VARIETAL RESISTANCE TO THE SUGARCANE BORER

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The sugarcane borer, *Diatraea saccharalis*, remains the most important economic pest of sugarcane in Louisiana. Varietal resistance is a critical part of integrated pest management (IPM) of sugarcane stem borers. Annual evaluations are conducted to assess sugarcane borer resistance among commercial and experimental sugarcane varieties. Small plot tests are planted each year, and borer injury data are collected in plant cane, first, and second-stubble.

The 2025 plant cane trial was planted 2 October 2024 and included experimental varieties from the 2020 and 2021 series in addition to commercial varieties with known levels of susceptibility. Varieties were planted to one row 23-ft (0.002 acre) plots in a randomized block design with 4 replications. Susceptible (HoCP 00-950) and resistant (HoCP 84-845) standards were included for comparison. Corn was planted every fourth row and inoculated with laboratory reared sugarcane borer larvae to create conditions of enhanced pest pressure. Twelve stalk samples were taken from each plot in November and the numbers of total internodes and bored internodes were recorded. Borer injury data were similarly collected from the first (2024 plant cane) and second stubble (2023 plant cane) variety tests. Data were analyzed for each trial separately with general linear mixed models (SAS Proc Glimmix) with variety as a fixed effect and replication as the random effect.

In the plant cane trial, differences were detected ($P < 0.05$) in percentage bored internodes among varieties. Injury was greatest in Ho 21-647 and least in HoCP 04-838 (Figure 1). Newly released variety, HoCP 18-803, continued to demonstrate a moderate level of resistance. Differences were similarly detected ($P < 0.05$) in the first stubble trial (Figure 2). Interestingly, borer resistant variety, L 01-299, was the most heavily injured in this trial. Differences among varieties were detected ($P < 0.05$) in the second stubble trial (Figure 3). Widely planted variety, HoCP 14-885, was among the more heavily injured in all three trials. Care should be taken to avoid planting susceptible varieties in areas where they cannot be protected with insecticides.

Figure 1. Sugarcane borer injury as influenced by sugarcane varieties in plant cane, Sugar Research Station, Iberville Parish, 2025

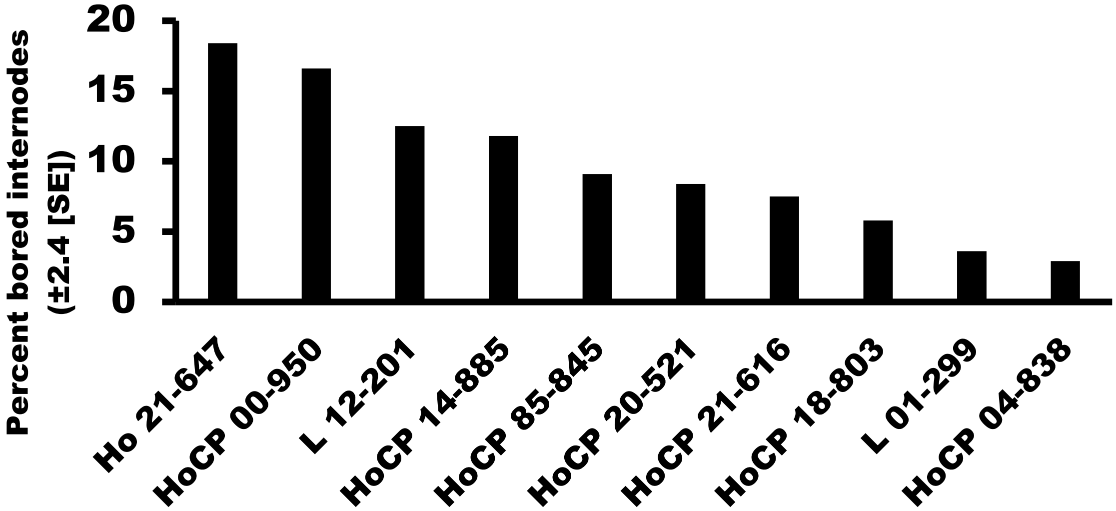


Figure 2. Sugarcane borer injury as influenced by sugarcane varieties in first stubble, Sugar Research Station, Iberville Parish, 2025

