

Field Performance of Selected Soybean Varieties in a Southern Root-knot Nematode Infested Field, 2018

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November 13, 2018

The southern root-knot nematode (*Meloidogyne incognita*) is the most important yield-limiting plant-pathogenic nematode that affects soybean production in the mid-South. It is found in nearly all soybean producing counties in Arkansas and can cause significant (>70%) yield loss when the wrong soybean variety (i.e. susceptible) is planted in field with a high population density of root-knot nematodes. During the 2018 season the Lonoke Extension Plant Pathology Program selected 58 soybean varieties that were grouped based on herbicide technologies and maturity groups to be evaluated in a southern root-knot nematode infested field. Due to the number of Roundup and Xtend MG IV entries, this group was divided into two experiments to minimize variability in root-gall ratings. The final nematode population densities (Pf) collected at harvest ranged from 206-887 individuals per 100 cm³ soil in each test. The Pf counts are lower than in 2017 because most of plants matured early thus the peak nematode population occurred before samples were collected at harvest. Percent of root system galled was estimated for at least 8 root systems from each replication per test at R4-R5 growth stage. Soybean varieties in each category with the lowest gall rating contributed to the greatest yield (Table 1-5). Soybean varieties with <10% of root of system galled are considered resistant compared to those with the greatest galling percentage. For example, ‘Terral REV 48A46’ is resistant compared to ‘Progeny P 4255 RX’ (2.9/99 = 2.9%). On average, the grain yield for these varieties were lower than that from 2017 due to dry summer conditions that favored nematode impact on yield. This information and that on the variety testing website can be used to make decisions about variety selection for the 2019 cropping season.

Table 1. Field performance of 14 Roundup Ready and Xtend MG IV soybean varieties in a southern root-knot nematode infested field (Pf = 288).

Cultivar	Percent root system galled	Yield (bu/A)
Terral REV 48A46	2.90 c	68.45 a
Go Soy 4914 GTS	7.96 c	58.58 ab
Progeny P 4444 RXS	36.14 bc	52.35 ab
Local Seed LSX4918X (LSX208640.18)	32.36 bc	49.59 b
Local Seed LS4988X (LSX208650.18)	78.96 ab	47.81 bc
Armor 46D63	69.81 ab	41.93 bcd
NK S45-J3X	86.51 a	30.75 cde
Progeny P 4994 RX	87.38 a	27.90 def
Armor 47D22	89.31 a	23.98 ef
Asgrow AG46X7	93.74 a	20.74 ef
Delta Grow 4970 GLY	72.72 ab	16.22 ef
Local Seed LSX5118X (LSX208670.18)	98.27 a	16.17 ef
Armor 44-D40	96.30 a	14.77 ef
Armor 44D36	96.45 a	10.95 f

^a Data are averages of four replications and averages followed by a different letter within each column are significantly different at $\alpha = 0.05$ according to Tukey’s HSD.

Table 2. Field performance of 14 Roundup Ready and Xtend MG IV soybean varieties in a southern root-knot nematode infested field (Pf = 449).

Cultivar	Percent root system galled	Yield (bu/A)
Delta Grow 4940 GLY	9.85 f	56.81 a
Pioneer P46T59R	3.34 f	56.05 a
Go Soy 49G16	5.27 f	55.92 a
Armor X49D31	80.16 cde	42.87 ab
Progeny P 4570 RXS	80.82 cde	42.28 ab
Agri Gold G4579 RX	73.06 de	41.35 abc
Dyna Gro S49XT39	53.07 e	40.90 abc
Pioneer P47T36R	99.46 a	27.12 bcd
Armor 43D43	96.63 abc	20.50 bcd
Asgrow AG47X6	83.74 bcd	18.93 bcd
Local Seed LSX4518X (LSX208520.18)	95.18 a-d	15.34 cd
Delta Grow 4970 GLY	98.72 ab	13.65 d
Hefty H49X7S	95.96 abc	12.28 d
Progeny P 4255 RX	98.64 ab	8.68 d

^a Data are averages of four replications and averages followed by a different letter within each column are significantly different at $\alpha = 0.05$ according to Tukey's HSD.

Table 3. Field performance of 18 Roundup Ready and Xtend MG V soybean varieties in a southern root-knot nematode infested field (Pf =395).

Cultivar	Percent root system galled	Yield (bu/A)
USG 7568XT	19.99 c	79.82 a
Pioneer P54A54X	18.68 cd	78.03 a
Pioneer P53T18X	7.09 cde	76.98 a
Armor 55D57	13.03 cde	76.75 a
Dyna Gro S56XT99	8.29 cde	75.42 a
Progeny P 5554 RX	13.65 cde	75.29 a
Delta Grow 5170 RR GenRR2Y/STS	14.51 cde	74.65 a
Terral REV 56A58	3.62 de	74.54 a
Pioneer P55T81R	4.12 de	73.76 a
Go Soy 50G17	8.68 cde	73.43 a
Terral REV 52A98	3.60 e	72.45 a
Go Soy 5214	7.08 cde	71.41 a
Ag Venture 52M7RSTS	3.38 e	70.16 a
Dyna Gro S52XT08	8.40 cde	59.70 ab
Armor 52D71	76.70 b	33.76 bc
Progeny P 5016 RXS	92.74 ab	28.23 c
Agri Gold 5000RX	95.38 a	18.15 c
Delta Grow 5170 RR GenRR2Y/STS	95.97 a	10.87 c

^a Data are averages of four replications and averages followed by a different letter within each column are significantly different at $\alpha = 0.05$ according to Tukey's HSD.

Table 4. Field performance of 8 Liberty Link MG IV soybean varieties in a southern root-knot nematode infested field (Pf =407).

Cultivar	Percent root system galled	Yield (bu/A)
Pioneer 45A29L	4.41 c	69.72 a
Delta Grow 4977LL/STS	11.72 c	61.04 a
Crendenz CZ 4222LL	38.09 bc	57.94 ab
Dyna Gro S49LS65	11.93 c	56.45 ab
Crendenz CZ 3601LL	88.17 a	44.99 b
Crendenz CZ 4540LL	66.51 ab	43.50 b
Terral REV 49L88	84.77 a	25.42 c
Delta Grow 4990LL	90.30 a	20.90 c

^a Data are averages of four replications and averages followed by a different letter within each column are significantly different at $\alpha = 0.05$ according to Tukey's HSD.

Table 5. Field performance of 4 Liberty Link MG V soybean varieties in a southern root-knot nematode infested field (Pf = 372).

Cultivar	Percent root system galled	Yield (bu/A)
Pioneer P52A43L	15.19 c	70.72 a
Terral REV 54L18	12.52 c	70.04 a
Crendenz CZ 5147LL	70.51 b	48.92 b
Delta Grow 4990LL	96.65 a	16.94 c

^a Data are averages of four replications and averages followed by a different letter within each column are significantly different at $\alpha = 0.05$ according to Tukey's HSD.

The authors would like to thank the Arkansas soybean promotion board for supporting this project, various seed companies for donating seed and our cooperators at Fletcher Farms for plot space on their farm. If you have questions, please contact Travis Faske at tfaske@uada.edu