



Entomology Update

USDA-ARS

Sugarcane Research Unit

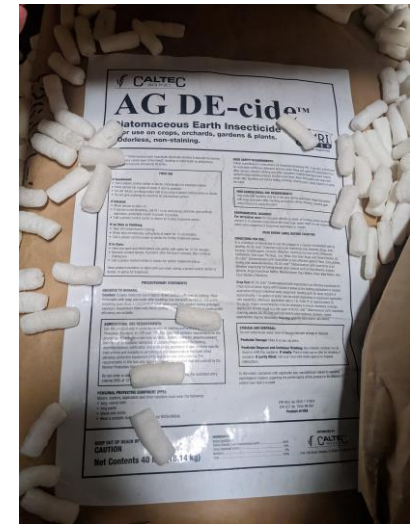
Hannah Penn, Research Entomologist
LATMC, Marksville, LA
Thursday, February 8, 2024

A tractor with a white fertilizer tank is in a field, pulling a wooden frame. A person in a white shirt and cap stands nearby. The field has rows of young plants. The background shows a fence and trees under a cloudy sky.

Evaluating Vantacor: Application with fertilizer

Does early application prevent initial SCB damage?

Vantacor: Application at fertilizer



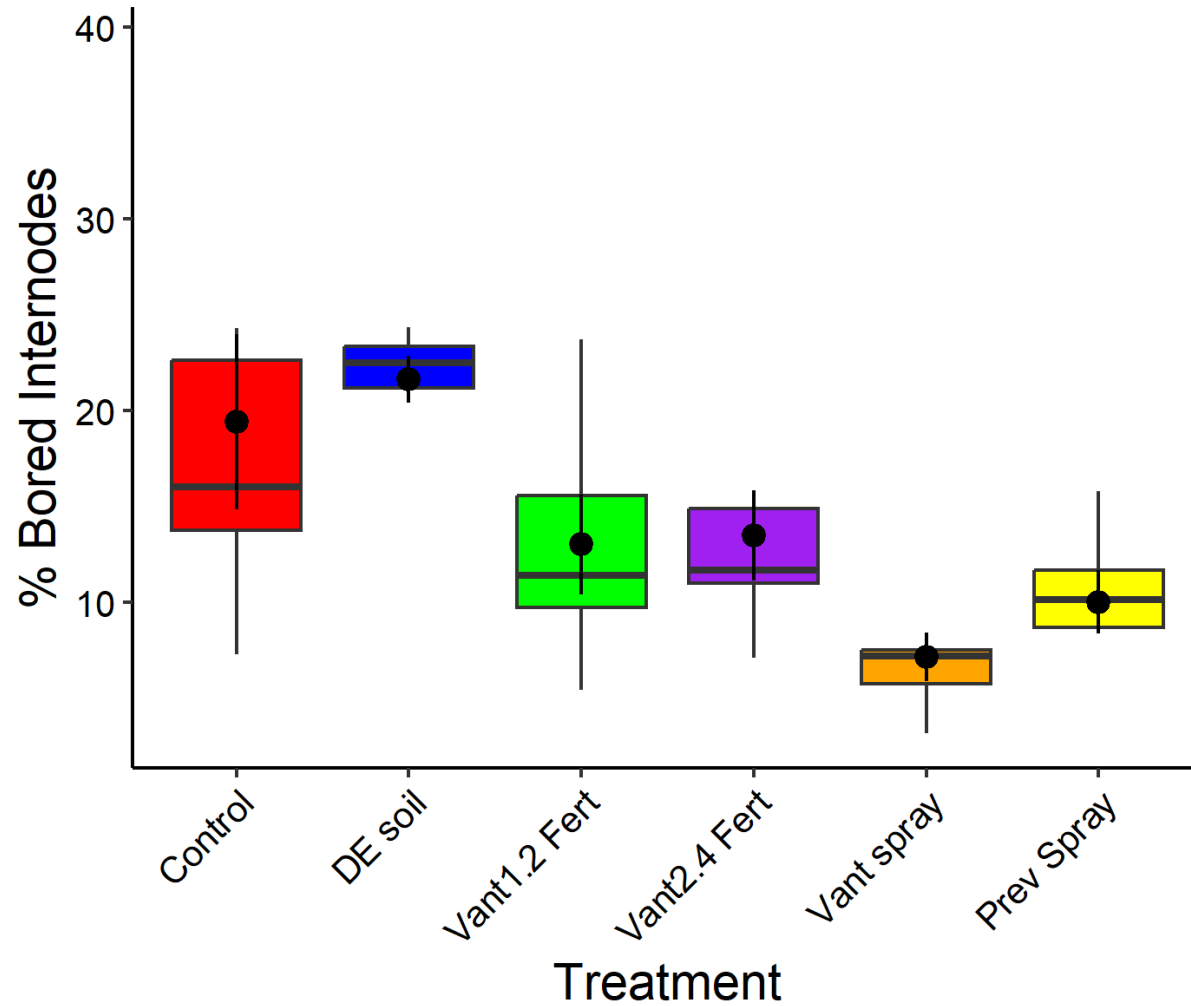
- Treatments:
 - Untreated control
 - DE at planting
 - AG DE-cide, 50 lbs/acre
 - Knife-in at fertilizer
 - Vantacor 1.2 oz
 - Vantacor 2.4 oz
 - Sprayed at threshold
 - Vantacor 1.2 oz
 - Prevathon 14 oz

Vantacor: Application at fertilizer

- HoCP 00-950, plant cane
- SCB-inoculated sorghum
- RCBD, 6 replicates
- Plots:
 - 3 rows wide
 - 16 ft long
- % bored internodes October
- TRS, Cane, and Sugar at harvest in November



