Billet Planting Research

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LSU AgCenter
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AMERICAN sugar cane LEAGUE
Making Life Sweeter Naturally

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Billet planting research

- Due to the increase in labor costs and adoption of fully mechanized planting – billet planting adoption is increasing

- With increased adoption of billet planting, the concern for stalk rots and stand failures also increases

Billet Planting Research

- Stalk rots can be caused by several fungal species, including *Colletotrichum falcatum* and *Thielaviopsis ethacetica*.
- *C. falcatum* and *T. ethacetica* cause red rot and pineapple rot, respectively
- Regardless of the causal agent or disease, the main impacts to yield include stand failures and reductions in sugar per acre

Billet Planting Research

- Environmental conditions that hamper sugarcane germination will increase disease severity
- 2023 drought – increased the impact of stalk rots
- Severe stand failures, fields needed to be replanted!
- Prioritize planting when soil moisture conditions are ideal/good for sugarcane development
- Fungicides and plant response activators may mitigate disease severity.


Stalk Rot Research Update

2023 season – Stalk Rot Research

- Planted on - 10-06-2022, harvested on 08-09-2023 at the Sugar Research Station in St. Gabriel, LA – 4 reps, RCBD
- Severe drought registered that year – exacerbating stalk rot severity
- Fungicide treatments mitigated the effect of stalk rots on yield compared to the billet non treated control

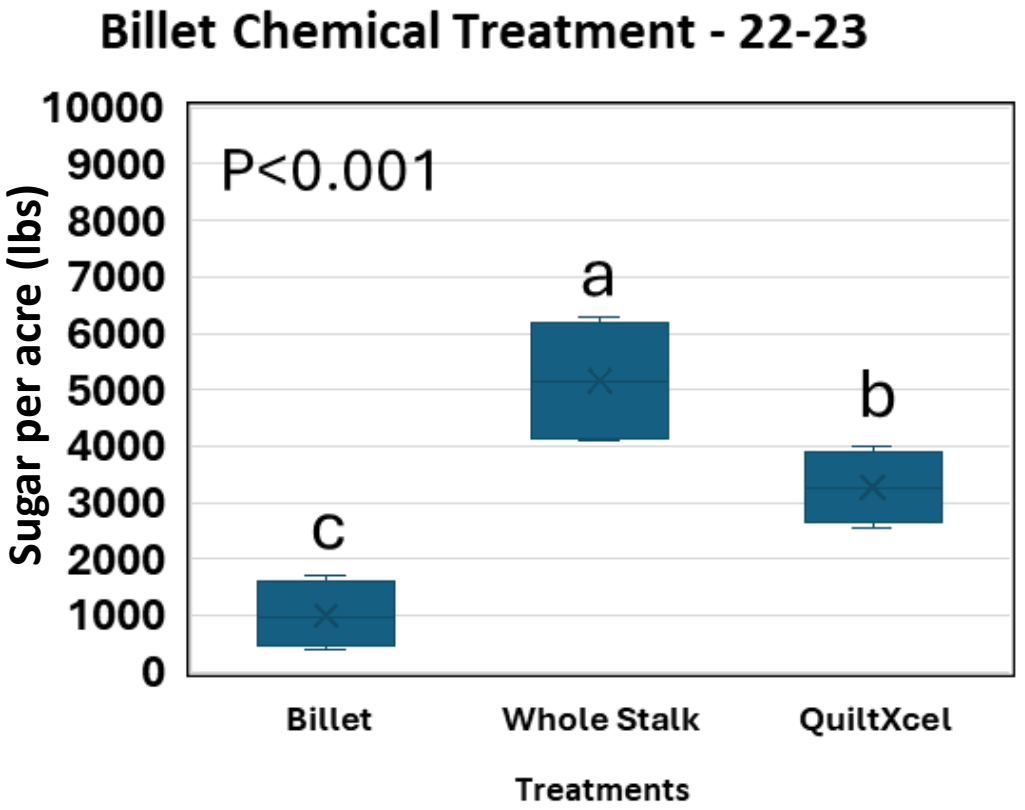
Effect of Stalk Desiccation on Sugarcane Red Rot

Zhi Yin and **J. W. Hoy,** Department of Plant Pathology and Crop Physiology, Station, Louisiana State University Agricultural Center, Baton Rouge 70803

ABSTRACT

Yin, Z., and Hoy, J. W. 1997. Effect of stalk desiccation on sugarcane red rot. Plant Dis. 81:1247-1250.

