

**Trial 20. SCN resistance sources variety screenings, Arthur, ND -2025**SOYBEAN (*Glycine max*)

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Sixty-four varieties among three relative maturity groups, early (0.009 – 0.3), mid- (0.4 – 0.7), and late (0.8 – 1.4). Treatments were replicated 5 times and were randomized by maturity group. Most varieties have known sources of resistance, either PI 88788 or Peking; however, some are reported to contain resistance but their source has not been made public knowledge, these varieties will be grouped as ‘Unknown’.

Data collected included SCN counts pre-planting (bulk samples), bulk soil samples for HG-type determination, end-of-season SCN egg counts by plot, and yield. Reproduction factor (RF) was calculated by dividing the end-of-season SCN egg counts by the averaged bulk samples collected pre-planting. HG-type for this location was determined to be 2.5.7 meaning that there is a breakdown of resistance to PI 88788, with a female index of 16.7%, as well as two other resistance sources that are not evaluated here. Generalized linear mixed models were used to evaluate relationships between the dependent and independent variables with replicate included as the random variable in each model.

Significant differences among maturity groups were observed for SCN RF ( $P=0.005$ ). Varieties within the early maturity group has significantly greater mean RF (3.0) compared to the moderate group (1.3); the late maturity group was similar to the early with a mean RF of 2.1. No significant differences were observed among varieties with respect to end-of-season egg counts or RF for the early, moderate, or late maturity groups (Tables 1, 2 & 3). Though no statistical significances were observed ( $P>0.05$ ), there were clear biological differences observed. SCN egg counts ranged from 826 to 9836 for the early maturity group, 222 to 3046 for the moderate group, and 285 to 6755 for the late maturing varieties. Several varieties had RF values  $< 1$  which indicates that SCN were not reproducing on those soybeans, with the majority of these varieties were within the moderate maturity group. These varieties were NK02-W8E3 (PI 88788), XO0315 (PI 88788), P04A98E (Unknown), XO0436 (PI 88788), B053EE (Peking), A06E36 (PI 88788), NK06-A1E3 (PI 88788), XO0602 (PI 88788), AG07XF4 (PI 88788), B074EE (PI 88788), B095EE (PI 88788), A10E35 (PI 88788), and A12E33 (PI 88788).

Significant differences were observed by maturity grouping ( $P<0.0001$ ) where late maturing varieties had significantly greater yields than those in early and moderate groups. Significant differences among yields were also observed with respect to varieties ( $P<0.0001$ ) with means ranging from 18 bu/ac to 50 bu/ac. Varieties, LGS1043E (PI 88788), NK11-U2X (P I88788), XO1095 (PI 88788), A12E33 (PI 88788), NK08-R3XF (PI 88788), XO0602 (PI 88788), LGS0988X (PI 88788), and NK10-P7X (PI 88788) had mean yields greater than 45 bu/ac. While NK13-Y4X (PI 88788), LGS1385X (PI 88788), and AG05XF4 (Unknown) resulted in mean yields less than 25 bu/ac.

**Table 20-1.** Brand, variety name, relative maturity, SCN egg counts, SCN reproductive factor, and yield for each of the early maturity group varieties.

<b>Brand</b>	<b>Variety</b>	<b>Relative Maturity</b>	<b>SCN Resistance Source</b>	<b>EOS<sup>a</sup> SCN egg count</b>	<b>SCN RF<sup>b</sup></b>	<b>Yield (bu/ac)<sup>c</sup></b>
Alloy	A03E34	0.3	PI88788	2405	2.1	42.2
Asgrow	AG02XF5	0.2	R3	2681	2.3	41.0
NK	NK02-W8E3	0.2	PI88788	826	0.7	39.5
Xitavo	XO0234	0.2	PI88788	2530	2.2	39.0
LG Seeds	LGS0320E3	0.3	PI88788	6622	5.7	38.7
Brevant	B025EE	0.2	Peking	2750	2.4	37.6
NK	NK03-J1XF	0.3	Susceptible	1658	1.4	37.1
Alloy	A01E36	0.1	PI88788	3750	3.2	36.5
LG Seeds	LGS0360XF	0.3	PI88788	1332	1.1	34.62
NK	NK02-Y2XF	0.2	PI88788	4510	3.9	33.6
Xitavo	XO0094	0.09	PI88788	1440	1.2	32.3
Brevant	B0095EE	0.09	Peking	4686	4.0	32.2
Asgrow	AG01XF3	0.1	R3	1756	1.5	31.9
Brevant	B014EE	0.1	Peking	2650	2.3	27.9
Brevant	B032EE	0.3	PI88788	9836	8.4	27.1
NK	NK008-P8XF	0.08	Susceptible	5556	4.7	26.1
Asgrow	AG009XF6	0.09	Susceptible	7188	6.1	–
NK	NK01-S7E	0.1	PI88788	3664	3.1	–
Xitavo	XO0315	0.3	PI88788	916	0.8	–
<b><i>P-value</i></b>	-	-	-	0.53	0.53	0.03

<sup>a</sup> EOS = End of season. These values are the mean egg counts among the 4 plots sampled.

<sup>b</sup> Mean reproductive factor based on the egg count per plot was divided by the number of SCN eggs present in the soil sample collected at planting.

<sup>c</sup> Means were significant but there were no means separation following Tukey's HSD test at  $\alpha=0.05$ . Missing yield data was due to poor plant survival from early season hail.

**Table 20-2.** Brand, variety name, relative maturity, SCN egg counts, SCN reproductive factor, and yield for each of the moderate maturity group varieties.