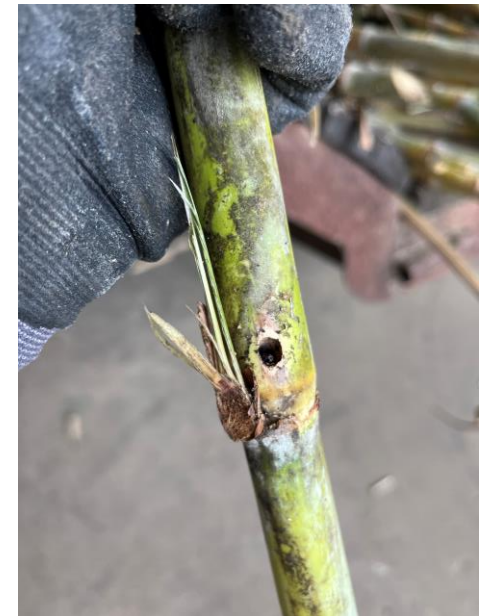
Total % bored internodes



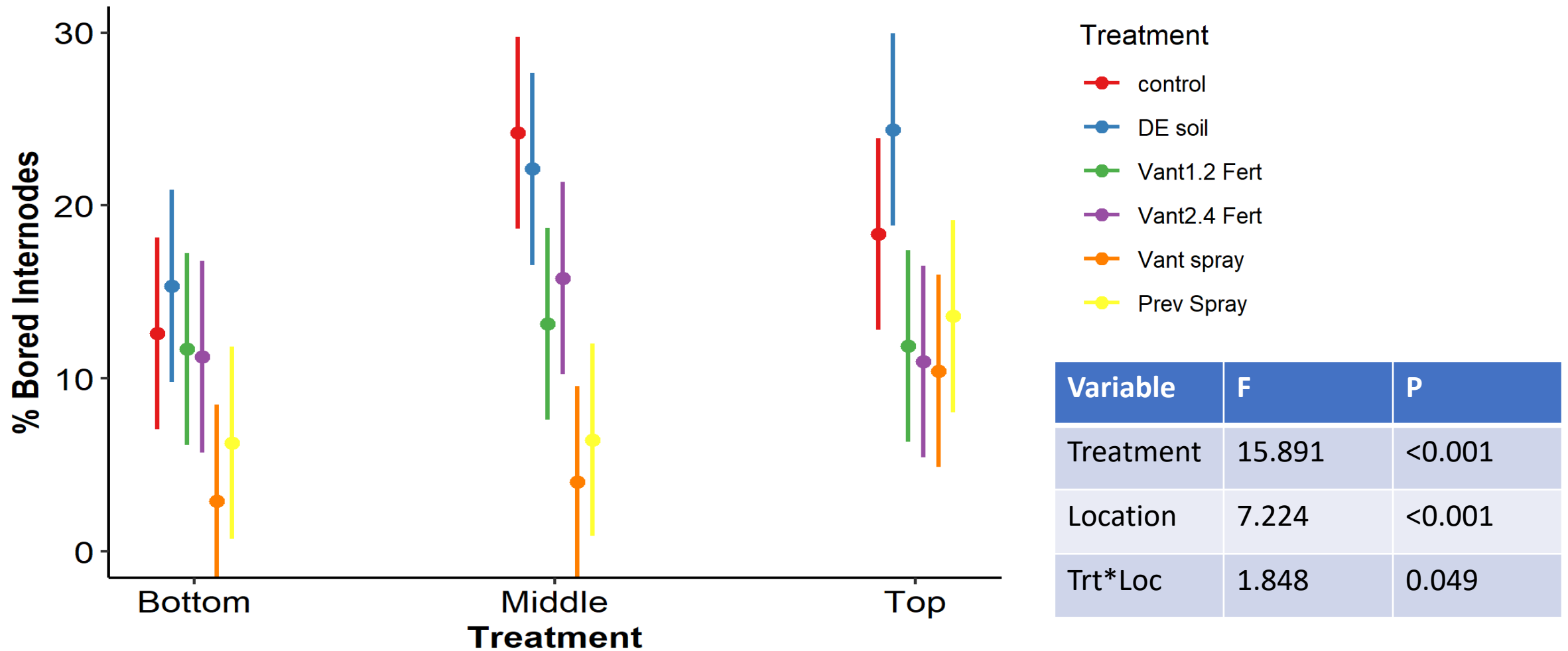
Variable	F	P
Treatment	5.085	0.002

Treatment

- Control
- DE soil
- Vant1.2 Fert
- Vant2.4 Fert
- Vant spray
- Prev Spray



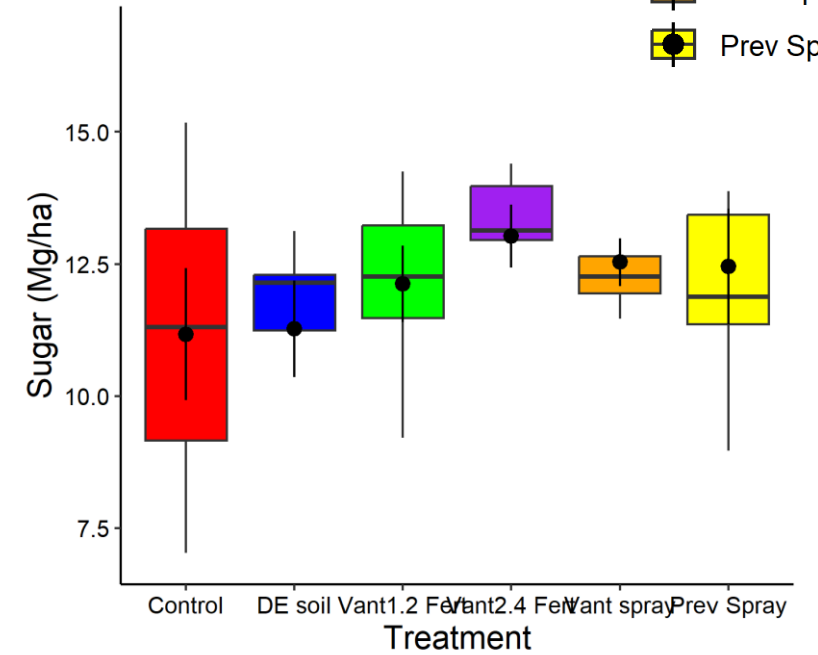
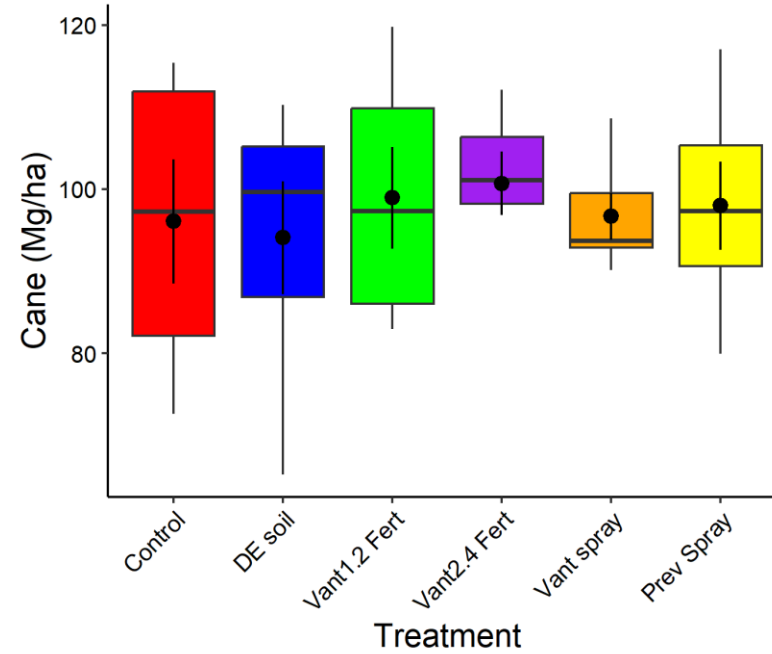
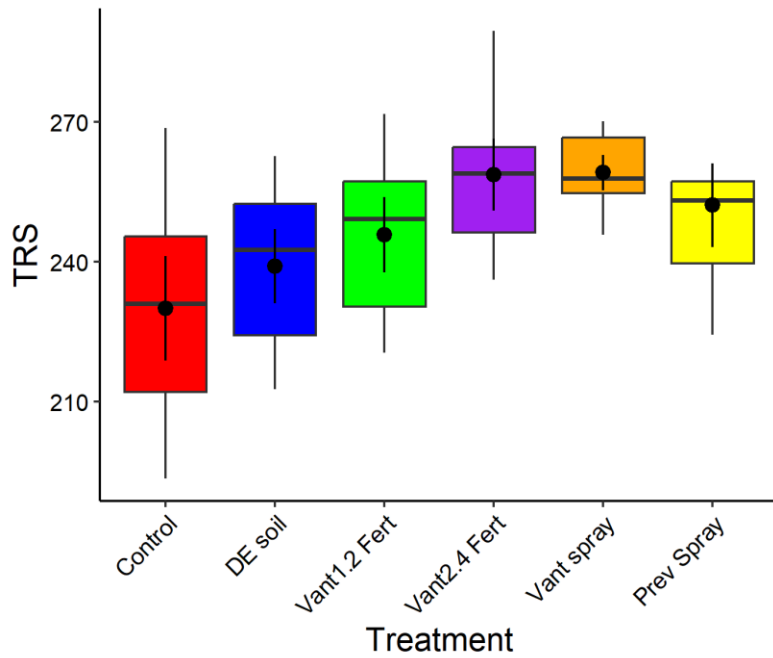
Bored internodes varied by on-stalk location



Marginal benefits to TRS not Cane or Sugar

Treatment

- Control
- DE soil
- Vant1.2 Fert
- Vant2.4 Fert
- Vant spray
- Prev Spray



Variable	F	P
Treatment	2.574	0.049

Variable	F	P
Treatment	0.169	0.972

Variable	F	P
Treatment	0.814	0.550

Evaluating Vantacor: Surfactant Test

Does surfactant change efficacy of Vantacor applied via drone?

Vantacor: Does surfactant matter?

