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Specialty Soybean Test—North

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Abstract
The purpose of this test was to evaluate the experimental food-type soybean lines adapted for northern Iowa. The 2004 specialty test included soybean cystnematode (SCN)–large seed, large seed high protein, small seed, and lipoxygenase-free experimental lines, and for comparison of agronomic traits, commercially grown SCN-resistant varieties released by Iowa State University. Large seed, large seed high protein, small seed, and lipoxygenase-free soybean varieties grown in Iowa are used to fill a niche in the food-bean market. These soybeans are mainly exported to Japan. Large seed soybeans are used in the production of miso, a soy product used to make soup, and are consumed as a vegetable. Large seed high protein soybeans are used for tofu production. Small-seed soybeans are used to create natto, a Japanese breakfast food. Lipoxygenase-free soybeans have less of the "beany" flavor associated with conventional varieties. This flavor trait is desirable in producing soy-based foods like soy milk.

Keywords
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Introduction

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Materials and Methods

The specialty soybean test for the northern district was planted at five Iowa locations: Ames, Curlew, Eldora, Kanawha, and Oelwein. At each location, three replications of four-row plots were planted. The plots were 12 ft long with a row spacing of 27 in. The seeding rate was nine seeds/ft. Agronomic characteristics evaluated at Kanawha included plant height and lodging susceptibility. The center two rows were harvested using a self-propelled research plot combine. The moisture and weight of each plot were measured on the combine during harvest. The harvested seed was brought to Ames for seed weight calculation and oil and protein analysis.

Results and Discussion

The test results of the small seed experimental lines A01-406016 and A01-406045; the large seed high protein experimental lines A01-408020 and A01-409033; the lipoxygenase-free SCN-resistant experimental line IA1008LF; and the SCN-resistant varieties IA1008 and IA2068 are summarized in Table 1. The data obtained from the test helped determine that A01-406016, A01-406045, A01-408020, A01-409033, and IA1008LF should be released.

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Table 1. 2004 Specialty Soybean Test North, Iowa State University—Ames, Curlew, Eldora, Kanawha, and Oelwein, Iowa.

Entry	Yield[1] (bu/a)	Maturity[2] date	Lodging[3] score	Height (in.)	Seed weight (mg/sd)	(sds/lb)	Protein[4] (%)	Oil (%)	Character
IA1008	52.4	9/15	1.8	34	187	2430	35.8	18.2	SCN resistant, yellow hilum
IA2068	50.3	9/18	2.5	31	145	3140	34.7	18.2	SCN resistant, yellow hilum
IA1007	47.9	9/15	1.5	29	255	1780	36.6	17.7	Large seed
IA1010	49.6	9/17	1.8	29	280	1620	37.2	17.2	Large seed
IA1011	45.3	9/17	2.1	30	262	1730	36.8	17.4	Large seed
IA2062	51.4	9/18	1.9	29	271	1670	36.8	17.9	Large seed
IA2043	50.6	9/18	2.0	30	271	1670	36.7	17.7	Large seed
IA2012	49.0	9/18	2.1	31	257	1760	37.9	17.2	Large seed
IA2045	48.1	9/18	2.0	29	273	1660	37.1	18.2	Large seed
IA2040	48.3	9/23	2.4	35	270	1680	38.2	17.3	Large seed
IA2063	49.1	9/24	2.6	35	276	1640	38.0	17.5	Large seed
+IA1017	50.9	9/14	1.9	33	233	1950	37.8	17.6	Large seed & high protein
+IA1018	51.7	9/15	2.0	31	196	2320	38.6	17.7	Large seed & high protein
IA2044	50.4	9/15	1.9	29	259	1750	38.4	17.9	Large seed & high protein
IA2047	49.5	9/18	2.0	32	268	1690	39.1	17.7	Large seed & high protein
IA2017	49.0	9/18	2.6	36	214	2120	38.6	17.3	Large seed & high protein
IA2048	48.1	9/18	2.0	31	265	1710	39.1	17.5	Large seed & high protein
IA2016	46.3	9/18	2.6	36	218	2080	39.1	17.3	Large seed & high protein
IA1014	45.3	9/18	2.6	33	225	2020	39.6	17.9	Large seed & high protein
IA2046	54.3	9/19	2.1	30	262	1730	37.9	17.7	Large seed & high protein
IA2053	53.1	9/19	2.4	34	220	2060	39.8	16.9	Large seed & high protein
IA2067	48.8	9/19	2.3	34	243	1870	39.9	17.1	Large seed & high protein
IA1013	46.0	9/19	2.2	34	249	1820	39.6	17.7	Large seed & high protein
HP204	43.6	9/19	2.7	39	220	2060	38.7	17.3	Large seed & high protein
IA2042	47.9	9/20	2.4	34	228	1990	38.8	17.1	Large seed & high protein
Vinton 81	43.7	9/20	2.6	38	229	1980	38.9	17.2	Large seed & high protein
IA2054	51.3	9/23	2.4	37	214	2120	39.5	16.4	Large seed & high protein
+IA1015	40.6	9/11	2.6	36	75	6050	37.2	16.7	Small seed
IA1012	38.8	9/14	2.8	29	79	5730	36.2	16.5	Small seed
+IA1016	42.8	9/16	2.5	29	93	4880	36.7	17.1	Small seed
IA2057	43.8	9/18	2.9	31	84	5400	36.2	17.2	Small seed
IA2059	42.4	9/18	3.1	32	82	5500	36.1	17.2	Small seed
IA2058	39.6	9/18	2.9	31	83	5450	36.1	17.2	Small seed
IA2056	41.8	9/19	2.9	31	84	5400	36.3	17.1	Small seed
IA2055	41.1	9/19	3.0	32	85	5340	36.2	17.1	Small seed
IA2011	50.5	9/19	2.3	33	205	2220	36.9	18.2	Lacks lipoxygenase-2
+IA1008LF	43.7	9/17	1.6	34	188	2420	36.3	18.3	Lipo. free, SCN, yellow hilum
IA2032	47.7	9/19	2.5	35	241	1880	38.6	17.9	Lipoxygenase-free
IA2042LF	45.7	9/19	2.4	32	222	2050	38.4	17.6	Lipoxygenase-free
IA2027	45.5	9/20	2.5	38	228	1990	38.5	18.1	Lipoxygenase-free
IA2025	41.7	9/21	2.5	33	220	2060	39.6	17.7	Lipoxygenase-free
IA2040LF	47.6	9/24	2.5	37	267	1700	38.7	17.5	Lipoxygenase-free

[1]Yield: Bushels/acre at 13% moisture
[2]Maturity: month/day
[3]Lodging: 1=erect, 5=prostrate
[4]Protein and oil: 13% moisture basis

+Available for licensing from the Iowa State University Research Foundation for commercial planting in 2005. The experimental line designation of IA1015 was A01-406016, IA1016 was A01-406045, IA1017 was A01-408020, and IA1018 was A01-409033.