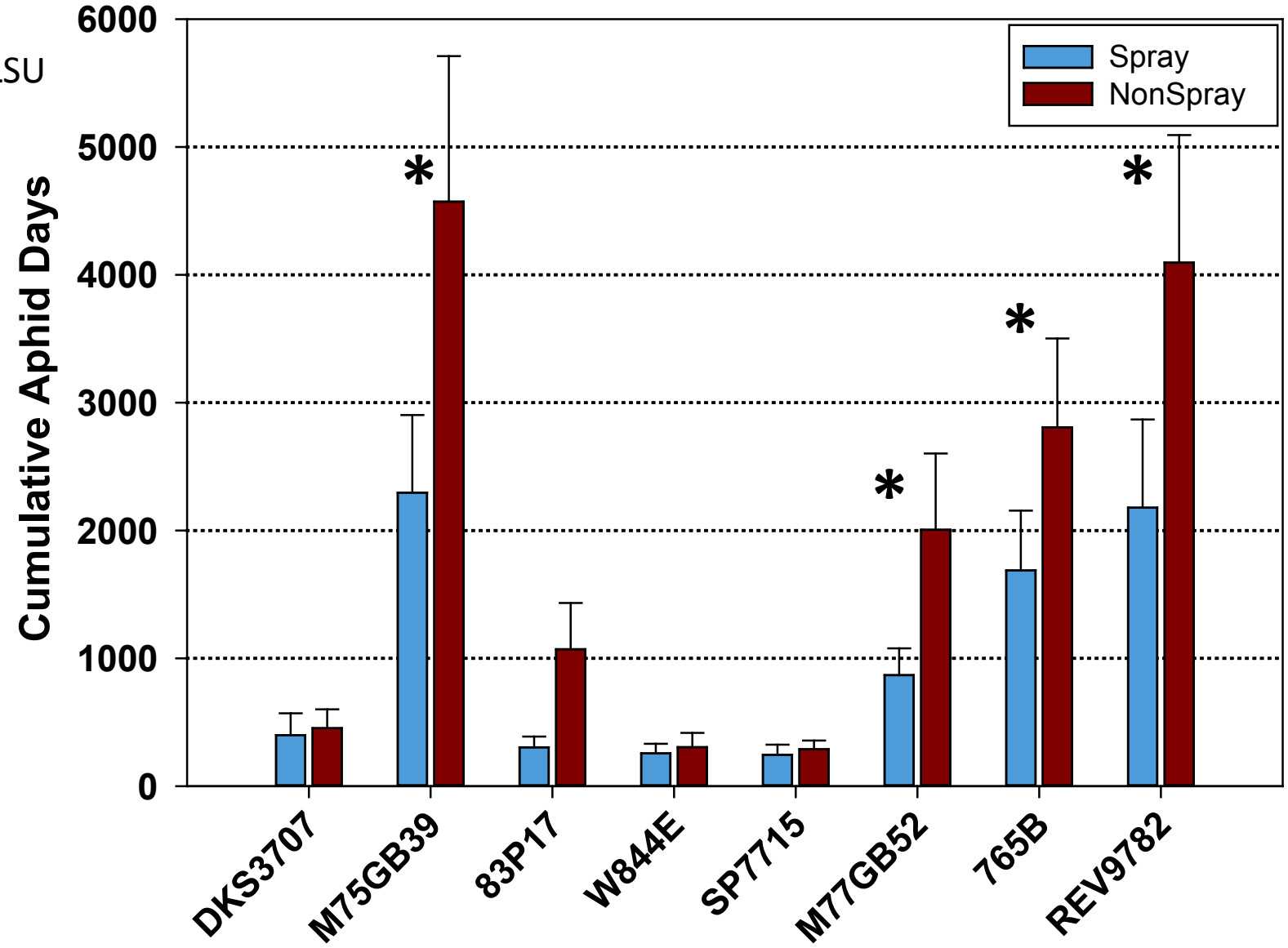
Average Number of SCA (middle + flag leaf)

Scott Stewart (U of Tenn)