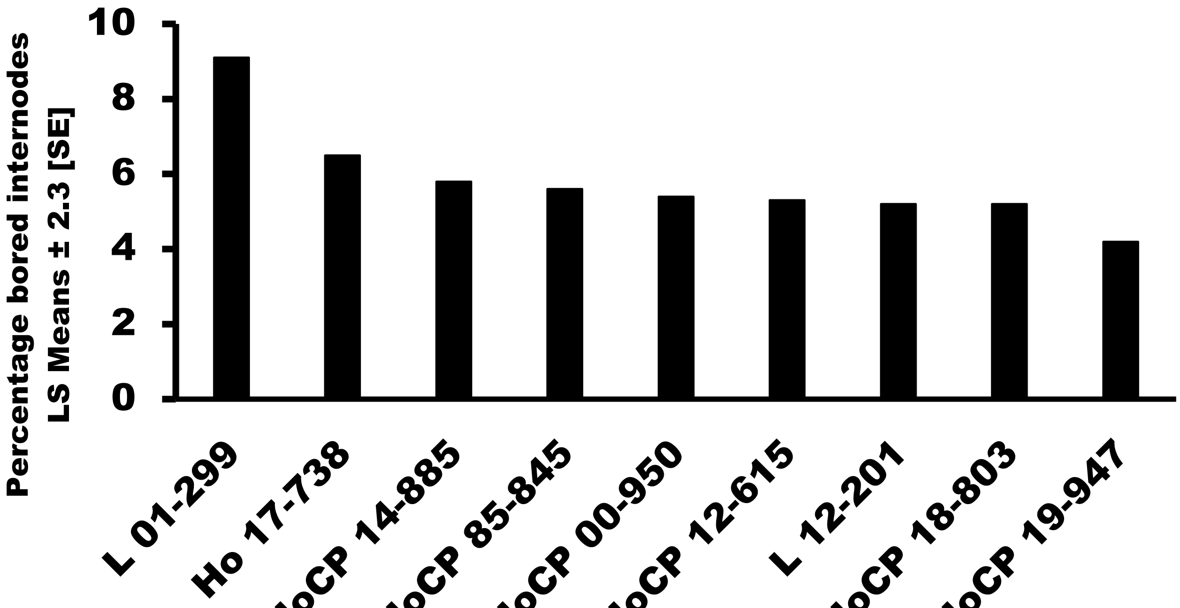
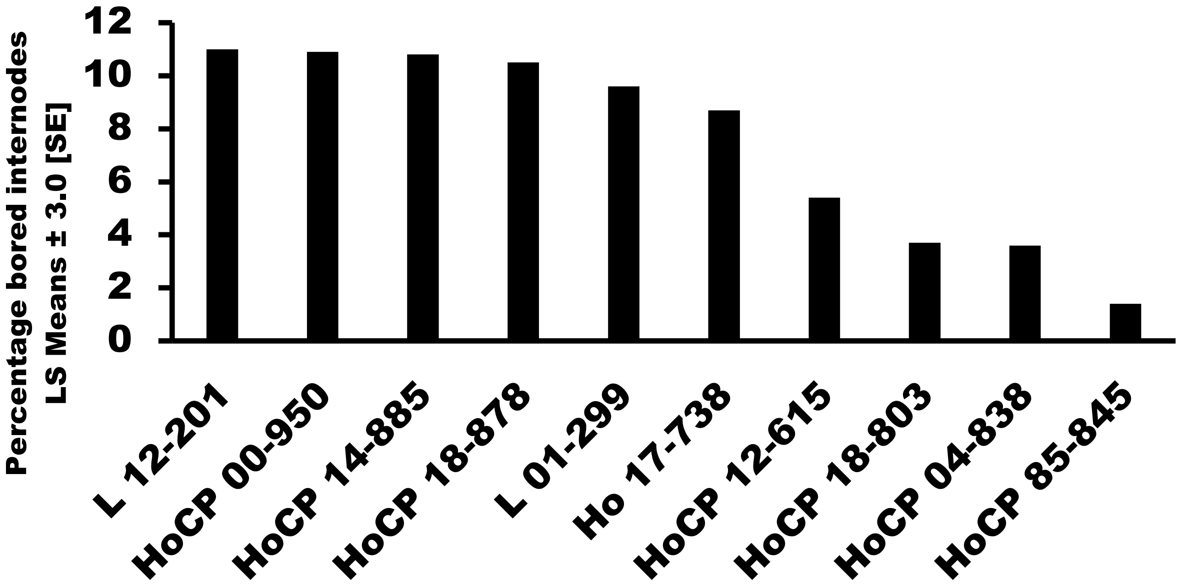


Figure 3. Sugarcane borer injury as influenced by sugarcane varieties in second stubble, Sugar Research Station, Iberville Parish, 2025



EVALUATION OF SOIL APPLIED INSECTICIDES IN PLANT CANE, ST. GABRIEL, LA, 2024–2025

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Wireworms (Coleoptera: Elateridae) and other soil-dwelling insects represent a threat to seed cane and subsequent crop establishment following planting. Soil applied insecticides are used on approximately 40% of Louisiana's plant cane acreage, though the benefits of this practice are not well documented. Due to the sporadic nature of wireworm infestations, evaluations of soil-applied insecticides are scarce. Here insecticides were evaluated in small plots inoculated with field collected wireworm larvae.

The trial was conducted in a randomized complete block design with four replications at the Sugar Research Station at St. Gabriel, LA. Prior to planting on 14 October 2024, small plots (one row 8-ft; 0.0011 acres), were inoculated with wireworms by placing 8 larvae/plot and covering them with approximately ½-in of soil. L 01-299 was then planted at a standardized seeding rate of 28 mature internodes (four 7-internode stalk pieces) per plot. Treatments were applied over the top of seed cane with a CO_2-pressurized backpack sprayer calibrated to deliver 15 GPA. Treatments included an infested control, uninfested control, three rates of plinazolin , an infested and uninfested plots of Platinum (thiamethoxam, 5.7 oz/acre), and Thimet (phorate, 3 lbs/acre).

Stand counts were taken on 11 Dec 2024, 14 Jan 2025, and 1 April 2025. Harvestable stalk counts were taken on 28 Aug 2025. Data from winter and spring counts were analyzed together with generalized linear mixed models (SAS Proc Glimmix) with treatment, sampling date, and the interaction as fixed effects and replication as a random effect. Harvestable stalk counts were analyzed separately with treatment as a fixed effect and replication as a random effect.