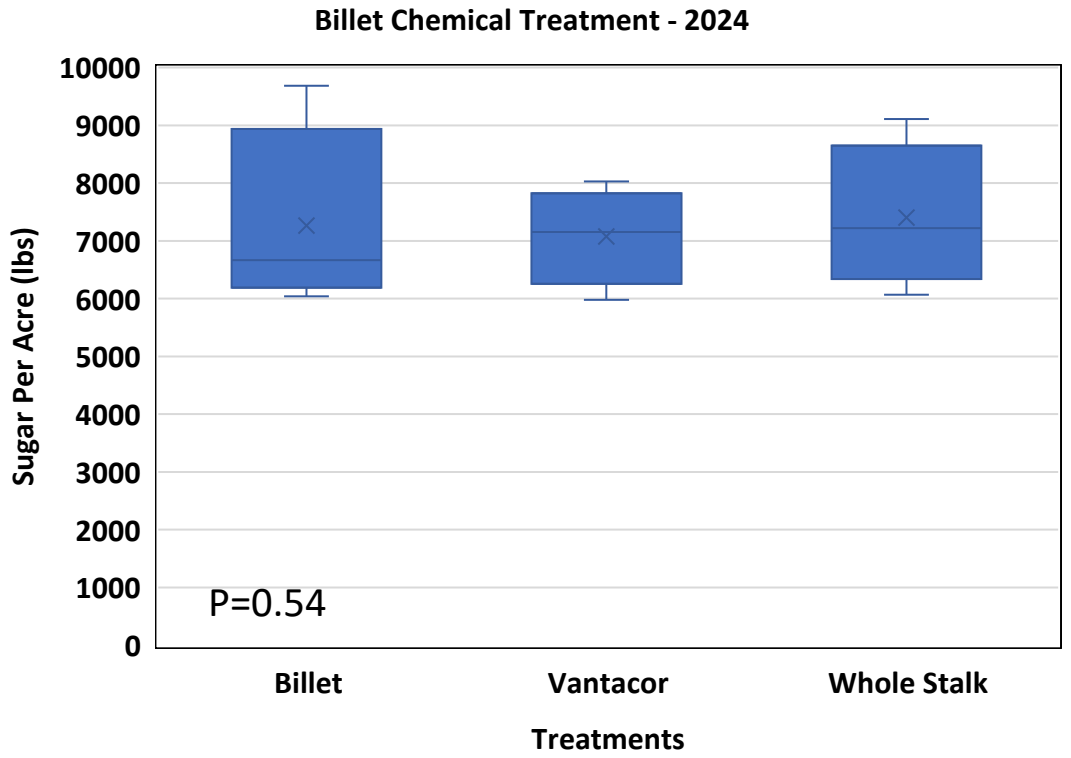
The effect of drought conditions at planting time on sugarcane red rot, caused by *Colletotrichum falcatum*, was evaluated in experiments conducted under controlled conditions and in the field. For experiments under controlled conditions, detached and topped mature stalks of five cultivars were inoculated with conidia of *C. falcatum*, then exposed to a 3-week desiccation treatment, followed by 3 weeks without desiccation, or maintained for 6 weeks without desiccation. Disease severity, assessed as the number of nodes beyond which rot symptoms extended, number of nodes rotted, internode rot severity, and a rot severity index, was increased in five cultivars by exposure to desiccation. However, response of individual cultivars varied for some disease traits assessed. In field experiments, *C. falcatum* inoculation alone did not reduce spring shoot populations for seven cultivars. The lowest shoot populations occurred in plantings of inoculated stalks exposed to desiccation. Some cultivars were adversely affected by desiccation alone. These results demonstrate that red rot severity can be increased by the occurrence of drought conditions during the initial growth processes of vegetatively propagated sugarcane stalks.



