Field Performance of Ninety-Five Soybean Varieties Against the Southern Root-knot Nematode and Frogeye Leaf Spot, 2026

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A comprehensive disease screening program has been conducted by the University of Arkansas System, Division of Agriculture, Extension Plant Pathology since 1990, thanks to support by the Arkansas Soybean Promotion Board. Field nurseries and greenhouse experiments are used to evaluate all varieties that are entered in the Official Variety Testing Program to major diseases of concern in Arkansas. The diseases evaluated and reported here during the 2026 cropping season were the southern root-knot nematode (*Meloidogyne incognita*) and frogeye leaf spot (caused by *Cercospora sojina*). Some 95 soybean varieties were planted on 21 May in single-row, 11-ft-long plots at 140,000 seeds per acre in a silt loam soil (37% sand, 55% silt, and 8% clay) field near Kerr, AR. The moderately root-knot nematode-resistant check, Pioneer P46Z53, and susceptible check Pioneer P48A14 were used. Varieties were arranged in a randomized complete block design with three replications. Three roots were arbitrarily sampled from each plot at the R4 to R5 growth stage to determine nematode susceptibility. Susceptibility was based on the percent root system galled where 1.1-4.0% = resistant (R), 4.1-9.0% = moderately resistant (MR), 9.1-20.0% = moderately susceptible (MS), 20.1-40.0% = susceptible (S), 40.1-100.0% = very susceptible (VS). Frogeye leaf spot severity was visually assessed on 21 August at R6 to R7 growth stage based on a 0-9 index scale (0-1 = R, 2-3 = MR, 4-5 = MS, 6-7 = S, and 8-9 = VS) in the upper 1/3 of the canopy.

The final nematode population (Pf) density averaged 404 second-stage juveniles (J2)/100 cm^3 soil at harvest across the experiment. This density is considered severe for soybean production in Arkansas. The post-harvest threshold for southern root-knot nematode on soybean in Arkansas is 60 J2 per100 cm^3 soil. Weather conditions were favorable for frogeye leaf spot and disease severity was greater than previous years. Southern stem canker is also part of the comprehensive disease screening project but not included in this report.

What else is important: Variety susceptibility can vary between years as varieties are evaluated in different fields. Therefore, a variety categorized as MR in one year may be MS or S in another. This difference is primarily due to nematode population density but can also be impacted by soil texture and drought conditions. Overall, selecting a less susceptible variety will ensure a greater yield than a more susceptible one in a nematode-infested field.

Additional data on root-knot nematode and frogeye leaf spot varieties before making final variety selections at the following link https://arkansascrops.uada.edu/posts/disease/2025-soybean-rootknot-nematode.aspx. Consult the cross-reference guide for soybean varieties to ensure different varieties selected are not the same genetics https://www.uaex.uada.edu/farm-ranch/crops-commercial-horticulture/soybean/2025-soybean-cross-reference-guide.pdf.

New for 2025 and 2026: A column was added for maximum percent root system galled (i.e., nematode susceptibility) to show the most severely galled roots, which may occur in some fields where nematode densities are high. The maximum gall ratings from each replication were averaged together and reported.

Why is final nematode population density or "Pf" important? The timing for these samples would be comparable to fall nematode samples collected in commercial fields. Therefore, soybean varieties would be expected to perform similarly when the nematode population density AND soil texture class (e.g., sandy loam) are similar. Overall, individual varieties will show a greater percentage of root system galled or susceptibility when grown in soils with a greater percentage of sand at similar final nematode densities (Pf) reported here. Furthermore, and more importantly, grain yield for individual varieties will decrease with increased drought stress AND when nematode densities are similar to those reported.

Table 1. Field performance of 95 soybean varieties against the southern root-knot nematode (RKN) and frogeye leaf spot (FLS). The final nematode density after harvest was 404 J2/100cm^3 of soil, which is high and likely to cause significant yield losses on a susceptible variety.

