# MICHIGAN STATE UNIVERSITY

Extension

# 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.

# 2017 Project Trials

St. Joseph County 612 E. Main Street Centreville, MI 49032-9627

**MSU Extension** 

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# Changes in 2017:

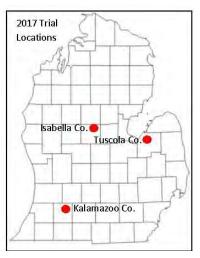
The project was coordinated by Dean Baas and Bob Battel, both with Michigan State University (MSU) Extension. Dan Rossman, previous coordinator, retired from MSU Extension in 2013 and has been certified as an organic inspector with Global Organic Alliance and continued to support this project. In 2017 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 Michgan 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

Figure 1. 2017 Organic Soybean Variety Trial Locations.

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.

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.

# <u>Future</u>

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 funded 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 reach 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 or call my cell phone at 269-967-9672.

Thank you,

Baas

Dean G. Baas, PhD Educator, Sustainable Agriculture NCRSARE PDP Michigan State Coordinator Michigan State University Extension 612 E. Main Street Centreville, MI 49032 Cell Phone: 269-967-9672 Fax: 269-467-5641 Email: baasdean@anr.msu.edu



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# Extension 2017 **Organic Soybean Entries**

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Sustainable Agriculture Research & Education

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 Jisher: 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 <u>ofmllc@vahoo.com</u> by August 31<sup>st</sup> as there is limited space.

Event sponsor: Organic Farmers of Michigan



# 2017 Michigan Organic Soybean Variety Trials

# D.G. Baas R.D. Battel T.E. Martin

# J.F. Dykstra

**Michigan State University Extension** 

R.G. Laurenz Dept. of Plant, Soil, & Microbial Sciences Mich<mark>i</mark>gan State University

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 Soft- ware, 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

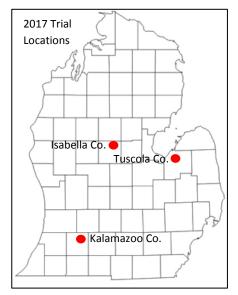
Isabella County	
Nearest city: Rosebush	Cooperator: Matt Graham
Soil type: Ithaca Loam	
Planting Date: May 30	Harvest Date: October 18

## **Tuscola County**

Nearest city: UnionvilleCooperator: Dave StingSoil type: Tappan-Londo LoamPrevious crop: CornTillage: Fall plowed, spring field cultivatePlanting Date: May 31Harvest Date: October 19

## Kalamazoo County

Nearest city: Hickory CornersCooperator: W.K. Kellogg Bio StationSoil type: Sandy loamPrevious crop: CornTillage: Chisel plow, field cultivatePlanting Date: June 1Harvest Date: October 20



D. Wang



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, POBox 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

			Hilum		Bushel	s per Acre		%	%	Height		Seeds
Brand / Source	Variety	Maturity	Color	Average	Isabella	Kalamazoo	Tuscola	Oil#	Protein#	Inches <sup>+</sup>	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
<sup>≠</sup> Dry Basis		G	RAND MEAN	44.4	37.3	46.0	49.1	19.9	40.0			
* Maturity: Days After Plan	ting		Max. Mean	53.6	50.9	57.6	59.0	21.8	48.6			
+ Average across location			Min. Mean		15.0	30.1	36.0	17.9	36.3			
			LSD		14.1	8.3	5.6	0.3	0.9			
			CV		19.5	10.9	6.9	1.4	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)

	Tuscola Bu/A							Kalar	nazoo	Bu/A			Ave	erage E	u/A		F	Plant H	eight (i	nches)	)+
Brand/Source	Variety	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

			DAP**				% Oil+#				%	Protei	n+#			Seeds	per P	ound	÷
Brand/Source	Variety	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
	ss all locations																		

\* 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 Soft- ware, 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 Soil type: Sandy loam Tillage: Spring moldboard plow, disk Planting Date: June 7

Cooperator: Charlie Brockriede Previous crop: Corn, spelt cover crop Harvest Date: November 15

## **Tuscola County**

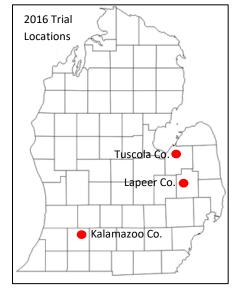
Nearest city: Unionville Soil type: Tappan-Londo Loam Tillage: Fall plowed, spring field cultivate Planting Date: May 21

Cooperator: Dave Sting Previous crop: Corn Harvest Date: November 10

## **Kalamazoo County**

Nearest city: Hickory Corners Soil type: Sandy loam Tillage: Chisel plow, field cultivate Planting Date: June 21

Cooperator: W.K. Kellogg Bio Station Previous crop: Winter wheat/Clover Harvest Date: November 7



