

Final report for the project “On-farm Organic Soybean Variety Trials”

R.D. Battel, D.G. Bass, D. Wang, D. Rossman, D. R. Mutch

Forty eight, 51, and 48 soybean varieties were tested on organic farms at three or four counties in Michigan in 2013, 2014 and 2015 respectively. At the beginning of each year, all the participating investigators, collaborators, and the project technicians had a planning meeting for the variety trials. A field day was organized each year when organic farmers and participating seed companies were invited to visit the trials in the field when the differences among the varieties were apparent (usually in late September). At the end of each year, the test results were summarized as a report (attached below) and distributed to organic farmers in Michigan. The following are the three reports for years 2013, 2014, and 2015.

2013 Michigan Organic Soybean Variety Trials

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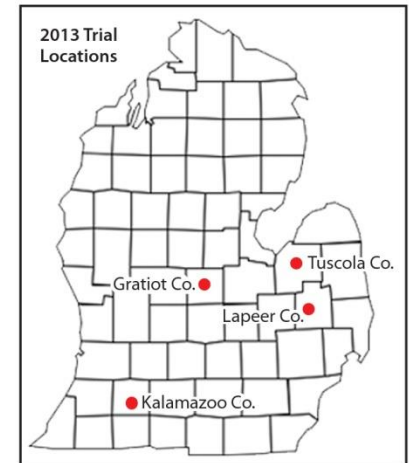
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This report provides information on performance of non-GMO soybean varieties grown under certified organic management in Michigan in 2013. This research is funded by North Central Region Sustainable Agriculture Research Education (NCR SARE) and The CERES Trust.

Testing Procedures

Four trial locations are reported in this publication. A total of 48 soybean varieties were entered by seven seed companies and three universities. The cooperators, planting dates, harvest dates and other site details for each location are listed below.

Seed was planted in 2-row plots, 26 feet long with 30-inch row spacing at a depth of 1.5 inches. The planting rate was 180,000 seeds/Acre. At each location, varieties were replicated four times in a lattice design. The plots were trimmed to a length of 21 feet and both rows were harvested. Experimental design, data management and data analysis were conducted with AGROBASE Generation II software (Agronomix Software, Inc., Winnipeg, Canada).



Using the Data

Yield: Expressed as bushels per acre (Bu/A) at 13 percent moisture and is reported as single and across site means for 2013.

Height: Plant height, reported in inches, was measured at maturity from the soil surface to the tip of the main stem. The reported values are means from all sites.

Protein and oil content: Protein and oil content of the seed was determined using near-infrared reflectance and is expressed on a 13 percent moisture basis.

Test Site Information

Gratiot County

Nearest city: Middleton
Cooperator: Dick Davis
Soil type: Parkhill Loam
Previous crop: Oats for Oatlage
Tillage: Spring: chisel plow, field cultivate
Planting date: June 20, 2013
Harvest date: November 13, 2013

Kalamazoo County

Nearest city: Hickory Corners
Cooperator: W.K. Kellogg Biological Station
Soil type: Kalamazoo sandy loam
Previous crop: Fallow
Tillage: Spring: chisel plow, field cultivate
Planting date: June 4, 2013
Harvest date: November 10, 2013



Farmers, breeders and project team review soybean varieties during the Sept. 6, MSU Extension Summer Organic Tour.

Lapeer County

Nearest city: Columbiaville
Cooperator: Don Brockriede
Soil type: Sandy loam
Previous crop: Corn
Tillage: Fall: deep tillage with pulverizer
Spring: field cultivator with large sweeps
Planting date: 06/08/2013
Harvest date: 11/14/2013

Tuscola County

Nearest city: Caro
Cooperator: Steve Reinbold
Soil type: Tappen-Londo loam
Previous crop: Seed Corn
Tillage: Fall: disk Rip
Spring: field cultivate
Planting date: 05/16/2013
Harvest date: 10/23/2013

Growing Conditions/Comments

Gratiot County: The moisture was good for several weeks after planting, then it turned dry for the next eight weeks.

Kalamazoo County: The conditions in Kalamazoo were favorable until early fall.

Lapeer County: Conditions at planting were good and continued until harvest.

Tuscola County: May had good moisture at planting and for the next three weeks. Droughty conditions and a very high population of aphids mid-summer caused a reduction in yields.

Selecting a Variety

Least Significant Difference (LSD) values are useful when comparing two varieties in the same table. If the difference between two varieties is less than the LSD value, this difference is probably due to chance or minor environmental differences. However, if the difference between two varieties is greater than the LSD, there is a 95 percent or greater probability that the difference in performance is due to the greater yield potential of one variety. Valid comparisons can only be made between averages in the same column. The C.V. is indicative of the trial precision. Lower C.V. values indicate more precise trials.

The primary consideration in selecting a variety is yield. When evaluating a variety, consider yield performance over locations and across several years, if available. Considerations other than yield are also important in selecting a variety. It is especially important to select a variety with protein levels and seed size that meets the end user requirements.

Growers should note seed size when selecting planting rates. Planting rates should be based on number of seeds per acre and not on pounds per acre.

It often benefits growers to select a few good varieties for planting each year. Yield determination and careful field evaluation during the growing season will add to the grower's knowledge of variety performance and allow for better selection.



Planting organic soybean trial at KBS, May 2013.



Harvesting soybeans at Columbiaville site, November 2013.



Field day at Middleton organic soybean variety trial, September 2013.



The management team from the North Central Region Sustainable Agriculture Research and Education Program touring the Caro trial August 13, 2013.

