Field Performance of Selected Soybean Varieties in a Southern Root-knot Nematode Infested Field, 2017

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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 (>50%) 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 2017 season the Lonoke Plant Pathology Program selected 48 soybean varieties that were grouped based on herbicide technologies and maturity groups to be evaluated in a root-knot nematode infested field. The final nematode population densities (Pf) ranged from 800-1300 individuals per 100 cm^3 soil in each test. Percent of root system galled was estimated for at least 10 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 1-4). Soybean varieties with <10% of root of system galled are considered resistant compared to those with the greatest galling percentage. For example, 'Go Soy 49G16' is resistant compared to 'Asgrow 4632' (5.4/78.3 = 6.9%). This information and that on the variety testing website can be used to make decisions about variety selection for the 2018 cropping season.

Table 1. Field performance of 16 Roundup Ready and Xtend MG IV soybean varieties in a southern root-knot nematode infested field (Pf = 810).

Cultivar	Percent root system galled	Yield (bu/A)
Go Soy 49G16	5.4 c[a]	79.8 a
Pioneer P46T59R	7.0 c	76.9 a
Delta Grow DG 4940	4.6 c	74.3 ab
Delta Grow DG 4995	2.8 c	73.9 ab
Terral 48A46[b]	2.0 c	65.1 abc
NK XD2R4373	51.1 ab	59.5 bcd
Progeny P4444RXS	25.2 bc	57.6 cd
Armor ARX4507	62.6 a	54.2 cde
Pioneer P47T36R	56.4 a	49.7 c-f
Asgrow 47X6	64.5 a	42.8 d-g
Asgrow 46X7	76.6 a	42.8 d-g
Asgrow 4632	78.3 a	40.1 efg
Dyna Grow S49X76	51.0 ab	36.4 fg
Armor 44-D40	70.9 a	34.3 fg
Delta Grow DG 4970	77.3 a	32.6 g
Delta Grow DG 4825	59.6 a	30.7 g

[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.
[b] 2016 seed

Table 2. Field performance of 16 Roundup Ready and Xtend MG V soybean varieties in a southern root-knot nematode infested field (Pf =1,178).

Cultivar	Percent root system galled	Yield (bu/A)
Terral REV 56A58	1.0 de[a]	78.1 a
Progeny P5376 RX	2.5 cd	77.2 a
NK S53-C5	24.2 b	76.8 a
Go Soy 5214GTS	0.6 de	76.3 ab
Asgrow 53X6	0.9 de	76.1 ab
Ag Venture 52M7RSTS	0.4 de	73.5 ab
Terral REV 52A98	0.4 de	72.7 ab
Pioneer P53T73SR	0.3 e	70.3 abc
Terral REV 52A94[b]	0.5 de	70.1 abc
Pioneer P53T18X	1.4 de	69.2 abc
Pioneer P55T81R	0.8 de	68.9 abc
Pioneer P52T86R	5.5 c	61.3 bcd
Armor 53-D04	38.8 ab	55.3 cd
NK S52Y7X	46.8 ab	48.0 d
Progeny P5016 RXS	72.1 a	31.2 e
Morsoy 50X64[b]	51.4 ab	31.1 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.
[b] 2016 seed

Table 3. Field performance of 12 Liberty Link MG IV soybean varieties in a southern root-knot nematode infested field (Pf =1,320).

Cultivar	Percent root system galled	Yield (bu/A)
Delta Grow DG 4977 STS	2.8 c[a]	65.5 a
CZ 4222LL	19.6 ab	62.1 a
Ag Venture 49H9LLST	5.0 bc	54.3 a
Dyna Gro S49LS65	4.1 bc	51.8 a
Armor 47-L20	50.1 a	47.8 a
CZ 4818LL	72.4 a	47.4 a
Terral 49L88	49.4 a	46.1 a
CZ 3601LL	34.7 a	45.9 a
CZ 4748LL	60.0 a	41.3 a
CZ 4044LL	22.2 ab	39.3 a
Delta Grow DG 4990	84.7 a	39.1 a
CZ 4540LL	30.7 a	38.9 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 4. Field performance of 4 Liberty Link MG V soybean varieties in a southern root-knot nematode infested field (Pf = 1,275).

Cultivar	Percent root system galled	Yield (bu/A)
Terral 54008L (EX54L)[b]	9.2 c[a]	77.3 a
Crendenz CZ 5147LL	47.1 b	57.6 b
Crendenz CZ 5242LL	92.0 a	33.7 c
Terral 48L63	91.0 a	12.5 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.
[b] New name will be Terral REV 54L18

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