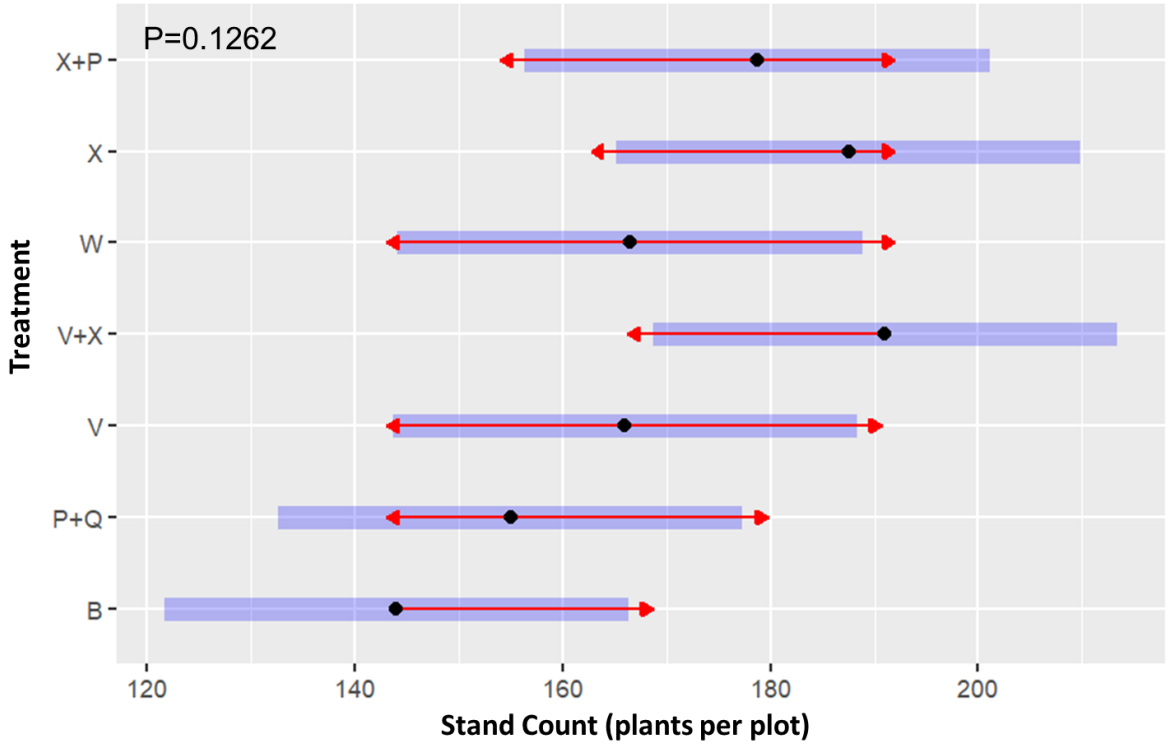
2024 season – Stalk Rot Research

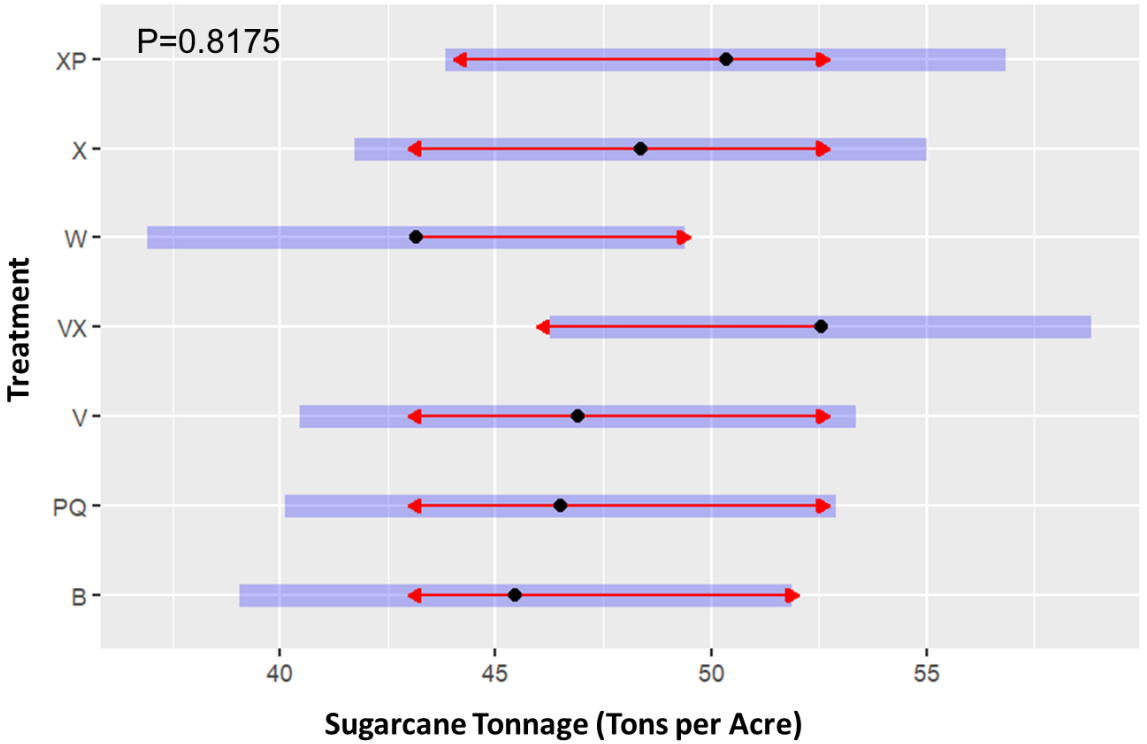
- Planted on 09-08-2023, harvested on 10-22-2024 (late due to Francine) at the Sugar Research Station in St. Gabriel, LA – 4 reps, RCBD