Variety Trial Results											
Source	Variety	Maturity group	Yield Bushels per Acre					Ht. In	Protein	Oil	Seeds/lb
			Tuscola	Lapeer	Gratiot	KBS	Average				
Albert Lea	Viking O.1706N	1.7	35.7	34.7	28.9	58.5	39.5	29	36.3	17.9	3547
Albert Lea	Viking O.199AT	1.9	36.6	41.7	33.6	62.2	43.5	30	36.8	18.1	2690
Albert Lea	O.IA2053	2.1	35.3	38.8	36.8	57.3	42.1	32	39.0	16.7	2284
Albert Lea	Viking O.2265	2.2	36.2	33.3	38.3	66.4	43.6	30	36.3	18.0	3138
Albert Lea	IA1018	1.8	38.7	38.0	34.0	62.1	43.2	30	38.9	16.9	2449
Blue River	Blue River 2A12	2.1	33.4	32.0	32.9	63.6	40.5	28	37.4	17.6	2931
Blue River	Blue River 21F3	2.1	36.3	34.1	36.5	57.2	41.0	31	39.1	16.6	2114
Blue River	Blue River 23C 2	2.4	33.3	34.7	34.7	61.4	41.0	31	35.4	18.1	2751
DF Seeds	DF 242N/S	2.4	38.4	35.1	44.1	61.4	44.8	31	37.9	17.3	3247
DF Seeds	DF 272 N/S	2.7	41.1	39.4	44.9	57.5	45.7	36	35.8	17.1	3187
DF Seeds	DF 161 STS	1.6	39.5	45.8	37.7	56.3	44.8	30	35.9	17.9	3466
DF Seeds	DF 155F	2.5	31.1	34.7	38.4	64.0	42.1	29	38.6	17.4	2322
DKB Farms	Vinton 81	1.9	30.8	33.4	32.7	51.5	37.1	35	40.4	16.6	2168
Iowa	IA1026	1.9	28.8	38.1	32.8	58.2	39.5	26	37.9	17.5	3048
Iowa	IA2102	2.7	38.3	41.1	43.8	66.8	47.5	31	36.3	17.9	2999
Iowa	IA2103	2.4	34.5	37.1	38.3	63.0	43.2	28	39.4	16.7	2065
Iowa	IA2104	2.2	34.2	33.9	37.8	56.1	40.5	29	39.5	16.8	2311
Iowa	IA3051	3	32.9	39.4	38.9	56.8	42.0	32	39.6	16.6	2504
Minn Crop Improvement	MN 1505SP	1.5	27.1	32.9	31.7	56.9	37.2	26	39.7	17.7	2338
Minn Crop Improvement	MN 1701 CN	1.7	32.5	40.5	33.3	56.9	40.8	30	36.9	17.7	2951
Minn Crop Improvement	MN 1410	1.4	31.4	32.3	36.3	62.2	40.6	29	37.5	18.0	2743
Minn Crop Improvement	M03-326084	1.7	23.3	32.7	32.2	52.3	35.1	34	38.8	17.1	2170
Minn Crop Improvement	MN 2001 SP	2.0	37.8	33.5	30.2	55.1	39.2	30	40.5	16.9	2096
Michigan State University	MSU E05181-T	2.0	36.8	38.3	36.2	57.4	42.2	28	37.8	17.7	2285
Michigan State University	MSU E06331-T	2.4	28.1	30.3	29.4	53.9	35.4	26	39.8	16.9	2185
Michigan State University	MSU E06341-T	2.6	31.4	23.8	39.5	53.9	37.2	28	39.8	16.9	2334
Michigan State University	MSU E07051	2.2	28.9	39.1	35.3	60.8	41.0	29	36.6	17.9	2458
Michigan State University	MSU E07130-T	2.3	33.9	35.4	34.5	55.2	39.8	33	40.8	16.4	1998
Michigan State University	MSU E07158-T	2.3	28.0	37.6	30.8	48.2	36.2	31	42.0	16.5	1929
Michigan State University	MSU E09014	2.7	42.3	33.4	42.2	56.8	43.7	35	36.8	17.6	2697
Michigan State University	MSU E09090	2.6	34.1	37.8	40.1	59.3	42.8	26	35.1	18.0	2826
Michigan State University	MSU E09222LL	2.4	32.6	31.7	38.5	55.0	39.5	26	37.0	17.2	3105
Michigan State University	MSU E10173	N/A	41.8	31.1	34.5	59.7	41.8	29	36.7	17.4	2473
Michigan State University	MSU E10174	N/A	43.9	46.9	47.7	67.5	51.5	33	35.0	18.0	2407
Michigan State University	MSU E10254LL	2.3	36.2	38.0	37.2	63.9	43.8	28	36.7	18.0	2883
Michigan State University	MSU E11399	N/A	42.1	36.3	37.5	64.6	45.1	32	34.5	18.0	2856
Michigan State University	MSU E11401	N/A	31.2	41.9	42.7	61.6	44.4	30	34.4	18.2	2783
Michigan State University	MSU E11431	N/A	34.2	44.6	40.7	65.1	46.2	32	34.5	18.1	2793
Organic Bean & Grain	Org B&G S2020	2	28.5	33.7	33.7	55.3	37.8	28	37.3	17.6	2612
Organic Bean & Grain	Org B&G DH410	1.6	32.8	37.3	41.9	57.3	42.3	29	39.3	17.7	2685
Organic Bean & Grain	Org B&G DH530	1.6	24.4	37.1	33.8	60.0	38.8	28	36.3	18.2	2620
Organic Bean & Grain	Org B&G MK9101	1	20.3	34.4	31.4	54.4	35.1	28	35.9	14.3	2184
Organic Bean & Grain	Org B&G MK1016	1	14.7	N/A	25.4	19.5	²	27	37.7	17.4	4593
Schillinger Genetics	Schillinger e2062	2.0	30.6	36.3	35.6	50.6	38.3	26	38.6	18.1	2672
Schillinger Genetics	Schillinger e2162	2.1	27.6	37.6	40.6	55.9	40.4	29	38.6	17.0	2916

Table continued on next page.

			Variety Trial Results								
Source	Variety	Maturity group	Yield Bushels per Acre					Ht. In	Protein	Oil	Seeds/lb
			¹ Tuscola	Lapeer	Gratiot	KBS	Average				
Sunopta	Sunopta SR-53LF	2.1	N/A	37.9	33.4	53.7	²	33	39.1	16.9	2451
Sunopta	Sunopta S20G7	2.0	31.3	33.9	40.1	57.1	40.6	29	38.1	17.4	2264
Sunopta	Sunopta SL9-L6	N/A	N/A	40.5	30.6	49.8	²	31	40.9	16.5	2177
	GRAND MEAN		33.1	36.4	36.3	57.5					
	Max.		43.9	46.9	47.7	67.5	¹ See comments on growing conditions for Tuscola County. ² Averages not included due to missing location yield.				
	Min.		14.7	23.8	25.4	19.5					
	LSD		7.6	10.0	7.7	9.6					
	CV		13.7	16.5	12.7	10.0	N/A = not available				

Results

The project was presented at the Michigan Organic Reporting Session in March, 2013. This event hosted 50 attendees including Extension educators, researchers, government agency personnel, agri-business representatives and organic farmers. Three field days were conducted in August and September, 2013 for Michigan organic farmers. Seventy-five organic farmers attended these field days.

The results from our trials were summarized and presented to 35 organic farmers at the December 17, 2013, organic meeting in Birch Run, Michigan. The project was also presented during two sessions, January 7 and 8, 2014, at the Southwest Agricultural Conference in Ridgeway, Ontario to over 80 attendees.

On August 13, 2013, the management team from the North Central Region (NCR) Sustainable Agriculture Research and Education (SARE) Program toured Michigan reviewing the Michigan SARE program. The variety trials project was reviewed on site at the Caro, Michigan location. As part of the review, NCR SARE produced a video of project investigator Dan Rossman discussing the project. That video has been posted by NCR SARE at http://www.youtube.com/watch?v=A8KCiwoJ_mo

Special thanks to our field crew for their efforts: Josh Dykstra, Amelia Mutch and Hailey Haist.

