

April 25, 2018

## CERES TRUST FINAL REPORT 2017: Organic Soybean Variety Trials

### Final Project Status:

The Michigan Organic Soybean Variety Trials were implemented over a six year period from 2012 – 2017 funded three years each by the Ceres Trust (2012, 2016 and 2017) and the North Central Sustainable Agriculture Research and Education (SARE) program (2013, 2014 and 2015). Both grants have been completed as of December 31, 2017. This report covers the last year of the trials (2017) and the overall project from 2012 – 2017.



### **MSU Extension**

### 2017 Project Trials

#### Changes in 2017:

The project was coordinated by Dean Baas and Bob Battel, both with Michigan State University (MSU) Extension. Dan Rossman, previous coordinator, retired from MSU Extension in 2013 and has been certified as an organic inspector with Global Organic Alliance and continued to support this project. In 2017 four trial locations were established. The trial location in Lapeer County was abandoned due to field inconsistencies and extensive deer damage. Results from the remaining three locations were reported in 2017. Entries in the trials decreased to 54 from 61 the previous year.

#### Highlights:

In 2017, we established four organic non-GMO soybean variety trials across Michigan. Three organically certified farms and organically certified MSU/W.K. Kellogg Biological Station (KBS) ground were used to plant 54 soybean varieties (see 2017 Michigan Organic Soybean Entries below) in a randomized complete block design with four replications. Thirty-one varieties included in previous years of the trials were evaluated again in the study in 2017. Organically certified trials were established in Isabella, Tuscola, Lapeer and Kalamazoo counties in Michigan. The trial location in Lapeer County was abandoned due to field inconsistencies and extensive deer damage. Results from the remaining three locations were reported in 2017 (see Figure 1). The 2017 growing season was completed at the trial locations. Yield, maturity and

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height data was gathered and harvested samples were submitted to the MSU Soybean Breeding Program, overseen by MSU soybean breeder Dr. Dechun Wang, for quality assessments including oil content, protein content and seeds per pound. These analyses have been completed and a fact sheet produced detailing a comparison of this year's trial data. (see 2017 Michigan Organic Soybean Variety Trials fact sheet below). In addition, since 2014 multi-year data has been summarized for varieties that have been in the trials for 3, 4, 5 and 6 years.

#### Outreach:

Two hundred printed copies of the 2016 Michigan Organic Soybean Variety Trials factsheet were distributed during meetings in 2017. One hundred and fifty printed copies of the 2017 Michigan Organic Variety Trials factsheet have been distributed during meeting in 2018. The 2017 factsheet is attached below and available on the web at <http://www.varietytrials.msu.edu/soybean>.

The farmer/industry advisory board for the project met on January 27, 2017. Results from the previous five years of the trials were presented and reviewed. Ten advisors met including organic farmers, seed company representatives, organic soybean brokers, soybean researchers and the research director from the Michigan Soybean Promotion Committee (MSPC). The direction of the project for 2017 was set in this meeting. Advancement of selected varieties was also discussed and planned at this meeting.

The project was presented and 2016 reports were distributed at a number of events including the following: Zeeland Farm Services Grower Meeting in Zeeland, MI on February 8, 2017. The Blue River Hybrids Grower Meeting in Frankenmuth, MI on February 1, 2017 attended by 40 organic farmers. The project was also presented at the Organic Farmers of Michigan (OFM) Annual Meeting on September 6, 2017 in Ruth, MI (see meeting flyer below). This event hosted 92 attendees including Extension educators, researchers, agri-business representatives and organic farmers. The 2017 field day/tour was conducted in conjunction with the OFM Annual Meeting for Michigan organic farmers. This event provided an opportunity for organic farmers to visit the Tuscola County trial site and evaluate the varieties being tested. Twenty-five participants toured the variety trial site. The project was presented and 2017 reports distributed at the OFM winter meeting on February 23, 2018 attended by 48 OFM members.

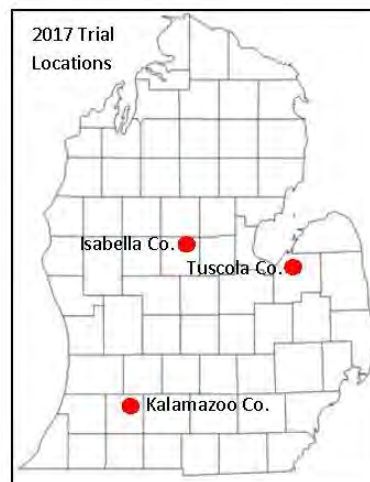


Figure 1. 2017 Organic Soybean Variety Trial Locations.

The 2017 fact sheet will continue to be distributed to farmers across the state at additional MSU Extension and other meetings in 2018.

### **Overall Project**

The Michigan Organic Soybean Trials were performed over a six year period from 2012 – 2017 producing valuable guidance for the selection of organic soybean varieties for organic farmers to deliver high yielding and high quality soybeans to their organic markets. This project has also identified potential varieties to improve future productivity and quality. Guidance has been delivered through an annual factsheet that details yield, oil content, protein content, height, maturity and seeds per pound by location and on average for all entries. The 2017, 2016, 2015, 2014, 2013 and 2012 factsheets are attached below and available on the web at <http://www.varietytrials.msu.edu/soybean>.

Over the life of the project, nearly 1000 stakeholders (farmers, seed dealers, agri-business, brokers, researchers and educators) were delivered information from this project through numerous meetings, field days and tours.

### **Financials:**

Funding for 2017 was provided by the Ceres Trust per the amended agreement between MSU and the Ceres Trust. As of December 31, 2017 support from the Ceres Trust has ended. Spending on the project was completed as of this date. Unspent funds equaling \$147.49 remains.

### **Future**

One of the objectives of this project was to make these trials self-supporting so they would continue into the future. Organic farmers in Michigan have expressed a desire for these trials to continue. While, approximately half of the cost can be covered by entry fees from seed companies and non-MSU universities, the project still requires additional funding to continue. The OFM, with the approval of their membership at the February 2018 winter meeting, have agreed to fund the remaining cost not covered by entry fees for the 2018 trials. The memorandum of understanding is currently being negotiated between the OFM and MSU. There are 42 varieties entered in the trials for 2018. We are committed to working with the OFM to make the trials self-supporting in the future.

The project team would like to take this opportunity to thank the Ceres Trust for their support to this project. Without that support, the Michigan Organic Soybean Variety Trials could not have reached its current state of development and potential to continue into the future. Organic

farmers in Michigan have benefited and will continue to benefit from the solid foundation created through funding from both the Ceres Trust and SARE.

Feel free to contact me if you have any questions. Email me at [baasdean@anr.msu.edu](mailto:baasdean@anr.msu.edu) or call my cell phone at 269-967-9672.

Thank you,

A handwritten signature in black ink, appearing to read "Dean G. Baas". The signature is fluid and cursive, with the first name "Dean" and last name "Baas" clearly distinguishable.

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## 2017 Organic Soybean Entries



Source	Designation of Variety	Maturity	Hilum Color	Source	Designation of Variety	Maturity	Hilum Color
Albert Lea Seed	Viking 0.1572N	1.5	Yellow	Michigan State University	E13364	2.2	Dark Brown
Albert Lea Seed	Viking 0.2072N	2.0	Yellow	Michigan State University	E13367	2.2	Brown
Albert Lea Seed	Viking 0.2188AT12N	2.4	Yellow	Michigan State University	E13370	2.2	Black
Albert Lea Seed	Viking 0.2446	2.4	Black	Michigan State University	E15079T	2.2	Yellow
Albert Lea Seed	Viking 0.2399AT12N	2.6	Yellow	Michigan State University	E16606	2.2	Yellow
Blue River Hybrids	17C2	1.7	Dark	Michigan State University	E07130-T	2.3	Yellow
Blue River Hybrids	18C7	1.8	Dark	Michigan State University	E07158-T	2.3	Yellow
Blue River Hybrids	20FC6	2.0	Yellow	Michigan State University	E13036T	2.4	Yellow
Blue River Hybrids	21C6	2.1	Buff	Michigan State University	E14077	2.4	Dark Imperfect Black
Blue River Hybrids	22DC6	2.2	Buff	Michigan State University	E16608	2.4	Yellow
Blue River Hybrids	21F3	2.6	Yellow	Michigan State University	E13100	2.5	Yellow
Blue River Hybrids	26F0	2.6	Yellow	Michigan State University	E13902	2.5	Dark Buff
Blue River Hybrids	27C5	2.7	Yellow	Michigan State University	E14044T	2.5	Yellow
Cooperative Elevator Co.	DH 410	1.6	Clear	Michigan State University	E15346T	2.5	Yellow
Cooperative Elevator Co.	DH 530	1.6	Clear	Michigan State University	E11128T	2.6	Yellow
DF Seeds Inc	DF 187N	1.8	Clear	Michigan State University	E10174	2.7	Yellow
DF Seeds Inc	DF 227N	2.2	Brown	Michigan State University	E12076T	2.9	Yellow
DF Seeds Inc	DF 232N	2.3	Clear	SunOpta	SR 129	1.8	Yellow
DF Seeds Inc	DF 155F	2.5	Clear	SunOpta	SR 354	2.2	Yellow
DKB Farms	Vinton 81	1.9	Clear	SunOpta	SR 204	2.4	Yellow
Michigan State University	E13369	1.6	Brown	University of Minnesota	M08-332003	1.3	Buff
Michigan State University	E13268	1.7	Black	University of Minnesota	M04-295008	1.5	Yellow
Michigan State University	E16602	1.8	Yellow	University of Minnesota	M08-365100	1.5	Grey
Michigan State University	E16603	1.8	Yellow	University of Minnesota	MN1613CN	1.6	Yellow
Michigan State University	E15165T	1.9	Yellow	University of Minnesota	M07-297007	1.7	Black
Michigan State University	E05181-T	2.0	Yellow	University of Minnesota	MN1701CN	1.7	Yellow
Michigan State University	E07051	2.2	Dark Brown	University of Minnesota	MN1806CN	1.8	Yellow

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# *Organic Farmers of Michigan Field Day*

## *September 06, 2017*

*Who:* Organic Farmers of Michigan (OFM)

*What:* Organic Field Crop and Educational Day

*When:* September 06, 2017 @ 9:00 a.m.

