



Information

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2005 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 2005. 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. Planting of plots during 2005 was delayed until mid-June due to cool, wet weather during May. Good soil moisture conditions existed when the crop was planted and above normal temperatures during the latter part of June allowed quick germination with rapid growth of the emerging seedlings. Precipitation during the vegetative growth period (Table 2) was timely allowing for development of desirable leaf area index to support reproductive stages of development. Hot, dry weather during the latter part of August and during September did not seem to affect production at Poplar Hill but yield for most varieties at Wye were less than what is generally attained.

Thirty-three food and specialty trait varieties and elite breeding lines (Table 3) were tested during 2005. A grain-type variety, 'Stressland' served as a check for comparison purposes. There were five varieties at Wye that produced significantly better yield than 'Stressland' (Table 4). There was considerable variability among plots at Poplar Hill that lead to no statistical differences for yield being identified for this location.

Nearly all the entries in this year's test came from regionally located food and specialty trait soybean variety development programs. Schillinger Seeds (8 entries) continue to develop food and specialty trait soybean varieties that show excellent adaptation to Maryland's growing conditions. Montague Farms located in Virginia submitted two natto-type soybean varieties (MFS 511 and MFS 516). Natto-type soybeans are noted for their small and uniform size, bright gold color, transparent hylum and optimum sugar content for proper natto fermentation. Montague Farms exports natto-type soybeans to Japan. Two food type varieties from the Ohio State program (Ohio FG4 and FG5) were included along with the food variety standard 'Vinton 81' that was used as one of the check varieties. Blue River Hybrids, located in Seward, NE is a seed company that develops and produces organically certified seeds. Blue River submitted four varieties for testing this past year. The most entries submitted from one program were the 13 elite breeding lines from the Virginia State University food-soybean breeding program

directed by Dr. Tadesse Mebrahtu. Though the yield for these lines was good at Poplar Hill, they have relatively late maturity for Maryland conditions. The Virginia State lines all had very large seed size. Iowa 3017 is a variety that should be of considerable interest since it 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. 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.

Acknowledgments

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Table 1. Production information for 2005 food and specialty trait soybean variety tests.

<u>Production Practice</u>	<u>Wye</u>	<u>Poplar Hill</u>
Soil type:	Matapeake silt loam	Mattapex silt loam
Planting date:	10-June	16-June
Row Width:	7.5 inches	7 inches
Previous Crop:	Corn	Corn
Fertilizer:	None	None
Lime:	None	None
Herbicide:	Pre-emerge = Dual II Magnum @ 1.5 pt a ⁻¹ Post-emerge = Blazer – Basagran @ 1.5 pt a ⁻¹	Pre-emerge = Linex 50 DF @ .75 lb a ⁻¹ + Lasso MicroTech @ 1.4 qt a ⁻¹ Post-emerge = Select 2EC @ 8.0 oz a ⁻¹ + crop oil concentrate
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:	31-October	1-November

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

Month	Wye	Poplar Hill
May	4.94	4.94
June	2.41	3.84
July	5.06	5.01
August	5.05	1.86
September	1.68	0.39
Total	19.14	16.04

Table 3. Food and specialty trait soybean varieties and elite breeding lines tested in Maryland during 2005 and their value added traits.

Variety	Value Added Traits
Iowa 3017	Low linolenic acid (1%)
Montague (MFS) 511	Natto soybean
Montague (MFS) 516	Natto soybean
Blue River 25YP6	Mid-Group II ; Yellow hilum; Excellent tofu type soybean; Organic
Blue River 36YP6	Mid-Gourp III; Yellow hilum; Organic
Blue River 3F43	Mid-Group III; Buff hilum; Cyst nematode line with some food grade qualities ; Organic
Blue River 41YP5	Early-Group IV; Yellow hilum; Excellent combination of yield, color and protein; Organic
Ohio FG 4	Ohio food grade variety
Ohio FG 5	Ohio food grade variety
Schillinger 305 F. HP	Early-Group III; Food grade soybean; High protein
Schillinger 365F.YC	Mid-Group III; Medium protein; Yellow hilum; SCN Resistant
Schillinger 394.T	Late-Group III; Medium protein; High sucrose
Schillinger 414F.YP	Mid-Group IV; Medium protein; Yellow hilum
Schillinger 435.TCS	Mid-Group IV; SCN Resistant; STS technology; Grain & oil soybean
Schillinger 444F.HPC	Early-Group IV; High protein; Black hilum
Schillinger FP44P245	Mid-Group IV; Food soybean
Schillinger FP45Y255	Mid-Group IV; Food soybean
Stressland	Traditional grain soybean check
VA 95-7456	Large seed/Yellow hilum
Vinton 81	Food grade standard
VS 04-796 (Virginia State University)	Food grade; Yellow hilum; Large seed
VS 04-836	Food grade; Yellow hilum; Large seed
VS 04-840	Food grade; Yellow hilum; Large seed
VS 04-841	Food grade; Yellow hilum; Large seed
VS 04-849	Food grade; Yellow hilum; Large seed
VS 04-856	Food grade; Yellow hilum; Large seed
VS 04-861	Food grade; Yellow hilum; Large seed
VS 04-863	Food grade; Yellow hilum; Large seed
VS 04-877	Food grade; Yellow hilum; Large seed
VS 04-879	Food grade; Yellow hilum; Large seed
VS 04-885	Food grade; Yellow hilum; Large seed
VS 04-919	Food grade; Yellow hilum; Large seed
VS 04-924	Food grade; Yellow hilum; Large seed