Stand counts were affected by treatment (F = 4.79, df = 7, 63, P < 0.001) and sampling date (F = 11.28, df = 2, 9, P = 0.003), but not the interaction. Across sampling dates tillers per hectare were lowest in infested and un-infested controls and greatest in Platinum and Thimet-treated plots (Figure 1). Stalk counts heading into harvest differed among treatments (F = 4.66, df = 7, 21, P = 0.003). Stalks per ha were greatest in Platinum and Plinazolin-treated plots (Figure 2).

The infested and uninfested controls had lower plant populations than all treated plots. This suggests the uninfested controls were damaged by larvae from neighboring plots. In the spring, heavy infestation of sugarcane beetle, *Euetheola humilis*, caused extensive deadhearts and reduced stand. Control of sugarcane beetle in addition to wireworms is thought to have led to the increased in harvestable stalk counts in insecticide treated plots. The 21–56% increase in harvestable stalk populations is the greatest recorded from soil applied insecticides at planting.

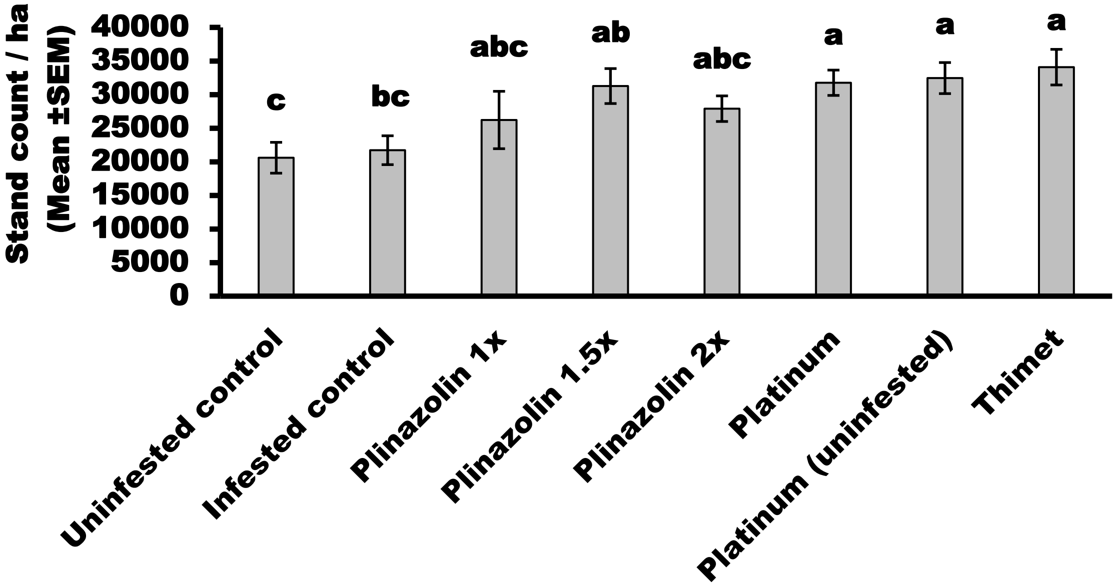

Figure 1. Sugarcane plant populations as affected by insecticide treatments across three winter and spring sampling dates, St. Gabriel, LA, 2024–2025.

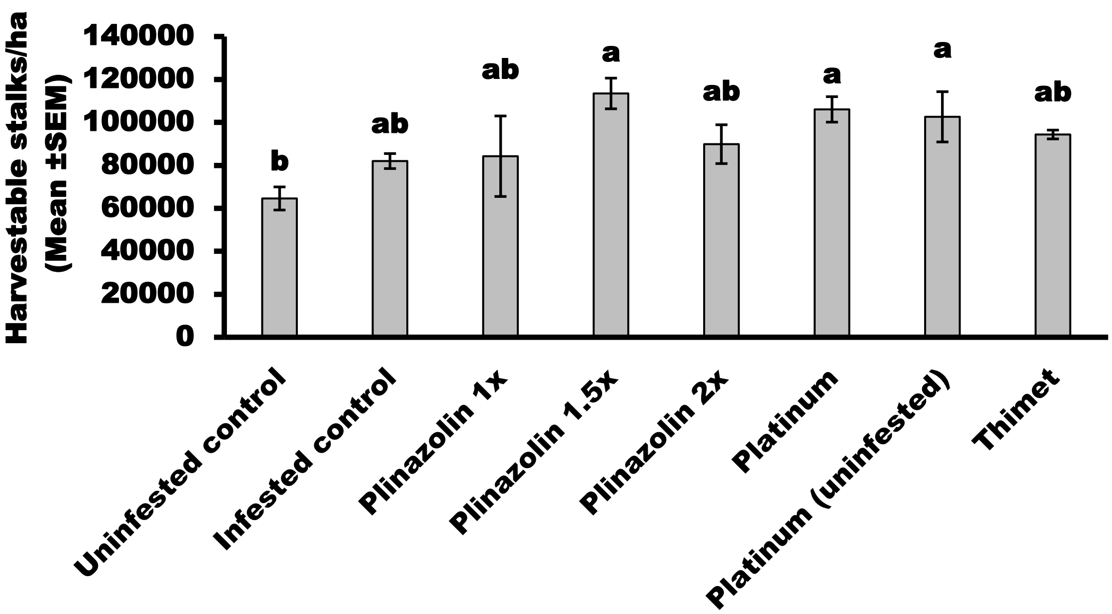

Figure 2. Harvestable stalks per hectare as affected by insecticide treatments at planting, 28 Aug 2025, St. Gabriel, LA.