*Where:* Marv Hills Farm 3400 S Minden Road Ruth MI 48470

*Why:* To promote organic field crop agriculture in Michigan

### *Speakers:*

*Kurt Fisher:* Agro-Liquids Plant Food Company

*Betty J. Kananen, President :* Global Organic Alliance, Inc.

*Brent Shetler:* Lemken Tillage Equipment

*Dan Bewersdorff:* Organic Grain Program Director @ Herbruck's Poultry.

*Dean Baas:* MSU Agriculture and Natural Resources, reporting on MSU soybean research.

*Steve Steely:* OFM marketing representative, giving an organic field crop overview.

The Organic Farmers of Michigan will be hosting its annual organic educational meeting Wednesday, September 06, 2017 at Marv Hills Farm, near Ruth, MI. The day will consist of a morning of educational and informational speakers, with an organic lunch at noon. The group will then travel to the MSU soybean test plot near Unionville, MI and then to Dean Berdens corn test plot at Sandusky, MI. **Please RSVP** to Stacey Steely 810.404.9347 or [ofmlc@yahoo.com](mailto:ofmlc@yahoo.com) by August 31<sup>st</sup> as there is limited space.

*Event sponsor: Organic Farmers of Michigan*





# 2017 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 2017. This research is funded by The Ceres Trust and the North Central Region Sustainable Agriculture Research Education (NCR SARE) Program.

## Testing Procedures

Three trial locations are reported in this publication. A total of 54 soybean varieties were entered by six seed companies and two 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 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 2017.

**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 Isabella, 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 **dry** basis. (This report in previous years used 13 percent basis).

## Test site information

### Isabella County

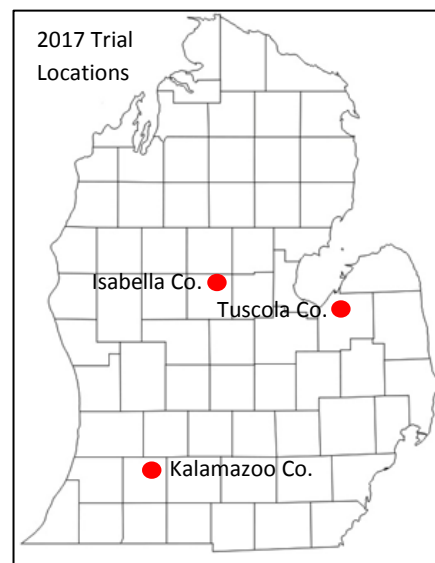
Nearest city: Rosebush	Cooperator: Matt Graham
Soil type: Ithaca Loam	
Planting Date: May 30	Harvest Date: October 18

### Tuscola County

Nearest city: Unionville	Cooperator: Dave Sting
Soil type: Tappan-Londo Loam	Previous crop: Corn
Tillage: Fall plowed, spring field cultivate	
Planting Date: May 31	Harvest Date: October 19

### Kalamazoo County

Nearest city: Hickory Corners	Cooperator: W.K. Kellogg Bio Station
Soil type: Sandy loam	Previous crop: Corn
Tillage: Chisel plow, field cultivate	
Planting Date: June 1	Harvest Date: October 20



Rotary hoed soybean plots in Kalamazoo Co, June 14.



Isabella County organic soybean variety trial, August 7.

## Growing conditions/comments

**Isabella:** Extremely wet in the early season. Wet soils and standing water delayed cultivation.

**Tuscola:** Wet spring prior to planting. Drought July and August, with a warm and late fall.

**Kalamazoo:** Dry at planting, wet in June then very dry mid-July until early September. These plots were irrigated.

## 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.



Mature soybeans at the Tuscola County site, October 19.



Harvesting the Kalamazoo site, October 20.

## Seed sources

### DKB Farm & Services

Charlie Brockriede  
4945 Marathon Road  
Columbiaville, MI 48421  
810-627-8477

### D.F. Seeds Inc.

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

### Cooperative Elevator Company

Gary Fritz  
1075 S. Colling Rd.  
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

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

### Blue Rive Hybrids

Stuart Grim  
2326 230th St.  
Ames, IA 50014  
800-370-7979

### University of Minnesota/ MN Crop Improvement

Roger Wippler  
1900 Hendon Ave.  
St. Paul, MN 55108  
612-625-7766



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## 2017 Michigan Organic Soybean Variety Trial Results

Brand / Source	Variety	Maturity	Hilum Color	Bushels per Acre				% Oil#	% Protein#	Height Inches*	Seeds	
				Average	Isabella	Kalamazoo	Tuscola				DAP**	per Lb.
Albert Lea Seed	Viking 0.1572N	1.5	yellow	37.1	31.8	33.9	45.6	20.5	40.9	22	112	2577
Albert Lea Seed	Viking 0.2072N	2.0	yellow	44.3	32.5	45.9	51.2	20.5	37.6	27	116	2800
Albert Lea Seed	Viking 0.2188AT12N	2.4	yellow	53.4	46.3	54.0	59.0	20.1	39.9	28	117	2732
Albert Lea Seed	Viking 0.2399AT12N	2.6	yellow	53.6	50.9	57.6	52.9	20.1	39.5	30	120	2732
Albert Lea Seed	Viking 0.2446	2.4	black	44.7	34.7	48.2	50.0	19.4	40.7	29	118	2506
Blue River Hybrids	17C2	1.7	dark	45.2	37.0	48.1	49.8	20.3	38.6	26	112	3217
Blue River Hybrids	18C7	1.8	dark	44.9	36.7	47.6	49.6	21.0	37.6	26	119	2338
Blue River Hybrids	20FC6	2.0	yellow	45.4	40.8	44.7	50.7	20.6	36.3	26	113	2732
Blue River Hybrids	21C6	2.1	buff	47.3	42.4	48.9	50.5	21.8	36.3	29	114	2817
Blue River Hybrids	21F3	2.6	yellow	43.1	36.8	46.0	46.1	19.5	41.5	24	115	2668
Blue River Hybrids	22DC6	2.2	buff	49.6	38.5	53.7	55.1	19.7	38.6	29	120	2945
Blue River Hybrids	26F0	2.6	yellow	45.0	29.7	50.2	49.8	19.5	41.5	30	120	2268
Blue River Hybrids	27C5	2.7	yellow	50.0	42.8	49.6	57.0	20.3	39.7	28	118	2871
Cooperative Elevator Co.	DH 410	1.6	clear	42.4	35.1	40.7	50.9	20.7	40.7	26	111	2700
Cooperative Elevator Co.	DH 530	1.6	clear	39.9	27.7	45.2	45.0	21.0	37.8	26	112	2592
DF Seeds Inc.	DF 155 F	2.5	clear	48.1	45.9	50.4	48.9	19.8	41.1	30	119	2326
DF Seeds Inc.	DF 187 N	1.8	clear	42.6	36.6	43.7	47.2	19.5	40.2	26	118	2520
DF Seeds Inc.	DF 227 N	2.2	brown	49.7	41.4	51.0	55.8	19.4	39.1	29	119	2908
DF Seeds Inc.	DF 232 N	2.3	clear	49.3	46.9	46.5	55.2	20.8	37.4	29	115	2413
DKB Farms	Vinton 81	1.9	clear	39.9	39.1	40.4	41.2	19.2	42.2	31	115	2150
Michigan State University	E05181T	2.0	yellow	44.4	42.1	42.7	49.1	20.6	40.1	26	117	2246
Michigan State University	E07051	2.2	dark brown	48.2	43.7	52.0	49.1	20.5	38.4	26	115	2439
Michigan State University	E07130T	2.3	yellow	44.8	46.9	43.4	44.7	18.9	43.7	33	118	1906
Michigan State University	E07158T	2.3	yellow	42.8	44.2	42.4	43.3	19.1	45.3	31	117	1772
Michigan State University	E10174	2.7	yellow	48.5	41.2	49.9	53.9	20.1	38.4	32	120	2246
Michigan State University	E11128T	2.6	yellow	47.4	42.9	48.7	50.9	19.3	43.1	28	118	2191
Michigan State University	E12076T	2.9	yellow	51.6	47.5	53.4	54.4	20.0	38.6	31	122	2749
Michigan State University	E13036T	2.4	yellow	45.6	36.1	51.2	48.5	19.8	40.2	27	121	2257
Michigan State University	E13100	2.5	yellow	48.3	42.5	48.4	53.7	20.2	37.9	29	117	2350
Michigan State University	E13268	1.7	black	45.1	35.8	43.2	55.3	20.6	38.2	25	113	2817
Michigan State University	E13364	2.2	dark brown	43.6	30.9	46.9	51.0	20.3	38.7	26	117	2800
Michigan State University	E13367	2.2	brown	46.9	34.1	52.7	50.1	19.5	37.1	26	115	2853
Michigan State University	E13369	1.6	brown	45.4	35.6	48.6	50.8	19.9	38.2	28	116	3044
Michigan State University	E13370	2.2	black	47.3	38.1	52.1	50.6	19.9	38.4	26	121	3086
Michigan State University	E13902	2.5	dark buff	46.4	45.2	44.9	49.6	19.9	39.3	26	121	2452
Michigan State University	E14044T	2.5	yellow	41.6	30.6	45.9	46.7	19.2	42.2	25	118	2338
Michigan State University	E14077	2.4	imp. black	48.4	38.1	51.6	54.3	20.6	38.4	28	121	2637
Michigan State University	E15079T	2.2	yellow	46.5	44.6	44.2	51.6	19.1	43.3	29	118	2257
Michigan State University	E15165T	1.9	yellow	46.7	41.1	47.3	51.4	19.2	44.4	25	115	1989
Michigan State University	E15346T	2.5	yellow	48.2	36.4	51.3	53.6	20.8	37.8	29	116	2479
Michigan State University	E16602	1.8	yellow	32.0	15.0	42.0	36.0	18.0	41.7	30	123	6389
Michigan State University	E16603	1.8	yellow	38.0	34.7	38.8	41.0	18.7	38.0	28	118	6574
Michigan State University	E16606	2.2	yellow	35.8	29.7	37.3	40.3	18.6	39.8	32	120	6670
Michigan State University	E16608	2.4	yellow	34.2	23.4	40.4	37.5	18.4	42.1	35	124	6670
SunOpta	SR 129	1.8	yellow	43.0	33.7	46.0	48.3	19.2	42.4	26	116	2291
SunOpta	SR 204	2.4	yellow	42.1	30.4	46.4	45.4	19.2	42.4	26	117	2234
SunOpta	SR 354	2.2	yellow	45.0	39.1	43.5	52.0	18.4	42.6	25	119	2213
University of Minnesota	M04-295008	1.5	yellow	43.4	35.9	44.9	48.9	19.8	42.3	28	114	2110
University of Minnesota	M07-297007	1.7	black	45.1	41.2	47.0	47.3	20.6	39.3	28	113	3107
University of Minnesota	M08-332003	1.3	buff	31.2	24.5	30.1	38.2	17.9	48.6	25	110	3044
University of Minnesota	M08-365100	1.5	grey	42.1	32.9	42.5	49.9	21.5	37.8	24	116	2716
University of Minnesota	MN1613CN	1.6	yellow	39.3	32.1	38.0	47.4	20.3	38.3	25	111	2835
University of Minnesota	MN1701CN	1.7	yellow	42.1	40.2	41.0	45.8	20.3	38.9	28	113	3065
University of Minnesota	MN1806CN	1.8	yellow	40.8	29.1	42.3	49.3	21.0	39.5	26	116	2653
# Dry Basis				GRAND MEAN	44.4	37.3	46.0	19.9	40.0			
* Maturity: Days After Planting				Max. Mean	53.6	50.9	57.6	21.8	48.6			
* Average across locations				Min. Mean	31.2	15.0	30.1	17.9	36.3			
				LSD	5.8	14.1	8.3	0.3	0.9			
				CV	13.8	19.5	10.9	6.9	1.6			