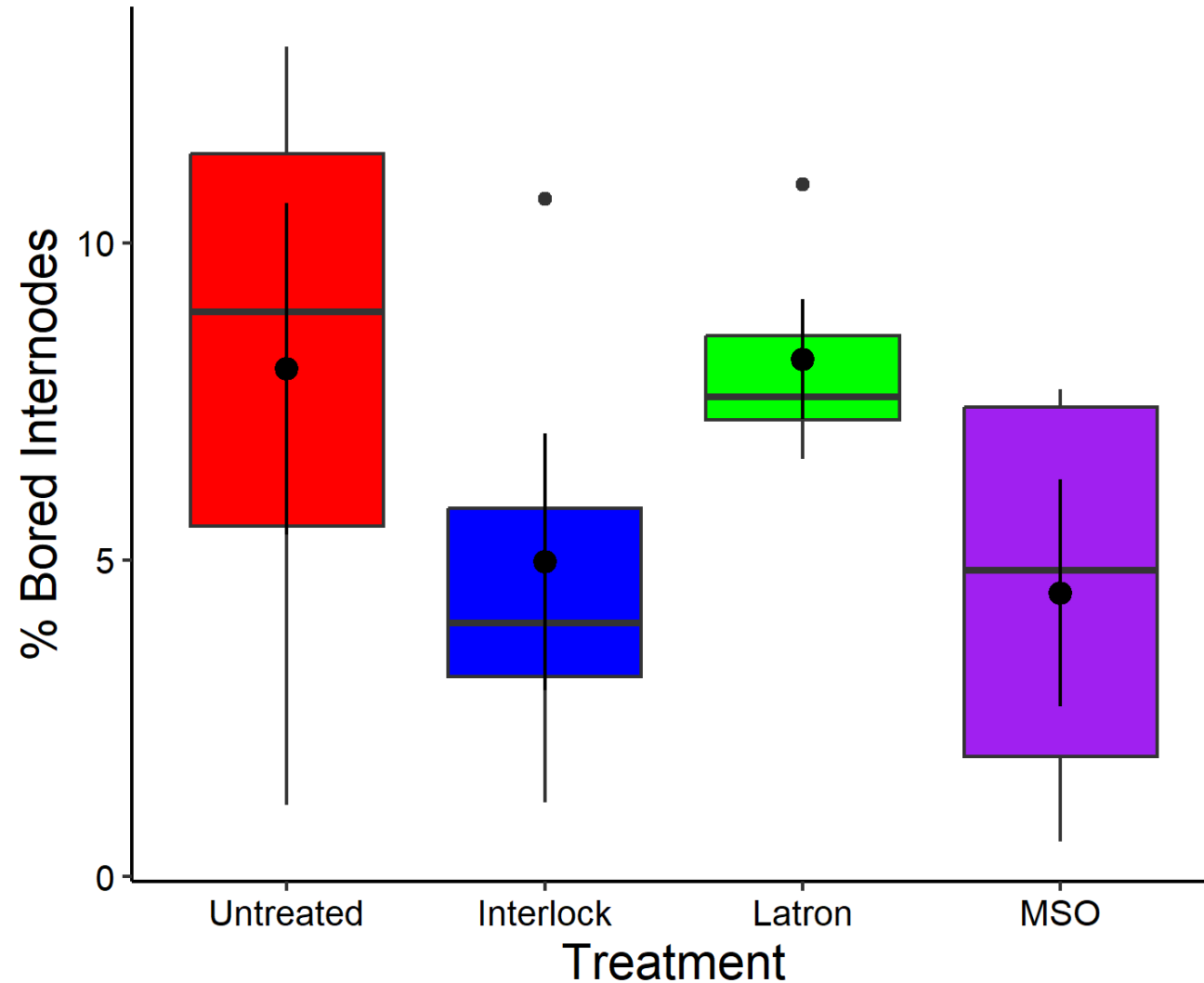
- Treatments:
 - Untreated Control
 - Vantacor @ 1.2 oz +
 - Interlock
 - Latron AG-98
 - Destiny HC (MSO)
- HoCP 00-950
- 2nd ratoon
- SCB-inoculated sorghum
- RCBD, 4 replicates
- Plots: 3 rows wide, 60 ft long

Vantacor: Does surfactant matter?

- Applied:
 - Spray drone (Dr. Al Ogeron)
 - 2 GPA
 - 29 June 2024
- % bored internodes October
- TRS, Cane, and Sugar at harvest in November



No impact on total % bored internodes?