INFLUENCE OF SOIL APPLIED INSECTICIDES ON PLANTING ON DEADHEART DENSITY AND PLANT POPULATIONS

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Soil insects including wireworms (Coleoptera: Elateridae) can feed on seed cane following planting, though the influence of these infestations on spring plant populations is poorly understood. Insecticides are frequently applied in-furrow during planting to control soil insects. The influence of soil applied insecticides was evaluated in two small plot trials on commercial sugarcane farms in Convent and Vacherie, LA (St. James Parish) during 2024-2025 cropping season.

Plots were whole stalk planted during September and treatments were applied with a CO_2-pressurized backpack sprayer or distributed as granules in-furrow prior to covering seed cane. Treatments included Nurizma (broflanilide), Platinum (thiamethoxam), Thimet (phorate), Mocap EC (ethoprop, 6.9 fl oz/100 row-ft), Index (chlorethoxyfos + bifenthrin; 0.72 fl oz/1000 row-ft), Advise (imidacloprid; 12 fl oz/acre), and Taurus SC (fipronil; 20 oz/acre). The numbers of deadhearts and tillers per plot were recorded in from both trials in April. Harvestable stalk counts were taken in August. Data were analyzed with generalized linear mixed models (SAS Proc Glimmix).

In the Vacherie trial, differences among treatments in spring deadheart densities ($F_{10, 30}$ = 2.89, P = 0.012)(Figure 1), but not in spring plant populations or harvestable stalks. Deadheart density was greatest in the untreated and least in Thimet treated plots. In the Convent trial, differences were detected in harvestable stalk counts ($F_{8, 24}$ = 3.17, P = 0.014)(Figure 2), but not in spring densities of tillers or deadhearts. Harvestable stalk counts were the lowest in untreated controls and the highest in Nurizma treated plots. Results demonstrate soil applied insecticides can reduce deadheart density and protect stalk populations. However, more research is needed to guide the use of at-planting insecticides.

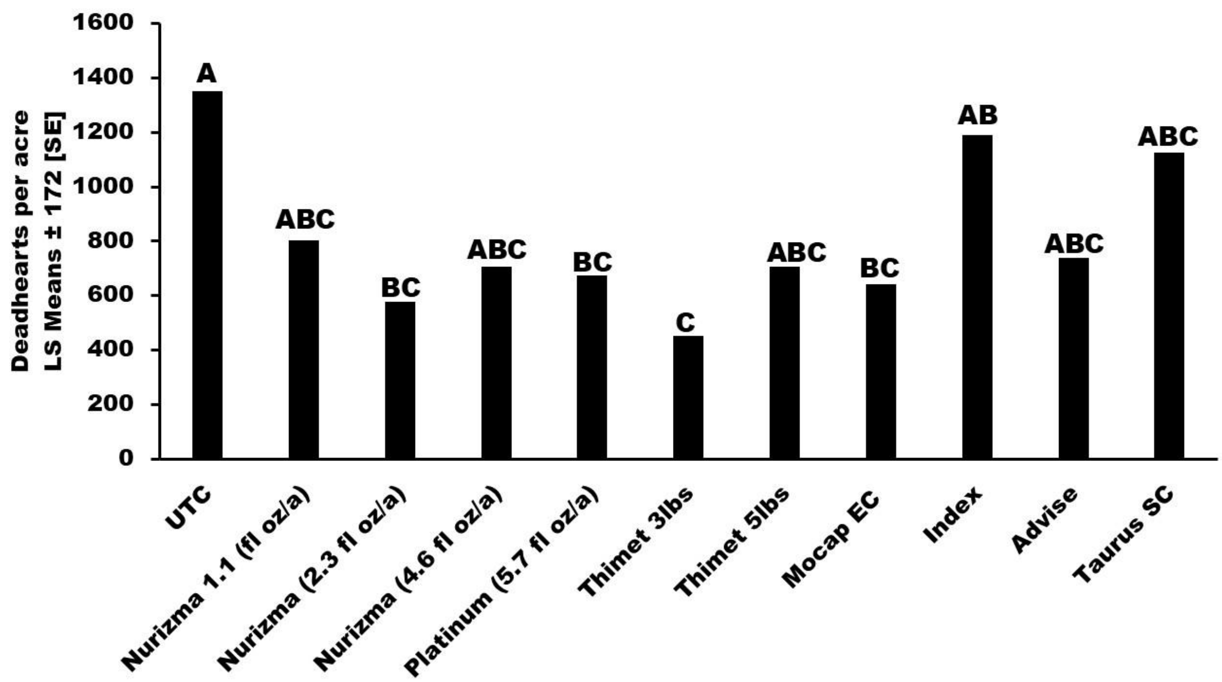

Figure 1. The influence of soil applied insecticides at planting on April deadheart density, Vacherie, LA, 2025.