# Multiple Year Michigan Organic Soybean Variety Trial Results

Multiple Year Averages (2 yr = 2016-2017, 3 yr = 2015-2017, 4 yr =2014-2017, 5 yr =2013-2017, 6 yr = 2012-2017)

Brand/Source	Variety	Tuscola Bu/A					Kalamazoo Bu/A					Average Bu/A					Plant Height (inches)*				
		2 yr	3 yr	4 yr	5 yr	6 yr	2 yr	3 yr	4 yr	5 yr	6 yr	2 yr	3 yr	4 yr	5 yr	6 yr	2 yr	3 yr	4 yr	5 yr	6 yr
BR Hybrids	17C2	50.1	53.1	-	-	-	53.3	51.3	-	-	-	51.7	52.2	-	-	-	27.5	28.1	-	-	-
BR Hybrids	18C7	61.3	-	-	-	-	50.5	-	-	-	-	55.9	-	-	-	-	28.3	-	-	-	-
BR Hybrids	20FC6	57.1	-	-	-	-	47.8	-	-	-	-	52.4	-	-	-	-	27.8	-	-	-	-
BR Hybrids	21C6	61.2	-	-	-	-	54.6	-	-	-	-	57.9	-	-	-	-	31.1	-	-	-	-
BR Hybrids	21F3	53.0	57.3	56.3	52.3	-	52.7	51.6	50.2	51.6	-	52.8	54.5	53.2	51.9	-	28.7	29.4	29.7	29.9	-
BR Hybrids	22DC6	62.8	66.7	-	-	-	59.0	58.8	-	-	-	60.9	62.8	-	-	-	30.3	30.6	-	-	-
DF Seeds Inc.	DF 155 F	54.4	58.7	57.7	52.4	51.9	55.8	55.0	53.7	55.8	52.9	55.1	56.8	55.7	54.1	52.4	30.9	31.1	30.1	29.9	29.7
DF Seeds Inc.	DF 227 N	62.5	-	-	-	-	58.4	-	-	-	-	60.5	-	-	-	-	30.8	-	-	-	-
CoElevator Co.	DH 410	50.8	54.6	53.6	49.4	50.8	49.1	46.3	43.1	46.0	44.8	49.9	50.4	48.4	47.7	47.8	29.1	29.3	28.6	28.7	30.3
CoElevator Co.	DH 530	42.1	48.2	49.2	44.2	46.1	51.2	48.0	46.4	49.1	45.1	46.7	48.1	47.8	46.7	45.6	28.8	28.2	27.7	27.7	29.5
MSU	E05181T	55.3	57.4	54.7	51.1	52.5	48.1	48.3	42.6	45.5	43.6	51.7	52.8	48.6	48.3	48.0	27.4	27.5	27.5	27.6	28.8
MSU	E07051	58.6	60.7	-	-	-	57.7	55.5	-	-	-	58.1	58.1	-	-	-	28.6	28.9	-	-	-
MSU	E07130T	49.7	51.7	50.0	46.7	47.9	49.6	47.7	46.1	47.9	46.3	49.7	49.7	48.0	47.3	47.1	33.8	33.5	32.5	32.6	34.6
MSU	E07158T	46.8	50.0	49.0	44.8	47.0	47.3	46.7	45.5	46.0	42.3	47.0	48.3	47.2	45.4	44.6	31.8	32.1	31.5	31.4	33.7
MSU	E10174	65.2	64.6	62.1	58.4	59.7	59.2	56.7	55.0	57.5	55.4	62.2	60.7	58.5	58.0	57.5	34.5	34.6	34.0	33.8	35.3
MSU	E11128T	61.2	59.6	58.3	-	-	53.2	51.9	49.5	-	-	57.2	55.8	53.9	-	-	28.8	29.4	28.9	-	-
MSU	E12076T	51.2	-	-	-	-	62.1	-	-	-	-	56.7	-	-	-	-	31.0	-	-	-	-
MSU	E13036T	57.5	57.4	-	-	-	57.1	52.7	-	-	-	57.3	55.1	-	-	-	28.8	29.1	-	-	-
MSU	E13268	58.6	-	-	-	-	53.9	-	-	-	-	56.2	-	-	-	-	27.5	-	-	-	-
MSU	E13364	59.8	57.7	-	-	-	53.1	51.8	-	-	-	56.4	54.7	-	-	-	29.2	29.0	-	-	-
MSU	E13367	57.6	58.4	-	-	-	58.5	55.8	-	-	-	58.0	57.1	-	-	-	27.5	27.3	-	-	-
MSU	E13369	56.2	56.4	-	-	-	57.2	53.6	-	-	-	56.7	55.0	-	-	-	29.3	29.5	-	-	-
MSU	E14044T	48.7	-	-	-	-	51.4	-	-	-	-	50.0	-	-	-	-	27.6	-	-	-	-
U of Minnesota	M04-295008	49.3	51.3	50.9	-	-	49.7	50.1	48.5	-	-	49.5	50.7	49.7	-	-	30.3	30.3	29.2	-	-
U of Minnesota	M07-297007	55.7	-	-	-	-	50.8	-	-	-	-	53.2	-	-	-	-	30.4	-	-	-	-
U of Minnesota	MN1701CN	52.9	52.1	-	-	-	47.5	47.9	-	-	-	50.2	50.0	-	-	-	30.6	30.7	-	-	-
U of Minnesota	MN1806CN	52.3	53.4	-	-	-	47.2	47.3	-	-	-	49.8	50.4	-	-	-	28.6	29.4	-	-	-
SunOpta	SR 129	50.7	-	-	-	-	52.0	-	-	-	-	51.3	-	-	-	-	28.1	-	-	-	-
SunOpta	SR 204	50.3	-	-	-	-	55.2	-	-	-	-	52.8	-	-	-	-	28.6	-	-	-	-
SunOpta	SR 354	54.8	-	-	-	-	51.7	-	-	-	-	53.2	-	-	-	-	28.1	-	-	-	-
DKB Farms	Vinton 81	44.9	46.6	47.1	43.8	44.9	44.5	43.3	42.2	44.1	42.3	44.7	44.9	44.6	43.9	43.6	33.7	33.9	33.8	34.0	36.0