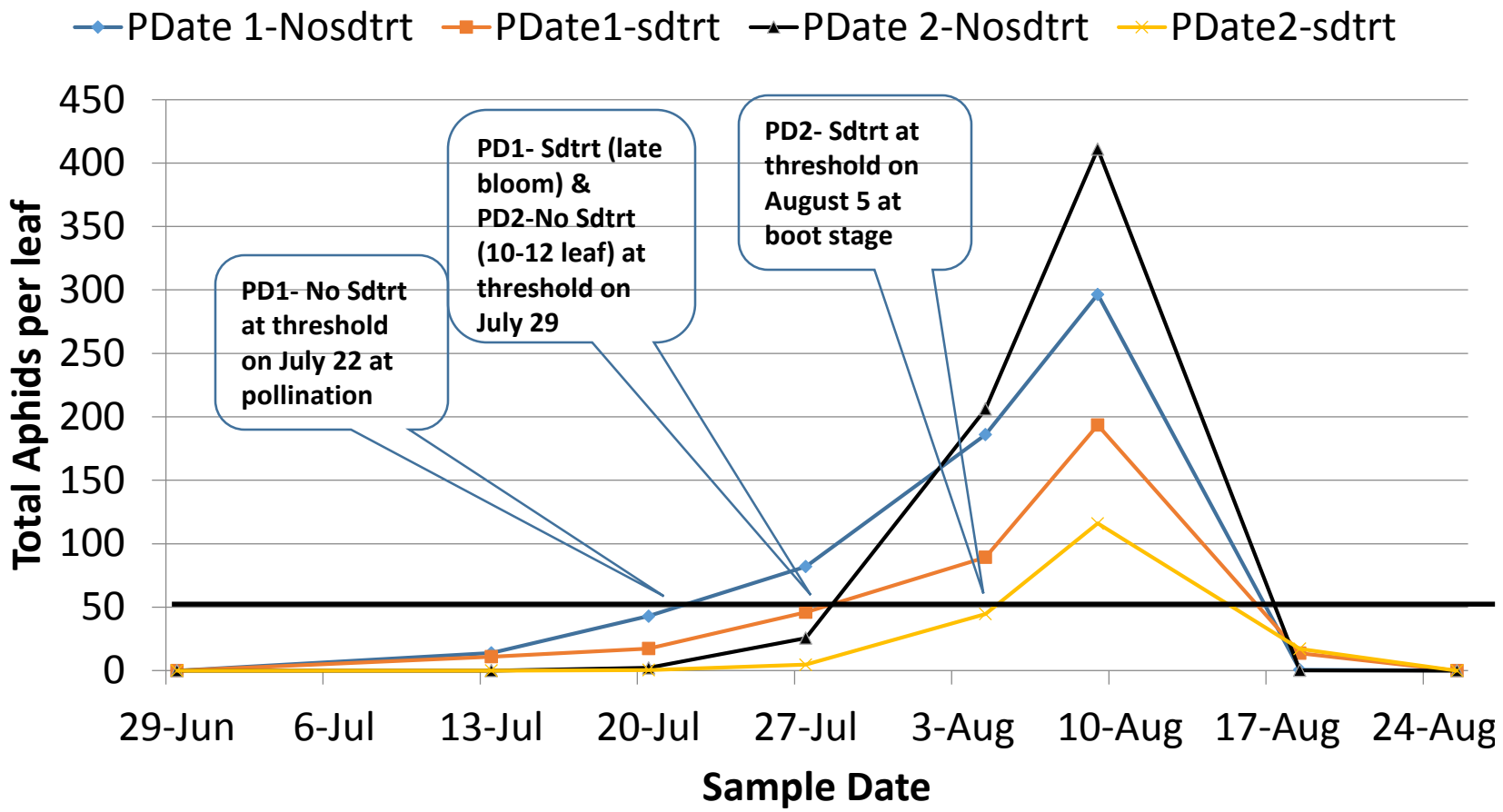
Cumulative Aphid Days Between Cvr.