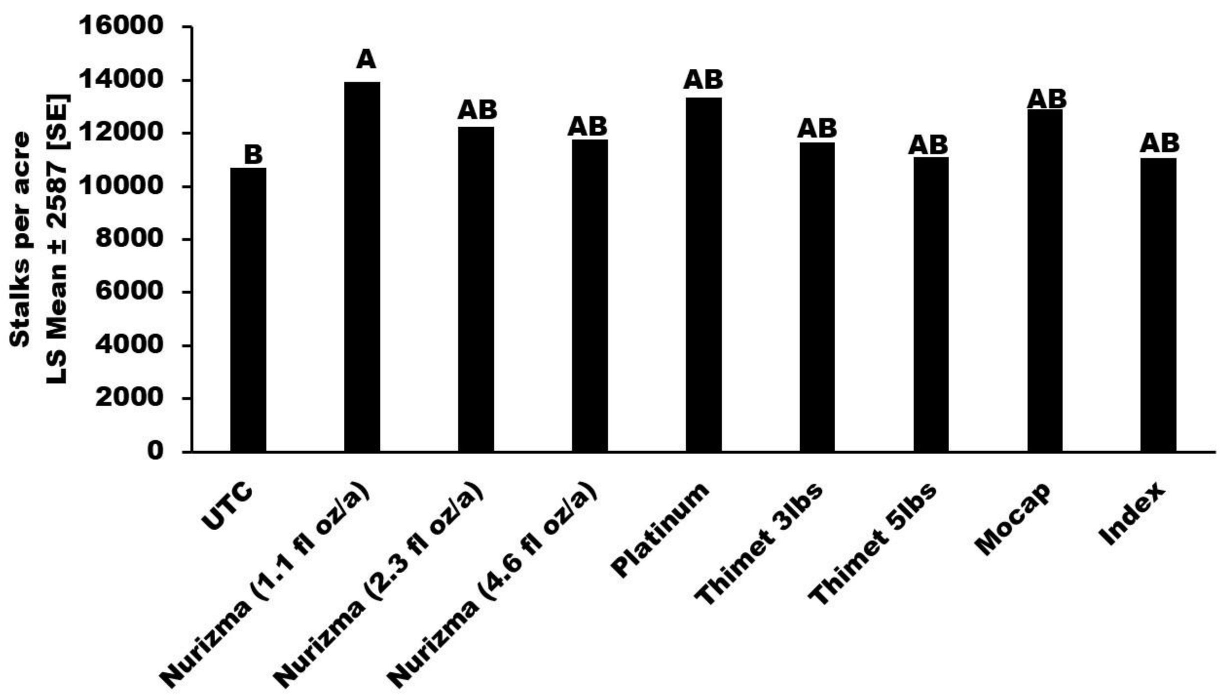

Figure 2. The influence of soil applied insecticides at planting on harvestable stalks per acre, Convent, LA, 2025.

INFLUENCE OF SUGARCANE VARIETY ON INFESTATIONS OF THE SUGARCANE BEETLE IN SPRING PLANT CANE, 2025

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The sugarcane beetle, *Euetheola humilis* (Coleoptera: Scarabaeidae), is a sporadic pest of sugarcane in Louisiana. Infestations are more common in mid- to late-Spring and impact young cane before the formation of internodes. Both adult and larval sugarcane beetles feed on sugarcane, but adult injury is most prominent. Adult feeding near the base of the tiller results in tiller death called a "deadheart".

Heavy infestations of sugarcane beetle were observed across the industry in May of 2025, including several fields at the Sugarcane Research Station in St. Gabriel, LA. Deadhearts were counted in plots of the second stubble sugarcane borer variety test on 1 May 2025. Deadheart densities were compared among varieties with generalized linear mixed model (SAS Proc Glimmix).

The number of deadhearts per acre averaged 8,064 across varieties, >1 deadheart/row-foot. Deadhearts per acre differed among varieties ($F_{9, 27} = 7.12$, $P < 0.001$) (Figure 1). Deadheart density was greatest in HoCP 04-838 and least in HoCP 00-950. This is the first trial to document differences in sugarcane beetle infestations among Louisiana sugarcane varieties. Many infested fields recovered to some degree and established a stand. Fields which were heavily infested during spring likely suffered some degree of yield loss.