Table 4. Performance of food and specialty trait soybean varieties at Wye Research and Education Center, Queenstown, MD and Lower Eastern Shore Research and Education Center, Poplar Hill Facility, Quantico, MD during 2005.

Variety	Yield (Bu a ⁻¹)		Seed Wt. No. lb ⁻¹	Maturity 100% Leaf Drop ¹	Plant Height in	Lodging 0-5 ²	Oil %	Protein %
	Wye	Poplar Hill						
Iowa 3017	23.2	47.9	3187	<9/19	31	3		
MFS 511	33.1*	49.7	6107	>10/10	38	1		
MFS 516	29.7*	45.4	3664	>10/10	39	1		
Blue River 25YP6	17.5	48.2	2254	<9/14	30	2		
Blue River 36YP6	N/A	60.7	N/A	>9/22	N/A	N/A		
Blue River 3F43	23.4	46.7	2762	<9/19	37	2.5		
Blue River 41YP5	21.8	55.2	2579	<10/10	38	1.3		
Ohio FG 4	19.2	39.7	2218	<9/22	30	2		
Ohio FG 5	20.8	21.5	2099	<9/22	32	1.8		
Schillinger 305 F. HP	28.1	47.7	3013	>9/22	36	1.8		
Schillinger 365 F. YC	23.2	45.4	2987	<9/22	31	0.5		
Schillinger 394 T	29.1	45.6	3076	<10/10	37	0.8		
Schillinger 414 F. YP	29.6*	53.6	2510	<10/10	39	2.3		
Schillinger 435.TCS	33.1*	37.1	2887	<10/10	35	1.3		
Schillinger 444 F. HPC	24.6	51.5	2995	<10/10	34	1.5		
Schillinger FP44P245	20.7	42.3	3191	<10/10	35	0		
Schillinger FP45Y255	30.4*	47.0	2412	>10/10	41	1		
Stressland	26.0	38.5	3317	<10/10	41	3.3		
VA 95-7456	23.5	42.6	3301	>9/22	34	2		
Vinton 81	5.7	45.9	2695	<9/14	26	1		
VS 04-796	13.6	46.9	1563	>10/10	35	3.5		
VS 04-836	19.7	49.6	1565	>10/10	29	4		
VS 04-840	15.6	62.7	1432	>10/10	41	4.5		
VS 04-841	15.7	48.0	1557	>10/10	29	2.5		
VS 04-849	17.3	45.6	1791	>10/10	34	3.5		
VS 04-856	20.5	54.6	1830	>10/10	38	2.8		
VS 04-861	14.6	49.0	1622	>10/10	29	5		
VS 04-863	16.7	48.8	1505	>10/10	40	4.8		
VS 04-877	13.2	50.4	1615	>10/10	37	4.8		
VS 04-879	13.7	40.5	1523	>10/10	37	4.8		
VS 04-885	19.5	45.8	1937	>10/10	41	4		
VS 04-919	16.1	50.4	1563	>10/10	32	4.5		
VS 04-924	21.6	56.7	1528	>10/10	34	3.8		
LSD _{0.10}	3.3	NS						

*Indicates the variety had yield significantly greater than the check "Stressland" at Wye.

¹Maturity is indicated by approximate date for 100% leaf drop, i.e. <9/22 indicates that leaf drop occurred prior to September 22.

²Lodging score 0 = no lodging; 5= plot was flat.