Seed Sources

DKB Farm & Services
Don Brockriede
4945 Marathon Road
Columbiaville, MI 48421
810-688-3008

D.F. Seeds Inc.
John Diehl
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Dansville, MI 48819
517-623-6161

Organic Bean & Grain
Mark Vollmar
1795 W. Akron Road
Caro, MI 48723
989-673-6402

SunOpta
John Simmons
26 E Sanilac
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810-648-5600

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1066 Bogue Street
East Lansing, MI 48824-1325
517-355-0271 Ext. 188

Schillinger Genetics, Inc.
Corey Nikkel
4401 Westown Parkway, Suite 225
West Des Moines, IA 50266
515-225-6164

Iowa State University
Dr. Walter Fehr/Kevin Scholbroch
1212 Agronomy Hall
Ames, IA 50011-1010
515-294-6864

Albert Lea Seed
Mathew Leavitt
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Albert Lea, MN 56007
800-352-5247

Blue River Hybrids
Maury Johnson
27087 Timber Rd.
Kelly, IA 50134
800-370-7979

University of Minnesota/ MN Crop Improvement
Roger Wippler
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St. Paul, MN 55108
612-625-7766



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2014 Michigan Organic Soybean Variety Trials

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This report provides information on performance of non-GMO soybean varieties grown under certified organic management in 2014. This research is funded under The Ceres Trust and the North Central Region Sustainable Agriculture Research Education (NCR SARE).

Testing Procedures

Three trial locations are reported in this publication. A total of 51 soybean varieties were entered by seven seed companies and three universities. The cooperators, planting dates, harvest dates and other site details for each location are listed below.

Seed was planted in 2-row plots, 26 feet long with 30-inch row spacing at a depth of 1.5 inches. The planting rate was 190,000 seeds/Acre. At each location, varieties were replicated four times in a lattice design. The plots were trimmed to a length of 20 feet and both rows were harvested. Experimental design, data management and data analysis were conducted with AGROBASE Generation II software (Agronomix Software, Inc., Winnipeg, Canada).

Using the data

Yield: Expressed as bushels per acre (Bu/A) at 13 percent moisture and is reported as single and across site means for 2014.

Height: Plant height, reported in inches, was measured at maturity from the soil surface to the tip of the main stem. The reported values are means of all replications at the Tuscola and Lapeer, and Kalamazoo sites.

Protein and oil content: Protein and oil content of the seed was determined using near-infrared reflectance and is expressed on a 13 percent moisture basis.

Test site information

Lapeer County

Nearest city: Columbiaville	Cooperator: Don Brockriede
Soil type: Brady Sandy Loam	Previous crop: Corn
Tillage: Rotovator	
Planting Date: June 26	Harvest Date: November 13

Tuscola County

Nearest city: Unionville	Cooperator: Dave Sting
Soil type: Tappan-Londo Loam	Previous crop: Corn
Tillage: Fall moldboard plow, spring field cultivate	
Planting Date: June 5	Harvest Date: November 12

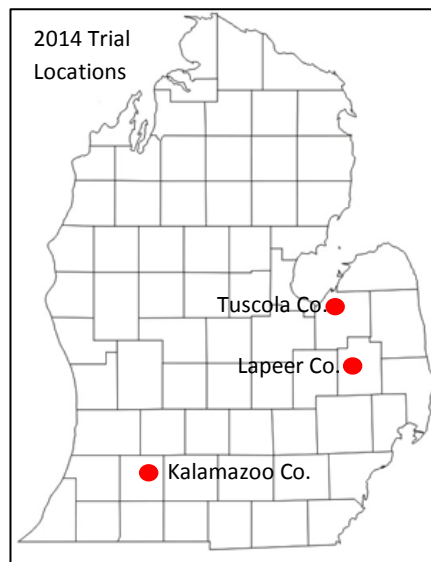
Kalamazoo County

Nearest city: Hickory Corners	Cooperator: W.K. Kellogg Bio Station
Soil type: Sandy Loam	Previous crop: Winter wheat
Tillage: Chisel plow, field cultivate	
Planting Date: June 6	Harvest Date: October 26

Growing conditions/comments

Lapeer: Due to heavy pressure from volunteer corn, plot was tilled and replanted at a rather late date. The site had timely rains and favorable growing conditions, but an early frost affected most varieties, resulting in small seed size.

2014 Trial Locations



Farmers, breeders and project team review soybean varieties during the Sept. 26, MSU Extension Summer Organic Tour.



Harvesting soybeans at Kalamazoo site, October 26.

Tuscola: Very wet spring delayed planting.

Kalamazoo: Delayed planting due to wet soils. Good growing conditions except for 3-4 weeks dry weather in August.

Selecting a variety

Least Significant Difference (LSD) values are useful when comparing two varieties in the same table. If the difference between two varieties is less than the LSD value, this difference is probably due to chance or minor environmental differences. However, if the difference between two varieties is greater than the LSD, there is a 95 percent or greater probability that the difference in performance is due to the greater yield potential of one variety. Valid comparisons can only be made between averages in the same column. The C.V. is indicative of the trial precision. Lower C.V. values indicate more precise trials.

The primary consideration in selecting a variety is yield. When evaluating a variety, consider yield performance over locations and across several years, if available. Considerations other than yield are also important in selecting a variety. It is especially important to select a variety that will mature before the first frost in the fall.

Growers should note seed size when selecting planting rates. Planting rates should be based on number of seeds per acre and not on pounds per acre. It often benefits growers to select a few good varieties for planting each year. Yield determination and careful field evaluation during the growing season will add to the grower's knowledge of variety performance and allow for better selection.



Planting Tuscola Organic Soybean Variety trial.



Rating Soybean Varieties for White Mold.