- No differences between treatments – low disease pressure, environmental conditions not suitable for disease – suitable for germination



No differences overall… Treatments not described do not have a label in Sugarcane





2025 season – Stalk Rot Research

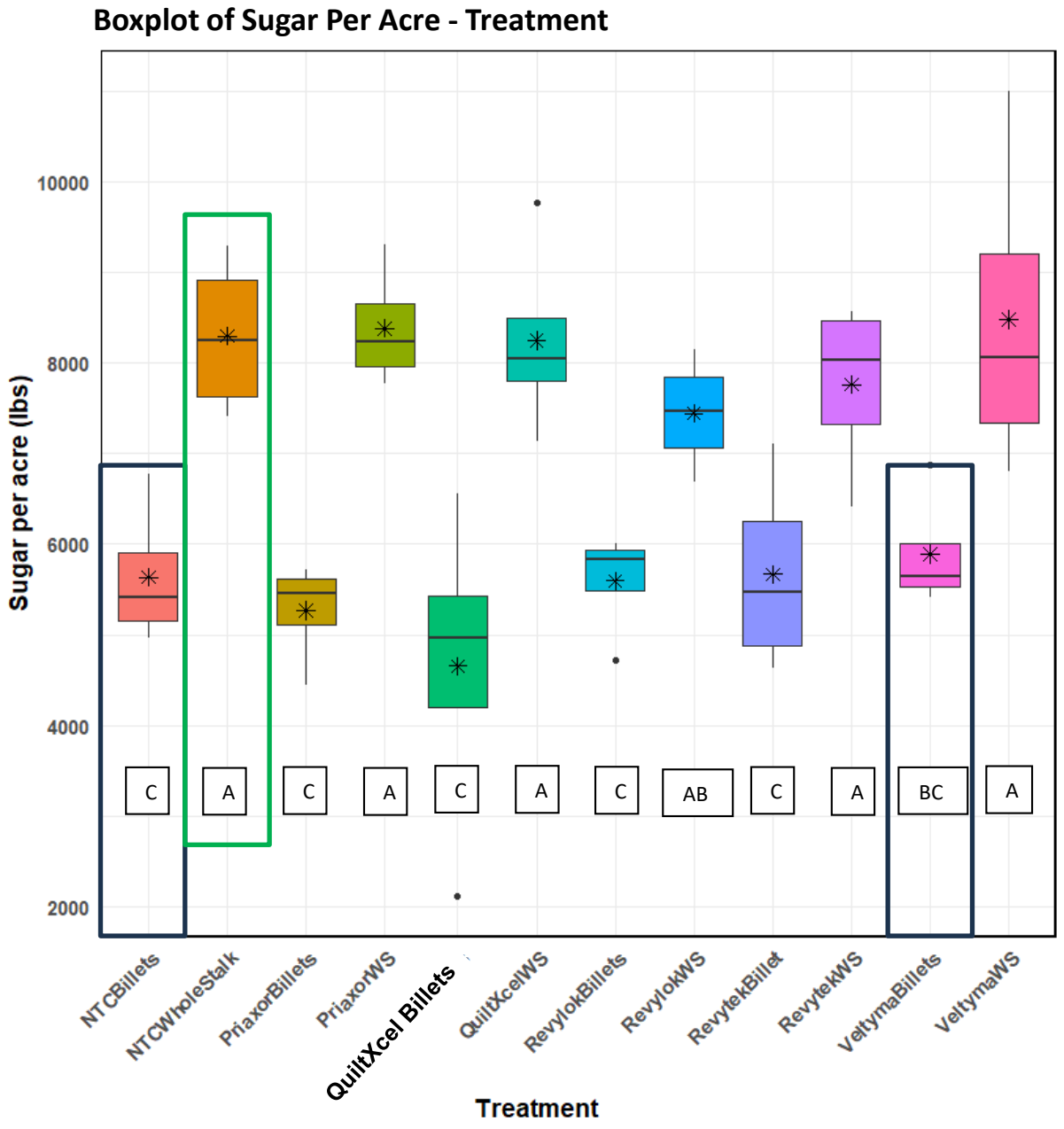
- Planted on 8/23/2024, harvested on 10/01/2025
- 4 reps - RCBD
- In-furrow application at 40 gpa
- Label rate for all products

