Field Performance of Selected Soybean Varieties in a Southern Root-knot Nematode Infested Field, 2019

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December 4, 2019

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 2019 season the Lonoke Extension Plant Pathology Program selected 56 soybean varieties that were divided into five experiments based on herbicide technologies and maturity groups. Varieties were replicated four times and eight root systems from each plot were sampled for the percent of root system galled at R4-R5 growth stage. The final nematode population densities (Pf) collected at harvest ranged from 154 – 4,192 second-stage root-knot nematode juveniles (J2)/100 cm^3 soil, which would be a moderate to severe nematode threshold in Arkansas. As a general rule, soybean varieties with the lowest gall rating had the greatest yield (Table 1-5). Soybean varieties with an average of less than four percent of root of system galled were considered resistant, especially when compared to those with the greatest galling percentage. Field performance of soybean varieties from previous trials (2016 and 2017) can be found on this website or on the UA Research Series website. These results and those on the UA variety testing website can be helpful for variety selection for the 2020 cropping season.

Table 1. Field performance of 17 **Roundup Ready and Xtend MG IV** soybean varieties in a southern root-knot nematode infested field (Pf (at harvest) = 1,798 J2/100cm^3 soil).

Cultivar	Percent root system galled	Yield (bu/A)
GT Ireane	1.9 d[a]	79.9 a
Pioneer P43A42X	4.0 cd	70.7 ab
Dyna Gro S49XT39	34.3 a-d	62.6 abc
Delta Grow 48E28	39.0 a-d	62.1 abc
Credenz CZ 4979X	22.3 a-d	61.2 abc
Armor X48-D88	41.8 a-d	59.3 abc
Local Seed LSX 46-19X	43.1 a-d	55.3 a-d
Credenz CZ 4570X	35.8 a-d	55.2 a-d
Progeny P4891E3	39.4 a-d	54.5 a-d
Credenz CZ 4869X	59.1 ab	54.2 bcd
Credenz CZ 4770X	17.3 bcd	53.4 bcd
Delta Grow DG4616	29.9 a-d	53.1 bcd
Delta Grow DG48X45	60.2 ab	42.7 cd
Local Seed LSX 49-19X	28.0 a-d	42.2 cd
Delta Grow DG4880	61.7 ab	39.0 cd
USG 7496XTS	71.8 a	37.2 cd
Asgrow AG 46X6	55.3 abc	32.1 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 2. Field performance of 14 **Roundup Ready and Xtend MG** IV soybean varieties in a southern root-knot nematode infested field (Pf (at harvest) = 1,885 J2/100cm^3 soil).

Cultivar	% root system galled	Yield (bu/A)
Go Soy 49G16	4.4 bc[a]	76.3 a
Dyna Gro S48XT40	6.5 abc	65.6 ab
Go Soy 4914	6.1 abc	65.6 ab
Delta Grow DG4940	0.9 c	64.5 abc
Progeny P4444RXS	4.9 bc	64.3 abc
Go Soy 48X19	17.9 abc	62.4 a-d
NK 45-J3X	19.7 abc	53.0 a-d
Delta Grow 45E23	47.0 ab	42.8 bcd
Credenz CZ 4280X	27.3 abc	41.7 bcd
Delta Grow DG4880	48.2 ab	38.3 bcd
Progeny P4525E3	20.5 abc	34.8 cd
Delta Grow DG46X25	41.1 abc	33.1 d
USG 7489XT	50.3 a	33.0 d
Credenz CZ 4600X	42.8 abc	32. 6 d

[a] Data are averages of four replications and averages followed by a different letter within each column are significantly different at α = 0.05 according to Tukey's HSD.

Table 3. Field performance of 15 **Roundup Ready and Xtend MG V** soybean varieties in a southern root-knot nematode infested field (Pf (at harvest) =1,452 J2/100cm^3 soil).

Cultivar	% root system galled	Yield (bu/A)
Pioneer P55A49X	0.8 cd	86.7 a
Armor 55D57	0.7 cd	80.4 ab
Terral REV5659X	0.9 cd	77.3 ab
Terral REV52A98	0.3 d	72.6 abc
Local Seed LSX 55-19X	0.3 d	72.3 abc
Go Soy 50G17	1.4 cd	71.4 abc
Progeny P5554RX	1.1 cd	71.1 abc
Delta Drow DG5585	2.7 cd	69.7 abc
Terral REV5299XS	0.2 d	67.9 bcd
Go Soy 5214	0.4 d	63.1 b-e
Delta Grow DG54X25	9.0 bc	63.1 b-e
Progeny P5226	23.0 ab	58.5 cde
Delta Grow DG5170	37.2 a	51.1 de
Progeny P5252RX	15.9 ab	50.7 de
Credenz CZ 5249X	15.3 ab	49.2 e

[a] Data are averages of four replications and averages followed by a different letter within each column are significantly different at α = 0.05 according to Tukey's HSD.

Table 4. Field performance of 6 **Liberty Link MG IV** soybean varieties in a southern root-knot nematode infested field (Pf (at harvest) =481 J2/100cm^3 soil)

Cultivar	% root system galled	Yield (bu/A)
Terral REV46L99	1.5 c[a]	66.2 a
Pioneer P45A29L	1.8 bc	64.1 a
Credenz CZ 4540LL	13.5 a	62.5 a
Credenz CZ4539GTLL	31.0 a	60.8 a
Credenz CZ 4222LL	2.6 bc	57.5 a
Credenz CZ 4308LL	2.4 c	57.3 a

[a] Data are averages of four replications and averages followed by a different letter within each column are significantly different at α = 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 (at harvest) = 2,096 J2/100cm^3 soil).

Cultivar	% root system galled	Yield (bu/A)
Terral REV54L18	1.7 ab[a]	75.4 a
Pioneer P52A43L	1.3 b	71.2 a
Credenz CZ 5147LL	16.4 a	60.4 b
Progeny P5414LLS	6.3 ab	59.2 b

[a] Data are averages of four replications and averages followed by a different letter within each column are significantly different at α = 0.05 according to Tukey's HSD.

The authors would like to thank the Arkansas soybean promotion board for supporting this project, 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@uaex.edu