Seed sources

DKB Farm & Services
Don Brockriede
4945 Marathon Road
Columbiaville, MI 48421
810-688-3008

D.F. Seeds Inc.
Chris Varner/John Diehl
905 S. Jackson Road P.O. Box 159
Dansville, MI 48819
517-623-6161

Organic Bean & Grain
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515-294-6864

Albert Lea Seed
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1414 W. Main, PO Box 127
Albert Lea, MN 56007
800-352-5247

Blue Rive Hybrids
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800-370-7979

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MN Crop Improvement**
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Source	Variety	Maturity Group	Hilum Color	(Bu./A)				% Protein	% Oil	Seeds per Pound	Maturity DAP**	Height (in.)*	WM DSI#
				Tuscola	Kalamazoo	Lapeer	Average						
Albert Lea	Viking O.1706N	1.7	Dark	57.9	37.8	34.2	43.3	36.6	17.2	3245	118	26.0	19.8
Albert Lea	Viking O.E1993N	1.9	ImpBlack	53.7	36.3	29.1	39.7	39.0	17.0	2415	117	27.6	11.2
Albert Lea	Viking O.2265	2.2	Dark	58.4	45.7	37.5	47.2	36.9	17.2	3048	123	29.2	21.2
Albert Lea	Viking O.2299	2.2	Clear	51.8	47.7	33.2	44.2	36.5	17.0	2887	122	27.5	5.1
Albert Lea	Viking O.2399AT12	2.3	Yellow	54.7	48.7	33.6	45.7	39.2	16.2	2230	123	26.0	12.6
Blue River	12A2	1.2	Dark	52.0	38.5	33.1	41.2	36.7	17.1	3266	117	26.8	24.9
Blue River	21F3	2.1	Yellow	53.0	45.8	25.5	41.4	39.3	15.6	2234	129	30.4	7.7
Blue River	27A5	2.7	Yellow	53.8	47.1	35.8	45.6	36.4	16.9	2855	124	27.1	14.9
DF Seeds	DF 161 N/STS	1.6	Black	51.2	48.6	37.9	45.9	36.4	17.3	3287	116	26.1	24.1
DF Seeds	DF 241 NCF	2.4	Clear	47.6	30.1	22.1	33.3	36.9	16.4	2837	125	23.7	20.5
DF Seeds	DF 242 N/S	2.4	Black	56.2	41.4	33.1	43.6	36.9	16.7	3310	123	27.1	12.7
DF Seeds	DF 155 F	2.5	Clear	54.6	49.9	27.7	44.1	39.1	16.4	2331	129	27.1	8.2
DKB Farms	VINTON 81	1.9	Clear	48.5	39.0	26.7	38.1	40.7	15.6	2241	122	33.4	14.1
Iowa State	IA3053RA12	3.0	Yellow	57.0	47.6	31.7	45.4	38.3	15.9	2330	127	29.1	19.3
Iowa State	IA2102	2.7	Yellow	55.7	46.1	32.6	44.8	36.8	16.8	2972	124	27.6	28.7
Iowa State	IA2104	2.2	Yellow	51.7	49.4	32.9	44.7	39.2	16.1	2270	124	26.6	9.0
Iowa State	IA3051	3.0	Yellow	57.6	47.3	33.3	46.1	39.2	15.3	2415	129	28.8	16.3
MSU	E05181-T	2.0	Yellow	46.6	25.5	31.3	34.5	37.7	16.8	2538	120	27.3	7.1
MSU	E07130-T	2.3	Yellow	44.8	41.1	24.9	36.9	40.7	15.6	2038	127	29.4	8.2
MSU	E07158-T	2.3	Yellow	46.1	41.7	27.4	38.4	41.4	15.5	2014	127	29.8	3.9
MSU	E10174	2.9	Brown	54.4	49.7	25.5	43.2	35.4	17.1	2378	129	32.3	11.1
MSU	E11095	2.5	Brown	53.6	39.1	29.9	40.9	35.3	16.9	2848	124	26.3	12.1
MSU	E11128T	2.6	Yellow	54.2	42.2	26.4	40.9	39.6	15.9	2352	127	27.3	21.2
MSU	E11399	2.5	Black	64.7	50.0	27.9	47.5	35.2	17.4	2779	124	28.8	6.3
MSU	E11401	2.1	Black	61.8	35.1	30.0	42.3	35.1	17.2	2732	124	29.1	7.2
MSU	E11431	2.2	Black	63.2	43.3	34.5	47.0	35.5	17.2	2755	124	30.0	13.5
MSU	E12007	2.8	Dk.Brown	62.8	51.2	31.8	48.6	37.0	16.9	3150	126	30.6	21.9
MSU	E12020	2.8	Brown	54.1	49.2	23.1	42.1	36.2	16.8	2908	131	28.8	11.1
MSU	E12023	2.6	Black	57.7	51.8	24.7	44.7	36.6	16.7	3181	127	28.6	10.2
MSU	E12034	2.9	Black	61.1	43.9	26.2	43.7	35.2	16.6	3296	129	27.8	8.7
MSU	E12042	2.7	Black	60.5	53.0	32.2	48.6	35.4	16.7	3191	129	32.0	12.3
MSU	E12061	2.6	Black	57.6	33.6	31.3	40.8	36.2	16.7	3113	125	25.1	16.7
MSU	E12076-T	2.9	Yellow	60.0	51.1	28.2	46.4	35.7	16.7	2706	129	29.1	6.1
MSU	E12084	2.7	Black	57.5	49.8	26.7	44.7	36.3	16.7	3168	128	32.0	17.8
MSU	E12247	2.7	Black	58.9	54.3	32.3	48.5	36.5	16.5	2928	130	37.8	11.0
MSU	E12377	2.5	ImpBlack	49.5	31.6	30.6	37.2	35.2	16.7	2906	127	28.1	22.3
MSU	E12397	2.2	LtBrown	56.0	41.7	33.3	43.7	36.6	17.2	2773	122	27.8	21.5
MN CROP IMP	MN 1709 CN	1.7	Yellow	54.1	35.2	34.1	41.1	37.4	16.7	2936	117	24.9	17.1
MN CROP IMP	M04-220008	1.7	Yellow	54.3	37.4	30.5	40.7	37.4	16.8	2547	118	25.7	13.9
MN CROP IMP	M04-295008	1.3	Yellow	49.5	43.8	36.3	43.2	39.5	16.7	2123	118	25.9	23.0
MN CROP IMP	M05-357149	1.7	Yellow	52.5	35.6	35.2	41.1	37.9	17.3	2807	120	26.8	8.2
MN CROP IMP	M05-363120	1.7	Yellow	46.3	33.1	32.6	37.3	37.4	16.8	2529	115	24.5	11.8
MN CROP IMP	MN 1505 SP	1.5	Yellow	51.0	35.0	28.6	38.2	39.9	16.9	2350	117	25.7	13.4
Organic B&G	S2020	2.0	Clear	58.5	38.8	32.3	43.2	37.1	17.2	2522	118	24.6	13.7
Organic B&G	DH410	1.6	Clear	50.5	33.7	35.4	39.9	39.4	17.1	2685	117	26.6	11.6
Organic B&G	DH530	1.6	Clear	52.2	41.4	28.4	40.7	36.9	17.8	2490	114	26.2	12.7
Schillinger Genetics	1993	1.9	ImpBlack	57.9	41.6	32.3	43.9	36.1	16.4	2357	124	25.6	17.5
Schillinger Genetics	2060	2.0	-	45.7	37.6	30.5	37.9	38.9	16.8	2561	124	24.0	19.1
Schillinger Genetics	2162	2.1	Yellow	45.7	40.5	25.5	37.2	39.1	15.9	2715	122	24.3	4.7

