Trial 21. SCN resistance sources variety screenings in Ayr, ND – 2025

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A total of 64 varieties divided across three relative maturity groups, early (0.009 – 0.3), mid- (0.4 – 0.7), and late (0.8 – 1.4) were sown in a field with a history of SCN pressure in Ayr, ND. Each variety was replicated five times and randomized by maturity group. Most varieties have known sources of resistance, either PI 88788 or Peking; however, some are reported to contain resistance to SCN Race 3 but their source of resistance is not known and is marked as R3.

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 21.7%, 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 ($P<0.0001$). Varieties within the moderate maturity group has significantly greater mean RF (3.2) compared to the early group (2.1) and the late maturity group (1.2). Analysis conducted within each maturity group (early, moderate, and late) indicated no significant differences among varieties with respect to end-of-season egg counts or RF (Tables 1, 2 & 3). Though no statistical differences were observed ($P>0.05$), there were clear biological differences observed. SCN egg counts ranged from 294 to 4898 for the early maturity group, 958 to 10835 for the moderate group, and 503 to 3180 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 falling in the moderate maturity group. These varieties were B025EE (Peking), NK07-G5E3 (Peking), NK08-R3XF (PI 88788), P08A44E (PI 88788), B095EE (PI 88788), XO993 (PI 88788), AG10XF4 (Unknown), LGS1043E3 (PI 88788), XO1116E (PI 88788), NK13-Y4XF (PI 88788), NK14-U5E3 (Peking).

Significant differences in yield were observed among maturity grouping ($P<0.0001$) where late and moderate maturity groups had significantly greater yields compared to early maturing varieties. Significant differences in yields were also observed with respect to varieties within maturity groups ($P<0.05$) with means ranging from 37.2 bu/ac to 62.6 bu/ac. NK14-U5E3 (Peking), NK08-R3XF (PI88788), NK07-G5E3 (Peking), AG07XF4 (Unknown), B074EE (PI88788), AG09XF3 (Unknown), NK04-A9E (PI88788), XO0602 (PI88788), XO1116E (PI88788), LGS0988X (PI88788), and A01E36 (PI88788) had mean yields ≥ 55 bu/ac. Only AG01XF3 (Unknown), NK03-J1XF (Susceptible), and LGS0360XF (PI88788) had mean yields less than 45 bu/ac.

Table 21-1. Soybean seed brand, variety name, relative maturity, SCN resistance source, end of season SCN egg counts, SCN reproductive factor, and yield for each of the early maturity group varieties.

Brand	Variety	Relative Maturity	SCN Resistance Source	EOS[a] SCN egg count	SCN RF[b]	Yield (bu/ac)[c]
Alloy	A01E36	0.1	PI88788	2215	1.9	55.5 a
Asgrow	AG02XF5	0.2	R3	3643	3.1	53.2 ab
Alloy	A03E34	0.3	PI88788	1800	1.6	52.9 ab
Brevant	B025EE	0.2	Peking	294	0.3	51.9 ab
Xitavo	XO0234	0.2	PI88788	2663	2.3	51.4 ab
Xitavo	XO0094	0.09	PI88788	1708	1.5	50.5 ab
NK	NK02-W8E3	0.2	PI88788	1899	1.6	50.3 ab
LG Seeds	LGS0320E3	0.3	PI88788	1191	1.0	50.2 ab
NK	NK02-Y2XF	0.2	PI88788	2340	2.0	49.0 ab
Brevant	B032EE	0.3	PI88788	2608	2.3	49.2 ab
Brevant	B0095EE	0.09	Peking	1410	1.2	44.9 ab
Brevant	B014EE	0.1	Peking	2078	1.8	44.8 ab
NK	NK008-P8XF	0.08	Susceptible	2221	1.9	44.7 ab
Asgrow	AG01XF3	0.1	R3	1839	1.6	44.4 ab
NK	NK03-J1XF	0.3	Susceptible	4855	4.2	43.3 ab
LG Seeds	LGS0360XF	0.3	PI88788	1806	1.6	37.2 b
Asgrow	AG009XF6	0.09	Susceptible	3776	3.3	–
NK	NK01-S7E	0.1	PI88788	4898	4.2	–
Xitavo	XO0315	0.3	PI88788	2203	1.9	–
P-value	-	-	-	0.08	0.08	<0.05

[a] EOS = End of season. These values are the mean egg counts among the 4 plots sampled.

[b] Mean reproductive factor was calculated as follows, the end of season egg count per plot divided by the number of SCN eggs present in the soil sample collected at planting.

[c] Mean followed by different letters are significantly different following Tukey's HSD at α=0.05. Missing yield data was due to poor plant survival from early season hail.

Table 21-2. Soybean seed brand, variety name, relative maturity, SCN resistance source =, end of season SCN egg counts, SCN reproductive factor, and yield for each of the moderate maturity group varieties.