D. Wang J.F. Boyse



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, POBox 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         Variage         Control         Fear Table Source         Nerroge         Inchest D         Average         Inchest         D 4P         Olf         Fear Source         Seed LD           Abert Las Seed         0.1700N         1.7         Block         54.6         43.0         51.1         53.1         28.1<				Hilum		Rushels	per Acre		Height		%	%	
Abert Les Seid         O. 1519N         11.6         Black         51.4         49.7         60.7         51.3         28         115         17.6         37.6         2283           Abert Les Seid         O. 2260A         1.7         Black         54.0         63.0         50.7         28         113         17.4         37.8         2245           Abert Les Seid         O. 2260A/12V         2.1         Yellow         63.3         65.7         17.2         68.0         52.1         25.7         17.8         37.7         2557           Abert Les Seid         O. 2260A/12V         2.1         Yellow         53.4         63.6         75.0         65.1         52.3         115         116         116.7         75.0         25.9         25.9         25.9         25.9         25.9         25.9         25.9         25.9         25.9         25.9         25.0	Brand/Source	Variety	Group		Kalamazoo			Average		DAP*+			Seeds/Lb⁺
Albert Les Sead         Q.212PM         112         Black         56.0         57.7         28         113         17.4         37.8         2247           Albert Les Sead         Q.2389AT12W         2.1         Yellow         66.3         65.1         66.3         57.5         7.8         37.7         23.77           Albert Les Sead         Q.2389AT12W         2.3         Yellow         66.3         65.1         87.3         27.7         87.7         87.7         23.7         23.9           Bue River Hybrids         1167         1.5         Dark         53.4         43.8         87.0         90.0         31         119         116         18.1         33.6         23.3         119         116         18.1         33.6         23.3         117         13.3         17.4         37.8         23.1         119         13.7         35.8         33.3         12.2         17.4         37.3         23.1         149         13.3         17.4         37.3         23.1         149         15.3         15.8         56.8         33.3         12.2         17.4         37.3         23.1         143         143         14.3         14.3         14.3         14.3         14.3         14.	Albert Lea Seed	0.1518N	1.5	Black	51.4	49.7	60.7		28	115	17.6	37.8	2588
Albert Les Sech         O. 2186A T12N         2.1         Yellow         63.3         67.6         71.2         99.0         32.2         17.8         37.7         2257           Blue Rome Hybrids         115C3         15.5         Dark         50.2         46.0         57.6         51.3         27         115.8         17.6         37.6         2280           Blue Rome Hybrids         116.7         1.6         Dark         50.2         46.0         57.6         51.3         27         115.8         116.7         36.6         2177           Blue Rome Hybrids         21.6         Dark         63.1         63.1         70.6         63.3         31.2         19.8         38.6         21.7           Blue Rome Hybrids         21.6         2.8         Yellow         53.3         54.1         65.1         70.5         63.3         31.2         12.7         12.8         77.4         27.1         12.0         17.6         33.1         12.1         17.6         33.7         12.1         17.6         37.4         21.0         17.6         33.8         12.1         17.7         37.2         21.0         17.8         37.1         21.00         17.4         37.3         21.0         17	Albert Lea Seed	O.1706N	1.7	Black	54.6	48.0	60.1	54.3	30	116	17.8	37.5	2938
Albert Las Said         O.2399A1TEN         2.3         Velow         62.3         65.1         68.3         65.2         34         126         7.6         7.6         223           Blue Rver Hybrids         117C2         1.7         Dark         58.4         45.8         50.4         51.3         27         115         17.6         37.6         2694           Blue Rver Hybrids         117C2         1.7         Dark         58.4         45.8         50.4         51.7         30.1         118         18.6         2236           Blue Rver Hybrids         210.0         2.1         Dark         63.4         51.3         71.4         30.1         118         18.6         233.6         21.2         10.0         30.4         221.5         11.0	Albert Lea Seed												
Bile Rev Hybrids 115C2 17. 207 18 0 17. 207 18 0 17. 207 18 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1													
Blue Rheer Hybrids 17C2 17. Dark 884 45.8 50.4 51.2 9 11 1 17C 17. Dark 584 51. 50.6 57.9 50. 57.9 50.5 57.4 30 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1									-				
Bile River Hybrids 20FOG 2.0 Yellow 50.8 75.9 63.5 75.4 63.0 131 119 17. 86.0 2377 Bile River Hybrids 20FOG 2.0 Yellow 50.8 61.4 71.9 64.5 33 121 19.0 35.4 2276 Bile River Hybrids 21F3 2.6 Yellow 50.4 61.3 50.8 65.8 33 121 19.0 35.4 2276 Bile River Hybrids 21F3 2.6 Yellow 50.4 61.3 50.8 65.8 33 121 19.0 35.4 2276 Bile River Hybrids 21F3 2.6 Yellow 50.4 61.3 50.8 01.0 32 122 17.6 37.3 2219 DF Seets DF 162.1 N 1.9 In Black 51.4 61.9 60.8 01.0 32 122 17.6 37.3 2219 DF Seets DF 162.1 N 2.4 In Black 51.4 50.8 65.8 30 117 17.4 37.3 2219 DF Seets DF 162.1 N 2.4 In Black 51.4 52.8 65.7 53 32 121 17.7 3.7 22100 DF Seets DF 162.1 N 2.4 In Black 51.4 52.8 65.7 53 32 112 17.7 3.2 2100 DF Seets DF 162.1 N 2.4 In Black 51.4 53.7 65.8 32 112 17.7 3.2 2210 DKB Farms Vrinn 61 1.9 Ocar 46.5 50.0 9 67.9 64.8 32 117 17.3 38.1 2241 DKB Samms Vrinn 61 1.9 Ocar 46.5 50.0 9 7.9 64.8 32 117 17.3 38.1 2241 DKB Samms Vrinn 61 1.9 Ocar 46.5 55.0 0.9 67.9 64.8 32 117 17.3 38.1 2241 DKB Samms Vrinn 61 1.9 Ocar 46.5 55.0 0.9 7.9 64.8 32 117 17.3 38.1 2241 DKB Samms Vrinn 61 1.9 Ocar 46.5 55.0 0.9 7.9 64.8 32 112 17.8 37.8 2034 DKB University AL7020X 1.9 B University 53.4 46.0 61.5 53.0 29 117 17.3 82.6 2235 DKB University AL7020X 2.8 Thorw 53.4 46.0 61.5 53.0 29 117 17.8 37.8 2034 DKB University E07131 2.2 Diversity 63.4 46.0 61.5 53.0 29 112 11.8 3.0 41.6 42.0 44.0 10.0 11.0 11.0 11.0 11.0 11.0 11	,												
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DKB Farms         Vinton 81         19.         Clear         48.5         35.0         48.6         44.0         36         118         12.2         40.8         1770           lowa State University         IA2112RA12         2.7         Yellow         65.5         66.8         57.3         32         117         7.3         33.0         120.4         83.1         221.2         17.4         38.1         221.2         17.9         37.3         226.2         17.4         18.0         221.2         17.9         37.3         23.6         17.3         30.8         17.4         18.0         20.7         17.9         37.3         226.2         17.0         17.0         18.0         20.3         17.0         18.0         20.4         17.9         37.3         226.2         17.9         37.3         23.0         17.0         18.0         17.0         18.0         17.0         18.0         17.0         18.0         17.1         18.0         17.0         18.0         17.0         18.0         18.0         17.1         18.0         18.0         18.0         18.0         18.0         18.0         18.0         18.0         18.0         18.0         18.0         18.0         18.0         18.0	DF Seeds	DF 227 N	2.2	Im Brown	65.8	55.6	69.2	63.5	33	122	17.4	37.3	2463
love State University   1412A12 2.7 Velow 61.6 53.7 56.8 57.3 32 17.7 17.3 3.1 2049 lows State University   AR2102SCN 1.9 Buft 54.8 51.1 68.4 58.1 33 119 18.7 36.8 2585 lows State University   AR2001SCN 2.6 Brown 60.8 58.0 77.4 65.4 2.9 117 17.8 37.9 2034 Michigan State University   AR2001SCN 2.6 Brown 60.8 58.0 77.4 65.4 2.9 117 17.8 37.9 2034 Michigan State University   E07051 2.2 Dark Brown 63.3 46.5 68.1 65.2 31 121 12.8 3.9 9 2109 Michigan State University   E07051 2.2 Dark Brown 63.3 64.5 68.1 65.2 31 121 18.3 41.7 164.2 Michigan State University   E07051 2.2 Dark Brown 63.3 64.5 68.1 65.2 31 121 18.3 41.7 164.2 Michigan State University   E07151 2.2 Dark Brown 63.5 64.9 76.5 70.6 37 128 13.9 35.2 2431 Michigan State University   E10174 2.7 Velow 68.5 16.9 76.5 70.6 37 128 17.9 35.2 148.3 Michigan State University   E10174 2.7 Velow 68.5 17 57.5 57.6 18 12 11 18.8 35.2 2431 Michigan State University   E10174 2.7 Velow 68.5 17 57.5 57.6 18 12 18.2 35.0 2433 Michigan State University   E11399 2.2 Black 63.6 17 53.2 59.8 88.2 35 123 18.3 35.5 2388 Michigan State University   E11399 2.2 Black 66.8 47.1 69.6 61.2 35 128 18.3 35.5 2388 Michigan State University   E1207 2.9 Velow 70.8 44.5 48.0 54.5 31 120 18.1 37.2 2459 Michigan State University   E1237 2.2 LiBown 60.1 47.9 68.0 88.7 31 120 18.1 37.2 2459 Michigan State University   E1336 1.4 198 Bisk 62.5 33 120 1.4 1.7 17.9 36.2 2388 Michigan State University   E1336 1.7 Black 64.6 45.5 61.8 60.8 31 120 18.1 37.2 2459 Michigan State University   E1336 1.7 Black 64.6 45.5 61.8 60.8 31 120 18.1 37.2 2459 Michigan State University   E1336 1.7 Black 54.6 61.5 61.6 60.0 31 1.7 17.9 36.2 2258 Michigan State University   E1336 1.7 Black 54.6 6.8 37.7 31.0 21.7 17.7 36.0 2245 Michigan State University   E1336 1.7 Black 54.6 61.5 61.6 60.0 31 10.7 17.9 36.2 2528 Michigan State University   E1336 1.2 Michigan State State State Michigan State University   E1336 1.2 Michigan State University   E1336 1.7 Black 54.5 31.5 1.6 1.1 17.7 38.0 2245 Michiga	DF Seeds	DF 242 N	2.4	Im Black	61.4	52.8	63.7	59.3	32	121	17.7	37.4	2772
Jowa State University         IA2112RA12         2.7         Yellow         65.5         60.9         67.9         64.8         31         119         17.4         38.1         2212           Jowa State University         IAR2104RA12         2.3         Yellow         62.5         65.2         62.2         60.0         32         124         16.9         33.6         125           Michigan State University         IAR2104RA12         2.3         Yellow         53.4         46.0         61.5         63.6         2.9         11.2         2.8         2.9         2.0         14.8         37.9         2.034           Michigan State University         E071017         2.3         Vellow         53.8         42.7         54.7         51.1         35         122         16.3         42.5         164.2           Michigan State University         E10174         2.7         Vellow         63.5         64.9         70.5         70.6         34         123         16.5         42.7         164.2         35         123         16.3         42.2         164.2         35         123         16.3         45.2         124.1         163.3         45.5         125         12.2         16.3         35.6		Vinton 81	1.9	Clear	48.5	35.0	48.6	44.0	36	118	16.2	40.8	
love State University (AR1902SCN) 19 Buff 54.8 51.1 68.4 58.1 63.1 19 18.7 36.8 2585 [owa State University (AR2001SCN) 2.6 Brown 60.8 58.0 77.4 65.4 2.9 117 17.8 37.3 2526 Michigan State University (EV104R)7 2.9 Vellow 53.4 46.0 61.5 55.3 2.9 117 17.8 37.9 2034 Michigan State University (EV1051) 2.2 Dark Brown 63.3 64.5 68.1 65.2 31.1 121 12.2 36.9 1219 Michigan State University (EV1051) 2.2 Dark Brown 63.3 64.5 68.1 65.2 31.1 13.1 121 15.2 35.9 1219 Michigan State University (EV1051) 2.2 Dark Brown 63.3 64.5 68.1 65.2 31.1 13.1 121 18.2 35.9 1219 Michigan State University (EV1051) 2.2 Dark Brown 63.5 64.9 76.5 70.6 37.1 28 17.9 35.2 149.1 Michigan State University (EV1051) 2.2 Black 63.1 54.8 60.7 59.5 34 123 18.5 35.2 2431 Michigan State University (E10174) 2.7 Vellow 68.5 66.9 76.5 70.6 37.1 28 17.9 35.2 149.1 Michigan State University (E10174) 2.7 Vellow 68.5 16.7 57.5 57.6 1.6 23 10.1 124 15.8 39.5 2.9 2431 Michigan State University (E11399) 2.2 Black 63.6 11.7 53.2 59.8 58.2 35 123 18.2 35.6 2330 Michigan State University (E11397) 2.2 Michigan State University (E1207) 2.7 Black 66.8 47.1 69.6 61.2 35 128 18.3 35.5 2588 Michigan State University (E1207) 2.2 Vellow 70.1 47.9 68.0 58.7 31 128 17.9 35.2 2458 Michigan State University (E1237) 2.2 Li Brown 60.1 47.9 68.0 58.7 31 128 17.9 35.2 2438 Michigan State University (E1237) 2.2 Li Brown 60.1 47.9 68.0 58.7 31 128 17.9 35.8 2288 Michigan State University (E1237) 2.2 KiBrown 60.1 47.9 68.0 58.7 31 128 17.9 35.8 2288 Michigan State University (E1336) 4.2 Dark Brown 59.2 63.3 68.5 63.7 32 12.2 17.9 37.6 2538 Michigan State University (E1336) 4.2 Dark Brown 59.2 63.3 68.5 63.7 63 2.1 22 17.9 37.6 2538 Michigan State University (E1336) 4.2 Dark Brown 59.2 63.3 68.5 63.7 63 2.1 22 17.9 37.6 256.1 Michigan State University (E1336) 4.2 Prelow 50.8 39.7 51.8 30.1 17.1 7.9 39.9 226.1 Michigan State University (E1336) 4.2 Dark Brown 59.2 63.3 68.5 63.7 63.1 12.1 7.9 37.6 256.1 Michigan State University (E1336) 4.2 Dark Brown 59.2 4.3 51.0 61.0 53.1 30.1 17.1 7.8 37.	Iowa State University												
