Evaluation of Soybean Varieties in the Northern SCN Regional Soybean Test – SCN Regional Test II in West Central Iowa

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Introduction

The Northern SCN Uniform/Preliminary (UT/PT) Regional Soybean Test is used to evaluate soybean varieties produced by public breeding programs in the northern portion of the United States and Canada. Lines are evaluated in locations with moderate to high SCN pressure. In 2015, five public breeding programs participated in the Northern SCN UT-PT II Trials (Uniform Test II and Preliminary Test II). Public breeders are allowed to enter varieties into the UT-PT Trials in exchange for growing locations for the trial. Material entered into the UT-PT Test is generally in advanced stages of a breeding program. Lines are evaluated one year in Preliminary Testing before being entered in Uniform Tests. Lines usually are evaluated in Uniform trials for two or three years prior to release as new varieties. The UT-PT Soybean Trials are an efficient method for soybean breeders to have a wider geographic range of field evaluations on advanced lines and to evaluate advanced lines from other public programs, which could be used as parents in future crossing. These results also are used in cultivar releases, publications, and publicity, once a variety is released.

Materials and Methods

Each SCN UT/PT trial was planted at two locations in Iowa. The UT/PT II trials were previously planted in West Central Iowa in 2011 and 2014. In 2015, the UT/PT II trial was planted at Ames and Moorhead.

Plots were four 17.5-ft long rows spaced 30 in. apart and were planted at a rate of 10 seeds/foot, with two replications/variety. Maturity was taken at only one location (Ames) in Iowa for each test. A variety was considered mature when 95 percent of the pods had turned brown. Average plant height (in.) and plot lodging were taken on each plot prior to harvest. Lodging was scored on each plot on a 1–5 scale where 1 = all plants erect and 5 = all plants laying down. The center two rows of each four-row plot were harvested with a plot combine, total seed weight/plot and seed moisture were determined, and total plot seed weights subsequently were converted to bushels/acre.

There were a total of 12 entries in the Uniform Test II and 32 entries in the Preliminary Test II. In addition, four standard checks were included in each test for comparison across years and test locations.

Results and Discussion

Moorhead, Iowa, was one of 14 locations where the UT II trial was grown and one of 10 locations where the PT II trial was grown (Table 1). The complete 2015 Northern Uniform Soybean Test report is available at http://cropsci.illinois.edu/research/SCN-tests under the category "USDA." The AR lines entered in this test are from Silvia Cianzio's Disease Resistant Soybean Breeding Program at Iowa State University.

Table 1. Agronomic performance for soybean varieties in the Northern Uniform Test II at Moorhead, Iowa in 2015.[a, b]

Strain name	Total yield (bu/A)	Rank	Maturity (date) (Ames avg.)	Lodging (score)	Height (in.)
IA2102	79.6	1	9/27/15	3.5	46
IA1022 (SCN)	70.8	6	-6.5	3.3	45
IA3024	68.0	13	2.5	3.3	45
LD02-4485	68.6	11	-3.0	2.8	44
AR12-127092	67.4	14	-6.5	3.0	44
AR12-127102	70.4	7	-3.0	3.0	48
E11128T	64.4	15	-5.5	3.5	44
E12007	64.3	16	3.0	3.3	47
E12076	74.3	4	8.0	4.0	41
LD10-5213a	70.1	9	-3.0	2.8	44
LD10-10198	74.4	3	3.0	3.0	43
LD10-14323	70.4	8	-2.0	3.8	44
LD11-4787a	75.1	2	-5.0	3.3	42
U11-911079	72.1	5	-3.0	2.3	45
U11-227016	69.2	10	-3.5	2.3	46
U12-911082	60.7	17	-4.5	2.3	42
Average	70.0			3.1	44
LSD(.05)	8.2				

[a]Values presented in this table are means of two replications. IA2102, IA1022, IA3024, and LD02-4485 are check varieties. Least significant difference: values are from Fisher's least significant difference test. Yield LSD = 8.198. Maturity is expressed as number of days after the first check, IA2102, matured on September 27 (negative values are days before IA2102).
[b]Moorhead PT data averages, along with averages for all other locations, are available at http://cropsci.illinois.edu/research/SCN-tests.