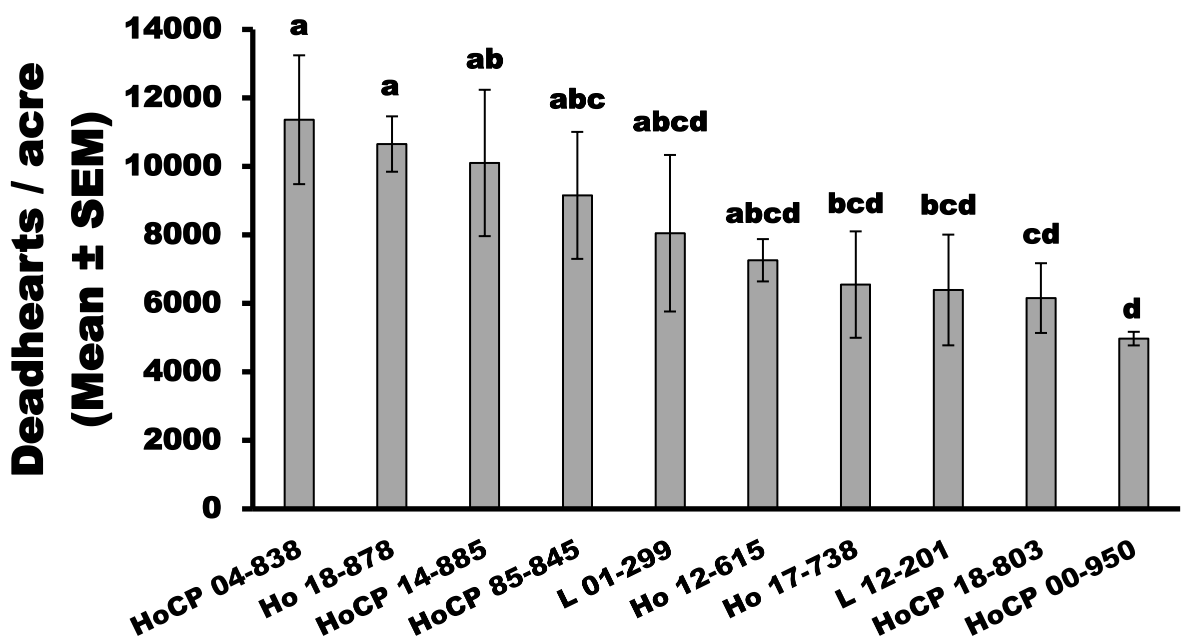

Figure 1. Influence of variety on sugarcane beetle deadheart densities, Iberville Parish, LA, 1 May 2025.

EFFICACY OF INSECTICIDES FOR CONTROL OF WEST INDIAN CANE FLY IN FALL PLANT CANE

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The West Indian canefly, *Saccharosydne saccharivora* (Hemiptera: Delphacidae), is an increasingly common pest of Louisiana sugarcane. The canefly adults and nymphs are sap-feeders which suck fluids from sugarcane leaves. Secretion of sugary "honeydew" results in the development of block sooty mold on leaf surfaces. Heavy canefly infestations are known to reduce yields in the summer. Following planting, infestations migrate from maturing sugarcane into fields of newly emerged plant cane. A small plot insecticide evaluation was conducted in a commercial sugarcane field near Kaplan, LA (Vermilion Parish).

Pretreatment counts were taken from the second fully formed leaf down from the whorl on 19 September 2025, and infestations averaged 67.9 nymphs/leaf. Insecticides were applied that same day using a CO_2-pressurized backpack sprayer calibrated to deliver 15-GPA. Treatments included Warrior (lambda-cyhalothrin), Sivanto (flupyradifurone), and Sefina (afidopyropen). The number of nymphs per leaf was recorded from 10 plants per plot on 4 days after treatment (DAT) and 10 DAT. Data were analyzed with generalized linear mixed models with treatment, DAT, and the interaction as fixed effects and replication and treatment × replication as random effects. The slice function was used to separate means among treatments within sampling date according to Tukey's HSD.

The number of nymphs per leaf was influenced by treatment ($F_{5, 15} = 54.42$, $P < 0.001$) and sampling date ($F_{1, 450} = 12.06$, $P < 0.001$), but not the interaction. Across sampling dates, infestations were lowest in the Sivanto + Warrior (0.6 nymphs/leaf ± 5.1 SE) and greatest in the non-treated control (64.5 nymphs/leaf). Across treatments, infestations were greater 4 DAT (31.8 ± 2.1 SE nymphs per leaf) than at 10 DAT (21.9). Sivanto, Warrior, and both in combination provided the greatest control at both sampling dates (Table 1).

Table 1. Efficacy of foliar insecticides against West Indian canefly in fall plant cane, Vermilion Parish, 2025.

		Nymphs per leaf	
Treatment	Rate (fl oz/acre)	4 DAT	10 DAT
Non-treated	NA	74.4 a	54.6 a
Sefina	7.0	57.5 ab	48.6 a
Sefina	14.0	38.6 b	19.5 b
Sivanto	4.0	11.2 c	6.0 b
Warrior	1.9	7.7 c	2.7 b
Sivanto + Warrior	4.0 + 1.9	1.2 c	0.1 b

*Letter groups indicate differences among treatments within a sampling date.

POSSIBLE YELLOW CANOPY SYNDROME OF SUGARCANE IN LOUISIANA

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Abstract

In late summer 2025, severe sugarcane yellowing was reported in southwest Louisiana by agricultural crop consultants, prompting a multidisciplinary investigation into its cause. Soil and tissue analyses indicated no nutrient deficiencies, while juice analysis revealed significantly lower Brix, purity, and sucrose content in affected stalks compared to healthy controls. High-throughput sequencing and RT-qPCR identified no novel plant virus associated with symptom development, although mixed infections of *sugarcane yellow leaf virus* (ScYLV) and the fungal species *Nigrospora oryzae* were detected in few fields. Disease diagnostics yielded no conclusive match to any known sugarcane virus, fungal, bacteria, or phytoplasma pathogen. However, a high infestation of a new invasive insect species, the pasture mealybug (*Heliococcus summervillei*), was detected in symptomatic (yellowing) fields. Ongoing research aims to further characterize this emerging threat and determine the effect of pasture mealybug infestations and associated yellowing on sugar yields of sugarcane grown in Louisiana.