Red Rot – Billet Planting Research – 24/25

Field trial planted in St. Gabriel in August 23rd 2024 . Harvested on October 1st 2025.
In-furrow fungicide sprays at 40 GPA

Treatment and rate per acre, if applicable	Abbreviation
Nontreated Control - Billets	NTCBillets
Nontreated Control Whole Stalk	NTCWholeStalk
Quilt Xcel 20 oz/A billets	QuiltXcelBillets
Quilt Xcel 20 oz/A Whole Stalk	QuiltXcelWS
Revytek 12- Whole Stalks	RevytekWS
Revytek 12 - Billets	RevytekBillets
Veltyma 10 - Whole Stalks	VeltymaWS
Veltyma 10 - Billets	VeltymaBillets
Priaxor 9 - Whole Stalks	PriaxorWS
Priaxor 9 - Billets	PriaxorBillets
Revylok 6.5 - Whole Stalks	RevylokWS
Revylok 6.5 - Billets	RevylokBillets

Red Rot – Billet Planting Research 24-25



- Similar patterns in terms of sugar per acre, but Veltyma led to slightly higher sugar yields when applied to billets
- Our lab is currently exploring salicylic acid as an alternative a.i. to induce defense responses similarly to what Platinum does, since a registration for Platinum is not likely.