Source	Variety	Maturity Group	Hilum Color	(Bu./A)				% Protein	% Oil	Seeds per Pound	Maturity DAP**	Height (in.)*	WM DSI#
				Tuscola	Kalamazoo	Lapeer	Average						
Schillinger Genetics	2282	2.2	Buff	59.2	36.0	29.7	41.6	38.5	16.2	2728	122	26.9	7.7
Sunopta	S03W4	-	Clear	47.3	34.9	29.3	37.2	38.7	17.7	2309	105	25.2	1.9
Sunopta	OAC Thomsville	-	Clear	56.4	45.4	29.5	43.8	37.7	16.8	2231	123	26.1	6.5
Grand Mean				54.3	42.2	30.5	42.3	37.5	16.7	2689	123	27.7	13.5
Maximum				64.7	54.3	37.9	48.6	41.4	17.8	3191	131	37.8	28.7
Minimum				44.8	25.5	22.1	33.3	35.1	15.3	2014	105	23.7	1.9
C.V. (%)				9.7	17.1	11.7	13.1	1.5	2.1				69.3
LSD (0.05)				8.8	12.0	5.9	5.3	0.6	0.3				15.6

* Average of all three sites.

** Days After Planting, average of Kalamazoo and Tuscola sites.

White Mold Disease Severity Rating, Tuscola site only.

Bolded values within columns are not statistically different.

White Mold Disease Severity Index rating : White mold levels were determined by rating 30 random plants in the center rows of each plot. Each plant was rated on a scale of 0 to 3 with 0 = no infection, 1 = infection only on branches, 2 = infection on the main stem but pod fill was normal, and 3 = infection on the main stem resulted in plant death and poor pod fill. The scores of the 30 plants rated for each plot were totaled. The total was divided by 90 (the total if all 30 scored plants were given a rating of 3) and multiplied by 100 to give a disease severity index(DSI). A DSI of 100 would be given to a plot where all evaluated plants had a rating of 3 and a DSI of 0 would be given to a plot where all evaluated plants had a rating of 0.

Two (2013-2014) and three (2012-2014) year averages of soybean varieties at Tuscola, Lapeer and Kalamazoo counties.

Source	Variety	Maturity Group	Hilum Color	Tuscola		Lapeer		Kalamazoo		Average		% Protein		% Oil		Seeds per Pound	
				2yr	3yr	2yr	3yr	2yr	3yr	2yr	3yr	2yr	3yr	2yr	3yr	2yr	3yr
Albert Lea Seeds	Viking O.1706N	1.7	Dark	46.8	-	34.5	-	48.2	-	41.4	-	36.5	-	17.5	-	3396	-
Albert Lea Seeds	Viking O.2265	2.2	Dark	47.3	53.1	35.4	44.3	56.1	48.9	45.4	48.0	36.6	36.5	17.6	17.8	3093	2985
Blue River	21F3	2.1	Yellow	44.7	-	29.8	-	51.5	-	41.2	-	39.2	-	16.1	-	2174	-
DF Seeds	DF 155 F	2.5	Clear	42.9	45.1	31.2	37.9	57.0	50.9	43.1	44.4	38.9	38.7	16.9	17.1	2326	2279
DF Seeds	DF 161 N STS	1.6	Black	45.4	52.8	41.9	48.9	52.5	46.2	45.4	48.1	36.2	36.2	17.6	17.8	3376	3273
DF Seeds	DF 242 N/S	2.4	Black	47.3	53.9	34.1	43.8	51.4	52.3	44.2	49.6	37.4	37.2	17.0	17.3	3279	3048
DKB Farms	Vinton 81	1.9	Clear	39.7	43.2	30.1	36.0	45.3	41.3	37.6	39.0	40.5	40.4	16.1	16.2	2205	2100
Iowa State	IA2102	2.7	Yellow	47.0	55.1	36.9	45.4	56.5	47.5	46.2	49.5	36.5	36.4	17.4	17.6	2985	2891
Iowa State	IA2104	2.2	Yellow	43.0	50.8	33.4	42.0	52.8	43.6	42.6	44.3	39.3	39.3	16.5	16.7	2290	2214
Iowa State	IA3051	3.0	Yellow	45.3	53.8	36.4	45.0	52.1	45.8	44.1	47.3	39.4	39.5	15.9	16.1	2460	2338
MCIA	MN 1505 SP	1.5	Yellow	39.1	43.5	30.8	36.6	46.0	41.1	37.7	38.9	39.8	39.8	17.3	17.4	2344	2273
MSU	E05181-T	2.0	Yellow	41.7	47.7	34.8	44.6	41.5	38.8	38.3	43.7	37.8	37.7	17.3	17.4	2412	2281
MSU	E07130-T	2.3	Yellow	39.4	44.0	30.2	38.7	48.2	45.0	38.3	40.9	40.8	40.8	16.0	16.2	2018	1937
MSU	E07158-T	2.3	Yellow	37.1	44.0	32.5	41.0	45.0	37.8	37.3	39.6	41.7	41.8	16.0	16.2	1971	1911
MSU	E10174	2.9	Yellow	49.2	54.8	36.2	45.2	58.6	54.0	47.4	51.6	35.2	35.0	17.5	17.8	2393	2333
MSU	E11399	2.5	Black	53.4	-	32.1	-	57.3	-	46.3	-	34.9	-	17.7	-	2818	-
MSU	E11401	2.1	Black	46.5	-	36.0	-	48.4	-	43.3	-	34.8	-	17.7	-	2757	-
MSU	E11431	2.2	Black	48.7	-	39.6	-	54.2	-	46.6	-	35.0	-	17.6	-	2774	-
Organic B&G	DH410	1.6	Clear	41.7	46.9	36.4	45.4	45.5	43.4	41.1	45.0	39.3	39.3	17.4	17.4	2685	2640
Organic B&G	DH530	1.6	Clear	38.3	44.1	32.8	42.2	50.7	42.1	39.8	41.5	36.6	36.2	18.0	18.2	2555	2579
Organic B&G	S2020	2.0	Clear	43.5	50.0	33.0	45.8	47.1	41.9	40.5	44.3	37.2	37.1	17.4	17.6	2567	2504
Schillinger Genetics	e2162	2.1	Yellow	36.7	45.3	31.6	37.9	48.2	44.3	38.8	42.8	38.8	38.6	16.5	16.8	2815	2715

2015 Michigan Organic Soybean Variety Trials

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This report provides information on performance of non-GMO soybean varieties grown under certified organic management in 2015. This research is funded under the North Central Region Sustainable Agriculture Research and Education (NCR SARE) Program and The Ceres Trust.

