Analyzing the Benefit of Root Knot Resistant Cotton Varieties Within a Variety Trial

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INTRODUCTION:

Root-knot nematodes (*Meloidogyne incognita*) are detrimental to cotton production in Screven Co. and throughout the Southeast. This study was conducted to assess two root-knot nematode resistant varieties against susceptible standards in a field infested with root-knot nematodes.

Every third zone in this field was sampled for nematodes in fall of 2019.

2019 Year Ending Root Knot Counts	
Zone	Nematodes/100cc of Soil
3	19
6	29
9	127
12	32
15	69
18	70
21	101
24	40
27	25
30	34
33	31
36	22
Average	49.9

Nematodes were present across the field in moderate numbers at the end of 2019.

PROJECT DESIGN:

Twelve varieties were planted in this cotton trial with 3 replications. The cotton was planted on May 11, 2020; plots were 4-rows wide by the length of the filed .

IMPACT OF NEMATODES:

During the growing season several varieties showed symptoms of nutrient deficiency and stunting, likely the results of nematodes.

2020 Year End Root Knot Gall Rating	
Variety	Average
DP 1646 B2XF	32.167
DP 2038 B3XF	20.633
DP 2055 B3XF	11.967
NG 5711 B3XF	26.767
NG 4936 B3XF	17.667
PHY 400 W3FE	0.933
Px 5C45 W3FE	10.017
ST 4990 B3XF	5.967
ST 5471 GLTP	4.400
CP 9608 B3XF	16.833
DG 3615 B3XF	8.340
DG 3799 B3XF	3.417

ROOT-GALL RATINGS:

2020 end of season gall ratings ranged from 0.933% to 32.167%. Root-knot nematode resistant variety PHY 400 W3FE had the lowest root gall rating of 0.933. Susceptible DP 1646 B2XF had the highest root-gall rating.

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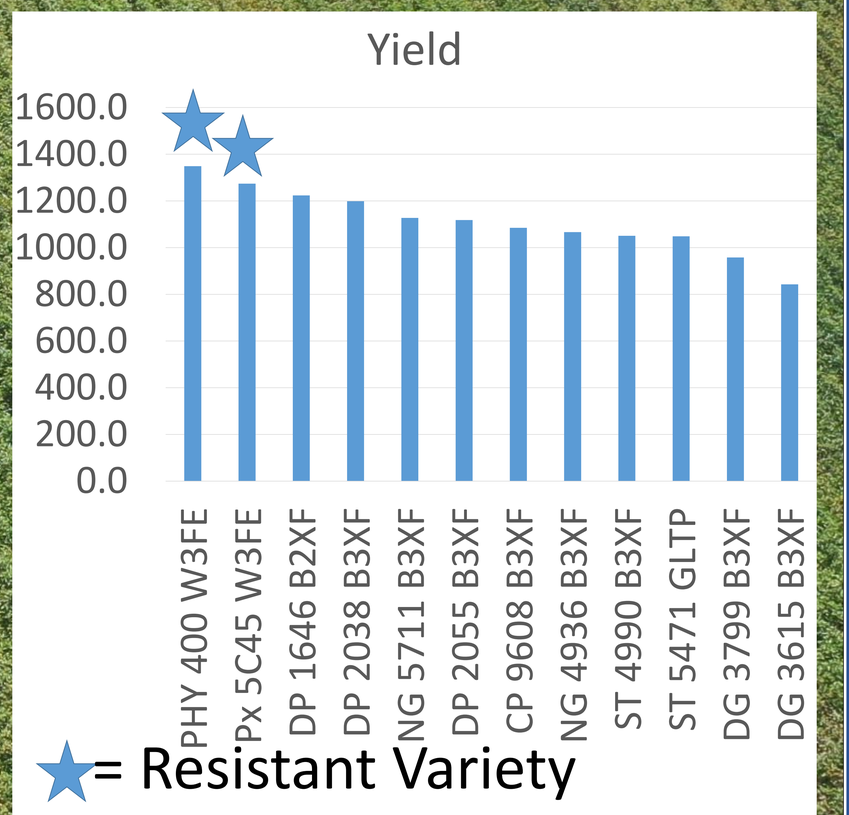
2020 Year End Root Knot Nematode/100 cc				
Variety	Rep 1	Rep 2	Rep 3	Avg.
DP 1646 B2XF	8	41	28	25.7
DP 2038 B3XF	44	16	45	35.0
DP 2055 B3XF	86	6	133	75.0
NG 5711 B3XF	27	7	155	63.0
NG 4936 B3XF	93	4	2	33.0
PHY 400 W3FE	37	8	3	16.0
Px 5C45 W3FE	2	7	0	3.0
ST 4990 B3XF	100	88	9	65.7
ST 5471 GLTP	26	23	0	16.3
CP 9608 B3XF	45	2	1	16.0
DG 3615 B3XF	71	120	68	86.3
DG 3799 B3XF	73	64	43	60.0

2020 NEMATODE ASSAY RESULTS:

Root-knot populations were moderate in this field and soil counts varied. Variety Px5C45 W3FE with 2 RKN resistance genes had the lowest average nematode count. Use of resistant varieties helps to reduce populations.



RESULTS:

Yields ranged from 842.8 to 1348.7 lbs lint/A. The two resistant varieties PHY 400 W3FE and Px 5C45 W3FE yielded 125.2 lbs and 50.6 lbs/A above any of the other varieties in the trial where pressure from root-knot nematodes was described as "moderate".