Brand/Source	Variety	DAP**			% Oil**						% Protein**					Seeds per Pound*				
		2 yr	3 yr	4 yr	2 yr	3 yr	4 yr	5 yr	6 yr	2 yr	3 yr	4 yr	5 yr	6 yr	2 yr	3 yr	4 yr	5 yr	6 yr	
BR Hybrids	17C2	113	115	-	20.6	20.7	-	-	-	40.6	40.9	-	-	-	2945	3014	-	-	-	
BR Hybrids	18C7	119	-	-	21.3	-	-	-	-	39.5	-	-	-	-	2258	-	-	-	-	
BR Hybrids	20FC6	114	-	-	20.7	-	-	-	-	39.2	-	-	-	-	2635	-	-	-	-	
BR Hybrids	21C6	117	-	-	21.8	-	-	-	-	38.5	-	-	-	-	2597	-	-	-	-	
BR Hybrids	21F3	119	122	124	19.5	18.9	18.6	18.7	-	43.7	42.9	43.4	43.8	-	2195	2163	2181	2167	-	
BR Hybrids	22DC6	121	124	-	19.9	19.9	-	-	-	40.8	41.1	-	-	-	2732	2699	-	-	-	
DF Seeds Inc.	DF 155 F	121	124	125	20.0	20.1	19.9	19.9	19.9	43.1	43.3	43.8	43.9	43.9	2145	2130	2180	2209	2204	
DF Seeds Inc.	DF 227 N	120	-	-	19.8	-	-	-	-	41.0	-	-	-	-	2685	-	-	-	-	
CoElevator Co.	DH 410	113	115	116	20.7	20.6	20.3	20.3	20.3	43.3	44.1	44.5	44.6	44.6	2510	2455	2512	2547	2548	
CoElevator Co.	DH 530	112	114	114	21.4	21.5	21.3	21.1	21.3	39.8	40.2	40.8	40.9	40.9	2509	2532	2522	2541	2555	
MSU	E05181T	117	119	119	20.6	20.6	20.2	20.2	20.3	41.8	42.4	42.6	42.9	42.9	2140	2119	2223	2236	2200	
MSU	E07051	118	121	-	20.7	20.8	-	-	-	40.5	41.0	-	-	-	2274	2242	-	-	-	
MSU	E07130T	120	122	124	18.9	19.0	18.7	18.7	18.9	45.9	46.2	46.3	46.4	46.6	1774	1777	1842	1874	1857	
MSU	E07158T	118	121	123	19.0	19.1	18.7	18.9	18.9	47.1	47.2	47.4	47.5	47.6	1717	1702	1780	1810	1807	
MSU	E10174	124	127	127	20.3	20.6	20.3	20.5	20.5	40.0	40.2	40.3	40.3	40.2	2112	2111	2178	2224	2222	
MSU	E11128T	121	124	125	19.3	19.3	19.1	-	-	44.5	44.9	45.1	-	-	2074	2061	2134	-	-	
MSU	E12076T	125	-	-	20.3	-	-	-	-	39.9	-	-	-	-	2517	-	-	-	-	
MSU	E13036T	122	124	-	19.9	19.9	-	-	-	41.7	42.1	-	-	-	2060	2059	-	-	-	
MSU	E13268	115	-	-	20.6	-	-	-	-	39.9	-	-	-	-	2678	-	-	-	-	
MSU	E13364	120	123	-	20.5	20.6	-	-	-	41.0	41.4	-	-	-	2708	2673	-	-	-	
MSU	E13367	119	121	-	20.0	20.2	-	-	-	39.2	39.8	-	-	-	2673	2647	-	-	-	
MSU	E13369	117	119	-	20.2	20.3	-	-	-	40.3	40.7	-	-	-	2826	2834	-	-	-	
MSU	E14044T	119	-	-	19.2	-	-	-	-	44.0	-	-	-	-	2195	-	-	-	-	
U of Minnesota	M04-295008	114	117	117	19.7	19.9	19.7	-	-	44.0	44.1	44.5	-	-	1971	1952	1994	-	-	
U of Minnesota	M07-297007	114	-	-	20.2	-	-	-	-	42.4	-	-	-	-	2896	-	-	-	-	
U of Minnesota	MN1701CN	115	116	-	20.3	20.3	-	-	-	41.1	41.6	-	-	-	2878	2881	-	-	-	
U of Minnesota	MN1806CN	116	118	-	20.9	20.9	-	-	-	41.4	41.7	-	-	-	2509	2519	-	-	-	
SunOpta	SR 129	116	-	-	19.5	-	-	-	-	43.7	-	-	-	-	2173	-	-	-	-	
SunOpta	SR 204	121	-	-	19.1	-	-	-	-	44.0	-	-	-	-	2032	-	-	-	-	
SunOpta	SR 354	121	-	-	18.6	-	-	-	-	44.7	-	-	-	-	2101	-	-	-	-	
DKB Farms	Vinton 81	116	118	119	19.0	19.1	18.7	18.9	18.9	44.6	45.2	45.6	45.7	45.9	1960	1942	2017	2047	2021	

\* Average across all locations

\* Maturity: Days After Planting

# Dry Basis

# 2016 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 2016. This research is funded by The Ceres Trust and the North Central Region Sustainable Agriculture Research Education (NCR SARE) Program.

## Testing Procedures

Three trial locations are reported in this publication. A total of 61 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 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 2016.

**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

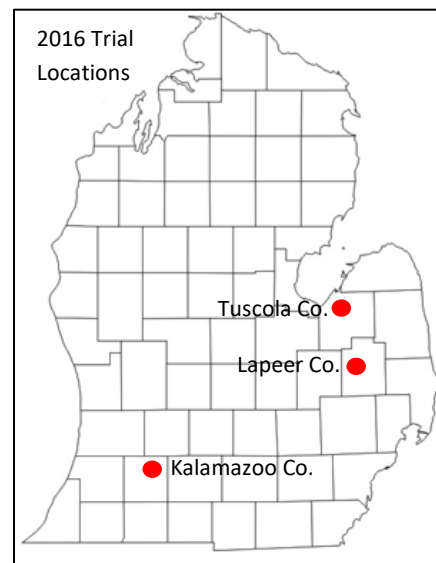
Nearest city: Columbiaville	Cooperator: Charlie Brockriede
Soil type: Sandy loam	Previous crop: Corn, spelt cover crop
Tillage: Spring moldboard plow, disk	
Planting Date: June 7	Harvest Date: November 15

### Tuscola County

Nearest city: Unionville	Cooperator: Dave Sting
Soil type: Tappan-Londo Loam	Previous crop: Corn
Tillage: Fall plowed, spring field cultivate	
Planting Date: May 21	Harvest Date: November 10

### Kalamazoo County

Nearest city: Hickory Corners	Cooperator: W.K. Kellogg Bio Station
Soil type: Sandy loam	Previous crop: Winter wheat/Clover
Tillage: Chisel plow, field cultivate	
Planting Date: June 21	Harvest Date: November 7



Planting soybeans at Tuscola County, May 21 .



Lapeer County organic soybean variety trial.



## Growing conditions/comments

**Lapeer:** early dry conditions, with average growing conditions rest of year.

**Tuscola:** wet ground prior to planting, then good planting conditions until a very dry stretch in June-July resulting in short plants.

**Kalamazoo:** wet conditions just after planting resulting in poor weed control. Site tilled up and replanted in late June. Very dry conditions after replanting, irrigated 1.4 inches. Good conditions for rest of season. All varieties matured before frost.

## 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.



Maturing soybeans at Kalamazoo County site, October 3.



Harvesting soybeans in Tuscola County, November 10.

## Seed sources

### DKB Farm & Services

Charlie Brockriede  
4945 Marathon Road  
Columbiaville, MI 48421  
810-627-8477

### 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/ Cooperative Elevator Company

Dan Armbruster  
1075 S. Colling Rd.  
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  
WestDes 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  
1414 W. Main, PO Box 127  
Albert Lea, MN 56007  
800-352-5247

### Blue Rive Hybrids

Stuart Grim  
2326 230th St.  
Ames, IA 50014  
800-370-7979

### University of Minnesota/ MN Crop Improvement

Roger Wippler  
1900 Hendon Ave.  
St. Paul, MN 55108  
612-625-7766



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## 2016 Michigan Organic Soybean Variety Trial