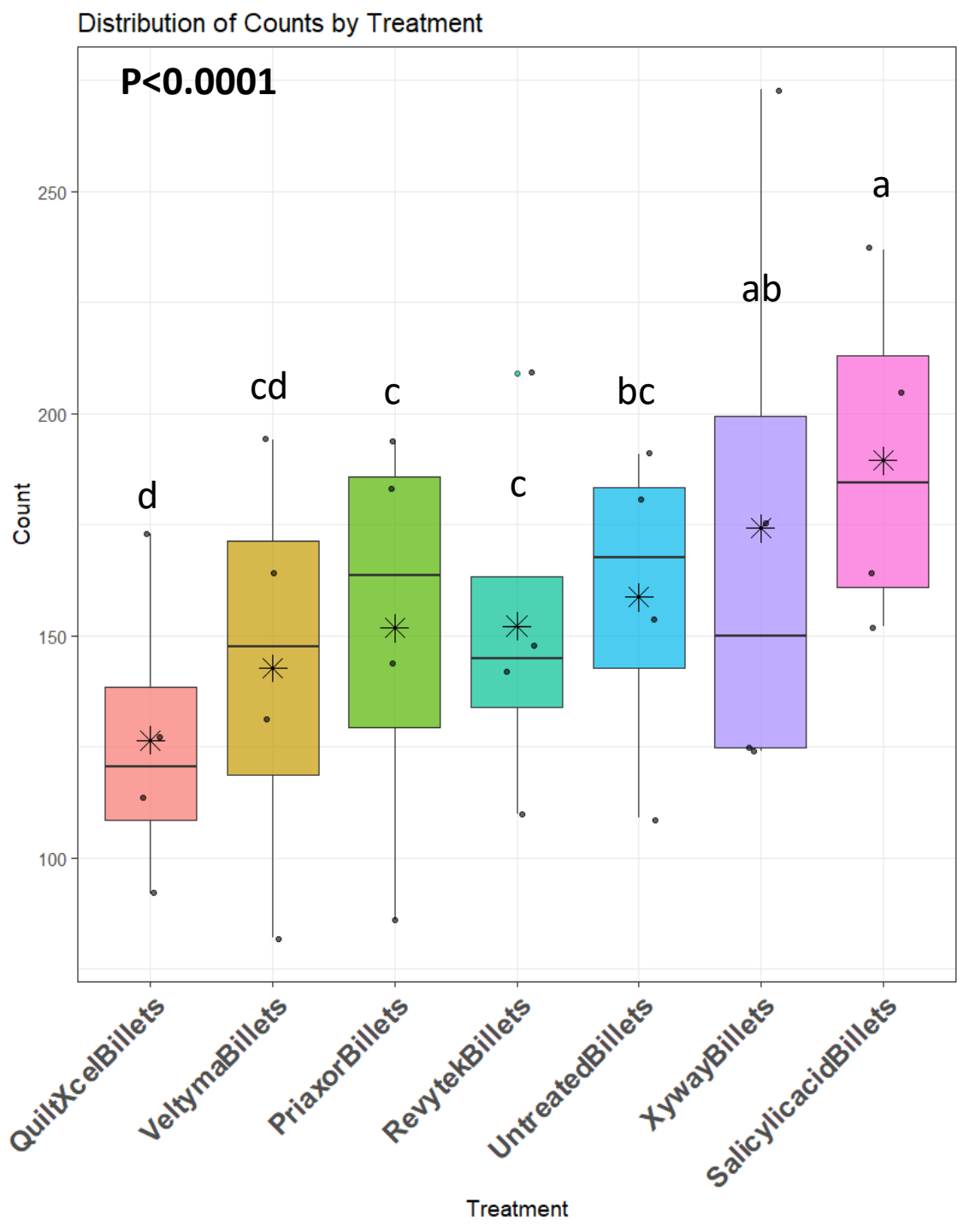
Red Rot – Billet Planting Research 25-26

Field trial planted in St. Gabriel in September 4th 2025.

In-furrow fungicide sprays at 40 GPA

Yet to be harvested

Stand count – number of plants per plot, conducted on 12-12-2025



Red Rot – Billet Planting Research 25-26

- Significant differences
- Salycilic acid apparently improves stand at first
- We need to confirm this will result in differences in yield
- Also, we need to confirm if this trend will hold in next season's trials

More research on Red Rot

- The main approach to manage sugarcane diseases – varietal resistance
- Identifying sources of resistance in parents or current cultivars is key

Greenhouse trial

- We inoculated billets of more than 140 varieties and accessions in a greenhouse and checked for sprouting and disease progression (3 reps, RCD)
- Planted on 10-25-2024
- Evaluated 54 days after planting

HOW DID WE RATE FOR RED ROT?