Iowa Site University         IAR2104RA12         2.3         Yellow         62.5         55.2         62.2         60.0         32         124         11.9         39.6         117         73.3         2362           Michgan State University         EX015CN         2.0         Yellow         53.4         46.0         61.5         53.6         29         117         17.8         37.9         203.4           Michgan State University         EX07101         2.3         Yellow         63.8         42.7         54.7         51.1         35.1         22.1         46.3         50.2         44.5         33.1         16.3         41.7         164.2           Michgan State University         E10151         2.3         Yellow         68.5         66.9         76.5         77.6         37         12.8         17.9         36.2         14.9         33.6         22.3         14.3         15.9         36.2         35.1         15.6         36.2         35.1         15.7         57.6         57.6         53.1         15.2         16.3         35.6         2.23.0           Michgan State University         E1.0242         2.7         Black         64.8         47.1         69.6         66.2         31													
lova State University AR22015CN 2.6 Provn 60.8 58.0 77.4 65.4 29 122 17.9 37.3 2362 Michigan State University E07051 2.2 Vallow 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 68.9 2109 Michigan State University E07191 2.3 Yellow 52.1 46.3 50.2 49.5 33 120 16.3 42.5 166.2 Michigan State University E10151 2.2 Black 63.1 54.8 60.7 59.5 33 120 16.3 42.5 166.2 Michigan State University E10174 2.7 Yellow 62.5 66.9 76.5 70.6 37 128 17.9 36.2 179.9 Michigan State University E111287 2.6 Yellow 57.7 59.4 71.5 62.9 30 124 16.8 39.9 1987 Michigan State University E111287 2.6 Yellow 57.7 59.4 71.5 62.9 30 124 16.8 39.9 1987 Michigan State University E111287 2.2 Black 61.7 53.2 69.8 56.2 35 123 18.3 35.6 2330 Michigan State University E1120761 2.9 Yellow 60.8 47.1 69.6 61.2 35 123 18.3 35.6 2330 Michigan State University E120761 2.9 Yellow 70.8 44.5 48.0 64.5 31 128 17.9 35.8 2265 Michigan State University E120761 2.4 Yellow 62.9 53.1 66.5 60.8 31 123 17.4 37.6 2249 Michigan State University E130367 2.4 Yellow 62.9 53.1 66.5 60.8 31 123 17.4 37.6 2459 Michigan State University E130361 2.4 Yellow 62.9 53.1 66.5 60.8 31 123 17.4 37.6 2626 Michigan State University E13364 1.2 Dark Brown 64.2 52.6 65.1 60.6 3.3 0 117 17.9 36.2 2538 Michigan State University E13364 1.2 Dark Brown 64.2 52.6 65.1 60.0 3 10 117 17.9 36.2 2538 Michigan State University E13364 1.2 Dark Brown 64.2 52.6 65.1 60.0 3 117 17.9 36.9 2263 Michigan State University E13364 1.2 Dark Brown 64.2 52.6 65.1 60.0 31 117 17.9 36.9 2263 Michigan State University E13364 1.2 Dark Brown 64.2 52.6 65.1 60.0 31 117 17.9 36.7 2276 Michigan State University E13364 1.2 Park Brown 64.2 52.6 65.1 60.0 31 117 17.9 36.7 226 16 Michigan State University E140417 2.5 Yellow 58.8 45.5 54.1 63.0 51.0 30 121 16.7 39.8 2265 Michigan State University E140412 1.2 Head State 5.2 44.4 54.7 33.1 55.7 15.2 9 111 17.7 38.6 2255 Simplify Gramma Gram DH330 1.6 Clear 57.4 57.0 50.5 55.0 32 111 17.7 38.6 2355 Simplify Gramm	,												
Michigan State University         E05161T         2.0         Yellow         53.4         46.0         61.5         53.6         29         117         17.8         37.9         2024           Michigan State University         E07100T         2.3         Yellow         55.8         42.7         54.7         51.1         35.2         21.8         3.4         17.7         16.2         31.0         16.3         42.5         1662           Michigan State University         E10114         2.7         Yellow         63.5         66.9         76.5         70.6         37         12.8         17.9         36.2         243.1           Michigan State University         E11128T         2.6         77         59.4         71.5         57.6         57.6         53         12.8         17.9         36.2         243.1           Michigan State University         E1128T         2.9         8.8         2.35         12.8         17.9         36.2         236         12.8         17.8         37.5         2.25         18.8         31.1         20.8         13.3         35.6         233.0         11.7         17.9         35.6         233.0         11.7         17.9         35.5         2283.0         11.7 <td>,</td> <td></td>	,												
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         52.1         46.3         50.2         46.3         33         120         16.3         41.7         164.2           Michigan State University         E10174         2.7         Yellow         68.5         66.9         76.5         77.6         37         128         17.9         36.2         1979           Michigan State University         E11128T         2.6         Yellow         63.5         57.7         59.4         77.5         57.6         35         125         18.2         36.6         2330           Michigan State University         E11431         2.2         Black         63.1         77.5         57.6         35         128         18.3         35.6         2330         128         18.3         35.6         2330         128         18.3         35.6         2330         120         18.1         37.2         24.9         Michigan State University         17.0         35.8         2285         Michigan State University	,												
Michigan State University         E07/13DT         2.3         Yellow         58.8         42.7         64.7         61.1         35         122         16.3         41.7         1642           Michigan State University         E10174         2.7         Yellow         62.1         64.3         50.2         49.5         33         120         16.3         42.5         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         E11291         2.2         Black         63.6         51.7         57.5         57.6         35         123         18.3         35.5         2538           Michigan State University         E12042         2.7         Black         66.8         47.1         69.6         61.2         35         126         18.3         35.5         2588           Michigan State University         E1207CT         2.2         It Brown         62.9         53.1         66.5         60.8         31         120         18.1         37.2         2489           Michigan State University         E13204         <	0 ,												
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         E10171         2.2         Biack         63.1         54.8         60.7         55.5         34         123         18.5         35.2         147.9         36.2         1979           Michigan State University         E11128T         2.6         Yellow         57.7         59.4         77.5         57.6         35         125         18.2         36.0         2438           Michigan State University         E1143T         2.2         Black         61.7         53.2         59.8         86.2         35         126         18.3         35.6         2359           Michigan State University         E12076T         2.9         Yellow         70.8         44.5         48.0         64.5         61.8         60.3         31         120         18.1         37.2         2459           Michigan State University         E13036T         2.4         Yellow         62.3         56.1         60.6         29.2         11.4         17.9         36.2         2538													
Michigan State University         E10151         2.2         Black         63.1         54.8         60.7         59.5         34         1123         116.5         35.2         2431           Michigan State University         E111281         2.7         Yellow         57.7         59.4         71.5         62.9         30         124         17.9         35.2         1979           Michigan State University         E11399         2.2         Black         66.6         51.7         57.5         57.6         35         123         18.3         35.6         2338           Michigan State University         E120767         2.2         Black         66.8         47.1         60.6         61.2         35         128         18.3         35.6         2398           Michigan State University         E120767         2.2         Vit Brown         60.1         47.9         68.0         54.5         31         18.1         17.4         37.6         88.2         225.3           Michigan State University         E130367         2.2         Dark Brown         69.1         47.9         48.0         54.5         61.8         60.3         30.1         17.7         7.9         36.2         2339													
Michigan State University         E10174         2.7         Vellow         66.5         66.9         76.5         7.06         37         128         17.9         36.2         1979           Michigan State University         E111281         2.6         Yellow         57.7         59.4         71.5         62.9         30         124         16.8         39.9         1987           Michigan State University         E11431         2.2         Black         61.7         53.2         55.8         52.2         51.2         16.3         35.5         2530           Michigan State University         E12071         2.9         Vellow         70.8         44.5         48.0         54.5         31         128         17.9         35.8         2285           Michigan State University         E130367         2.4         Vellow         62.9         53.1         66.5         60.3         31         120         11.8         37.2         2459           Michigan State University         E13041         1.6         Black         64.9         44.5         66.5         61.7         52.4         61.7         53.2         62.6         61.5         60.0         31         11.7         19.9         36.2													
Mchagan State University       E11128T       2.6       Yellow       57.7       59.4       71.5       57.6       35       124       16.8       39.9       1957         Michigan State University       E11399       2.2       Black       61.7       53.2       59.8       58.2       35       123       18.3       35.6       2330         Michigan State University       E12076T       2.9       Yellow       70.8       44.5       44.0       54.5       31       128       18.3       35.6       2330         Michigan State University       E12076T       2.9       Yellow       70.8       44.5       44.0       54.5       31       128       17.4       37.6       1864         Michigan State University       E13036T       2.4       Yellow       62.9       53.1       66.5       60.8       31       123       17.4       37.6       26.16         Michigan State University       E13304       1.6       Black       49.9       49.6       48.2       49.2       32       11.4       17.9       36.6       2539         Michigan State University       E1364       2.2       Dark Brown       63.2       66.1       60.0       29       122       17.7 <td></td>													
Mchigan 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       66.8       47.1       66.6       61.2       35       123       18.3       35.6       2330         Michigan State University       E12042       2.7       Black       66.6       61.2       35       125       18.3       35.6       2330         Michigan State University       E12307       2.2       Lit Brown       60.1       44.5       44.0       58.7       31       120       18.1       37.2       2459         Michigan State University       E13036       1.7       Black       49.9       49.6       48.2       49.2       32       114       17.9       36.6       2538         Michigan State University       E13364       2.2       Dark Brown       59.2       63.3       68.5       60.0       31       117       17.9       36.2       2538         Michigan State University       E13367       2.2       Brown       65.7       52.8       61.5       60.0       31       117       71.9       36.2													
Michigan State University       E1431       2.2       Black       61.7       53.2       59.8       35.8       123       18.3       35.6       2330         Michigan State University       E12042       2.7       Black       66.8       47.1       66.6       61.2       35       126       18.3       35.6       2598         Michigan State University       E12397       2.2       Lit Brown       60.1       47.9       68.0       54.5       31       123       18.1       37.2       2459         Michigan State University       E13036T       2.4       Yellow       62.9       63.3       66.5       60.8       31       123       17.4       37.6       1864         Michigan State University       E13364       2.2       Dark Brown       65.2       63.3       66.5       60.6       2.9       122       17.9       37.6       2616         Michigan State University       E13364       2.2       Dark Brown       65.2       66.1       60.6       2.9       122       17.8       35.9       2493         Michigan State University       E13369       1.6       Brown       65.7       52.8       65.1       60.6       2.9       127       17.4       3				Black									
