



Information

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2004 Food and Specialty Trait Soybean Variety Evaluations

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The Maryland Soybean Board provided funding for evaluation of food and specialty trait soybean varieties during 2004. The tests were conducted at two locations: Wye Research and Education Center in Queen Anne's County and Lower Eastern Shore Research and Education Center – Poplar Hill Farm in Wicomico, County. Pertinent production management information for the test is in Table 1. The 2004 production year was much less challenging than 2003 when record precipitation was received. Good soil moisture conditions existed when the crop was planted in and above normal temperatures during the end of May allowed quick germination with rapid growth of the emerging seedlings. Precipitation during the growing season (Table 2) was timely which contributed to the high yields that were realized by most of the varieties. Yield information for the twenty-five varieties tested are found in Tables 3-5.

Highlighting this year's tests were 15 varieties and/or breeding lines that have local origin. Schillinger Seeds (9 entries) continue to develop food and specialty trait soybean varieties that show excellent adaptation to Maryland's growing conditions. Three elite breeding lines from Dr. William Kenworthy's oil improvement program were also tested. These lines had low linolenic acid and low saturated fats. Montague Farms continued to test the two natto-type soybean varieties that farmers are producing under contract with them and submitted a food type breeding line from the Virginia Polytechnic Institute (VPI) program for evaluation. Four food type varieties from the Ohio State program were included along with the food variety standard 'Vinton 81' that was used as one of the check varieties. A grain type check, 'Stressland' was evaluated simply for comparison purposes. Iowa 3018 is a variety that should be of considerable interest since it was produced on about 5000 Delmarva acres for Perdue this past year. Iowa 3018 produces oil that is low in linolenic acid thus greatly reducing the amount of trans fats that it contains. There is a great deal of interest in soybean varieties that produce low trans fats since the Food and Drug Administration has declared that starting in 2006 all food labels will have to indicate the amount of trans fats they contain. It is expected that food processors will be creating a great deal of demand for oil that contains low trans fats.

As in past years, the results of this year's tests indicate that there are food and specialty trait soybeans that can produce as well as the traditional grain-type varieties.

Schillinger Seeds had a number of lines (Tables 3-5) that produced statistically as good as the grain-type check, 'Stressland'. Food and specialty trait soybean production in Maryland has progressed past the days when 'Vinton 81' was the leading variety. Today, there are a number of options available for farmers who want to enter this market. And, with the demand for soybean oil with improved health benefits, Maryland producers will have well adapted choices available to them.

Table 1. Production information for 2004 food and specialty trait soybean variety tests.

Production Practice	Wye	Poplar Hill
Soil type:	Matapeake silt loam	Mattapex silt loam
Planting date:	24-May	21-May
Row Width:	7.5 inches	7 inches
Previous Crop:	Corn	Corn
Fertilizer:	None	250 lbs/A of 0-16-36
Lime:	None	
Herbicide:	Pre-emergence: (5/21) 5.0 oz a ⁻¹ Canopy XL 1 pt a ⁻¹ Dual Post-emergence: (7/26) 2 pt a ⁻¹ Poast Plus & NIS	Pre-emergence: 1.5 pt a ⁻¹ Dual 8E 13 oz a ⁻¹ Lorox DF 3 oz a ⁻¹ Canopy XL
Plots:	7 rows, 25 feet long	7 rows, 25 feet long
Seeding rate:	140,000 seeds a ⁻¹ (~2/ft)	140,000 seeds a ⁻¹ (~2/ft)
Tillage:	Conventional	Conventional
Harvest date:	Plots were harvested as beans matured.	Plots were harvested as beans matured.

Table 2. Monthly precipitation (inches) at the two locations where the test was conducted.

Month	Wye	Poplar Hill
May	3.68	2.01
June	2.74	1.89
July	7.53	7.80
August	4.27	6.54
September	3.66	2.98
October	1.63	0.69
Total	23.51	21.91

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Table 3. Average performance of food and specialty trait soybean varieties grown at two locations in Maryland during 2004.