Testing Procedures

Four trial locations are reported in this publication. A total of 48 soybean varieties were entered by seven seed companies and three universities. The cooperators, planting dates, harvest dates and other site details for each location are listed below.

Seed was planted in 2-row plots, 26 feet long with 30-inch row spacing at a depth of 1.5 inches. The planting rate was 190,000 seeds/acre. At each location, varieties were replicated four times in a lattice design. The plots were trimmed to a length of 20 feet and both rows were harvested. Experimental design, data management and data analysis were conducted with AGROBASE Generation II software (Agronomix Software, Inc., Winnipeg, Canada).

Using the data

Yield: Expressed as bushels per acre (Bu/A) at 13 percent moisture and is reported as single and across site means for 2015.

Height: Plant height, reported in inches, was measured at maturity from the soil surface to the tip of the main stem. The reported values are means of heights taken at the Tuscola, Isabella, Lapeer, and Kalamazoo sites.

Protein and oil content: Protein and oil content of the seed was determined using near-infrared reflectance and is expressed on a 13 percent moisture basis.

Test site information

Lapeer County

Nearest city: Columbiaville	Cooperator: Charlie Brockriede
Soil type: Brady sandy loam	Previous crop: Corn
Tillage: Spring moldboard plow, field cultivate	
Planting Date: June 5	Harvest Date: October 26

Tuscola County

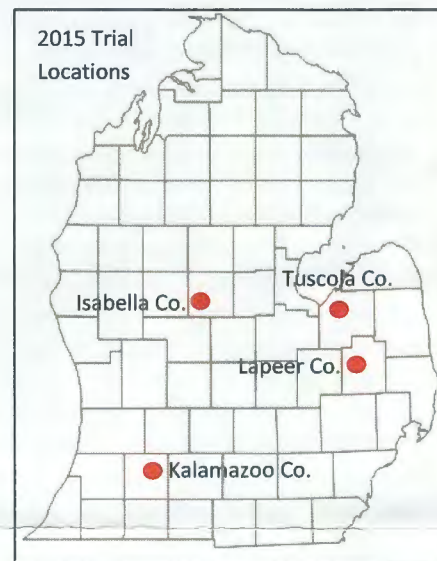
Nearest city: Unionville	Cooperator: Dave Sting
Soil type: Tappan loam	Previous crop: Corn
Tillage: Fall plowed, rye cover, spring field cultivate	
Planting Date: May 22	Harvest Date: October 22

Kalamazoo County

Nearest city: Hickory Corners	Cooperator: W.K. Kellogg Bio Station
Soil type: Sandy loam	Previous crop: Clover
Tillage: Chisel plow, field cultivate	
Planting Date: May 26	Harvest Date: October 19

Isabella County

Nearest city: Mt. Pleasant	Cooperator: Tom Nelson
Soil type: Guelph clay loam	Previous crop: Corn
Tillage: Fall chisel plow, spring disk	
Planting Date: May 29	Harvest Date: October 23



Farmers, breeders and project team review soybean varieties.



Harvesting soybeans at Isabella site, October 23.

Growing conditions/comments

Lapeer: Good season long growing conditions

Tuscola: Good to wet growing conditions. High winds with hail affected this site.

Kalamazoo: Good growing conditions except for 3-4 weeks dry weather in August.

Isabella: Good growing conditions except for several dry weeks at the end of July.

Selecting a variety

Least Significant Difference (LSD) values are useful when comparing two varieties in the same table. If the difference between two varieties is less than the LSD value, this difference is probably due to chance or minor environmental differences. However, if the difference between two varieties is greater than the LSD, there is a 95 percent or greater probability that the difference in performance is due to the greater yield potential of one variety. Valid comparisons can only be made between averages in the same column. The Coefficient of Variation (CV) is indicative of the trial precision. Lower CV values indicate more precise trials.

The primary consideration in selecting a variety is yield. When evaluating a variety, consider yield performance over locations and across several years, if available. Considerations other than yield are also important in selecting a variety. It is especially important to select a variety that will mature before the first frost in the fall.

Growers should note seed size when selecting planting rates. Planting rates should be based on number of seeds per acre and not on pounds per acre. It often benefits growers to select a few good varieties for planting each year. Yield determination and careful field evaluation during the growing season will add to the grower's knowledge of variety performance and allow for better selection.



Isabella County Organic Soybean Variety trial.



Maturing soybeans, Tuscola County.

Seed sources

DKB Farm & Services
Don Brockriede
4945 Marathon Road
Columbiaville, MI 48421
810-688-3008

D.F. Seeds Inc.
Chris Varner/John Diehl
905 S. Jackson Road P.O. Box 159
Dansville, MI 48819
517-623-6161

Organic Bean & Grain
Mark Vollmar
1795 W. Akron Road
Caro, MI 48723
989-673-6402

SunOpta
Emily Shettler
10407 Scribner Rd
Bancroft MI 48414
989-721-7857

MSU
DeChen Wang
A384-E Plant and Soil Sciences Bldg.
1066 Bogue Street
East Lansing, MI 48824-1325
517-355-0271 Ext. 188

Schillinger Genetics, Inc.
Corey Nikkel
4401 Westown Parkway, Suite 225
West Des Moines, IA 50266
515-225-6164

Albert Lea Seed
Mathew Leavitt
1414 W. Main, PO Box 127
Albert Lea, MN 56007
800-352-5247

Blue River Hybrids
2326 230th St.
Ames IA, 50014
(517) 402-3395

**University of Minnesota/
MN Crop Improvement**
Roger Wippler
1900 Hendon Ave.
St. Paul, MN 55108
612-625-7768



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2015 Michigan Organic Soybean Variety Trial Results