Variety	Technology	Maturity	Average percent root system galled[ab] (1 year data)	Average Southern RKN susceptibility ratings[b] (1 year data)	Maximum percent root system galled[c] (1 year data)	Maximum southern RKN susceptibility ratings[c] (1 year data)	FLS severity[d] (1 year data)	FLS susceptibility ratings[d] (1 year data)
AG43XF5	XtendFlex	4.3	36.7	S	40.0	S	0	R
AG44XF4	XtendFlex	4.4	41.7	VS	50.0	VS	1	R
AG45XF3	XtendFlex	4.5	48.3	VS	53.3	VS	4	MS
AG47XF2	XtendFlex	4.7	30.0	S	33.3	S	0	R
AG47XF6	XtendFlex	4.7	47.8	VS	50.0	VS	0	R
AG48XF2	XtendFlex	4.8	38.9	S	46.7	VS	4	MS
AG48XF3	XtendFlex	4.8	30.6	S	36.7	S	4	MS
AG48XF6	XtendFlex	4.8	38.9	S	46.7	VS	0	R
AG49XF4	XtendFlex	4.9	32.8	S	38.3	S	0	R
AG49XF6	XtendFlex	4.9	20.6	S	26.7	S	0	R
AG50XF5	XtendFlex	5.0	30.6	S	33.3	S	4	MS
AG52XF5	XtendFlex	5.2	11.6	MS	14.3	MS	5	MS
AG54XF5	XtendFlex	5.4	14.0	MS	18.3	MS	6	S
AG54XF6	XtendFlex	5.4	15.1	MS	21.0	S	0	R
AG56XF2	XtendFlex	5.6	13.9	MS	16.7	MS	0	R
Armor 45-F86S	XtendFlex	4.5	28.7	S	31.7	S	0	R
Armor 46-F15S	XtendFlex	4.6	40.6	VS	46.7	VS	1	R
Armor 47-E76S	Enlist E3	4.7	25.0	S	30.0	S	2	MR
Armor 47-F47S	XtendFlex	4.7	20.6	S	25.0	S	2	MR
Armor 47-F66S	XtendFlex	4.7	24.4	S	28.3	S	0	R
Armor 47XF26	XtendFlex	4.7	32.2	S	36.7	S	0	R

Armor 48-F55S	XtendFlex	4.8	27.8	S	30.0	S	1	R
Armor 48X26	XtendFlex	4.8	45.0	VS	50.0	VS	1	R
Armor 49-E17S	Enlist E3	4.9	16.4	MS	21.0	S	0	R
Armor 50E36S	Enlist E3	5.0	27.1	S	31.7	S	1	R
Armor 51-F27S	XtendFlex	5.1	21.8	S	26.0	S	1	R
Axis 4625XFS	RR, LL, Dicamba	4.6	35.6	S	41.7	VS	2	MR
Axis 4716XFS	RR, LL, Dicamba	4.7	24.2	S	30.0	S	1	R
Axis 4815XFS	RR, LL, Dicamba	4.8	36.1	S	43.3	VS	0	R
Confluence Genetics 39F093E	Enlist E3	3.9	29.2	S	30.0	S	3	MR
Delta Grow DG43XF65STS	XtendFlex	4.3	31.7	S	38.3	S	1	R
DELTA GROW DG47E20STS	Enlist E3	4.7	32.8	S	40.0	S	5	MS
DELTA GROW DG48XF70STS	XtendFlex	4.8	32.6	S	36.0	S	2	MR
DELTA GROW DG48XF80	XtendFlex	4.8	36.1	S	43.3	VS	0	R
DELTA GROW DG49E30STS	Enlist E3	4.9	29.4	S	30.0	S	6	S
DELTA GROW DG49XF70STS	XtendFlex	4.9	33.7	S	40.0	S	2	MR
DONMARIO DM46F76S	XtendFlex	4.6	22.8	S	30.0	S	1	R
DONMARIO DM47F44S	XtendFlex	4.7	31.7	S	35.0	S	1	R
DONMARIO DM51F96S	XtendFlex	5.1	25.9	S	35.0	S	0	R
Dyna-Gro S43XF85S	XtendFlex	4.3	40.0	S	46.7	VS	0	R
Dyna-Gro S45XF47S	XtendFlex	4.5	24.2	S	31.7	S	0	R
Dyna-Gro S46XF26S	XtendFlex	4.6	40.6	VS	48.3	VS	3	MR
Dyna-Gro S48XF35	XtendFlex	4.8	31.2	S	36.7	S	2	MR
Dyna-Gro S52XF76S	XtendFlex	5.2	39.4	S	43.3	VS	4	MS
Gateway 441XFS	XtendFlex	4.4	21.7	S	26.7	S	1	R
Gateway 457XFS	XtendFlex	4.5	36.7	S	40.0	S	1	R
Gateway 479XFS	XtendFlex	4.7	28.9	S	31.7	S	3	MR
Gateway 487XFS	XtendFlex	4.8	38.3	S	43.3	VS	0	R