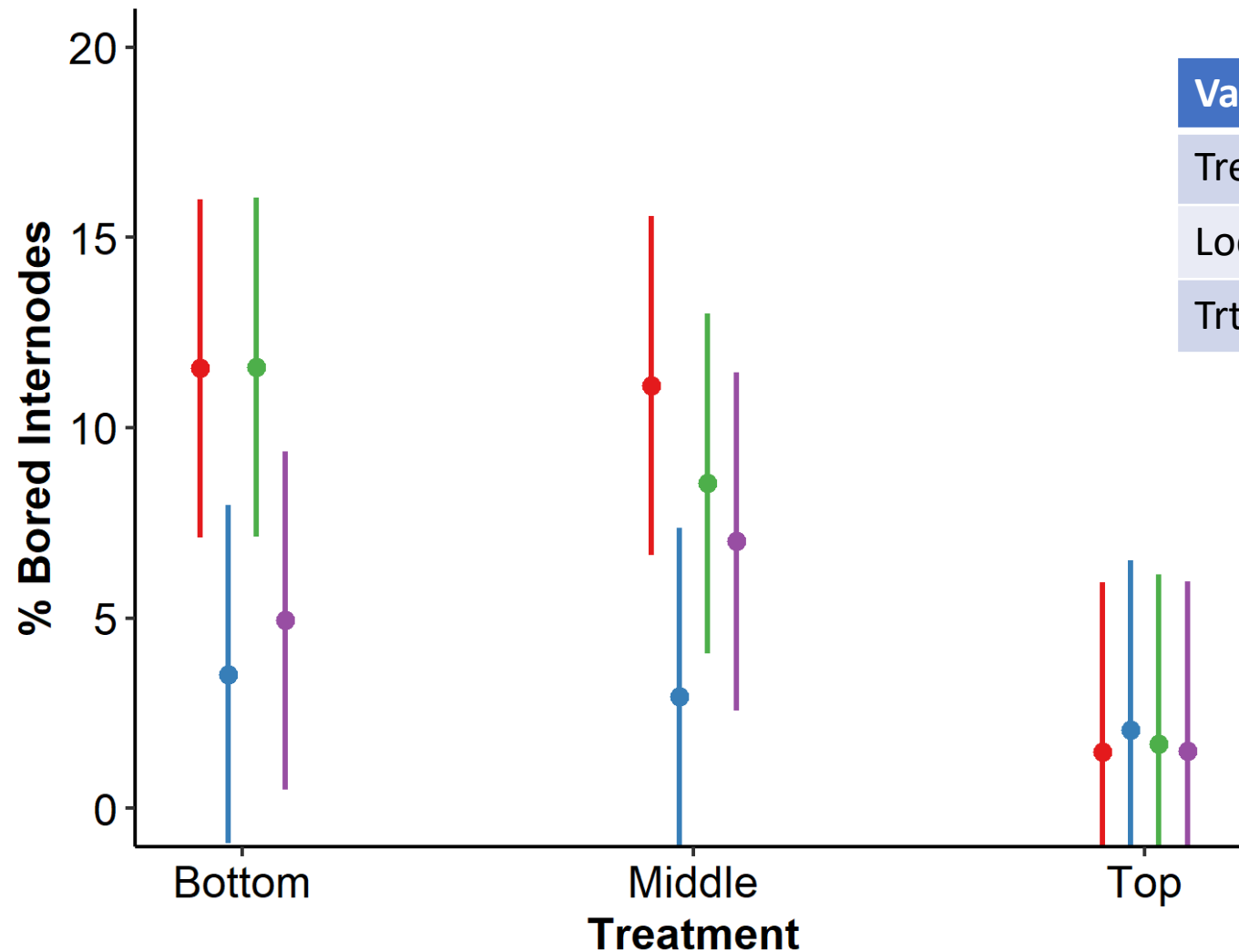


Variable	F	P
Treatment	1.1537	0.3795

Treatment

- Untreated
- Interlock
- Latron
- MSO

Bored internodes varied by on-stalk location



Variable	F	P
Treatment	5.725	<0.001
Location	15.480	<0.001
Trt*Location	2.024	0.061

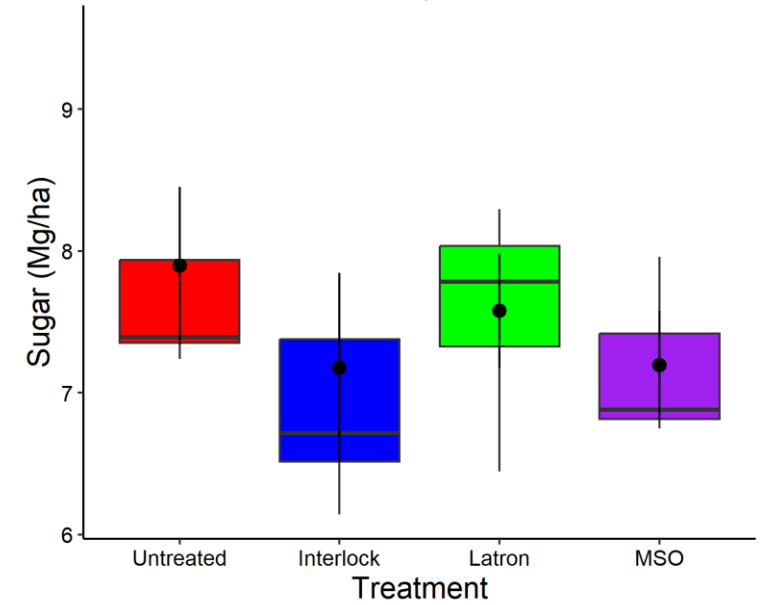
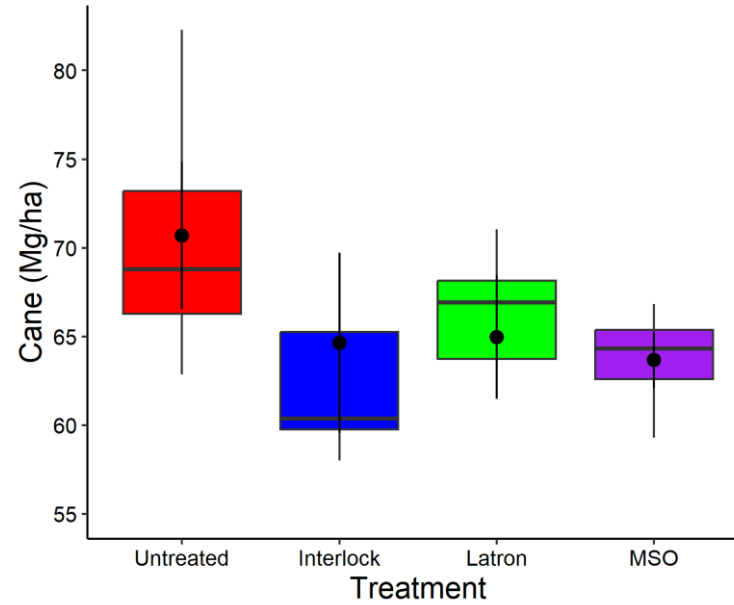
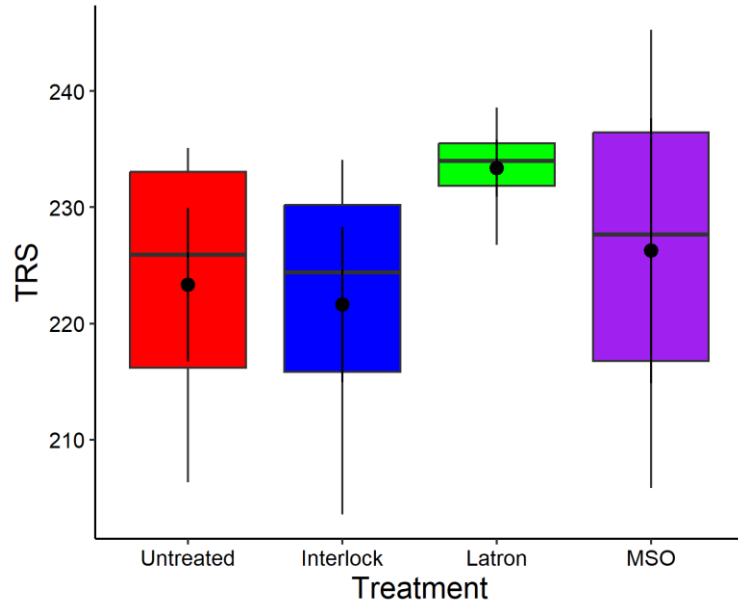
Treatment

- Untreated
- Interlock
- Latron
- MSO

No impacts on TRS, Cane, and Sugar

Treatment

- Untreated
- Interlock
- Latron
- MSO



Variable	F	P
Treatment	0.6159	0.6189

Variable	F	P
Treatment	1.0226	0.4274

Variable	F	P
Treatment	0.5435	0.6663

Evaluating Silica Soil Amendments

Do amendments interact with varieties to increase SCB resistance?