Source	Variety	Group	Hilum Color	Bushels per Acre					% Protein*	% Oil*	Height Inches*	Maturity DAP*	Seeds/ Pound*
				Tuscola	Isabella	Lapeer	Kalamazoo	Average					
Albert Lea	2018N	2.0	Yellow	67.4	57.0	61.7	51.6	59.4	34.8	18.5	29.1	127	2463
Albert Lea	O.1518	1.5	Black	55.3	42.8	32.5	56.3	46.7	37.2	17.7	27.9	120	2807
Albert Lea	O.1706N	1.7	Black	50.0	47.6	47.5	45.6	47.7	33.6	16.7	27.2	118	2906
Albert Lea	O.2265	2.2	Black	65.8	53.6	56.8	54.0	57.5	36.8	18.1	31.7	127	2777
Albert Lea	O.2299N	2.2	Yellow	56.5	58.8	55.7	50.1	55.3	36.4	18.2	30.9	128	2569
Blue River Hybrids	17C2	1.7	Dark	59.2	46.3	42.2	47.3	48.7	36.2	18.1	29.5	119	3151
Blue River Hybrids	20C6	2.0	Yellow	57.8	49.2	46.7	59.1	53.2	36.9	17.8	29.3	120	2935
Blue River Hybrids	21F3	2.1	Yellow	66.1	44.7	33.1	49.4	48.3	36.1	15.4	30.8	128	2099
Blue River Hybrids	22DC6	2.2	Dark	74.6	55.0	56.5	58.4	61.1	36.6	17.4	31.2	130	2633
Blue River Hybrids	27A7	2.7	Dark	67.7	50.4	45.0	50.5	53.4	38.4	17.8	31.8	132	2064
Blue River Hybrids	27C5	2.7	Yellow	67.0	62.6	68.9	55.3	63.5	36.6	17.9	30.3	132	2375
Blue River Hybrids	2A12	2.1	Dark	57.5	45.9	35.0	53.5	48.0	37.1	18.0	30.5	121	2756
DF Seeds	DF 155 F	2.5	Clear	67.3	42.5	44.0	53.4	51.8	38.2	17.8	31.6	130	2101
DF Seeds	DF 161 N/STS	1.6	Black	60.6	45.8	49.5	54.3	52.5	36.4	18.1	30.3	121	3060
DF Seeds	DF 242 N/S	2.4	Brown	66.4	51.9	46.0	51.8	54.0	36.9	18.0	30.3	127	2930
DF Seeds	DF 252 N/S	2.5	Clear	61.1	61.3	67.3	58.7	62.1	36.1	17.8	32.7	132	2885
DKB FARMS	Vinton 81	1.9	Clear	50.0	38.7	32.5	40.9	40.5	40.4	16.8	34.3	122	1906
Minn. Crop Improv	M04-220008	1.7	Yellow	59.3	45.7	39.7	45.0	47.4	37.3	17.9	28.9	120	2328
Minn. Crop Improv	M04-295008	1.5	Yellow	55.3	42.3	41.8	50.9	47.5	38.6	17.6	30.3	121	1912
Minn. Crop Improv	M06-288155	1.6	Yellow	61.5	52.3	49.5	44.7	52.0	37.0	17.3	29.9	119	2676
Minn. Crop Improv	M06-288190	1.7	buff	59.5	44.9	44.6	48.2	49.3	37.0	17.7	26.6	119	2466
Minn. Crop Improv	MN1701CN	1.7	Yellow	50.6	49.4	48.8	48.8	49.4	37.1	17.8	30.8	120	2887
Minn. Crop Improv	MN1806CN**	1.8	Yellow	55.7	50.1	56.4	47.6	52.4	37.1	18.3	31.0	122	2540
MSU	E05181-T	2.0	Yellow	61.5	48.3	50.2	48.7	52.2	38.0	17.9	27.8	122	2076
MSU	E07051	2.2	Dark Brown	65.0	59.6	57.1	51.3	58.3	36.8	18.2	29.3	128	2178
MSU	E07130-T	2.3	Yellow	55.6	38.5	38.3	43.9	44.1	40.9	16.8	32.9	127	1784
MSU	E07158-T	2.3	Yellow	56.4	46.5	42.9	45.6	47.8	41.3	16.9	32.7	127	1673
MSU	E10151	2.2	Black	65.3	53.9	45.4	59.1	55.9	34.7	18.5	30.2	127	2558
MSU	E10174	2.9	Yellow	63.5	58.4	64.4	51.8	59.5	35.4	18.3	34.7	133	2109
MSU	E11128T	2.6	Yellow	56.4	58.8	52.1	49.3	54.2	39.8	16.9	30.8	129	2034
MSU	E11399	2.5	Black	68.1	46.3	53.2	52.0	55.1	35.2	18.3	29.6	128	2534
MSU	E11431	2.2	Black	64.2	45.9	38.0	51.7	49.9	35.3	18.2	31.6	127	2551
MSU	E12007	2.8	Dark Brown	59.0	53.2	39.9	58.8	52.7	36.4	18.3	32.4	131	2797
MSU	E12397	2.2	Light Brown	66.4	49.3	37.5	54.1	51.8	33.9	16.5	29.3	125	2458
MSU	E13021T	2.2	Yellow	56.7	59.1	47.8	48.7	53.0	36.2	18.1	29.3	129	2412
MSU	E13036T	2.6	Yellow	57.3	51.7	49.5	44.0	50.6	37.3	17.4	29.8	129	2057
MSU	E13364	2.7	Dark Brown	53.5	45.5	39.1	49.3	46.9	36.8	18.2	28.8	129	2602
MSU	E13367	2.6	Brown	59.9	46.9	48.7	50.5	51.5	35.5	17.9	26.9	127	2595
MSU	E13369	2.3	Brown	56.8	52.3	40.0	46.6	48.9	36.2	18.0	30.0	124	2849
Organic Bean & Grain	DH410	1.6	Clear	62.3	45.7	50.6	40.7	49.8	39.8	17.8	29.7	120	2344
Organic Bean & Grain	DH530	1.6	Clear	60.3	26.4	42.0	41.7	42.6	35.8	18.8	27.0	117	2578
Organic Bean & Grain	S2020	2.0	Clear	60.0	40.7	32.8	49.7	45.8	36.7	18.2	28.3	118	2397
Schillinger Genetics	e1665	1.6	Yellow	56.5	53.6	49.4	46.7	51.5	38.2	17.6	27.8	120	2518
Schillinger Genetics	e2062	2.0	Yellow	56.4	50.6	47.3	46.9	50.3	38.6	18.0	27.1	126	2296
Schillinger Genetics	e2162	2.1	Yellow	55.6	49.6	46.8	52.8	51.2	38.7	17.2	27.9	124	2481
Schillinger Genetics	e2282	2.2	Buff	59.0	65.5	58.3	50.1	58.2	38.3	17.5	30.4	128	2446
SunOpta	S14L9	1.4	ImpYellow	65.9	42.3	26.8	53.1	47.0	38.2	17.3	25.1	118	2273
SunOpta	S20-G7	2.0	Yellow	63.1	36.5	36.7	44.0	45.1	38.4	17.7	30.5	124	2060
GRAND MEAN				60.3	49.2	46.6	50.1	51.6					
Max. Mean				74.6	65.4	68.9	59.1	63.5					
Min. Mean				50.0	26.4	26.8	40.7	40.5					
LSD				7.1	12.0	15.3	8.5	5.6					
CV				7.1	14.7	19.7	10.2	13.1					

*Average of all four sites.

**M05-357149 (experimental designation)

DAP = Days After Planting.

Bolded values within columns are not statistically different.