Innvictis A4411XFS	XtendFlex	4.4	27.9	S	32.7	S	6	S
Innvictis A4646XFS	XtendFlex	4.6	35.0	S	43.3	VS	2	MR
Innvictis A4755XFS	XtendFlex	4.7	28.9	S	31.7	S	1	R
Innvictis A4826XFS	XtendFlex	4.8	52.2	VS	56.7	VS	0	R
Innvictis A4862XF	XtendFlex	4.8	33.9	S	40.0	S	1	R
Innvictis A4924XF	XtendFlex	4.9	32.0	S	40.0	S	3	MR
Innvictis A5226XFS	XtendFlex	5.2	14.4	MS	17.7	MS	1	R
Innvictis A5445XF	XtendFlex	5.4	6.0	MR	8.3	MR	0	R
Innvictis B4553ES	Enlist E3	4.5	33.1	S	43.3	VS	1	R
Innvictis B4744ES	Enlist E3	4.7	28.3	S	33.3	S	4	MS
Innvictis B4865ES	Enlist E3	4.8	27.3	S	32.7	S	2	MR
Innvictis B4956ES	Enlist E3	4.9	18.8	MS	22.7	S	0	R
Innvictis B5015ES	Enlist E3	5.0	29.0	S	36.0	S	1	R
Innvictis B5504E	Enlist E3	5.5	28.9	S	35.0	S	0	R
Integra 4454S	Xtendflex	4.4	23.9	S	26.7	S	3	MR
Integra 4797S	Xtendflex	4.7	26.1	S	33.3	S	1	R
Integra 4875S	Xtendflex	4.8	40.0	S	48.3	VS	0	R
Pioneer P43Z44SE	Enlist E3/STS	4.3	10.9	MS	13.3	MS	5	MS
Pioneer P44Z67BE	Enlist Enlist E3/Bolt	4.4	33.3	S	40.0	S	1	R
Pioneer P45Z21E	Enlist E3	4.5	8.1	MR	10.0	MS	5	MS
Pioneer P45Z75E	Enlist E3	4.5	23.9	S	28.3	S	1	R
Pioneer P46Z53E (check)	Enlist E3	4.6	3.6	R	4.7	MR	4	MS
Pioneer P47Z15BE	Enlist Enlist E3/Bolt	4.7	37.8	S	46.7	VS	1	R
Pioneer P48A14 (check)	Enlist E3	4.8	37.2	S	43.3	VS	2	MR
Pioneer P48Z35E	Enlist E3	4.8	34.8	S	40.0	S	1	R
Pioneer P48Z73E	Enlist E3	4.8	33.3	S	36.7	S	1	R
Pioneer P50Z95E	Enlist E3	5.0	24.7	S	29.0	S	2	MR

R23KB-13478E	Enlist E3	4.2	34.8	S	40.0	S	3	MR
R23KB-14136E	Enlist E3	4.6	12.8	MS	16.7	MS	2	MR
R23PR-00033E	Enlist E3	4.9	22.6	S	28.3	S	3	MR
R23PR-00037E	Enlist E3	4.7	25.6	S	30.0	S	2	MR
R23PR-00043E	Enlist E3	4.3	25.0	S	30.0	S	3	MR
R23PR-00045E	Enlist E3	4.4	32.2	S	38.3	S	2	MR
R23PR-00058E	Enlist E3	4.8	40.6	VS	43.3	VS	2	MR
R23PR-00067E	Enlist E3	4.8	36.7	S	41.7	VS	3	MR
R23PR-00091E	Enlist E3	4.6	19.0	MS	23.3	S	2	MR
R23PR-00100E	Enlist E3	4.4	29.4	S	36.7	S	3	MR
R23PR-00178E	Enlist E3	4.6	17.0	MS	24.3	S	2	MR
R24PR-00227E	Enlist E3	4.6	34.4	S	40.0	S	1	R
R24PR-00252E	Enlist E3	4.4	37.8	S	46.7	VS	0	R
Revere 48-F22	Xtendflex	4.8	27.8	S	31.7	S	0	R
Revere 49-F36	Xtendflex	4.9	28.9	S	35.0	S	0	R
Revere X48F99	Xtendflex	4.8	20.6	S	23.3	S	0	R
USG 7435XFS	XtendFlex/STS	4.3	24.8	S	28.3	S	0	R
USG 7457XFS	XtendFlex/STS	4.5	28.7	S	31.7	S	0	R
USG 7474XFS	XtendFlex/STS	4.7	41.7	VS	43.3	VS	3	MR
USG 7476XF	XtendFlex	4.7	28.9	S	33.3	S	2	MR
USG 7487XFS	XtendFlex/STS	4.8	28.1	S	31.7	S	0	R
USG 7488XFS	XtendFlex/STS	4.8	36.1	S	40.0	S	1	R

[a] Data are averages of three roots from three replications (n = 9) arranged in a randomized complete block design.

[b] Southern root-knot nematode susceptibility was based on percent root system galled, whereas 0-1.0% = very resistant, 1.1-4.0% = resistant, 4.1-9.0% = moderately resistant, 9.1-20.0% = moderately susceptible, 20.1-40.0% = susceptible, 40.1-100.0% = very susceptible.

[c] Maximum southern root-knot nematode susceptibility was based on the average percentage of root system galled for the single most severe root from each replication.

[d] Frogeye leaf spot susceptibility was based on a 0-9 scale (0 = no disease and 9 = severe disease) across the entire plot in the upper 1/3 of the canopy.


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