Variety	Yield Bu a ⁻¹	Value Added Traits	Seed Wt. No. lb ⁻¹	Maturity 100% Leaf Drop	Plant Height in	Lodging 0-5	Oil %	Protein %
Stressland	74.5	Traditional grain soybean check	3113	26-Sept	36	1	20.3	41.7
Schillinger 414F.YP	72.9	MG 4.4/Med. Protein/Yellow hilum	2707	27-Sept	34	>1	19.8	42.4
Schillinger 435.TCS	70.7	Grain & Oil/MG 4.3/SCN Res./STS	2847	27-Sept	29	>1	20.2	41.1
Schillinger 45434Y	70.0	MG 4.5/Yellow hilum	3089	28-Sept	34	>1	20.9	40.7
Schillinger 394.T	68.9	MG 3.9/Med. Protein/High sucrose	2744	23-Sept	33	>1	20.2	42.2
Schillinger 41414Y	68.3	MG 4.1/Yellow hilum	2944	25-Sept	30	>1	20.9	41.2
VA 95-7456	66.8	Large seed/Yellow hilum	2159	7-Oct	25	>1	20.1	40.5
Ohio FG 4	65.7	Ohio food grade variety	1860	22-Sept	26	>1	20.6	41.6
Ohio FG 5	63.6	Ohio food grade variety	1837	22-Sept	28	>1	20.6	41.4
Montague 516	63.4	Natto bean/Montague Farms	4522	6-Oct	34	>1	17.9	41.4
MD 02-5386	62.9	Low saturated & linolenic fatty acids	3423	28-Sept	32	2	19.9	42.4
Schillinger 365F.YC	61.5	MG 3.6/Med. Protein/Yellow hilum/SCN Res.	2558	19-Sept	28	>1	20.2	42.2
Schillinger FP41424P	61.0	MG 4.1/High Protein/Black hilum	2582	25-Sept	36	>1	18.9	45.9
Iowa 3018	60.8	2% (low) linolenic acid	2332	13-Sept	30	>1	21.8	39.4
Schillinger 444F.HPC	60.7	MG 4.2/High Protein/Black hilum	2794	25-Sept	30	>1	19.0	45.4
Schillinger FP34053PY	60.7	MG 3.4/Med. Protein/Yellow hilum	2589	21-Sept	32	1.9	19.7	41.7
MD 02-5988	60.3	Low linolenic acid	3317	25-Sept	32	1	20.0	41.8
NC+ 3F43	53.7	Food grade line/SCN res. variety	3034	14-Sept	33	>1	20.3	40.7
MD 02-5362	53.5	Low saturated & linolenic fatty acids	3642	25-Sept	28	1.3	19.7	42.6
Ohio FG 1	50.6	First Ohio food grade variety	1948	18-Sept	26	>1	21.0	40.7
Montague 553	49.3	Natto bean/Montague Farms	5457	8-Oct	31	>1	18.7	40.6
Japanese L1L2L3	45.6	Low lipoxygenase bean	2659	30-Sept	24	>1	19.5	40.6
Vinton 81	36.9	Food grade standard	2485	7-Sept	28	>1	19.6	41.7
Ohio FG 3	33.8 ¹	Ohio food grade variety	2277	8-Sept	24	>1	20.1	41.2
SK 9401	22.6 ²	Black soybean	No data	1-Oct	17	>1	N/A	N/A

Table 4. Performance of food and specialty trait soybean varieties at Wye Research and Education Center, Queenstown, MD during 2004.