CarbonLock × Variety

- Treatments:
 - 0CL: Untreated Control
 - 3CL: 3 tons/acre CL
 - 3CLN: 3 tons/acre CL with 10 lbs N
- Varieties:
 - L 01-299
 - Ho 12-615
 - HoCP 96-540
 - HoCP 14-885
- **12** treatments

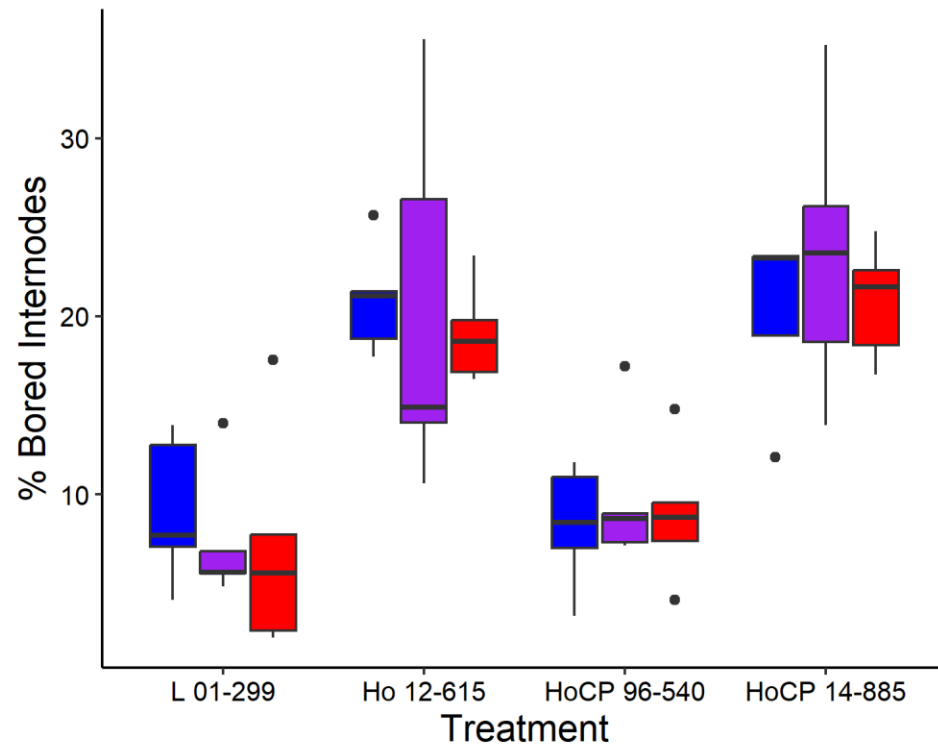


CarbonLock × Variety

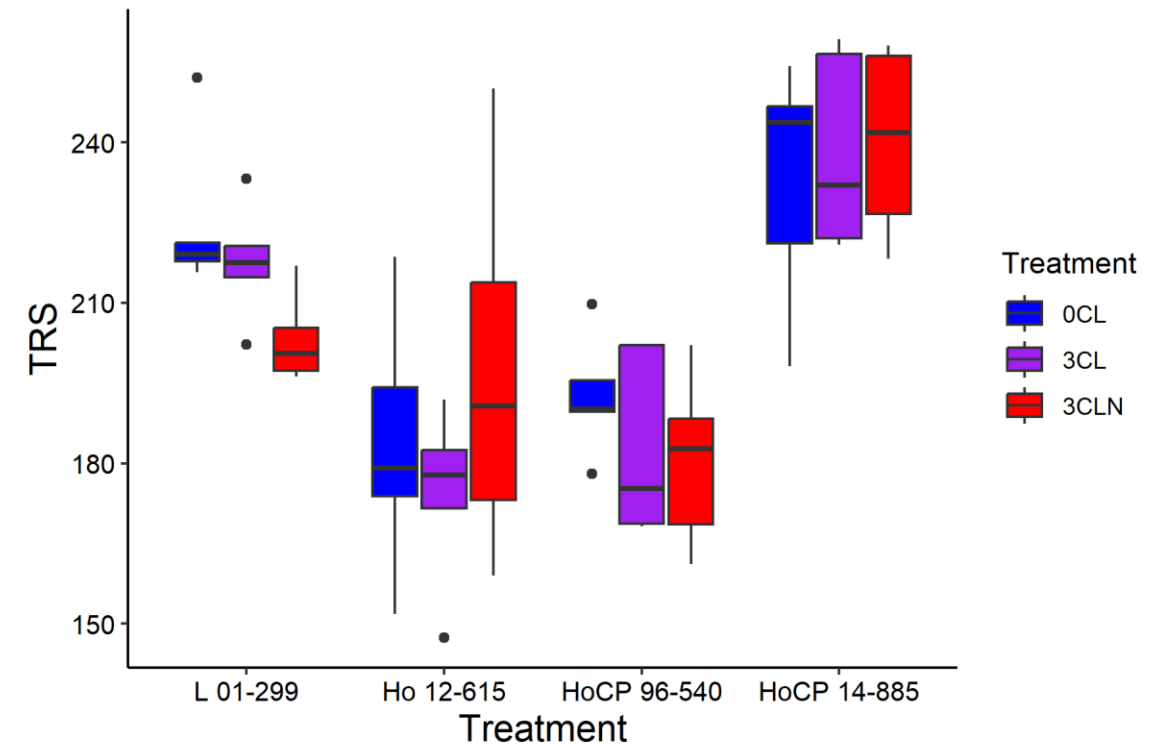
- Plant cane
- SCB-inoculated sorghum
- Completely randomized, 5 replicates
- Plots: 2 rows wide, 24 ft long
- Soil samples and % bored internodes October
- TRS, Cane, and Sugar at harvest in November