Brand/Source	Variety	Group	Hilum Color	Bushels per Acre				Height Inches <sup>+</sup>	DAP <sup>++</sup>	% Oil <sup>+</sup> Protein <sup>+</sup>		Seeds/Lb <sup>+</sup>
				Kalamazoo	Lapeer	Tuscola	Average					
Albert Lea Seed	O.1518N	1.5	Black	51.4	49.7	60.7	53.9	28	115	17.6	37.8	2588
Albert Lea Seed	O.1706N	1.7	Black	54.6	48.0	60.1	54.3	30	116	17.8	37.5	2938
Albert Lea Seed	O.202N	1.2	Black	54.0	47.8	50.3	50.7	28	113	17.4	37.8	2247
Albert Lea Seed	O.2188AT12N	2.1	Yellow	68.3	67.6	71.2	69.0	32	125	17.8	37.7	2357
Albert Lea Seed	O.2399AT12N	2.3	Yellow	62.3	65.1	68.3	65.2	34	126	17.6	37.6	2235
Blue River Hybrids	15C6	1.5	Dark	50.2	46.0	57.6	51.3	27	115	17.6	37.6	2609
Blue River Hybrids	17C2	1.7	Dark	58.4	45.8	50.4	51.5	29	113	18.1	37.0	2674
Blue River Hybrids	18C7	1.8	Dark	53.4	53.6	73.0	60.0	31	119	18.7	36.0	2177
Blue River Hybrids	20FC6	2.0	Yellow	50.8	57.9	63.5	57.4	30	116	18.1	36.6	2538
Blue River Hybrids	21C6	2.1	Dark	60.3	61.4	71.9	64.5	33	121	19.0	35.4	2376
Blue River Hybrids	21F3	2.6	Yellow	59.4	51.3	59.8	56.8	33	123	16.9	39.8	1721
Blue River Hybrids	22DC6	2.2	Dark	64.3	55.1	70.5	63.3	32	122	17.4	37.3	2519
DF Seeds	DF 155 F	2.5	Clear	61.1	61.9	59.9	61.0	32	124	17.6	39.1	1963
DF Seeds	DF 192 N	1.9	Im Black	59.5	56.3	54.0	56.6	30	117	18.2	37.1	2100
DF Seeds	DF 227 N	2.2	Im Brown	65.8	55.6	69.2	63.5	33	122	17.4	37.3	2463
DF Seeds	DF 242 N	2.4	Im Black	61.4	52.8	63.7	59.3	32	121	17.7	37.4	2772
DKB Farms	Vinton 81	1.9	Clear	48.5	35.0	48.6	44.0	36	118	16.2	40.8	1770
Iowa State University	IA1029	1.9	Yellow	61.6	53.7	56.8	57.3	32	117	17.3	39.1	2049
Iowa State University	IA2112RA12	2.7	Yellow	65.5	60.9	67.9	64.8	32	125	17.4	38.1	2212
Iowa State University	IAR1902SCN	1.9	Buff	54.8	51.1	68.4	58.1	33	119	18.7	36.8	2585
Iowa State University	IAR2104RA12	2.3	Yellow	62.5	55.2	62.2	60.0	32	124	16.9	39.6	1873
Iowa State University	IAR2601SCN	2.6	Brown	60.8	58.0	77.4	65.4	29	122	17.9	37.3	2362
Michigan State University	E05181T	2.0	Yellow	53.4	46.0	61.5	53.6	29	117	17.8	37.9	2034
Michigan State University	E07051	2.2	Dark Brown	63.3	64.5	68.1	65.2	31	121	18.2	36.9	2109
Michigan State University	E07130T	2.3	Yellow	55.8	42.7	54.7	51.1	35	122	16.3	41.7	1642
Michigan State University	E07158T	2.3	Yellow	52.1	46.3	50.2	49.5	33	120	16.3	42.5	1662
Michigan State University	E10151	2.2	Black	63.1	54.8	60.7	59.5	34	123	18.5	35.2	2431
Michigan State University	E10174	2.7	Yellow	68.5	66.9	76.5	70.6	37	128	17.9	36.2	1979
Michigan State University	E11128T	2.6	Yellow	57.7	59.4	71.5	62.9	30	124	16.8	39.9	1957
Michigan State University	E11399	2.2	Black	63.6	51.7	57.5	57.6	35	125	18.2	36.0	2438
Michigan State University	E11431	2.2	Black	61.7	53.2	59.8	58.2	35	123	18.3	35.6	2330
Michigan State University	E12042	2.7	Black	66.8	47.1	69.6	61.2	35	126	18.3	35.5	2598
Michigan State University	E12076T	2.9	Yellow	70.8	44.5	48.0	54.5	31	128	17.9	35.8	2285
Michigan State University	E12397	2.2	Lit Brown	60.1	47.9	68.0	58.7	31	120	18.1	37.2	2459
Michigan State University	E13036T	2.4	Yellow	62.9	53.1	66.5	60.8	31	123	17.4	37.6	1864
Michigan State University	E13268	1.7	Black	64.6	54.5	61.8	60.3	30	117	17.9	36.2	2538
Michigan State University	E13304	1.6	Black	49.9	49.6	48.2	49.2	32	114	17.9	38.6	2539
Michigan State University	E13364	2.2	Dark Brown	59.2	63.3	68.5	63.7	32	122	17.9	37.6	2616
Michigan State University	E13367	2.2	Brown	64.2	52.6	65.1	60.6	29	122	17.8	35.9	2493
Michigan State University	E13369	1.6	Brown	65.7	52.8	61.5	60.0	31	117	17.9	36.9	2608
Michigan State University	E13901	2.3	Black	54.5	34.1	55.8	48.1	34	121	17.9	36.7	2176
Michigan State University	E14022T	2.2	Yellow	50.8	39.7	39.9	43.4	27	117	17.7	39.0	2045
Michigan State University	E14044T	2.5	Yellow	56.8	45.5	50.7	51.0	30	121	16.7	39.8	2052
Michigan State University	E14309	2.5	Med Brown	62.3	51.0	61.0	58.1	36	127	17.4	36.8	2355
Organic Bean & Grain	DH410	1.6	Clear	57.4	57.0	50.6	55.0	32	115	17.9	40.0	2321
Organic Bean & Grain	DH530	1.6	Clear	57.2	42.7	39.2	46.4	32	113	18.9	36.3	2427
Organic Bean & Grain	S2020	2.0	Clear	55.2	46.4	54.7	52.1	32	115	18.3	37.0	2275
Schillinger Genetics	e1665	1.6	Yellow	53.5	55.9	51.5	53.6	29	111	17.7	38.1	2463
Schillinger Genetics	e2162	2.1	Yellow	52.2	48.7	53.7	51.5	29	119	17.2	38.7	2492
Schillinger Genetics	e2346	2.3	Black	54.6	53.1	58.4	55.4	32	118	17.2	38.4	2186
Schillinger Genetics	e2866A	2.8	Yellow	62.5	62.8	70.7	65.3	31	125	17.6	37.8	2228
SunOpta	SR 129	1.8	Yellow	58.0	44.8	53.0	51.9	30	117	17.2	39.0	2055
SunOpta	SR 204	2.4	Yellow	64.0	53.8	55.2	57.6	31	125	16.5	39.7	1830
SunOpta	SR 354	2.2	Yellow	59.8	54.4	57.6	57.3	31	123	16.3	40.6	1989
University of Minnesota	M04-295008	1.5	Yellow	54.4	43.8	49.7	49.3	33	115	17.0	39.7	1833
University of Minnesota	M06-288155	1.6	Yellow	59.0	49.8	51.6	53.5	34	115	17.5	36.9	2678
University of Minnesota	M07-297007	1.8	Black	54.5	59.4	64.1	59.3	33	115	17.3	39.5	2685
University of Minnesota	M07-322-4006	1.7	Yellow	48.3	44.8	51.1	48.0	33	114	16.9	40.5	1673
University of Minnesota	MN1612CN	1.6	Yellow	51.1	51.2	60.7	54.3	30	115	17.8	37.2	2187
University of Minnesota	MN1701CN	1.7	Yellow	53.9	52.2	59.9	55.3	33	116	17.6	37.8	2691
University of Minnesota	MN1806CN	1.8	Yellow	52.1	47.5	55.3	51.6	31	116	18.1	37.5	2365
GRAND MEAN				58.4	52.1	59.8	56.8	32	120	17.6	37.9	
Max. Mean				70.8	67.6	77.4	70.6	37	128	19.0	42.5	
Min. Mean				48.3	34.1	39.2	43.4	27	111	16.2	35.2	
LSD				6.8	8.4	13.3	5.7					
CV				7.0	9.7	13.4	10.5					

\*Maturity: Days After Planting

+ Average across sites

# Multiple Year Michigan Organic Soybean Variety Trial Results

Multiple Year Averages (2 yr = 2015-2016, 3 yr = 2014-2016, 4 yr=2013-2016)