Multiple Year Michigan Organic Soybean Variety Trial Results

Multiple Year Averages (2 yr = 2014-2015, 3 yr = 2013-2015, 4 yr=2012-2015)

Source	Variety	Group	Hilum color	Tuscola Bu/A			Lapeer Bu/A			Kalamazoo Bu/A			Average Bu/A*		
				2 yr	3 yr	4 yr	2 yr	3 yr	4 yr	2 yr	3 yr	4 yr	2 yr	3 yr	4 yr
Albert Lea	O.1706N	1.7	Black	54.0	47.9	-	40.9	38.8	-	41.7	47.3	-	45.5	43.5	-
Albert Lea	O.2265	2.2	Black	62.1	53.5	56.3	47.2	42.5	47.4	49.9	55.4	50.2	52.4	49.4	50.4
Blue River Hybrids	21F3	2.1	Yellow	59.6	51.8	-	29.3	30.9	-	47.6	50.8	-	44.9	43.6	-
DF Seeds	DF 155F	2.5	Clear	61.0	51.0	50.6	35.9	35.5	39.4	51.7	55.8	51.5	48.0	46.0	46.2
DF Seeds	DF 161 N STS	1.6	Black	55.9	50.4	54.7	43.7	44.4	49.1	51.5	53.1	48.3	49.2	47.7	49.2
DF Seeds	DF 242 N/S	2.4	Brown	61.3	53.7	57.0	39.6	38.1	44.4	46.6	51.5	52.2	48.8	47.5	50.7
DKB Farms	Vinton 81	1.9	Clear	49.3	43.1	44.9	29.6	30.9	35.1	40.0	43.8	41.2	39.3	38.6	39.4
Minn. Crop Improv	M04-220008	1.7	Yellow	56.8	-	-	35.1	-	-	41.2	-	-	44.1	-	-
Minn. Crop Improv	M04-295008	1.5	Yellow	52.4	-	-	39.1	-	-	47.4	-	-	45.4	-	-
MSU	E05181-T	2.0	Yellow	54.1	48.3	51.1	40.8	39.9	46.0	37.1	43.9	41.3	43.4	43.0	45.8
MSU	E07130-T	2.3	Yellow	50.2	44.8	46.9	31.6	32.9	38.6	42.5	46.7	44.7	40.5	40.3	41.7
MSU	E07158-T	2.3	Yellow	51.3	43.5	47.1	35.2	36.0	41.5	43.7	45.2	39.8	43.1	40.8	41.6
MSU	E10174	2.9	Yellow	59.0	53.9	57.0	45.0	45.6	50.0	50.8	56.3	53.4	51.4	51.4	53.6
MSU	E11128T	2.6	Yellow	55.3	-	-	39.3	-	-	45.8	-	-	47.6	-	-
MSU	E11399	2.5	Black	66.4	58.3	-	40.6	39.1	-	51.5	55.8	-	51.3	49.2	-
MSU	E11431	2.2	Black	63.7	53.9	-	36.3	39.0	-	47.5	53.4	-	48.5	47.7	-
MSU	E12007	2.8	Dk Brown	60.9	-	-	35.9	-	-	55.0	-	-	50.7	-	-
MSU	E12397	2.2	Lt Brown	61.2	-	-	35.4	-	-	47.9	-	-	47.8	-	-
Organic Bean & Grain	DH410	1.6	Clear	56.4	48.5	50.8	43.0	41.1	46.7	37.2	43.9	42.7	44.9	44.0	46.2
Organic Bean & Grain	DH530	1.6	Clear	56.3	45.6	48.2	35.2	35.8	42.2	41.6	47.7	42.0	41.7	40.7	41.8
Organic Bean & Grain	S2020	2.0	Clear	59.3	49.0	52.5	32.6	32.9	42.5	44.3	47.9	43.8	44.5	42.3	44.7
Schillinger Genetics	e2162	2.1	Yellow	50.7	43.0	47.9	36.2	36.6	40.1	46.7	49.7	46.5	44.2	42.9	44.9

Source	Variety	Group	Hilum Color	Percent Protein*			Percent Oil*			Seeds/Pound*		
				2 yr	3 yr	4 yr	2 yr	3 yr	4 yr	2 yr	3 yr	4 yr
Albert Lea	O.1706N	1.7	Black	36.6	36.5	-	17.8	17.8	-	3076	3233	-
Albert Lea	O.2265	2.2	Black	36.9	36.7	36.6	17.7	17.8	17.9	2913	2988	2933
Blue River Hybrids	21F3	2.1	Yellow	39.2	39.2	-	16.3	16.4	-	2166	2149	-
DF Seeds	DF 155F	2.5	Clear	38.7	38.6	38.6	17.1	17.2	17.3	2216	2251	2234
DF Seeds	DF 161 N STS	1.6	Black	36.4	36.2	36.2	17.7	17.8	17.8	3173	3271	3220
DF Seeds	DF 242 N/S	2.4	Brown	36.9	37.2	37.1	17.4	17.3	17.5	3120	3163	3018
DKB Farms	Vinton 81	1.9	Clear	40.6	40.5	40.4	16.2	16.3	16.4	2074	2105	2051
Minn. Crop Improv	M04-220008	1.7	Yellow	37.4	-	-	17.4	-	-	2437	-	-
Minn. Crop Improv	M04-295008	1.5	Yellow	39.1	-	-	17.2	-	-	2017	-	-
MSU	E05181-T	2.0	Yellow	37.9	37.8	37.8	17.4	17.5	17.5	2307	2300	2230
MSU	E07130-T	2.3	Yellow	40.8	40.8	40.8	16.2	16.3	16.3	1911	1940	1899
MSU	E07158-T	2.3	Yellow	41.4	41.6	41.6	16.2	16.3	16.3	1844	1872	1852
MSU	E10174	2.9	Yellow	35.4	35.3	35.1	17.7	17.8	17.9	2244	2298	2277
MSU	E11128T	2.6	Yellow	39.7	-	-	16.4	-	-	2193	-	-
MSU	E11399	2.5	Black	35.2	35.0	-	17.9	17.9	-	2657	2723	-
MSU	E11431	2.2	Black	35.4	35.1	-	17.7	17.8	-	2653	2700	-
MSU	E12007	2.8	Dk Brown	36.7	-	-	17.6	-	-	2973	-	-
MSU	E12397	2.2	Lt Brown	36.7	-	-	17.7	-	-	2615	-	-
Organic Bean & Grain	DH410	1.6	Clear	39.6	39.5	39.4	17.5	17.5	17.5	2515	2571	2566
Organic Bean & Grain	DH530	1.6	Clear	36.4	36.3	36.1	18.3	18.3	18.4	2534	2563	2578
Organic Bean & Grain	S2020	2.0	Clear	36.9	37.0	37.0	17.7	17.7	17.7	2459	2510	2477
Schillinger Genetics	e2162	2.1	Yellow	38.9	38.8	38.6	16.6	16.7	16.9	2598	2704	2657

*Average of all three sites.