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Modified Oil Soybean Test—South

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Abstract

The purpose of this test was to evaluate the experimental modified oil soybean lines adapted to southern Iowa. The 2010 Modified Oil Test included 1 percent linolenic, 2.5 percent linolenic, low saturates, and mid oleic, and for comparison of agronomic traits, commercially grown varieties released by Iowa State University. Oil from 1 percent linolenic, 2.5 percent linolenic, low saturates, and mid oleic soybean varieties grown in Iowa is used in the frying oil market. This oil is healthier for the consumer.

Keywords

RFR A1022, Agronomy

Disciplines

Agricultural Science | Agriculture | Agronomy and Crop Sciences

Modified Oil Soybean Test—South

RFR-A1022

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Introduction

The purpose of this test was to evaluate the experimental modified oil soybean lines adapted to southern Iowa. The 2010 Modified Oil Test included 1 percent linolenic, 2.5 percent linolenic, low saturates, and mid oleic, and for comparison of agronomic traits, commercially grown varieties released by Iowa State University. Oil from 1 percent linolenic, 2.5 percent linolenic, low saturates, and mid oleic soybean varieties grown in Iowa is used in the frying oil market. This oil is healthier for the consumer.

Materials and Methods

The modified oil soybean test for the southern district was planted at four Iowa locations including Ames, Carlisle, Chariton, and Lewis. At each location, three replications of four-row plots were planted. The plots were 13 ft long with row spacing of 27 in. The seeding rate was nine seeds/foot. Agronomic characteristics evaluated at Chariton 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, oil and protein analysis, and fatty acid analysis.

Results and Discussion

The test results of the commodity varieties IA3023, IA3048, and IA4004, the 1 percent linolenic varieties and experimental lines A08-252040, and A08-351023, the 2.5 percent linolenic variety IA3018, the low saturates varieties and the mid oleic varieties, are summarized in Table 1. The data obtained from the test helped determine that A08-252040, A08-351023, IA2101, and IA3050 should be released to interested growers.

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Table 1. 2010 Modified Oil Soybean Test—south, Iowa State University Ames, Carlisle, Chariton, and Lewis, IA.

Entry	Yield bu/a ¹	Maturity date ²	Lodging score ³	Height in.	Seed weight mg/sd	Seed weight sds/lb	Protein % ⁴	Oil % ⁴	Palmitic %	Stearic %	Palmitic +		Linoleic %	Linolenic %	Character
											Stearic %	Oleic %			
IA3023	61.8	9/23	2.3	36	146	3100	34.1	19.3	10.3	3.7	14.0	23.4	55.9	6.7	Commodity check
IA3048	56.7	9/22	2.6	35	130	3480	35.8	18.0	10.2	3.5	13.7	23.8	55.5	6.9	SCN, yellow hilum
IA4004	56.6	9/27	3.0	39	153	2960	35.9	17.7	10.7	3.9	14.6	24.7	53.5	7.3	Commodity, yellow
IA2077	51.1	9/11	1.9	33	152	2990	36.4	18.4	10.4	4.1	14.4	27.5	56.9	1.2	1% linolenic
#IA2101	56.9	9/13	2.1	37	165	2750	36.3	18.0	10.1	4.2	14.3	28.9	55.5	1.3	1% linolenic
IA2097	55.7	9/13	2.5	35	143	3160	36.2	18.4	9.8	4.2	14.1	26.4	58.2	1.2	1% linolenic
IA2078	50.9	9/13	2.0	35	145	3120	37.1	18.5	11.2	4.5	15.6	25.6	57.6	1.2	1% linolenic
IA3042	54.6	9/14	2.1	33	141	3210	37.2	17.9	11.0	4.4	15.4	22.8	60.5	1.3	1% linolenic
IA3028	52.4	9/15	2.7	36	144	3150	36.7	17.6	10.4	4.3	14.7	23.8	60.2	1.4	1% linolenic, SCN
res #A08-252040	49.1	9/15	2.5	36	136	3330	36.5	18.3	11.1	4.2	15.3	23.2	60.2	1.3	1% linolenic, SCN
res #IA3050	59.3	9/16	1.6	33	154	2950	36.8	18.3	10.7	4.3	15.0	28.5	55.1	1.3	1% linolenic
IA3025	54.6	9/16	2.0	38	160	2830	36.4	18.4	10.1	4.4	14.6	29.5	54.6	1.2	1% linolenic
IA3024	61.8	9/17	2.4	37	152	2980	34.8	19.3	10.0	4.1	14.1	28.4	56.1	1.3	1% linolenic
IA3044	59.3	9/23	1.8	37	159	2850	36.1	18.6	10.1	4.4	14.5	26.1	58.1	1.3	1% linolenic
IA3041	56.3	9/23	2.4	37	150	3030	35.7	17.5	11.0	4.0	15.0	26.8	56.7	1.4	1% linolenic
#A08-351023	59.9	9/26	1.7	35	148	3060	36.4	18.0	9.7	4.3	14.0	25.0	59.5	1.3	1% linolenic
IA3043	57.3	9/28	2.4	42	151	3000	36.7	18.3	10.2	4.6	14.8	24.3	59.6	1.3	1% linolenic
IA4005	61.4	9/30	1.7	38	142	3200	35.4	18.3	10.1	4.6	14.6	24.8	59.2	1.3	1% linolenic
IA3018	59.8	9/22	2.9	38	149	3050	34.9	19.3	10.2	3.9	14.1	23.4	59.8	2.7	2.5% linolenic
IA2100	56.3	9/14	2.2	34	139	3270	35.2	18.9	3.5	2.8	6.3	27.2	59.5	7.0	Low saturates
IA3049	57.6	9/15	2.8	36	169	2680	35.8	19.3	3.5	2.9	6.4	31.4	55.4	6.7	Low saturates
ZFS 291	52.6	9/15	2.2	36	153	2960	35.6	19.4	4.0	3.0	7.0	27.4	59.0	6.6	Low saturates
IA3026	55.5	9/19	3.0	40	128	3560	34.8	18.4	4.2	3.0	7.1	25.5	59.9	7.5	Low saturates
IA3039	52.4	9/19	2.2	35	137	3310	37.4	17.5	8.4	4.5	12.9	54.0	31.9	1.1	Mid oleic
IA3036	51.7	9/20	2.2	38	139	3270	36.5	17.3	8.1	4.3	12.4	56.8	29.6	1.2	Mid oleic

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

Released in November 2010.