John David Gonzales, LSU



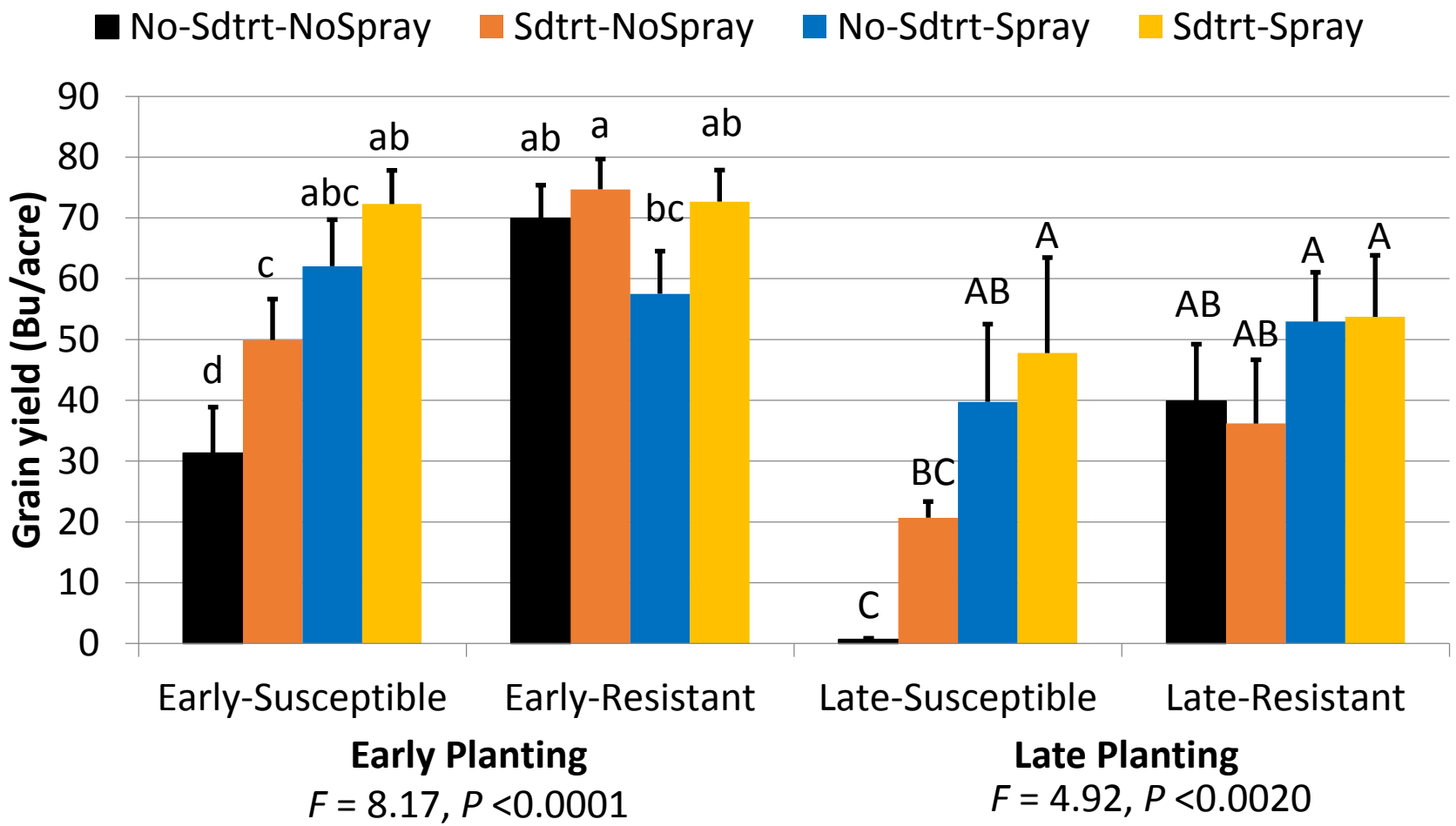
2016, Georgia, SCA on early and late planting of susceptible variety (DKS 3888) sorghum, no spray, with and without Poncho Insecticide Seed Treatment (Sdtrt)
Seed treatment delayed Threshold by 1 week (TX, OK also)

G. David Buntin
(U of Georgia)



2016, **Georgia**, Effect of planting time, variety resistance, seed treatment and foliar spray for control of SCA on sorghum grain yield

G. David Buntin
(U of Georgia)



Means within planting date followed by the same letter are not significantly different, LSD α=0.05

GEORGIA

SUMMARY:

BEST MANAGEMENT PRACTICES

- Plant as early as possible, keeping in mind 60F soil temp for good germination rate
- Control Johnsongrass as an alternative host, all weeds to protect stand establishment and promote early crop root vigor and exploration
- Use neonicotinoid treated seed, especially on later planted stands
- Scout early and often (from ~ late June, once weekly until found; twice weekly until 50 aphid/leaf)
- Spray at threshold with recommended rate and volume
- Avoid chlorpyrifos, dimethoate, and malathion when possible to protect natural enemies

TROUBLESHOOTING POOR CONTROL

- Treatment threshold exceeded
- Rain occurs soon after application – PROBABLY NOT RELEVANT TO SJV, CA
- Temperatures too cool for insect feeding activity – PROBABLY NOT RELEVANT TO SJV, CA
- Too low of insecticide rate
- Too low of spray volume for adequate coverage

WHAT WE EXPECT THIS YEAR

- Higher surface water allocations, less sorghum planting?
- Occurrence of SCA in sorghums and Johnson grass

WHAT WE STILL DO NOT KNOW

- Action thresholds for forage sorghum production
  - Crop stage * infestation timing damage potential for forage sorghum?
  - Consider economics of treatment v. early harvest
  - Yield/quality tradeoff in early harvest for pest avoidance?
- Efficacy of below CA label treatment rates (7-14 fl oz/ac) of Sivanto Prime?
- Will SCA overwinter? Probably in our climate
- **What** effects do **which** beneficials have on SCA population?
- How is SCA mgmt. affected by **tank mixing with broad spectrum** materials or **following broad spectrum** insecticide treatment.

Questions?