Michigan State University       E12076T       2.9       Yellow       70.8       44.5       48.0       54.5       31       128       17.9       55.8       2225         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       E13268       1.7       Black       64.6       54.5       61.8       60.3       30       117       17.9       36.2       2539         Michigan State University       E13364       2.2       Dark Brown       59.2       63.3       68.5       63.7       32       122       17.8       35.9       2493         Michigan State University       E13367       2.2       Brown       64.2       52.6       65.1       60.0       31       117       17.9       36.9       2403         Michigan State University       E13091       2.3       Black       54.5       34.1       55.8       61.5       60.0       31       117       17.9       36.7       2176         Michigan State University       E14022T       2.2       Yellow       56.8       45.5       50.7       51.0       30 <td></td> <td>E11431</td> <td>2.2</td> <td>Black</td> <td>61.7</td> <td>53.2</td> <td>59.8</td> <td>58.2</td> <td>35</td> <td>123</td> <td>18.3</td> <td>35.6</td> <td>2330</td>		E11431	2.2	Black	61.7	53.2	59.8	58.2	35	123	18.3	35.6	2330
Michigan State University       E13297       2.2       Li Brown       60.1       4.7.9       68.0       58.7       31       120       18.1       37.2       24.99         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       E13304       1.6       Black       44.9       49.6       48.2       49.2       32       114       17.9       36.2       25339         Michigan State University       E13364       2.2       Dark Brown       59.2       63.3       68.5       63.7       32       122       17.8       35.9       2493         Michigan State University       E13305       1.6       Brown       64.2       52.6       65.1       60.0       31       117       17.9       36.7       22493         Michigan State University       E13017       2.4       Yellow       50.8       39.7       39.9       43.4       27       117       17.7       39.0       2045         Michigan State University       E140217       2.5       Yellow       50.8       39.7       39.9       43.4       27       117	Michigan State University	E12042		Black	66.8			61.2		126	18.3	35.5	2598
Michigan State University       E1303GT       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       E13364       2.2       Dark Brown       64.2       52.6       65.1       60.6       29       122       17.8       35.9       2493         Michigan State University       E13367       1.6       Brown       65.7       52.8       61.5       60.0       31       117       17.9       36.9       2608         Michigan State University       E13091       2.3       Black       64.5       34.1       55.8       48.1       34       121       17.9       36.7       27.6         Michigan State University       E140217       2.5       Yellow       56.8       39.7       39.9       43.4       27       117       17.7       39.0       2052         Michigan State University       E140309       2.5       Med Brown       65.2       50.1       2115       17.4       36.8       2255	Michigan State University			Yellow						-	-		
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       36.6       2539         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       E14044T       2.5       Yellow       50.8       39.7       39.9       43.4       27       117       17.7       39.0       2052         Michigan State University       E14044T       2.5       Mel Brown       62.3       51.0       61.0       58.1       36       127       17.4       36.8       2052         Michigan State University       E14044T       2.5       Vellow       53.5       50.7       51.0       30       112       16.7													
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       69.2       63.3       68.5       63.7       32       122       17.9       37.6       2616         Michigan State University       E13367       2.2       Brown       65.7       52.8       61.5       60.0       31       117       17.9       36.9       2608         Michigan State University       E14022T       2.2       Yellow       50.8       39.7       39.9       43.4       27       117       17.9       36.8       2052         Michigan State University       E140447       2.5       Vellow       56.8       45.5       50.0       32       115       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       2352         Organic Bean & Grain       DH530       1.6       Clear       57.4       57.0       50.6       55.0       32       115       18.3													
Michigan State University       E13364       2.2       Dark Brown       69.2       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       33.9       2493         Michigan State University       E133901       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       55.8       48.1       34.4       121       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       2352         Michigan State University       E14309       2.5       Med Brown       62.3       51.0       61.0       55.0       32       115       17.9       40.0       2321         Organic Bean & Grain       DH410       1.6       Clear       57.2       46.4       52.1       32       115       17.8													
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       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       36.3       2427       Organic Bean & Grain       DH410       1.6       Clear       57.2       42.7       39.2       46.4       32       113       18.9       36.3       2427         Organic Bean & Grain       DH410       1.6       Clear       57.2       42.7       32.1       15       13.2       116       18.3       37.0       2228       Schillinger Genetics<													
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       E14022T       2.2       Yellow       50.8       39.7       39.9       43.4       27       117       17.7       39.0       2045         Michigan State University       E14024T       2.5       Mel Brown       62.3       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       46.4       52.1       32       115       17.3       88.1       2463         Schillinger Genetics       e2666A       2.3       Black       54.6       53.1       56.4       32       118       17.2       38.1       2463         Schillin													
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       57.2       42.7       39.2       46.4       43.2       113       18.9       36.3       2427         Organic Bean & Grain       DH430       1.6       Clear       57.2       42.7       39.2       46.4       32       113       18.9       36.3       2427         Organic Bean & Grain       DH430       1.6       Yellow       53.5       55.9       51.5       29       111       17.7       38.1 <td></td>													
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       65.8       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         Schillinger Genetics       e2162       2.1       Yellow       53.5       55.9       51.5       53.6       29       111       17.7       38.1       2463         Schillinger Genetics       e2346       2.3       Black       54.6       53.1       58.4       55.4       32       118       17.2	<b>v</b> ,												
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       e2162       2.1       Yellow       52.2       48.7       53.7       51.5       53.6       29       111       17.7       38.7       2463         Schillinger Genetics       e2866A       2.8       Yellow       62.5       62.8       70.7       65.3       31       125       16	Ĵ,								-				
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         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       53.5       55.9       51.5       53.6       29       111       17.7       38.1       2463         Schillinger Genetics       e2346       2.3       Black       54.6       53.1       58.4       52.1       118       17.2       38.7       2428         SunOpta       SR 129       1.8       Yellow       68.0       44.8       53.0       51.9       30       117       17.2       39.0       2055	<b>v</b> ,												
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         e21346         2.3         Black         54.6         53.1         58.4         55.4         32         118         17.2         38.7         2492           Schillinger Genetics         e2866A         2.8         Yellow         62.5         62.8         70.7         65.3         31         125         17.6         37.8         2228           SunOpta         SR 204         2.4         Yellow         58.4         57.6         57.6         31         125         16.5         39.7         1830           University of Minnesota         M04-295008         1.5         Yellow         59.4         47		E14309	2.5	Med Brown	n 62.3	51.0	61.0	58.1	36	127	17.4	36.8	2355
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         2.9         111         17.7         38.1         2463           Schillinger Genetics         e2346         2.3         Black         54.6         53.1         58.4         55.4         32         118         17.2         38.7         2492           Schillinger Genetics         e2366A         2.8         Yellow         62.5         62.8         70.7         65.3         31         125         17.6         37.8         2228           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         54.4         57.6         57.3         31         123         16.3         40.6         1989           University of Minnesota         M04-295008         1.5         Yellow         59.0         49.8		DH410	1.6	Clear	57.4	57.0	50.6	55.0	32	115	17.9	40.0	2321
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       e2366A       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       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       17.3       36.9       2678													
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         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         59.4         64.1         59.3         33         115         17.0         39.7         1833           University of Minnesota         M07-322-4006         1.7         Yellow         51.1         51.													
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       64.0       53.8       55.2       57.6       31       125       16.5       39.7       1830         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       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       M07-297007       1.8       Black       54.5       59.4       64.1       59.3       33       115       17.3       39.5       2685 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>													
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         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         53.9 <td></td>													
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         114         16.9         40.5         1673           University of Minnesota         MN1612CN         1.6         Yellow         53.9													
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         114         16.9         40.5         1673           University of Minnesota         M07-322-4006         1.7         Yellow         53.9         52.2         59.9         55.3         33         116         17.8         37.2         2187           University of Minnesota         MN1701CN         1.7         Yellow													
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         MN1701CN         1.6         Yellow         53.9         52.2         59.9         55.3         33         116         17.6         37.8         2691           University of Minnesota         MN1806CN         1.8													
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         18.1         37.5         2365           GRAND MEAN         58.4         52.1 <td></td>													
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. M													
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       52.1       47.5       55.3       51.6       31       116       18.1       37.5       2365         Max. Mean       70.8       67.6       77.4       70.6       37       128       19.0       42.5       45.1         LSD       6.8       8.4       13.3													
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         LSD       6.8       8.4       13.3       5.7       111       16.2       35.2         LSD       6.8       8.4       13.3       5.7       5.7       5.4       10.5													
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         LSD       6.8       8.4       13.3       5.7       51.1       16.2       35.2       111       16.2       35.2         LSD       7.0       9.7       13.4       10.5       10.5       111       16.2       111       16.2													
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       5.7       5.4       10.5													
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         57.0			1.7	Yellow	53.9	52.2	59.9		33	116			2691
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         5.7           CV         7.0         9.7         13.4         10.5         5.7		MN1806CN	1.8	Yellow		47.5	55.3	51.6	31		18.1	37.5	
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	GRAND MEAN				58.4	52.1	59.8	56.8			17.6		
LSD 6.8 8.4 13.3 5.7 CV 7.0 9.7 13.4 10.5													
CV 7.0 9.7 13.4 10.5									27	111	16.2	35.2	
					1.0	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)