No CarbonLock effects on bored internodes or TRS

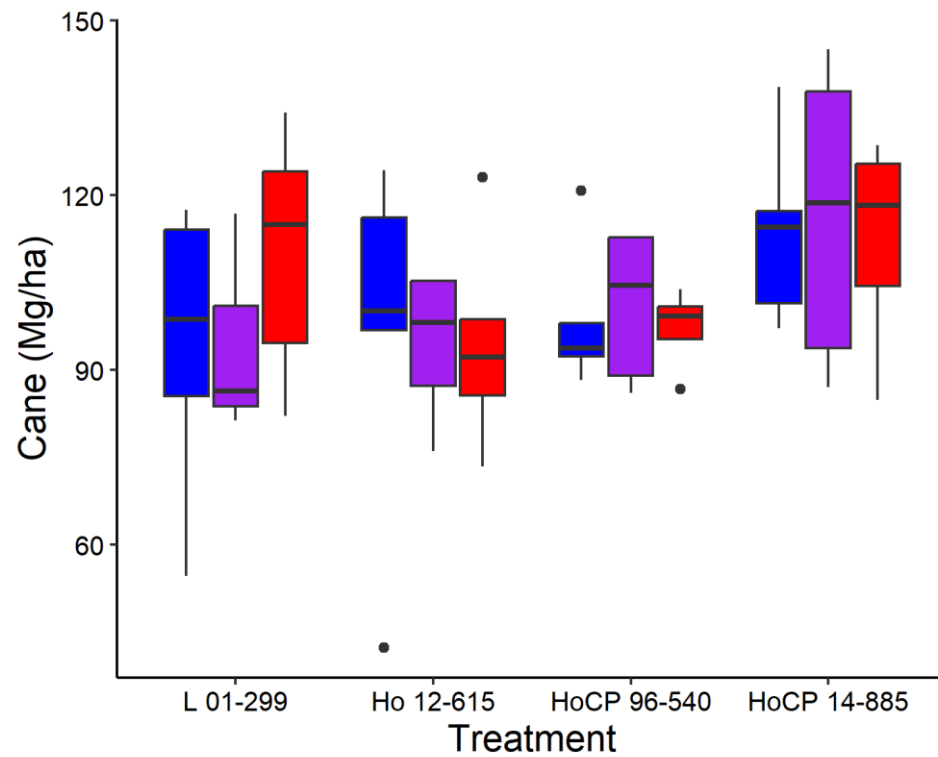


Variable	F	P
Variety	27.176	<0.001
Treatment	0.303	0.740
Var*Treat	0.243	0.960

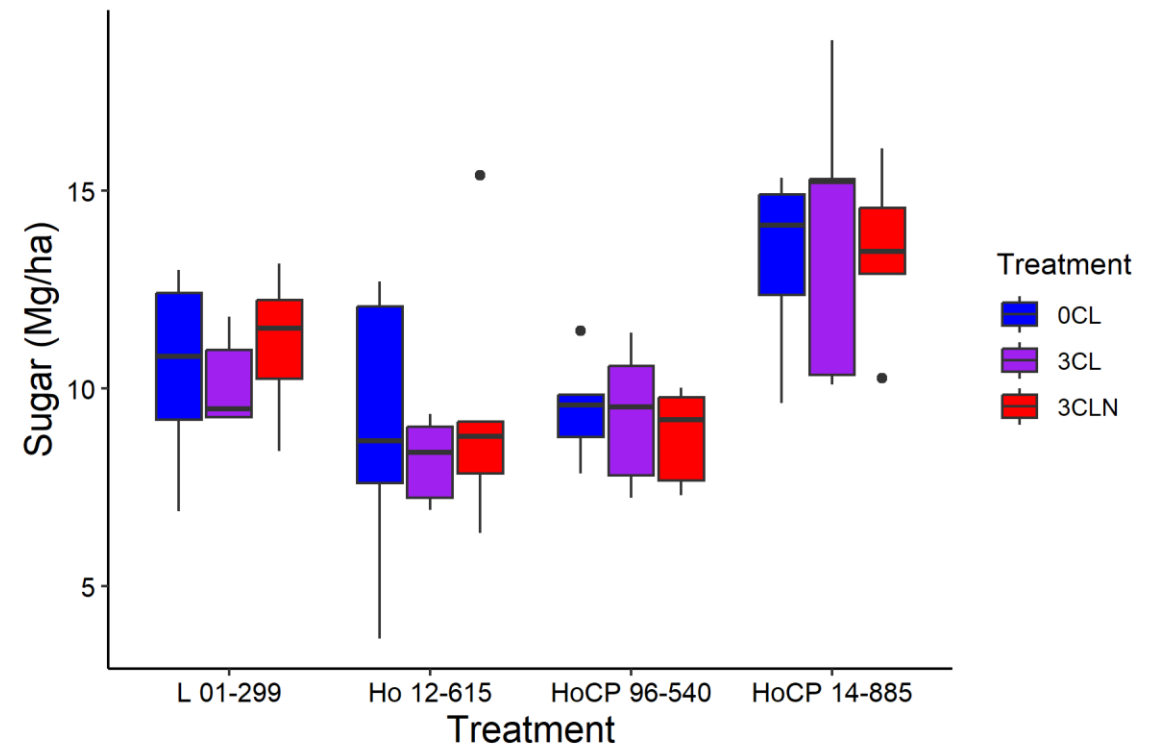


Variable	F	P
Variety	25.491	<0.001
Treatment	0.364	0.697
Var*Treat	1.277	0.286

No CarbonLock effects on Cane or Sugar



Variable	F	P
Variety	2.870	0.046
Treatment	0.119	0.888
Var*Treat	0.382	0.887



Variable	F	P
Variety	12.112	<0.001
Treatment	0.089	0.915
Var*Treat	0.247	0.958



Diaprepes Root Weevil (DRW)

Diaprepes Root Weevil (DRW)

