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Evaluation of Soybean Varieties in the Northern Uniform Soybean Test–Uniform Test III

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Abstract
The Northern Uniform/Preliminary (UT-PT) Soybean Test is used to evaluate soybean varieties produced by public breeding programs in the Northern portion of the United States and Canada. In 2014, 10 public breeding programs participated in the Northern UT-PT III Tests (Uniform Test III and Preliminary Test IIIA and IIIB). Public breeders were allowed to enter varieties into the UT-PT Test in exchange for growing locations for the test. 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 Test is an efficient method for soybean breeders to get a wider geographic range of field evaluations on advance lines and to evaluate advance lines from other public programs, which could be used as parents in future crossing. Once a variety is released, these results also are used in cultivar releases, publications, and publicity.

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Introduction

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Materials and Methods

Plots were four 17.5-ft long rows spaced 30 in. apart and planted at a rate of 10 seeds/foot, with two replications per variety. A variety was considered mature when 95 percent of the pods had turned brown. 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. Seed size was determined by weighing a 200 seed sample from each plot. Seed quality scores were determined by considering the amount and degree of wrinkling, defective seed coat, level of green seed coat, and moldy or other pigment imperfections. A seed quality score of 1 = very good and 5 = very poor.

There were a total of 15 entries in the Uniform Test III, 24 entries in the Preliminary Test IIIA, and 25 entries in the Preliminary Test IIIB. In addition, four standard checks were included in each test for comparison across years and tests.

Summary

The Crawfordsville location was one of 17 locations where the Uniform Test III was grown. The complete 2014 Northern Uniform Soybean Test report is available on the USDA website. 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 and seed composition data for soybean varieties in the Northern Uniform Test III at Crawfordsville, Iowa, in 2014.*

Strain name	Yld avg (bu/acre)	Yld rank	Maturity (date) overall	Quality (score)	Size (g/100)
IA3023 (III)	57.8	12.0	9/22	2.0	14.2
IA3024	44.1	19.0	-4	2.0	13.6
IA3048 (SCN)	60.5	8.0	2	2.0	13.6
IA4005	53.5	16.0	5	2.0	12.1
AR11-214015	53.9	15.0	-2	2.0	14.2
HM11-W192	58.3	11.0	6	2.0	17.8
LD10-2477	51.6	17.0	-1	2.0	15.3
LD10-9168	66.9	3.0	5	2.0	13.5
LD10-9200	55.6	14.0	-3	2.0	12.3
LD10-9409	60.9	7.0	4	2.0	13.7
LD10-9763	64.5	4.0	7	2.0	13.3
LD10-10219	47.7	18.0	-3	2.0	12.8
LD10-10226	60.1	9.0	-1	2.0	14.4
LG11-6210	57.7	13.0	4	2.0	13.5
LG11-6214	62.2	6.0	7	2.0	14.1
U11-616086	67.3	1.0	3	2.0	14.5
U11-616111	58.9	10.0	4	2.0	13.3
U11-622148	63.4	5.0	1	2.0	13.9
U11-649117	67.1	2.0	5	2.0	15.5
Average	58.5			2.0	14.0

*Values presented in this table are means. The top four varieties are check varieties. Least significant difference: values are from Fisher's least significant difference test. Yield L.S.D. = 11.85. Maturity is expressed as number of days after the first check, IA3023, matured on September 22 (negative values are days before IA3023).