			Hilum	Kalar	nazoo	Bu/A	Lap	beer B	u/A	Tus	cola B	u/A	Ave	rage E	Bu/A
Brand/Source	Variety	Group	Color	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	-	-

			Hilum	Heig	ht(incl	hes)⁺	DA		-	% Oil⁺		%	Protei	n⁺	See	ds/pou	und+
Brand/Source	Variety	Group	Color	2 yr	3 yr	4 yr	2 yr	3 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	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	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	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	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	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	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	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	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	16.9	16.5	-	39.9	-	-	1996	2114	-
Michigan State University	E11399	2.2	Black	32.3	31.1	31.4	127	126	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	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	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	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	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	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	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																	

\* Average across sites \* Maturity Days After Planting

# 2015 Michigan Organic Soybean Variety Trials

# R.D. Battel T.E. Martin D.G. Baas - Collaborator Michigan State University Extension

D. Wang J.F. Boyse R.G. Laurenz Dept. of Plant, Soil, & Microbial Sciences Michigan State University

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 Soft- ware, Inc., Winnipeg, Canada).

### Using the data

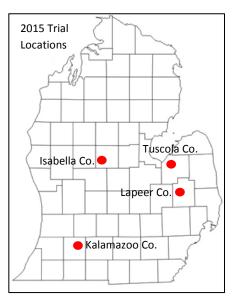
**Yield**: Expressed as bushels per acre (Bu/A) at 13 percent moisture and is reported as single and across site means for 2015.