Brand/Source	Variety	Group	Hilum Color	Kalamazoo Bu/A			Lapeer Bu/A			Tuscola 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 Seed	O.1706N	1.7	Black	50.1	46.0	49.1	47.8	41.1	41.4	55.1	56.0	50.9	51.0	48.4	46.2
Blue River Hybrids	17C2	1.7	Dark	52.9	-	-	44.0	-	-	54.8	-	-	50.1	-	-
Blue River Hybrids	21F3	2.6	Yellow	54.4	51.5	53.0	42.2	36.0	36.6	63.0	59.6	53.8	52.6	48.8	46.9
Blue River Hybrids	22DC6	2.2	Dark	61.4	-	-	55.8	-	-	72.6	-	-	62.2	-	-
DF Seeds	DF 155 F	2.5	Clear	57.3	54.8	57.1	53.0	42.1	41.2	63.6	60.6	53.2	56.4	52.3	49.8
DKB Farms	Vinton 81	1.9	Clear	44.7	42.8	45.0	33.8	31.9	31.3	49.3	49.0	44.5	42.3	40.9	39.9
Michigan State University	E05181-T	2.0	Yellow	51.1	42.5	46.3	48.1	41.5	41.1	61.5	56.5	51.6	52.9	46.8	45.6
Michigan State University	E07051	2.2	Dark Brown	57.3	-	-	60.8	-	-	66.6	-	-	61.8	-	-
Michigan State University	E07130-T	2.3	Yellow	49.9	46.9	49.0	40.5	35.3	35.0	55.2	51.7	47.3	47.6	44.0	43.0
Michigan State University	E07158-T	2.3	Yellow	48.9	46.5	46.9	44.6	38.6	36.2	53.3	50.9	45.2	48.7	45.2	43.0
Michigan State University	E10151	2.2	Black	61.1	-	-	50.1	-	-	63.0	-	-	57.7	-	-
Michigan State University	E10174	2.7	Yellow	60.2	56.7	59.4	65.7	50.9	50.2	70.0	64.8	59.6	65.1	57.8	56.2
Michigan State University	E11128-T	2.6	Yellow	53.5	49.7	-	55.8	46.0	-	64.0	60.7	-	58.6	52.7	-
Michigan State University	E11399	2.2	Black	58.3	55.5	57.8	52.5	42.3	43.7	62.8	63.4	58.1	56.4	53.4	51.3
Michigan State University	E11431	2.2	Black	56.7	52.2	55.5	45.6	42.6	40.0	62.0	62.4	55.4	54.1	51.7	50.3
Michigan State University	E12397	2.2	Lit Brown	57.1	52.0	-	42.7	39.6	-	67.2	63.5	-	55.3	51.4	-
Michigan State University	E13036-T	2.4	Yellow	53.5	-	-	51.3	-	-	61.9	-	-	55.7	-	-
Michigan State University	E13364	2.2	Dark Brown	54.3	-	-	51.2	-	-	61.0	-	-	55.3	-	-
Michigan State University	E13367	2.2	Brown	57.4	-	-	50.7	-	-	62.5	-	-	56.1	-	-
Michigan State University	E13369	1.6	Brown	56.2	-	-	46.4	-	-	59.2	-	-	54.5	-	-
Minn Crop Improvement	M04-295008	1.5	Yellow	52.7	49.7	-	42.8	40.6	-	52.5	51.5	-	48.4	46.7	-
Minn Crop Improvement	M06-288155	1.6	Yellow	51.9	-	-	49.7	-	-	56.6	-	-	52.8	-	-
Minn Crop Improvement	MN1701 CN	1.7	Yellow	51.4	-	-	50.5	-	-	55.3	-	-	52.4	-	-
Organic Bean & Grain	DH 410	1.6	Clear	49.1	43.9	47.3	53.8	45.1	44.0	56.5	54.5	49.1	52.4	48.2	46.8
Organic Bean & Grain	DH 530	1.6	Clear	49.5	46.8	50.1	42.4	37.6	34.4	49.8	50.6	44.0	44.5	43.2	42.1
Organic Bean & Grain	S2020	2.0	Clear	52.5	47.9	49.8	39.6	36.3	35.0	57.4	57.7	50.4	49.0	47.0	44.7
Schillinger Genetics	e1665	1.6	Yellow	50.1	-	-	52.7	-	-	54.0	-	-	52.6	-	-
Schillinger Genetics	e2162	2.1	Yellow	52.5	-	-	47.8	-	-	54.7	-	-	51.4	-	-

Brand/Source	Variety	Group	Hilum Color	Height(inches)*			DAP**			% Oil*			% Protein*			Seeds/pound*		
				2 yr	3 yr	4 yr	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 Seed	O.1706N	1.7	Black	28.6	27.7	28.1	117	117	117	17.3	17.2	17.4	35.6	35.9	36.0	2922	3030	3159
Blue River Hybrids	17C2	1.7	Dark	29.3	-	-	116	-	-	18.1	-	-	36.6	-	-	2913	-	-
Blue River Hybrids	21F3	2.6	Yellow	31.9	31.4	31.3	126	127	126	16.2	16.0	16.1	38.0	38.4	38.6	1910	2018	2042
Blue River Hybrids	22DC6	2.2	Dark	31.6	-	-	126	-	-	17.4	-	-	37.0	-	-	2576	-	-
DF Seeds	DF 155 F	2.5	Clear	31.8	30.2	29.9	127	128	127	17.7	17.3	17.3	38.7	38.8	38.8	2032	2132	2179
DKB Farms	Vinton 81	1.9	Clear	35.2	34.6	34.7	120	121	120	16.5	16.2	16.3	40.6	40.6	40.6	1838	1972	2021
Michigan State University	E05181-T	2.0	Yellow	28.4	28.0	28	120	120	120	17.9	17.5	17.6	38.0	37.9	37.9	2055	2216	2233
Michigan State University	E07051	2.2	Dark Brown	30.2	-	-	125	-	-	18.2	-	-	36.9	-	-	2144	-	-
Michigan State University	E07130-T	2.3	Yellow	34.0	32.4	32.6	125	125	125	16.6	16.2	16.3	41.3	41.1	41.0	1713	1821	1866
Michigan State University	E07158-T	2.3	Yellow	32.9	31.8	31.6	124	125	124	16.6	16.2	16.3	41.9	41.7	41.8	1668	1783	1820
Michigan State University	E10151	2.2	Black	32.1	-	-	125	-	-	18.5	-	-	35.0	-	-	2495	-	-
Michigan State University	E10174	2.7	Yellow	35.9	34.7	34.3	131	130	131	18.1	17.8	17.8	35.8	35.7	35.5	2044	2155	2218
Michigan State University	E11128-T	2.6	Yellow	30.4	29.4	-	127	127	127	16.9	16.5	-	39.9	-	-	1996	2114	-
Michigan State University	E11399	2.2	Black	32.3	31.1	31.4	127	126	127	18.3	18.0	18.0	35.6	35.5	35.2	2486	2584	2652
Michigan State University	E11431	2.2	Black	33.3	32.2	32.2	125	125	125	18.3	17.9	18.0	35.5	35.5	35.2	2441	2545	2607
Michigan State University	E12397	2.2	Lit Brown	30.2	29.4	-	123	122	123	17.3	17.3	-	35.6	35.9	-	2459	2563	-
Michigan State University	E13036-T	2.4	Yellow	30.4	-	-	126	-	-	17.4	-	-	37.5	-	-	1961	-	-
Michigan State University	E13364	2.2	Dark Brown	30.4	-	-	126	-	-	18.1	-	-	37.2	-	-	2609	-	-
Michigan State University	E13367	2.2	Brown	28.0	-	-	125	-	-	17.9	-	-	35.7	-	-	2544	-	-
Michigan State University	E13369	1.6	Brown	30.5	-	-	121	-	-	18.0	-	-	36.6	-	-	2729	-	-
Minn Crop Improvement	M04-295008	1.5	Yellow	31.7	29.7	-	118	118	118	17.3	17.1	-	39.2	39.3	-	1873	1956	-
Minn Crop Improvement	M06-288155	1.6	Yellow	32.0	-	-	117	-	-	17.4	-	-	37.0	-	-	2677	-	-
Minn Crop Improvement	MN1701 CN	1.7	Yellow	31.9	-	-	118	-	-	17.7	-	-	37.5	-	-	2789	-	-
Organic Bean & Grain	DH 410	1.6	Clear	30.9	29.4	29.3	118	117	118	17.9	17.6	17.6	39.9	39.7	39.6	2333	2450	2509
Organic Bean & Grain	DH 530	1.6	Clear	29.5	28.4	28.3	115	115	115	18.9	18.5	18.4	36.1	36.3	36.3	2503	2498	2529
Organic Bean & Grain	S2020	2.0	Clear	30.2	28.3	28.2	117	117	117	18.3	17.9	17.8	36.9	36.9	37.0	2336	2398	2452
Schillinger Genetics	e1665	1.6	Yellow	28.4	-	-	116	-	-	17.7	-	-	38.2	-	-	2491	-	-
Schillinger Genetics	e2162	2.1	Yellow	28.5	-	-	122	-	-	17.2	-	-	38.7	-	-	2487	-	-

\* Average across sites

\* Maturity Days After Planting



# 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

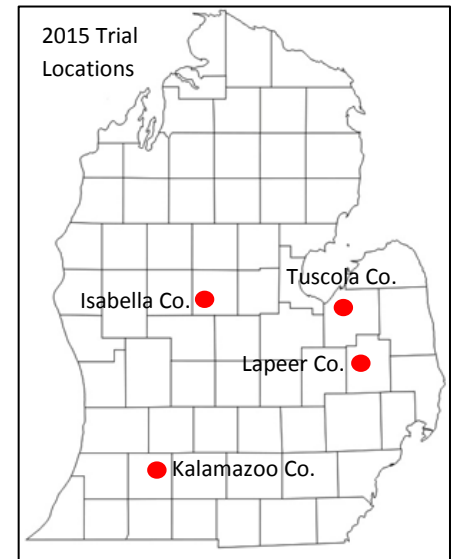
Nearest city: Unionville	Cooperator: Dave Sting
Soil type: Tappan loam	Previous crop: Corn
Tillage: Fall plowed, rye cover, spring field cultivate	
Planting Date: May 22	Harvest Date: October 22