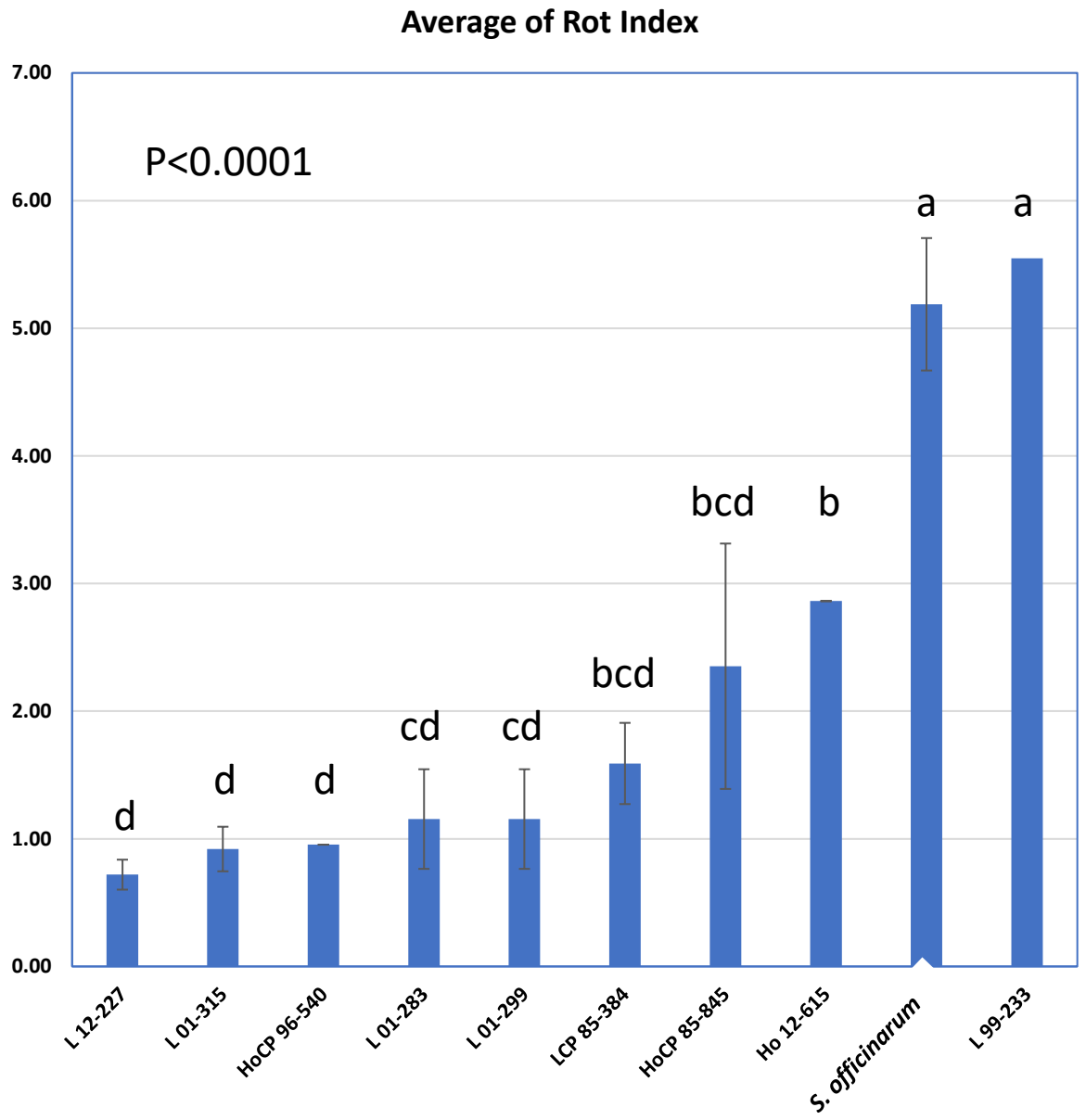
Rot index – developed by Dr. Hoy
We used the equation below:

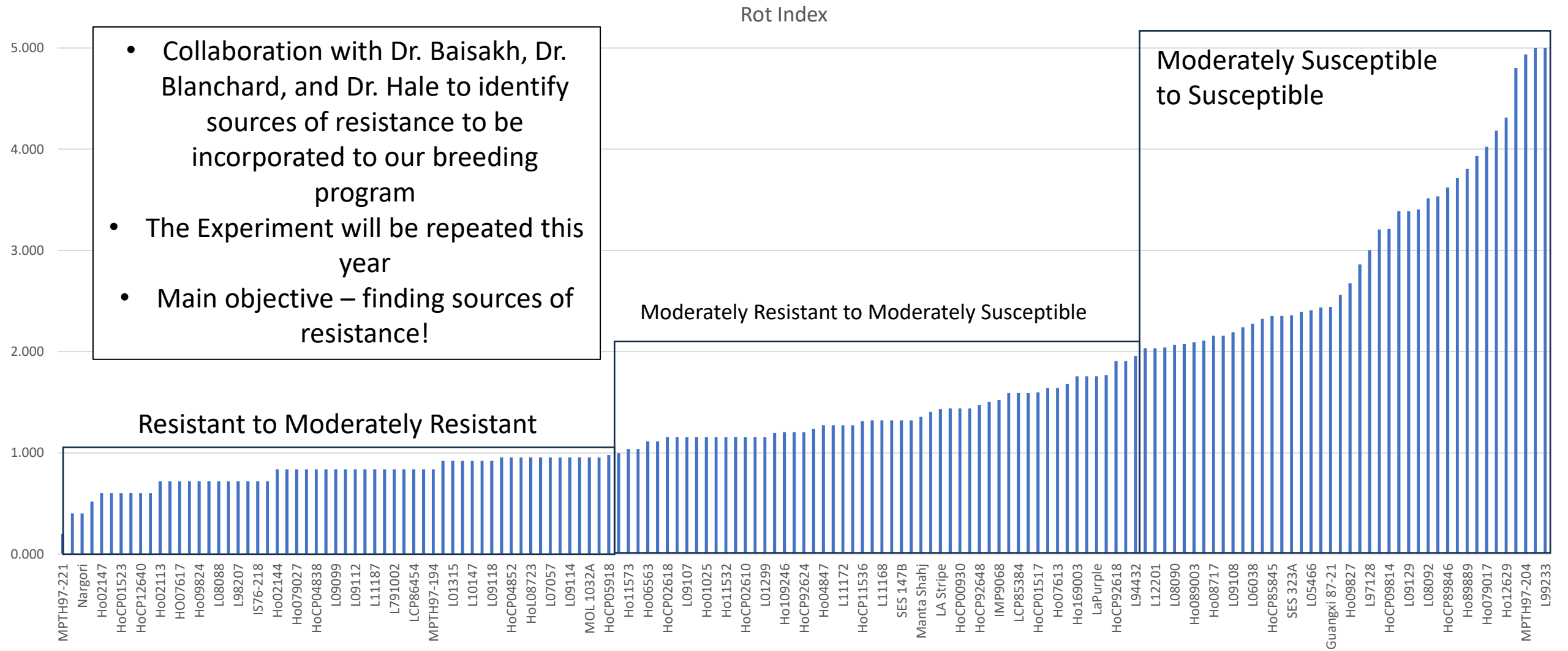
$$RI = (NP+NR) \cdot \log10(IRS +1)$$

RI = rot index
NP = nodes passed
NR = nodes rotted
IRS = internode rot severity

Results

- Part of the Results L99-233 – our most susceptible variety
- HoCP 96-540, L01-283 and L01-299 – similar levels of susceptibility




Rot Index
5.000
4.000
3.000
2.000
1.000
0.000
• Collaboration with Dr. Baisakh, Dr. Blanchard, and Dr. Hale to identify sources of resistance to be incorporated to our breeding program
• The Experiment will be repeated this year
• Main objective – finding sources of resistance!
Resistant to Moderately Resistant
Moderately Resistant to Moderately Susceptible
Moderately Susceptible to Susceptible
MPTH97-221
Nargori
HoO2147
HoCP01523
HoCP12640
HoO2113
HO07617
HoO9824
L08088
L98207
IS76-218
HoO2144
HoO79027
HoCP04838
L09099
L09112
L11187
L791002
LCP86454
MPTH97-194
L01315
L10147
L09118
HoCP04852
HoL08723
L07057
L09114
MOL 1032A
HoCP05918
Ho11573
HoO6563
HoCP02618
L09107
HoO1025
Ho11532
HoCP02610
L01299
Ho109246
HoCP92624
HoO4847
L11172
HoCP11536
L11168
SES 147B
Manta Shahj
LA Stripe
HoCP00930
HoCP92648
IMP9068
LCP85384
HoCP01517
HoO7613
Ho169003
LaPurple
HoCP92618
L94432
L12201
L08090
HoO89003
HoO8717
L09108
L06038
HoCP85845
SES 323A
L05466
Guangxi 87-21
HoO9827
L97128
HoCP09814
L09129
L08092
HoCP89846
HoO89889
HoO79017
Ho12629
MPTH97-204
L99233

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THANK YOU!
Any Questions?