Brand	Variety	Relative Maturity	SCN Resistance Source	EOS[a] SCN egg count	SCN RF[b]	Yield (bu/ac)[c]
NK	NK07-G5E3	0.7	Peking	958	0.8	61.7
Asgrow	AG07XF4	0.7	R3	2748	2.4	59.2
Brevant	B074EE	0.7	PI88788	2738	2.4	58.6
Xitavo	XO0602	0.6	PI88788	3375	2.9	56.3
NK	NK04-A9E3	0.4	PI88788	2113	1.8	55.2
Xitavo	XO0554	0.5	PI88788	1820	1.6	53.4
Xitavo	XO0731	0.7	PI88788	1273	1.1	53.2
Asgrow	AG05XF4	0.5	R3	4060	3.5	53.1
NK	NK06-C4XF	0.6	PI88788	8120	7.0	52.9
Asgrow	AG04XF4	0.4	R3	3190	2.8	51.6
Brevant	B053EE	0.5	Peking	2055	1.8	50.9
NK	NK04-Q9XF	0.4	PI88788	1530	1.3	50.8
Brevant	B054EE	0.5	PI88788	2765	2.4	49.8
NK	NK06-A1E3	0.6	PI88788	6893	6.0	47.2
Xitavo	XO0436	0.4	PI88788	10835	9.4	46.9
LG Seeds	LGS0405E3	0.4	Peking	3098	2.7	46.3
Asgrow	AG06XF3	0.6	R3	4065	3.5	45.4
LG Seeds	LGS0444XF	0.4	PI88788	4500	3.9	44.3
Pioneer	P04A98E	0.4	R3	3698	3.2	–
Alloy	A06E36	0.6	PI88788	4068	3.5	–
Pioneer	P06A38E	0.6	Unknown	2653	2.3	–
P-value	-	-	-	0.25	0.25	0.03

[a] EOS = End of season. These values are the mean egg counts among the 4 plots sampled.

[b] Mean reproductive factor was calculated as follows, the end of season egg count per plot divided by the number of SCN eggs present in the soil sample collected at planting.

[c] Mean were significantly different but no means separation were observed following Tukey's HSD at α=0.05.

Missing yield data was due to poor plant survival from early season hail.

Table 21-3. Soybean seed brand, variety name, relative maturity, SCN resistance source, end of season SCN egg counts, SCN reproductive factor, and yield for each of the late maturity group varieties.

Brand	Variety	Relative Maturity	SCN Resistance Source	EOS[a] SCN egg count	SCN RF[b]	Yield (bu/ac)[c]
NK	NK08-R3XF	0.8	PI88788	1085	0.9	62.6 a
NK	NK14-U5E3	1.4	Peking	503	0.4	62.5 a
Asgrow	AG09XF3	0.9	R3	1166	1.0	57.6 ab
Xitavo	XO1116E	1.1	PI88788	1028	0.9	56.0 ab
LG Seeds	LGS0988XF	0.9	PI88788	1440	1.2	55.8 ab
NK	NK11-A4E3	1.1	PI88788	1275	1.1	55.5 ab
Alloy	A12E33	1.2	PI88788	1095	0.9	55.5 ab
NK	NK11-U2XF	1.1	PI88788	3180	2.7	55.1 ab
Xitavo	XO1095	1.0	PI88788	1408	1.2	54 ab
NK	NK10-P7XF	1.0	PI88788	1445	1.2	53.8 ab
NK	NK13-Y4XF	1.3	PI88788	996	0.9	53.2 ab
LG Seeds	LGS1385XF	1.3	PI88788	1496	1.3	52.8 ab
Alloy	A10E35	1.0	PI88788	1705	1.5	52.7 ab
LG Seeds	LGS1043E3	1.0	PI88788	770	0.7	52.4 ab
LG Seeds	LGS0830E3	0.8	PI88788	2659	2.3	52.3 ab
NK	NK09-V2E3	0.9	PI88788	2895	2.5	51.3 ab
Brevant	B095EE	0.9	PI88788	670	0.6	50.6 ab
Pioneer	P08A44E	0.8	PI88788	579	0.5	50.5 ab
NK	NK08-Z4E3	0.8	PI88788	1728	1.5	48.9 ab
Asgrow	AG10XF4	1.0	R3	653	0.6	48.0 b
Xitavo	XO0806	0.8	PI88788	1806	1.6	47.5 b
Alloy	A08E36	0.8	PI88788	1988	1.7	–
Xitavo	XO993	0.9	PI88788	781	0.7	–
Brevant	B114EE	1.1	Peking	1178	1.0	–
P-value	-	-	-	0.28	0.28	0.01

[a] EOS = End of season. These values are the mean egg counts among the 4 plots sampled.

[b] Mean reproductive factor was calculated as follows the end of season egg count per plot divided by the number of SCN eggs present in the soil sample collected at planting.

[c] Mean followed by different letters are significantly different following Tukey's HSD at α=0.05.

Missing yield data was due to poor plant survival from early season hail.