<b>Brand</b>	<b>Variety</b>	<b>Relative Maturity</b>	<b>SCN Resistance Source</b>	<b>EOS<sup>a</sup> SCN egg count</b>	<b>SCN RF<sup>b</sup></b>	<b>Yield (bu/ac)<sup>c</sup></b>
Xitavo	XO0602	0.6	PI88788	640	0.5	46.8 a
Brevant	B074EE	0.7	PI88788	828	0.7	44.4 ab
NK	NK06-C4XF	0.6	PI88788	3046	2.6	44.3 ab
NK	NK06-A1E3	0.6	PI88788	927	0.8	43.4 ab
NK	NK07-G5E3	0.7	Peking	1699	1.5	43.2 ab
NK	NK04-Q9XF	0.4	PI88788	1612	1.4	42.2 ab
Alloy	A06E36	0.6	PI88788	947	0.8	41.9 ac
Pioneer	P06A38E	0.6	Unknown	2595	2.2	41.3 ac
Xitavo	XO0731	0.7	PI88788	2535	2.2	39.7 ac
Xitavo	XO0436	0.4	PI88788	222	0.2	38.9 ac
NK	NK04-A9E3	0.4	PI88788	3035	2.6	37.5 ac
Xitavo	XO0554	0.5	PI88788	1457	1.2	37.1 ac
Brevant	B053EE	0.5	Peking	415	0.4	35.6 ac
Asgrow	AG04XF4	0.4	R3	1549	1.3	32.6 ac
Brevant	B054EE	0.5	PI88788	2704	2.3	32.0 ac
Asgrow	AG06XF3	0.6	R3	1414	1.2	31.4 ac
Asgrow	AG07XF4	0.7	R3	313	0.3	31.2 ac
LG Seeds	LGS0444XF	0.4	PI88788	1165	1.0	31.0 ac
LG Seeds	LGS0405E3	0.4	Peking	2229	1.9	26.4 bc
Asgrow	AG05XF4	0.5	R3	2178	1.9	18.4 c
Pioneer	P04A98E	0.4	R3	782	0.7	–
<b><i>P-value</i></b>	-	-	-	0.77	0.77	<0.001

<sup>a</sup> EOS = End of season. These values are the mean egg counts among the 4 plots sampled.

<sup>b</sup> Mean reproductive factor based on the egg count per plot was divided by the number of SCN eggs present in the soil sample collected at planting.

<sup>c</sup> Mean followed by different letters are significantly different following Tukey's HSD test at  $\alpha=0.05$ . Missing yield data was due to poor plant survival from early season hail.

**Table 20-3.** Brand, variety name, relative maturity, SCN egg counts, SCN reproductive factor, and yield for each of the late maturity group varieties.

Brand	Variety	Relative Maturity	SCN Resistance Source	EOS <sup>a</sup> SCN egg count	SCN RF <sup>b</sup>	Yield (bu/ac) <sup>c</sup>
LG Seeds	LGS1043E3	1.0	PI88788	2943	2.5	50.3 a
NK	NK11-U2XF	1.1	PI88788	1255	1.1	48.3 a
Xitavo	XO1095	1.0	PI88788	2501	2.1	48.1 a
Alloy	A12E33	1.2	PI88788	285	0.2	47.7 a
NK	NK08-R3XF	0.8	PI88788	2630	2.2	47.3 a
Asgrow	AG09XF3	0.9	R3	1358	1.2	47.2 a
LG Seeds	LGS0988XF	0.9	PI88788	3330	2.8	46.2 a
NK	NK10-P7XF	1.0	PI88788	2118	1.8	45.6 ab
Alloy	A10E35	1.0	PI88788	411	0.4	44.8 ab
NK	NK11-A4E3	1.1	PI88788	6755	5.8	44.6 ab
NK	NK09-V2E3	0.9	PI88788	2866	2.4	43.7 ab
Xitavo	XO1116E	1.1	PI88788	1561	1.3	43.1 ab
Xitavo	XO0806	0.8	PI88788	4755	4.1	42.3 ab
NK	NK14-U5E3	1.4	Peking	694	0.6	39.4 ac
LG Seeds	LGS0830E3	0.8	PI88788	4661	4.0	39.1 ac
Brevant	B095EE	0.9	PI88788	803	0.7	36.9 ac
Asgrow	AG10XF4	1.0	R3	2123	1.8	36.4 ac
NK	NK08-Z4E3	0.8	PI88788	4220	3.6	36.3 ac
Pioneer	P08A44E	0.8	PI88788	3305	2.8	32.0 ac
NK	NK13-Y4XF	1.3	PI88788	2913	2.5	23.1 bc
LG Seeds	LGS1385XF	1.3	PI88788	1396	1.2	21.0 c
Alloy	A08E36	0.8	PI88788	5693	4.9	–
Xitavo	XO993	0.9	PI88788	1678	1.4	–
Brevant	B114EE	1.1	Peking	1795	1.5	–
<b><i>P-value</i></b>	-	-	-	0.28	0.28	<0.001

<sup>a</sup> EOS = End of season. These values are the mean egg counts among the 4 plots sampled.

<sup>b</sup> Mean reproductive factor based on the egg count per plot was divided by the number of SCN eggs present in the soil sample collected at planting.

<sup>c</sup> Mean followed by different letters are significantly different following Tukey's HSD test at  $\alpha=0.05$ . Missing yield data was due to poor plant survival from early season hail.