### 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  
612-625-7766



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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	<b>57.0</b>	61.7	<b>51.6</b>	<b>59.4</b>	34.8	18.5	29.1	127	2463
Albert Lea	O.1518	1.5	Black	55.3	42.8	32.5	<b>56.3</b>	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	<b>53.6</b>	<b>56.8</b>	<b>54.0</b>	57.5	36.8	18.1	31.7	127	2777
Albert Lea	O.2299N	2.2	Yellow	56.5	<b>58.8</b>	<b>55.7</b>	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	<b>59.1</b>	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	<b>74.6</b>	<b>55.0</b>	<b>56.5</b>	<b>58.4</b>	<b>61.1</b>	36.6	17.4	31.2	130	2633
Blue River Hybrids	27A7	2.7	Dark	<b>67.7</b>	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	<b>62.6</b>	<b>68.9</b>	<b>55.3</b>	<b>63.5</b>	36.6	17.9	30.3	132	2375
Blue River Hybrids	2A12	2.1	Dark	57.5	45.9	35.0	<b>53.5</b>	48.0	37.1	18.0	30.5	121	2756
DF Seeds	DF 155 F	2.5	Clear	67.3	42.5	44.0	<b>53.4</b>	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	<b>54.3</b>	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	<b>51.8</b>	54.0	36.9	18.0	30.3	127	2930
DF Seeds	DF 252 N/S	2.5	Clear	61.1	<b>61.3</b>	<b>67.3</b>	<b>58.7</b>	<b>62.1</b>	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	<b>50.9</b>	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	<b>56.4</b>	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	<b>59.6</b>	<b>57.1</b>	<b>51.3</b>	<b>58.3</b>	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	<b>53.9</b>	45.4	<b>59.1</b>	55.9	34.7	18.5	30.2	127	2558
MSU	E10174	2.9	Yellow	63.5	<b>58.4</b>	<b>64.4</b>	<b>51.8</b>	<b>59.5</b>	35.4	18.3	34.7	133	2109
MSU	E11128T	2.6	Yellow	56.4	<b>58.8</b>	52.1	49.3	54.2	39.8	16.9	30.8	129	2034
MSU	E11399	2.5	Black	<b>68.1</b>	46.3	53.2	<b>52.9</b>	55.1	35.2	18.3	29.6	128	2534
MSU	E11431	2.2	Black	64.2	45.9	38.0	<b>51.7</b>	49.9	35.3	18.2	31.6	127	2551
MSU	E12007	2.8	Dark Brown	59.0	53.2	39.9	<b>58.8</b>	52.7	36.4	18.3	32.4	131	2797
MSU	E12397	2.2	Light Brown	66.4	49.3	37.5	<b>54.1</b>	51.8	33.9	16.5	29.3	125	2458
MSU	E13021T	2.2	Yellow	56.7	<b>59.1</b>	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	<b>53.6</b>	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	<b>52.8</b>	51.2	38.7	17.2	27.9	124	2481
Schillinger Genetics	e2282	2.2	Buff	59.0	<b>65.5</b>	<b>58.3</b>	50.1	<b>58.2</b>	38.3	17.5	30.4	128	2446
SunOpta	S14L9	1.4	ImpYellow	65.9	42.3	26.8	<b>53.1</b>	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.

# 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 reps at the Tuscola and Isabella 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

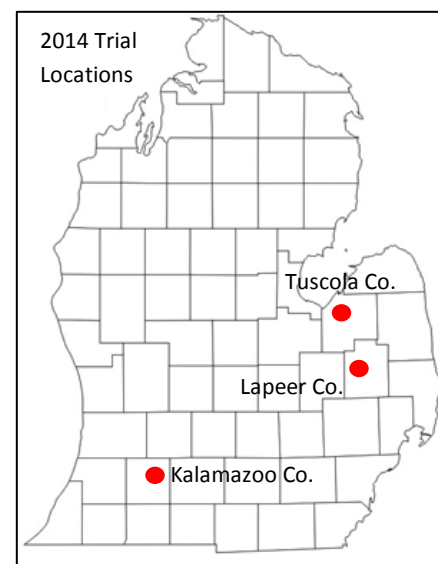
Nearest city: Unionville	Cooperator: Dave Sting
Soil type: Tappan-Londo Loam	Previous crop: Corn
Tillage: Fall moldboard plow, spring field cultivate	
Planting Date: June 5	Harvest Date: November 12

### 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



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



Harvesting soybeans at KBS site, October 26.

small seed size.

**Tuscola:** Very wet spring delayed planting.

**KBS:** 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**  
Mark Vollmar  
1795 W. Akron Road  
Caro, MI 48723  
989-673-6402

**SunOpta**  
John Simmons  
26 E Sanilac  
Sandusky, MI 48471  
810-648-5600

**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

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

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

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

**University of Minnesota/  
MN Crop Improvement**  
Roger Wippler  
1900 Hendon Ave.  
St. Paul, MN 55108  
612-625-7766



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Source	Variety	Maturity Group	Hilum Color	(Bu./A)				% Protein	% Oil	Seeds per Pound	Maturity DAP**	Height (in.)*	WM DSI#
				Tuscola	KBS	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	-	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	KBS	Lapeer	Average						
Schillinger Genetics	2282	2.2	Buff	<b>59.2</b>	36.0	29.7	41.6	38.5	16.2	2728	122	26.9	<b>7.7</b>
Sunopta	503W4	-	-	47.3	34.9	29.3	37.2	38.7	<b>17.7</b>	2309	105	25.2	<b>1.9</b>
Sunopta	OAC Thomsville	-	-	<b>56.4</b>	<b>45.4</b>	29.5	<b>43.8</b>	37.7	16.8	2231	123	26.1	<b>6.5</b>
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 KBS 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 varieties at Tuscola, Lapeer and KBS.

Source	Variety	Tuscola		Lapeer		KBS		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	46.8	-	34.5	-	48.2	-	41.4	-	36.5	-	17.5	-	3396	-
Albert Lea Seeds	Viking O.2265	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	44.7	-	29.8	-	51.5	-	41.2	-	39.2	-	16.1	-	2174	-
DF Seeds	DF 155 F	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	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	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	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	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	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	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	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	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	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	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	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	53.4	-	32.1	-	57.3	-	46.3	-	34.9	-	17.7	-	2818	-
MSU	E11401	46.5	-	36.0	-	48.4	-	43.3	-	34.8	-	17.7	-	2757	-
MSU	E11431	48.7	-	39.6	-	54.2	-	46.6	-	35.0	-	17.6	-	2774	-
Organic B&G	DH410	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	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	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	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

# 2013 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 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.1A2053	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	1A1018	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	1A1026	1.9	28.8	38.1	32.8	58.2	39.5	26	37.9	17.5	3048
Iowa	1A2102	2.7	38.3	41.1	43.8	66.8	47.5	31	36.3	17.9	2999
Iowa	1A2103	2.4	34.5	37.1	38.3	63.0	43.2	28	39.4	16.7	2065
Iowa	1A2104	2.2	34.2	33.9	37.8	56.1	40.5	29	39.5	16.8	2311
Iowa	1A3051	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	<sup>2</sup>	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
			<sup>1</sup> Tuscola	Lapeer	Gratiot	KBS	Average				
Sunopta	Sunopta SR-53LF	2.1	N/A	37.9	33.4	53.7	<sup>2</sup>	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	<sup>2</sup>	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					
	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					

<sup>1</sup> See comments on growing conditions for Tuscola County.  
<sup>2</sup> Averages not included due to missing location yield.  
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](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  
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**  
John Simmons  
26 E Sanilac  
Sandusky, MI 48471  
810-648-5600

**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

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

**Albert Lea Seed**  
Mathew Leavitt  
1414 W. Main, PO Box 127  
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  
1900 Hendon Ave.  
St. Paul, MN 55108  
612-625-7766



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# 2012 Michigan Organic Soybean Variety Trials

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Michigan State University

This report provides information on performance of non-GMO soybean varieties grown under certified organic management in Michigan in 2012. This research is funded by The CERES Trust and the North Central Region Sustainable Agriculture Research Education (NCR SARE).

## Testing procedures

Four 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 2012.

**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 reps at the Tuscola and Isabella 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.

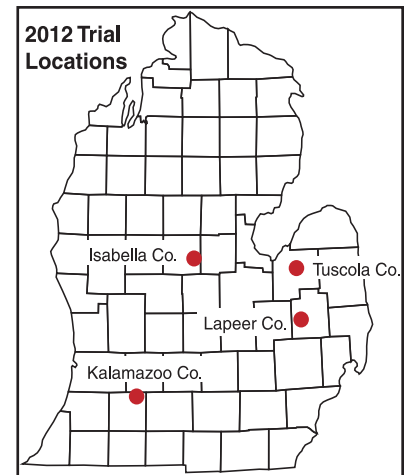
## Test site information

### Isabella County

Nearest city: Mt. Pleasant  
Cooperator: Tom Nelson  
Soil type: Guelph clay loam  
Previous crop: Double crop of peas followed by green beans  
Tillage: Spring moldboard, disked, soil finisher  
Planting date: 05/15/2012  
Harvest date: 10/12/2012

### Kalamazoo County

Nearest city: Hickory Corners  
Cooperator: W.K. Kellogg Biological Station  
Soil type: Kalamazoo sandy loam  
Previous crop: Mustard  
Tillage: Chisel plow, field cultivator  
Planting date: 05/22/2012  
Harvest date: 10/09/2012



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 w/pulverizer then rye cover crop;  
Spring: field cultivator with large sweeps.  
Planting date: 05/29/2012  
Harvest date: 11/09/2012

## Tuscola County

Nearest city: Caro  
Cooperator: Mark and Steven Vollmar  
Soil type: Tappen-Londo loam  
Previous crop: Black beans followed by rye cover crop  
Tillage: Fall chisel plow, spring disked and field cultivator  
Planting date: 05/24/2012  
Harvest date: 10/13/2012

## Growing conditions/comments

**Isabella County:** Unusually dry period during flowering, but timely rains resulted in good yields.

**Kalamazoo County:** Drought severely affected plots. Irrigation (five inches) was required to save research. The edges of the plots were effected by spider mites.