Variety	Yield Bu a ⁻¹	Seed Wt. No. lb ⁻¹	Maturity 100% Leaf Drop	Plant Height in	Lodging 0-5	Oil %	Protein %
Schillinger 414F.YP	92.6*	2709	September 25	36	1.3	19.20	43.07
Stressland	91.2*	3138	September 25	38	2	19.88	41.95
Schillinger 45434Y	86.2*	3432	September 26	37	1.3	20.33	41.03
Schillinger 41414Y	83.6	3072	September 24	31	1	20.28	41.38
Schillinger 394.T	82.9	2870	September 22	35	0.5	19.68	42.10
Iowa 3018	82.6	2973	September 13	33	1	21.75	39.08
Ohio FG 4	78.2	1991	September 21	27	0.5	19.93	41.83
Schillinger FP34053PY	78.2	2709	September 19	34	3.3	19.20	42.15
Schillinger 435.TCS	78.0	3051	September 25	27	1.8	20.10	40.90
Ohio FG 5	77.1	1963	September 22	31	1.5	20.10	41.78
Schillinger 365F.YC	76.5	2672	September 16	31	0.3	19.85	42.15
Montague 516	75.5	4764	October 8	34	1	17.48	41.65
VA 95-7456	74.7	2433	October 8	23	0.8	19.73	40.53
Schillinger 444F.HPC	73.1	2845	September 24	30	0.8	18.55	45.28
MD 02-5386	72.6	3712	September 29	32	3	19.32	42.94
Schillinger FP41424P	70.1	2693	September 22	35	0.5	18.58	45.93
MD 02-5362	66.8	3509	September 25	31	2	19.43	43.03
NC+ 3F43	66.5	3116	September 12	35	0.7	19.93	40.68
MD 02-5988	65.3	3319	September 24	32	2	19.68	42.05
Montague 553	63.6	4820	October 9	31	1	18.15	40.75
Ohio FG 1	61.5	2132	September 15	27	0.3	20.45	40.45
Japanese L1L2L3	46.6	3086	September 30	20	0.8	18.79	40.87
Ohio FG 3	40.5	2374	September 7	25	0	19.78	40.93
Vinton 81	36.9	2485	September 7	28	0.3	19.58	41.73
SK 9401	22.6	N/A	October 1	17	0	n/a	n/a
LSD _{0.10}	8.4	N/A	N/A	N/A	0.5	0.39	0.43

*Indicates a variety is not statistically different from the best yielding variety at the location.

Table 5. Performance of food and specialty trait soybean varieties at Lower Eastern Shore Research and Education Center, Poplar Hill farm near Quantico, MD during 2004.

Variety	Yield Bu a ⁻¹	Seed Wt. No. lb ⁻¹	Maturity 100% Leaf Drop	Plant Height in	Lodging 0-5	Oil %	Protein %
Schillinger 435.TCS	63.3*	2642	September 29	31	0	20.35	41.33
VA 95-7456	58.8*	1885	October 5	N/A	0.3	20.55	40.43
Stressland	57.7*	3088	September 27	33	0	20.73	41.53
MD 02-5988	55.2	3316	September 27	32	0	20.38	41.45
Schillinger 394.T	55.0	2618	September 25	31	0	20.75	42.30
Schillinger 45434Y	53.7	2746	September 30	30	0	21.53	40.43
Schillinger 414F.YP	53.2	2705	September 28	33	0	20.45	41.70
Ohio FG 4	53.2	1729	September 24	25	0	21.35	41.43
Schillinger 41414Y	53.1	2816	September 26	30	0	21.48	41.10
MD 02-5386	53.1	3133	September 28	33	1	20.53	41.90
Schillinger FP41424P	52.0	2472	September 27	36	0	19.25	45.78
Montague 516	51.3	4280	October 4	N/A	0.3	18.30	41.10
Ohio FG 5	50.0	1711	September 22	26	0.3	21.08	41.10
Schillinger 444F.HPC	48.4	2743	September 26	31	0	19.35	45.45
Schillinger 365F.YC	46.4	2443	September 21	25	0	20.60	42.15
Japanese L1L2L3	44.7	2232	September 30	27	0	20.18	40.33
Schillinger FP34053PY	43.2	2470	September 22	29	0.5	20.18	41.28
NC+ 3F43	41.0	2953	September 15	31	0.3	20.75	40.80
MD 02-5362	40.2	3775	September 26	25	0.5	19.98	42.25
Ohio FG 1	39.8	1764	September 20	25	0	21.45	41.03
Iowa 3018	39.0	1690	September 13	26	0	21.78	39.73
Montague 553	34.9	6094	October 6	N/A	0	19.25	40.53
Ohio FG 3	27.0	2180	September 8	23	0	20.35	41.48
LSD _{0.10}	7.2	N/A	N/A	N/A	N/A	0.49	0.5

*Indicates a variety is not statistically different from the best yielding variety at the location.