**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, fie	ld 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, spri	ng 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

			Hilum		Bus	hels per	Acre		%	%	Height	Maturity	Seeds/
Source	Variety	Group	· · · ·	Tuscola	Isabella		Kalamazoo	Average	-	Oil*	Inches*	DAP*	Pound*
Albert Lea	2018N	2.0	Yellow	67.4	57.0	61.7	51.6	59.4	34.8	18.5	29.1	127	2463
Albert Lea	O.1518	1.5	Black	55.3	42.8	32.5	56.3	46.7	37.2	17.7	27.9	120	2807
Albert Lea	O.1706N	1.7	Black	50.0	47.6	47.5	45.6	47.7	33.6	16.7	27.2	118	2906
Albert Lea	O.2265	2.2	Black	65.8	53.6	56.8	54.0	57.5	36.8	18.1	31.7	127	2777
Albert Lea	O.2299N	2.2	Yellow	56.5	58.8	55.7	50.1	55.3	36.4	18.2	30.9	128	2569
Blue River Hybrids	17C2	1.7	Dark	59.2	46.3	42.2	47.3	48.7	36.2	18.1	29.5	119	3151
Blue River Hybrids	20C6	2.0	Yellow	57.8	49.2	46.7	59.1	53.2	36.9	17.8	29.3	120	2935
Blue River Hybrids	21F3	2.1	Yellow	66.1	44.7	33.1	49.4	48.3	36.1	15.4	30.8	128	2099
Blue River Hybrids	22DC6	2.2	Dark	74.6	55.0	56.5	58.4	61.1	36.6	17.4	31.2	130	2633
Blue River Hybrids	27A7	2.7	Dark	67.7	50.4	45.0	50.5	53.4	38.4	17.8	31.8	132	2064
Blue River Hybrids	27C5	2.7	Yellow	67.0	62.6	68.9	55.3	63.5	36.6	17.9	30.3	132	2375
Blue River Hybrids	2A12	2.1	Dark	57.5	45.9	35.0	53.5	48.0	37.1	18.0	30.5	121	2756
DF Seeds	DF 155 F	2.5	Clear	67.3	42.5	44.0	53.4	51.8	38.2	17.8	31.6	130	2101
DF Seeds	DF 161 N/STS	1.6	Black	60.6	45.8	49.5	54.3	52.5	36.4	18.1	30.3	121	3060
DF Seeds	DF 242 N/S	2.4	Brown	66.4	51.9	46.0	51.8	54.0	36.9	18.0	30.3	127	2930
DF Seeds	DF 252 N/S	2.5	Clear	61.1	61.3	67.3	58.7	62.1	36.1	17.8	32.7	132	2885
DKB FARMS	Vinton 81	1.9	Clear	50.0	38.7	32.5	40.9	40.5	40.4	16.8	34.3	122	1906
Minn. Crop Improv	M04-220008	1.7	Yellow	59.3	45.7	39.7	45.0	47.4	37.3	17.9	28.9	120	2328
Minn. Crop Improv	M04-295008	1.5	Yellow	55.3	42.3	41.8	50.9	47.5	38.6	17.6	30.3	121	1912
Minn. Crop Improv	M06-288155	1.6	Yellow	61.5	52.3	49.5	44.7	52.0	37.0	17.3	29.9	119	2676
Minn. Crop Improv	M06-288190	1.7	buff	59.5	44.9	44.6	48.2	49.3	37.0	17.7	26.6	119	2466
Minn. Crop Improv	MN1701CN	1.7	Yellow	50.6	49.4	48.8	48.8	49.4	37.1	17.8	30.8	120	2887
Minn. Crop Improv	MN1806CN**	1.8	Yellow	55.7	50.1	56.4	47.6	52.4	37.1	18.3	31.0	122	2540
MSU	E05181-T	2.0	Yellow	61.5	48.3	50.2	48.7	52.2	38.0	17.9	27.8	122	2076
MSU	E07051	2.2	Dark Brown	65.0	59.6	57.1	51.3	58.3	36.8	18.2	29.3	128	2178
MSU	E07130-T	2.3	Yellow	55.6	38.5	38.3	43.9	44.1	40.9	16.8	32.9	127	1784
MSU	E07158-T	2.3	Yellow	56.4	46.5	42.9	45.6	47.8	41.3	16.9	32.7	127	1673
MSU	E10151	2.2	Black	65.3	53.9	45.4	59.1	55.9	34.7	18.5	30.2	127	2558
MSU	E10174	2.9	Yellow	63.5	58.4	64.4	51.8	59.5	35.4	18.3	34.7	133	2109
MSU	E11128T	2.6	Yellow	56.4	58.8	52.1	49.3	54.2	39.8	16.9	30.8	129	2034
MSU	E11399	2.5	Black	68.1	46.3	53.2	52.9	55.1	35.2	18.3	29.6	128	2534
MSU	E11431	2.2	Black	64.2	45.9	38.0	51.7	49.9	35.3	18.2	31.6	127	2551
MSU	E12007	2.8	Dark Brown	59.0	53.2	39.9	58.8	52.7	36.4	18.3	32.4	131	2797
MSU	E12397	2.2	Light Brown	66.4	49.3	37.5	54.1	51.8	33.9	16.5	29.3	125	2458
MSU	E13021T	2.2	Yellow	56.7	59.1	47.8	48.7	53.0	36.2	18.1	29.3	129	2412
MSU	E13036T	2.6	Yellow	57.3	51.7	49.5	44.0	50.6	37.3	17.4	29.8	129	2057
MSU	E13364	2.7	Dark Brown	53.5	45.5	39.1	49.3	46.9	36.8	18.2	28.8	129	2602
MSU	E13367	2.6	Brown	59.9	46.9	48.7	50.5	51.5	35.5	17.9	26.9	127	2595
MSU	E13369	2.3	Brown	56.8	52.3	40.0	46.6	48.9	36.2	18.0	30.0	124	2849
Organic Bean & Grain	DH410	1.6	Clear	62.3	45.7	50.6	40.7	49.8	39.8	17.8	29.7	120	2344
Organic Bean & Grain		1.6	Clear	60.3	26.4	42.0	41.7	42.6	35.8	18.8	27.0	117	2578
Organic Bean & Grain	S2020	2.0	Clear	60.0	40.7	32.8	49.7	45.8	36.7	18.2	28.3	118	2397
Schillinger Genetics	e1665	1.6	Yellow	56.5	53.6	49.4	46.7	51.5	38.2	17.6	27.8	120	2518
Schillinger Genetics	e2062	2.0	Yellow	56.4	50.6	47.3	46.9	50.3	38.6	18.0	27.1	126	2296
Schillinger Genetics	e2162	2.1	Yellow	55.6	49.6	46.8	<b>52.8</b>	51.2	38.7	17.2	27.9	124	2481
Schillinger Genetics	e2282	2.1	Buff	59.0	45.0 65.5	<del>58.3</del>	50.1	58.2	38.3	17.5	30.4	124	2401
SunOpta	S14L9	1.4	ImpYellow	65.9	42.3	26.8	53.1	47.0	38.2	17.3	25.1	118	2273
SunOpta	S20-G7	2.0	Yellow	63.1	36.5	36.7	44.0	47.0	38.4	17.3	30.5	124	2060
GRAND MEAN		2.0	-		-	46.6	50.1	51.6			00.0	127	2000
				60.3	49.2								
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)

			Hilum	Tus	scola B	u/A	La	peer Bu	ı/A	Kala	mazoo	Bu/A	Ave	rage Bu	<b>ı/A</b> *
Source	Variety	Group	color	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

			Hilum	Percent Protein*		tein*	Pe	ercent Oi	il*	S	eeds/Pound	*
Source	Variety	Group	Color	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 Soft- ware, 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.

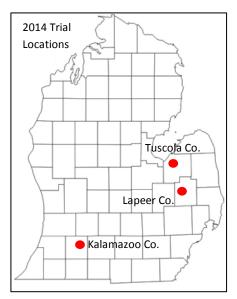
# Test site information

### Lapeer County

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	g 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.

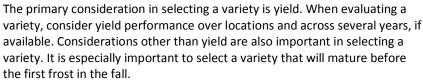
### small seed size.

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.