**Lapeer County:** Conditions at planting were very good, but then became very dry until the end of July. Timely rains then fell through to harvest time.

**Tuscola County:** May was very dry at planting and all of June and the first half of July were abnormally dry also. After July 17 there was adequate moisture which helped 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 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 at Isabella Co. site.



Tuscola Co. site.



Field tour at Lapeer Co. site.



Harvest at the W.K. Kellogg Biological Station site.



			Yield – Bu/A								
Source	Variety	Maturity group	Tuscola	Isabella	Lapeer	KBS	Average Bu/A	Average Ht. In. <sup>1</sup>	Average Protein	Average Oil	Average Seeds/lb
Albert Lea (Viking)	1955 AT	1.9	58.5	35.2	54.5	16.3	41.1	34	36.4	18.6	2769
Albert Lea (Viking)	2022	2.0	60.4	40.7	56.8	29.5	46.9	35	36.2	18.3	2425
Albert Lea (Viking)	2054N	2.0	60.8	46.6	66.3	38.1	53.0	37	37.3	17.7	2141
Albert Lea (Viking)	IA 2053	2.0	56.1	41.6	53.8	35.1	46.7	41	39.5	16.9	2005
Albert Lea (Viking)	2265	2.2	64.8	51.8	62.0	34.7	53.3	40	36.5	18.1	2768
Blue River	Blue River 17C2	Mid 1	59.3	55.5	47.9	36.9	49.9	37	35.5	18.3	2996
Blue River	Blue River 2A12	Mid 2	62.2	40.2	53.9	32.6	47.2	39	37.1	17.8	2780
Blue River	Blue River 23C2	Mid 2	59.5	61.5	57.4	29.8	52.1	41	35.7	18.1	2462
DF Seeds	DF 155F	2.5	49.5	48.2	51.3	38.7	46.9	29	38.4	17.5	2183
DF Seeds	DF 242 N/S	2.4	67.1	57.5	63.2	54.0	60.5	37	36.8	17.8	2586
DF Seeds	DF 161N STS	1.6	67.6	49.8	63.0	33.8	53.6	37	36.2	18.0	3067
DKB Farms	VINTON 81	1.9	50.2	36.0	47.9	33.4	41.9	46	40.1	16.6	1890
Iowa State University	A 09-754003	–	62.0	52.3	55.3	27.8	49.4	32	38.3	17.7	2623
Iowa State University	IA 2102	–	71.2	61.2	62.6	29.6	56.2	37	36.2	18.1	2701
Iowa State University	IA 2103	–	56.5	41.0	51.0	34.2	45.7	36	38.9	16.9	1898
Iowa State University	IA 2104	–	66.5	39.9	59.3	25.2	47.7	37	39.4	17.0	2061
Iowa State University	IA 3051	–	71.0	48.1	62.3	33.3	53.7	41	39.7	16.4	2093
Organic Bean & Grain	DH 410	1.6	57.4	51.4	63.6	39.1	52.9	38	39.1	17.5	2551
Organic Bean & Grain	S 20-20	2.0	63.1	42.0	71.3	31.5	52.0	38	36.8	17.9	2378
Organic Bean & Grain	IA 2041	2.0	57.9	37.6	53.1	36.0	46.2	43	40.8	16.9	2170
Organic Bean & Grain	DH 530	1.5	55.7	38.5	61.2	25.0	45.1	38	35.4	18.7	2626
Organic Bean & Grain	TITAN	1.4	54.7	41.8	45.6	27.7	42.5	31	37.5	17.6	2514
Organic Bean & Grain	MK 1016 (Natto)	1.0	39.6	28.1	40.3	29.0	34.3	38	37.4	17.6	4469
Michigan State Univ.	E05181-T	2.0	59.6	60.1	64.2	33.6	54.4	35	37.6	17.8	2020
Michigan State Univ.	E06331-T	2.4	59.2	38.6	54.9	30.0	45.7	33	40.4	16.4	1923
Michigan State Univ.	E06341-T	–	60.1	39.4	53.7	31.6	46.2	40	40.1	16.8	2152
Michigan State Univ.	E07051	2.2	66.5	61.6	64.3	35.8	57.1	36	37.0	18.1	2284
Michigan State Univ.	E07130-T	–	53.4	36.8	55.8	38.6	46.2	45	40.8	16.6	1776
Michigan State Univ.	E07158-T	–	58.0	37.2	58.0	23.6	44.2	45	41.9	16.5	1790
Michigan State Univ.	E08210LL	2.3	63.3	41.9	52.8	36.5	48.6	36	36.9	17.3	2493
Michigan State Univ.	E08313-T	–	61.0	44.8	55.9	34.1	49.0	41	38.5	17.7	2177
Michigan State Univ.	E09014	–	58.1	60.2	54.5	45.4	54.6	45	36.9	17.7	2634
Michigan State Univ.	E09090	–	52.1	62.6	63.9	29.3	52.0	30	35.1	18.1	2622
Michigan State Univ.	E09222LL	2.4	57.9	51.5	56.5	27.2	48.3	31	37.3	17.2	2857
Michigan State Univ.	E10149	–	65.5	54.8	60.7	41.2	55.6	41	33.9	18.5	2736
Michigan State Univ.	E10169	–	61.6	40.3	58.4	29.9	47.6	41	34.8	19.0	2861
Michigan State Univ.	E10173	–	54.4	64.8	61.4	39.5	55.0	36	35.9	17.7	2277
Michigan State Univ.	E10174	–	66.2	66.2	63.3	44.7	60.1	43	34.7	18.2	2215
Michigan State Univ.	E10254LL	–	65.1	43.4	59.3	30.9	49.7	37	36.5	18.5	2781
Michigan State Univ.	E10265LL	–	64.8	43.1	61.7	39.2	52.2	40	36.8	18.0	2463
Schillinger Genetics	e2062	2.0	59.6	53.1	56.1	39.2	52.0	31	38.6	18.2	2384
Schillinger Genetics	e2162	–	62.5	53.6	50.6	36.6	50.8	36	38.1	17.5	2515
Schillinger Genetics	XP 2272	2.2	60.8	53.1	50.4	37.7	50.5	36	41.8	16.7	2750
Schillinger Genetics	XC 2282	2.2	68.8	58.3	63.1	39.5	57.4	37	37.9	17.7	2555
SunOpta	SR 67	–	54.0	46.0	48.1	35.8	46.0	45	40.3	16.8	1955
SunOpta	S20G7	–	60.4	44.1	64.2	28.8	49.4	39	38.3	17.3	2059
SunOpta	IA 3027	–	59.6	44.9	52.5	42.1	49.8	41	39.0	16.3	2126

Table continued on next page.



Source	Variety	Maturity group	Yield = Bu/A					Average Ht. In. <sup>1</sup>	Average Protein	Average Oil	Average Seeds/lb
			Tuscola	Isabella	Lapeer	KBS	Average Bu/A				
Univ. of Minn (MCIA)	MN1505 SP	1.5	52.3	33.1	48.3	31.4	41.3	33	39.9	17.5	2131
Univ. of Minn (MCIA)	MN1410	1.4	54.5	48.1	55.5	33.4	47.9	37	37.8	18.0	2630
Univ. of Minn (MCIA)	MN1701 CN	1.7	53.3	56.9	52.0	17.5	44.9	36	36.8	18.0	2849
Univ. of Minn (MCIA)	M02-359041	1.8	49.2	36.0	42.8	32.5	40.1	32	39.7	17.3	1916
	<b>Grand Mean</b>		59.5	47.5	56.6	33.7		<sup>1</sup> Average height of Tuscola and Isabella sites only. <sup>2</sup> See Growing Conditions/comments for Kalamazoo County.			
	<b>Maximum</b>		71.2	66.2	71.3	54.0					
	<b>Minimum</b>		39.6	28.1	40.3	16.3					
	<b>LSD</b>		13.0	14.2	12.8	21.3					
	<b>CV</b>		13.2	17.9	13.6	38.1 <sup>2</sup>					

## Results

Approximately 75 organic producers took the opportunity to view the trials during at least one of three different field events this summer:

- 1) Organic Farmers of Michigan Field Day, August 28 (viewed at the Tuscola site).
- 2) MSU Extension Summer Organic Tour, September 6 (viewed at the Lapeer, Tuscola and Isabella site).
- 3) KBS Organic Farm Tour, September 18 (viewed at the W.K. Kellogg Biological Station site).

The trial results were shared with approximately 50 organic producers who attended the MSU Extension Organic Market update on Dec. 3 in Millington, Michigan.

The results are also a part of the 2012 Mid Michigan Crop Report. This report contains on farm research results and MSU university trial results for field crops applicable for the area. This report is discussed and distributed at over 10 producer meetings during December and January.

A 2013 planning meeting with farmers will take place in January. We will be using a SARE grant to continue this work in 2013-2015.

Special thanks to our field crew for their efforts: Josh Dykstra, Michael Barrows, Amelia Mutch, Victoria Ackroyd, Phillip Kantola.

## Seed sources

### DKB Farm & Services

Don Brockriede  
4945 Marathon Road  
Columbiaville, MI 48421  
810-688-3008

### D.F. Seeds Inc.

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

John Simmons  
26 E Sanilac  
Sandusky, MI 48471  
810-648-5600

### 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

### Iowa State University

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

### Albert Lea Seed

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

### Blue Rive Hybrids

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

### University of Minnesota/ MN Crop Improvement

Roger Wippler  
1900 Hendon Ave.  
St. Paul, MN 55108  
612-625-7766



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