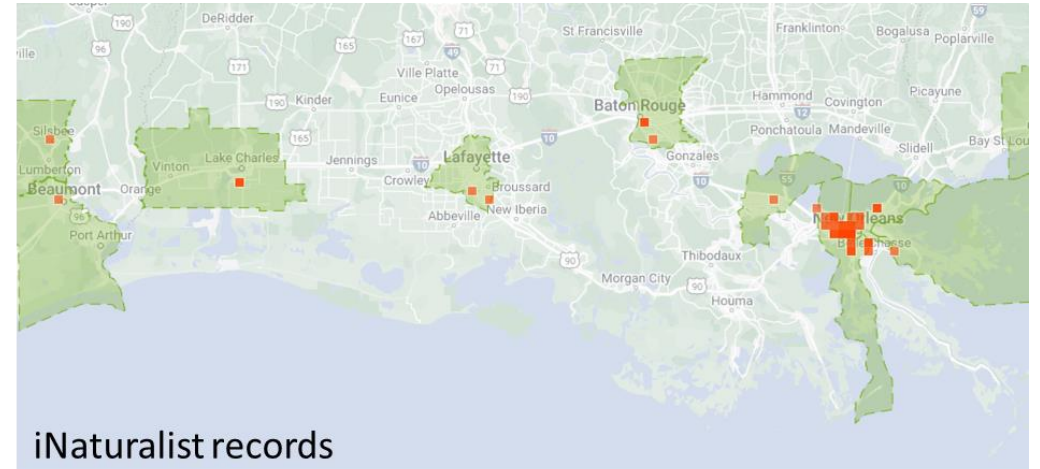
- *Diaprepes abbreviatus*
(Coleoptera: Curculionidae)
- Citrus root weevil, sugarcane root weevil, Caribbean root weevil
- Adults 0.95-1.9 cm long
- Color is variable between white/gray and orange/red



DRW: 2024 Monitoring Efforts

- In Houma:
 - Timing adult emergence
 - Monitoring sugarcane for damage
- Area-wide:
 - Late summer/fall scouting for adults
 - Mapping presence
 - Recording host plants

**Let me know if you find any, where,
and host plant!**



Acknowledgements



USDA ARS SRU

- Randy Richard
- Dawson Dufrene

LSU AgCenter

- Dr. Blake Wilson
- students



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**American
Sugar Cane
League**

Making Life Sweeter. Naturally

DRW: Distribution

- Found throughout the Caribbean and Florida
- In LA, was thought to be mostly in Orleans/Plaquemines Parishes
- Found at SRU station in Houma October 2023
- Potentially more wide spread
- Is a poor disperser → moving in potted plants & soil



DRW: Host plants

- Pests of citrus, ornamentals, pineapple, sugarcane
- >270 species of host plants
- Including many weeds:
 - Hemp sesbania
 - Sicklepod
 - Coffee senna
 - Lambsquarters
 - Spiny amaranth
 - Common purslane



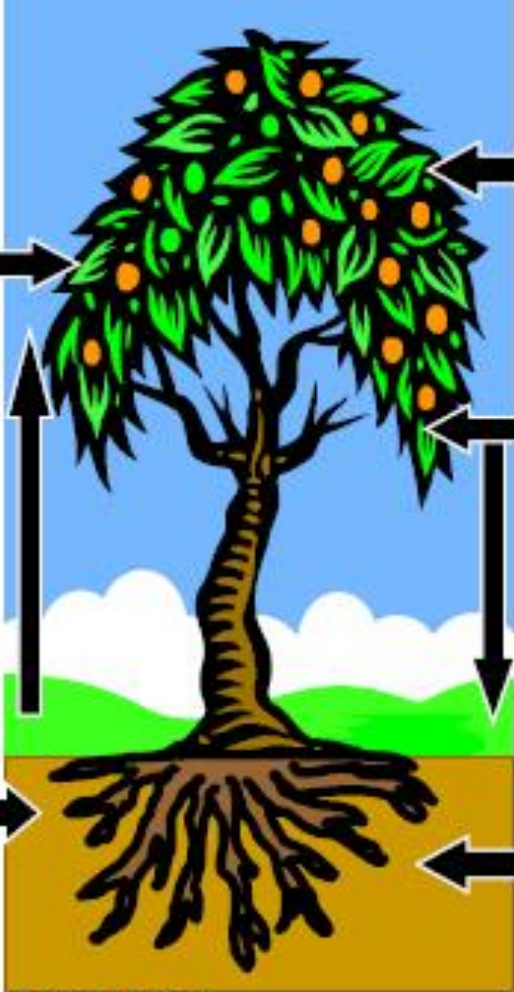
DRW: Life Cycle

“party tree” for leaf-feeding and mating

Adult emergence can have 2 peaks / year; # and timing depends on rain and temps



Adults



5000/female
Laid between leaves
Hatch 7-10 days



Neonates drop onto soil and dig for roots



Larvae eat fibrous roots and introduces pathogens for 65-388 days



Can take <1 to >2 years to develop depending on when eggs laid and weather conditions in the year

Diagram courtesy of Larry Duncan, UF/IFAS CREC

DRW: Damage

- Problems in Caribbean
- 2010 issues in Florida
- Eat fibrous roots
- Burrow into below/near-ground stalks
- Stalks appear:
 - Stunted
 - Dehydrated
 - Lodged



Fig. 4. Larva of *Diaprepes abbreviatus* L., feeding in root-stalk of sugar-cane. One-half natural size. (Drawn by F. Seín).



DRW: Management

- **Biological control:**
 - Fire ants can give up to 90% control
 - Entomopathogenic nematodes (sandy soils best)
- **Weed control:**
 - Prevent preferred plants used as “party trees”
 - Control in AND near fields (females disperse a little ways to oviposit)
- Insecticides
 - Target adults and neonates dropping to soil
 - VERY limited timing and few registered products for DRW