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, POBox 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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		Maturity		(Bu./A)				%		Seeds per	Maturity	Height	WM
Source	Variety	Group	Hilum Color	Tuscola	KBS	Lapeer	Average	Protein	Oil	Pound	DAP**	(in.)*	DSI#
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

		Maturity	Hilum		(Bu./	A)		%	%	Seeds per	Maturity	Height	WM
Source	Variety	Group	Color	Tuscola	KBS	Lapeer	Average	Protein	Oil	Pound	DAP**	(in.)*	DSI#
Schillinger Genetics	2282	2.2	Buff	59.2	36.0	29.7	41.6	38.5	16.2	2728	122	26.9	7.7
Sunopta	503W4	-	-	47.3	34.9	29.3	37.2	38.7	17.7	2309	105	25.2	1.9
Sunopta	OAC Thomsville	-	-	56.4	45.4	29.5	43.8	37.7	16.8	2231	123	26.1	6.5
Grand Mean				54.3	42.2	30.5	42.3	37.5	16.7	2689	123	27.7	13.5
Maximum				64.7	54.3	37.9	48.6	41.4	17.8	3191	131	37.8	28.7
Minimum				44.8	25.5	22.1	33.3	35.1	15.3	2014	105	23.7	1.9
C.V. (%)				9.7	17.1	11.7	13.1	1.5	2.1				69.3
LSD (0.05)				8.8	12.0	5.9	5.3	0.6	0.3				15.6

\* Average of all three sites. \*\* Days After Planting, average of KBS and Tuscola sites # White Mold Disease Severity Rating, Tuscola site only.

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, <math>2 = infection on the main stem but pod fill was normal, and <math>3 = infection on the main stem resulted in plant death and poor pod fill. The scores ofthe 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.

# Bolded values within columns are not statistically different.

## Two (2013-2014) and three (2012-2014) year averages of varieties at Tuscola, Lapeer and KBS.

		Tus	<u>cola</u>	Lap	eer	K	<u>3S</u>	Ave	rage	<u>% Pr</u>	otein	%	Oil	Seeds p	er Pound
Source	Variety	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

D.J. Rossman T.E. Martin D.R. Mutch – Collaborator D.G. Baas – Collaborator Michigan State University Extension

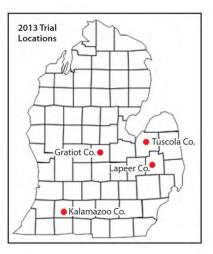
J.F. Boyse R.G. Laurenz Dept. of Plant, Soil & Microbial Sciences Michigan State University

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).



D. Wang

# **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.

Continued on next page.