Description

In late summer 2025, agricultural consultants in southwest Louisiana reported severe yellowing of sugarcane in fields in Vermilion, Iberia, St. Landry, and West Baton Rouge parishes (Figs. 1 and 2). Most affected fields had not received a ripener application, which may contribute to yellowing during this time of year. Symptoms typically begin in the middle portion of the canopy. Yellowing first appears along the outer margins of the leaf blade and progresses inward toward the midrib (Fig. 3). This pattern then develops on the opposite side of the same leaf, again moving from the outer leaf blade toward the midrib. As symptoms advance, the entire leaf turns a bright yellow with a slight orange hue, followed by reddening of the midrib. Notably, symptom expressions often appear to follow an alternating-leaf pattern.

Effect on Yield

Leaf, stalk, and soil samples were collected from each field. Analyses indicated that macro- and micro-nutrient leaf values to be in optimal range. Soil test values confirmed that nutrient imbalance or lack was not a contributing factor to observed yellowing. Sugarcane stalk samples were processed and analyzed at the juice laboratory at the LSU AgCenter, Sugar Research Station in St. Gabriel. Healthy stalk samples from nearby fields or the Sugar Research Station were included in the analysis. Sugarcane derived from yellowing fields had juice Brix (%) and juice purity (%) values lower than fields in unaffected healthy areas (Tables 1, 2, 3, 4, 5, and 6). Accordingly, sucrose content (lbs. sucrose per ton of sugarcane) was lower in areas where sugarcane yellowing occurred. Juice pH and polysaccharides are a measure of juice deterioration, and the normal range of juice pH derived from healthy plants in 5.3 to 5.4. There was no indication of abnormal juice pH or polysaccharides in the samples collected from affected and unaffected (yellowing) fields (Table 3).

A severely affected (yellowed) field in Kaplan was harvested in late October. When compared to the year-to-date farm average, sucrose content decreased by 41.7%, and cane yield decreased by 13.8%.

Disease Testing

Metagenomic high-throughput sequencing (HTS) was employed to detect and identify disease-causing organisms targeting existing or novel plant viruses present in plant tissues. HTS confirmed mixed infections with ScYLV and multiple fungal species, with *Nigrospora oryzae* being the dominant one. *Nigrospora* is commonly found in Louisiana and is saprophytic in nature or a weaker pathogen in rice and corn. The HTS result was validated using RT-qPCR, confirming sugarcane yellow leaf virus (ScYLV) in all samples collected in one sample in Kaplan (Vermilion Parish) sample. All other samples evaluated were negative for ScYLV. The yellowing of sugarcane was not associated with any specific sugarcane disease after a comprehensive comparison to sugarcane diseases that occur worldwide.

Insect Association

Insects collected in some affected sugarcane fields were identified as a new invasive insect, pasture mealybug (*Heliococcus summervillei*) (Fig. 4). The pasture mealybug is a primary pest of pasture and turf grasses that causes 'pasture dieback'. The new pest was recently reported in the continental United States in Texas pastures (Biles et al. 2025). The recent outbreak in sugarcane poses a significant threat to the Louisiana sugarcane industry and thus necessitates further research into its introduction pathways and effective management strategies.

Conclusion

Research in Australia indicates that our scenario in Louisiana may be similar to their reports of Yellow Canopy Syndrome of sugarcane (Xu, H. et al., 2025). The complex disorder causes leaves to turn yellow in the middle region of the crop canopy. Yellow Canopy Syndrome in Australia affects commercial sugarcane production and was first reported in far North Queensland and has since spread to southern Queensland. Despite a decade of research, the underlying causal factor(s) of Yellow Canopy Syndrome in Australia still needs to be fully determined.

In Louisiana, sugarcane fields that prematurely turned yellow during the fall of 2025 had close association with the pasture mealybug. The Louisiana research group and crop consultants will continue work in 2026 to better understand the role of the pasture mealybug in Louisiana sugarcane production and the effect of infestations and yellowing on Louisiana sugar yield.

References

Biles, S., D. Sekula, J. Santiago-González, C. Xiong, and D. Kerns, 2025. The pasture mealybug: A new invasive pest of pastures and hayfields in Texas. Texas A&M AgriLife Extension ENTO-PU-248: 1–9.

Xu, H., J.A. Humpal, B.A. Wilson, G. J. Ash, and K.S. Powell. Yellow canopy syndrome of sugarcane: A review of current knowledge and future research directions. Annal of Applied Biology. DOI: 10.1111/aab.70040

Fig. 1. Yellowing sugarcane from a field of L 01-299 just south of Kaplan, Louisiana. Photo by Blake Wilson.

Fig. 2. Aerial photograph of a sugarcane field showing yellowing in northern St. Landry parish. Photo by Matthew Stagg.

Fig. 3. Yellowing of the sugarcane leaf progressing from the edge of the leaf blade toward the midrib. Photo by Blake Wilson.


Fig 4. Pasture mealybug (*Heliococcus summervillei*) on the underside of a sugarcane leaf of L 01-299 in a field just south of Kaplan, Louisiana. Photo by Blake Wilson.

Table 1. Baseline data on healthy sugarcane. Sugarcane juice quality analyses from healthy, unaffected fields of sugarcane sampled at the Sugar Research Station, St. Gabriel, LA. The sampling date was September 10, 2025, and the samples were analyzed at the juice laboratory at the Sugar Research Station, St. Gabriel, LA (core-press method). Samples were stripped of leaves.

Variety	Brix (%)	Purity (%)	TRS (lbs/Ton)	Fiber (%)
L 01-299	15.6	76.8	169	12.5
HoCP 09-804	17.4	83.2	215	12.3
HoCP 14-885	16.3	77.6	191	9.4
L 15-306	17.5	80.8	216	10.0
HoL 15-508	17.4	81.7	218	10.1
HoCP 18-803	12.7	59.8	93	10.2

Table 2. Sugarcane juice quality analyses from affected fields and one unaffected field (in Kaplan) of sugarcane showing yellowing symptomology. The sampling date was September 12, 2025, and samples were analyzed at the juice laboratory at the Sugar Research Station, St. Gabriel, LA (core-press method). Samples were stripped of leaves.

Variety/Treatment[1/]	Brix (%)	Purity (%)	TRS (lbs/Ton)	Fiber (%)
Yellow L 01-299 Kaplan No Ripener	9.00	45.8	37	9.1
Green (unaffected) L 01-299 Kaplan No ripener	17.70	75.8	194	10.9
Yellow Ho 12-615 Jefferson Island Ripener applied 9-8-25	15.40	73.7	160	11.3
Yellow HoCP 09-804 Jefferson Island No ripener	13.00	70.7	130	9.6
Yellow L 01-299 Jefferson Island No ripener	12.80	70.1	124	10.8
Yellow HoCP 14-885 Jefferson Island No ripener	15.10	78.4	178	10.0

[1/] Table 1 serves as a comparable reference for sugarcane varieties that had not pasture mealybug infestations and were healthy green in color.

Table 3. Sugarcane was sampled on September 16, 2025, at Kaplan, Jefferson Island, and St. Gabriel, LA. Samples were analyzed at the juice laboratory at the Sugar Research Station, St. Gabriel, LA (core-press method). Samples were stripped of leaves. Juice pH and polysaccharide analyses were done by Jeanie Stein and Dr. Harold Birkett at the Audubon Sugar Institute, St. Gabriel, LA.

Variety/Treatment	Juice Purity (%)	Juice pH	Polysaccharides (ppm/Brix)
Yellow L 01-299 Kaplan No ripener	61.4	5.33	2746
Green (unaffected) L 01-299, Kaplan No ripener	72.3	5.23	2604
Yellow HoCP 09-804 Jefferson Island No ripener	72.8	5.30	2871
Yellow L 01-299 Jefferson Island No ripener	64.4	5.25	2402
Yellow HoCP 14-885 Jefferson Island No ripener	76.1	5.41	2026
Green L 01-299 St. Gabriel No ripener	74.4	5.31	2046
Green HoCP 09- 804 St. Gabriel No ripener	80.7	5.30	2520
Green HoCP 14-885 St. Gabriel No ripener	76.7	5.25	1547

Table 4. Sugarcane juice quality analyses from affected fields (Jefferson Island) and one unaffected field (Sugar Research Station, St. Gabriel) of sugarcane showing symptomology of yellowing. Sampling date was October 30, 2025. Samples were analyzed at the juice laboratory at the Sugar Research Station, St. Gabriel, LA (core-press method). Samples were stripped of leaves.

Variety/Treatment	Brix (%)	Purity (%)	TRS (lbs/Ton)	Fiber (%)
HoCP 09-804 Yellow Jefferson Island	13.4	79.0	155	11.5
L 01-299 Yellow Jefferson Island	14.7	76.2	163	10.8
HoCP 09-804 Green Jefferson Island	20.2	90.7	280	13.0
HoCP 09-804 Green St. Gabriel	19.7	90.0	266	13.7

Table 5. First sampling of sugarcane on October 29, 2025, with normal growth (green) and yellowing in St. Landry parish. The first sample was taken at the Sugar Research Station in St. Gabriel, LA where sugarcane growth was normal. Samples were analyzed at the juice laboratory at the Sugar Research Station, St. Gabriel, LA (core-press method). Samples were stripped of leaves.

Variety	Brix (%)	Purity (%)	TRS (lbs./Ton)
St Gabriel, L 01-299 Green	19.7	87.6	259
St Landry, L 01-299 Green	16.9	81.3	205
St Landry, L 01-299 Yellow	11.7	63.2	96

Table 6. Second sampling of sugarcane on November 4, 2025, with normal growth and yellowing in St. Landry parish. The first sample was taken at the Sugar Research Station in St. Gabriel, LA where sugarcane growth was normal. One sample was taken from West Baton Rouge parish with yellowing symptoms (**ripener** had been applied to this field), and pasture mealybug was confirmed in this field). Samples were analyzed at the juice laboratory at the Sugar Research Station, St. Gabriel, LA (core-press method). Samples were stripped of leaves.

Variety	Brix (%)	Purity (%)	TRS (lbs./Ton)	Fiber (%)
St Gabriel, L 01-299 Green	19.8	89.5	269	13.1
St Landry, L 01-299 Green	16.7	85.2	218	11.3
St Landry, L 01-299 Yellow	15.6	80.8	189	11.0
West Baton Rouge, L 01-299 Yellow	17.3	86.8	234	10.9