# **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.

Variate	Maturity		V. 1							
Variaty	Maturity	-	Yield	Bushels p	er Acre					
Variety	group	<sup>1</sup> Tuscola	cola Lapeer Gratiot	KBS	Average	Ht. In	Protein	Oil	Seeds/I	
Viking O.1706N	1.7	35.7	34.7	28.9	58.5	39.5	29	36.3	17.9	3547
Viking O.199AT	1.9	36.6	41.7	33.6	62.2	43.5	30	36.8	18.1	2690
O.IA2053	2.1	35.3	38.8	36.8	57.3	42.1	32	39.0	16.7	2284
Viking O.2265	2.2	36.2	33.3	38.3	66.4	43.6	30	36.3	18.0	3138
IA1018	1.8	38.7	38.0	34.0	62.1	43.2	30	38.9	16.9	2449
Blue River 2A12	2.1	33.4	32.0	32.9	63.6	40.5	28	37.4	17.6	2931
Blue River 21F3	2.1	36.3	34.1	36.5	57.2	41.0	31	39.1	16.6	2114
Blue River 23C 2	2.4	33.3	34.7	34.7	61.4	41.0	31	35.4	18.1	2751
DF 242N/S	2.4	38.4	35.1	44.1	61.4	44.8	31	37.9	17.3	3247
DF 272 N/S	2.7	41.1	39.4	44.9	57.5	45.7	36	35.8	17.1	3187
DF 161 STS	1.6	39.5	45.8	37.7	56.3	44.8	30	35.9	17.9	3466
DF 155F	2.5	31.1	34.7	38.4	64.0	42.1	29	38.6	17.4	2322
Vinton 81	1.9	30.8	33.4	32.7	51.5	37.1	35	40.4	16.6	2168
IA1026	1.9	28.8	38.1	32.8	58.2	39.5	26	37.9	17.5	3048
IA2102	2.7	38.3	41.1	43.8	66.8	47.5	31	36.3	17.9	2999
IA2103	2.4	34.5	37.1	38.3	63.0	43.2	28	39.4	16.7	2065
IA2104	2.2	34.2	33.9	37.8	56.1	40.5	29	39.5	16.8	2311
IA3051	3	32.9	39.4	38.9	56.8	42.0	32	39.6	16.6	2504
MN 1505SP	1.5	27.1	32.9	31.7	56.9	37.2	26	39.7	17.7	2338
MN 1701 CN	1.7	32.5	40.5	33.3	56.9	40.8	30	36.9	17.7	2951
MN 1410	1.4	31.4	32.3	36.3	62.2	40.6	29	37.5	18.0	2743
M03-326084	1.7	23.3	32.7	32.2	52.3	35.1	34	38.8	17.1	2170
MN 2001 SP	2.0	37.8	33.5	30.2	55.1	39.2	30	40.5	16.9	2096
MSU E05181-T	2.0	36.8	38.3	36.2	57.4	42.2	28	37.8	17.7	2285
MSU E06331-T	2.4	28.1	30.3	29.4	53.9	35.4	26	39.8	16.9	2185
MSU E06341-T		31.4	23.8	39.5	53.9	37.2	28	39.8	16.9	2334
										2458
MSU E07130-T		33.9	35.4	34.5	55.2	39.8	33	40.8	16.4	1998
MSU E07158-T		28.0	37.6	30.8	48.2	36.2	31	42.0	16.5	1929
MSU E09014		42.3	33.4	42.2	56.8	43.7	35	36.8	17.6	2697
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	O.IA2053         Viking O.2265         IA1018         Blue River 2A12         Blue River 21F3         Blue River 23C 2         DF 242N/S         DF 242N/S         DF 161 STS         DF 155F         Vinton 81         IA2102         IA2103         IA3051         MN 1505SP         MN 1701 CN         MN 2001 SP         MSU E0531-T         MSU E06331-T         MSU E06341-T         MSU E07051	O.IA20532.1Viking O.22652.2IA10181.8Blue River 2A122.1Blue River 21F32.1Blue River 23C 22.4DF 242N/S2.4DF 272 N/S2.7DF 161 STS1.6DF 155F2.5Vinton 811.9IA10261.9IA21032.4IA30513MN 1505SP1.5MN 1701 CN1.7MN 14101.4M03-3260841.7MSU E05181-T2.6MSU E06341-T2.6MSU E06341-T2.3MSU E07158-T2.3MSU E07158-T2.3MSU E07158-T2.3MSU E090142.7MSU E09158-T2.3MSU E09158-T2.3MSU E09142.7MSU E09158-T2.3MSU E09142.7MSU E11173N/AMSU E11431N/AMSU E11431N/AMSU E11431N/AMSU E11431N/AMSU E114311.6Org B&G DH5301.6Org B&G MK91011Org B&G MK90151Org B&G MK90161Org B&G MK90161Schillinger e20622.0	O.IA20532.135.3Viking 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        39.5         45.8         37.7         56.3         44.8         30           IA1026         1.9         2.8         38.1         32.8         56.2         39.5         26           IA2102         2.7         38.3         41.1         43.8         66.8         47.5         31           IA2104         2.2         34.2         33.9         37.8         56.8         40.6         24           IA1025         1.7         38.3         66.2</td><td>OJA20532.13.5.33.8.83.6.85.7.34.2.13.2.03.6.3IAI0181.83.8.73.8.06.6.44.3.63.0.3.6.3IAI0181.83.8.73.8.06.6.14.3.23.03.8.9Blue River 2A122.13.6.33.4.13.6.55.7.24.1.03.13.5.1Blue River 23C22.43.3.33.4.73.4.761.44.1.03.13.5.1DF 242N/S2.43.8.43.5.14.4.161.44.4.83.13.7.9DF 72N/S2.74.1.13.9.44.9.95.7.53.6.33.6.83.6.8DF 161 STS1.63.1.13.4.73.8.46.4.04.2.12.93.8.6Vinton 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10011.431.432.336.257.4MSU E05181-T2.037.833.530.255.1MSU E06341-T2.631.423.839.553.9MSU E0631-T2.428.130.329.453.9MSU E0631-T2.631.423.835.553.9MSU E0631-T <td>OlA20532.135.338.836.857.342.1Viking O.22652.236.233.338.366.443.6IA10181.838.738.034.062.143.2Blue River 2A122.133.432.032.963.640.5Blue River 21732.136.334.136.557.241.0Blue River 232.22.433.334.734.761.441.8DF 242N/S2.741.139.444.957.545.7DF 161 STS1.639.545.837.756.344.8DF 155F2.531.134.738.464.042.1Vinton 811.930.833.432.751.537.1IA10261.92.8.838.132.865.847.5IA21022.738.341.143.866.847.5IA21032.434.537.138.366.940.2IA305133.2.939.438.956.840.5IA3142.234.235.436.536.937.2IN1701 CN1.732.540.533.356.940.8N14101.431.432.336.362.240.6M3240631-T2.637.835.535.935.4MSU E05181-T2.631.423.839.535.935.4MSU E071512.33.935.434.5&lt;</td> <td>Ola2053         2.1         35.3         38.8         36.8         57.3         42.1         32.2           Viking 0.2265         2.2         36.2         33.3         38.3         66.4         43.6         30           IA1018         1.8         38.7         38.0         34.0         62.1         43.2         30           Blue River 21F3         2.1         36.3         34.1         36.5         57.2         41.0         31           Blue River 221C2         2.4         33.3         34.7         61.4         41.0         31           DF 242N/S         2.4         38.4         35.1         44.1         61.4         44.8         31           DF 151 ST         1.6         39.5         45.8         37.7         56.3         44.8         30           IA1026         1.9         2.8         38.1         32.8         56.2         39.5         26           IA2102         2.7         38.3         41.1         43.8         66.8         47.5         31           IA2104         2.2         34.2         33.9         37.8         56.8         40.6         24           IA1025         1.7         38.3         66.2</td> <td>OJA20532.13.5.33.8.83.6.85.7.34.2.13.2.03.6.3IAI0181.83.8.73.8.06.6.44.3.63.0.3.6.3IAI0181.83.8.73.8.06.6.14.3.23.03.8.9Blue River 2A122.13.6.33.4.13.6.55.7.24.1.03.13.5.1Blue River 23C22.43.3.33.4.73.4.761.44.1.03.13.5.1DF 242N/S2.43.8.43.5.14.4.161.44.4.83.13.7.9DF 72N/S2.74.1.13.9.44.9.95.7.53.6.33.6.83.6.8DF 161 STS1.63.1.13.4.73.8.46.4.04.2.12.93.8.6Vinton 811.92.8.83.8.13.2.85.8.23.9.52.63.7.9IA21022.73.8.34.1.14.8.86.6.04.7.23.8.43.6.1IA21032.43.4.53.7.13.8.36.3.04.3.23.9.43.9.4IA21042.23.4.23.3.33.7.85.6.14.0.52.93.9.5IA305133.2.93.7.13.5.94.0.43.03.6.9<!--</td--><td>OlAz0532.135.338.836.857.342.132.239.016.7Viking OZ2652.236.233.338.366.443.630.036.318.0IA10181.838.738.032.032.062.143.230.038.916.9Blue Rive 71212.136.334.136.557.241.031.135.418.1Blue River 2222.433.334.734.761.441.831.135.417.1DF 221 N/S2.741.139.444.957.57.656.517.1DF 222 N/S2.731.134.738.464.042.12.938.617.4Vinton 811.930.833.432.751.537.13.540.416.7IA1021.930.834.143.866.847.531.136.317.9IA21042.234.233.937.856.140.52.939.516.6M1 1001.431.432.336.362.240.830.136.917.7IA21042.234.233.937.456.140.532.39.416.7IA21041.52.7.132.937.756.937.22.639.717.7IN 1701CN1.732.540.533.356.940.830.957.218.1MN 2001SP2.037.8</td></td>	OlA20532.135.338.836.857.342.1Viking O.22652.236.233.338.366.443.6IA10181.838.738.034.062.143.2Blue River 2A122.133.432.032.963.640.5Blue River 21732.136.334.136.557.241.0Blue River 232.22.433.334.734.761.441.8DF 242N/S2.741.139.444.957.545.7DF 161 STS1.639.545.837.756.344.8DF 155F2.531.134.738.464.042.1Vinton 811.930.833.432.751.537.1IA10261.92.8.838.132.865.847.5IA21022.738.341.143.866.847.5IA21032.434.537.138.366.940.2IA305133.2.939.438.956.840.5IA3142.234.235.436.536.937.2IN1701 CN1.732.540.533.356.940.8N14101.431.432.336.362.240.6M3240631-T2.637.835.535.935.4MSU E05181-T2.631.423.839.535.935.4MSU E071512.33.935.434.5<	Ola2053         2.1         35.3         38.8         36.8         57.3         42.1         32.2           Viking 0.2265         2.2         36.2         33.3         38.3         66.4         43.6         30           IA1018         1.8         38.7         38.0         34.0         62.1         43.2         30           Blue River 21F3         2.1         36.3         34.1         36.5         57.2         41.0         31           Blue River 221C2         2.4         33.3         34.7         61.4         41.0         31           DF 242N/S         2.4         38.4         35.1         44.1         61.4         44.8         31           DF 151 ST         1.6         39.5         45.8         37.7         56.3         44.8         30           IA1026         1.9         2.8         38.1         32.8         56.2         39.5         26           IA2102         2.7         38.3         41.1         43.8         66.8         47.5         31           IA2104         2.2         34.2         33.9         37.8         56.8         40.6         24           IA1025         1.7         38.3         66.2	OJA20532.13.5.33.8.83.6.85.7.34.2.13.2.03.6.3IAI0181.83.8.73.8.06.6.44.3.63.0.3.6.3IAI0181.83.8.73.8.06.6.14.3.23.03.8.9Blue River 2A122.13.6.33.4.13.6.55.7.24.1.03.13.5.1Blue River 23C22.43.3.33.4.73.4.761.44.1.03.13.5.1DF 242N/S2.43.8.43.5.14.4.161.44.4.83.13.7.9DF 72N/S2.74.1.13.9.44.9.95.7.53.6.33.6.83.6.8DF 161 STS1.63.1.13.4.73.8.46.4.04.2.12.93.8.6Vinton 811.92.8.83.8.13.2.85.8.23.9.52.63.7.9IA21022.73.8.34.1.14.8.86.6.04.7.23.8.43.6.1IA21032.43.4.53.7.13.8.36.3.04.3.23.9.43.9.4IA21042.23.4.23.3.33.7.85.6.14.0.52.93.9.5IA305133.2.93.7.13.5.94.0.43.03.6.9 </td <td>OlAz0532.135.338.836.857.342.132.239.016.7Viking OZ2652.236.233.338.366.443.630.036.318.0IA10181.838.738.032.032.062.143.230.038.916.9Blue Rive 71212.136.334.136.557.241.031.135.418.1Blue River 2222.433.334.734.761.441.831.135.417.1DF 221 N/S2.741.139.444.957.57.656.517.1DF 222 N/S2.731.134.738.464.042.12.938.617.4Vinton 811.930.833.432.751.537.13.540.416.7IA1021.930.834.143.866.847.531.136.317.9IA21042.234.233.937.856.140.52.939.516.6M1 1001.431.432.336.362.240.830.136.917.7IA21042.234.233.937.456.140.532.39.416.7IA21041.52.7.132.937.756.937.22.639.717.7IN 1701CN1.732.540.533.356.940.830.957.218.1MN 2001SP2.037.8</td>	OlAz0532.135.338.836.857.342.132.239.016.7Viking OZ2652.236.233.338.366.443.630.036.318.0IA10181.838.738.032.032.062.143.230.038.916.9Blue Rive 71212.136.334.136.557.241.031.135.418.1Blue River 2222.433.334.734.761.441.831.135.417.1DF 221 N/S2.741.139.444.957.57.656.517.1DF 222 N/S2.731.134.738.464.042.12.938.617.4Vinton 811.930.833.432.751.537.13.540.416.7IA1021.930.834.143.866.847.531.136.317.9IA21042.234.233.937.856.140.52.939.516.6M1 1001.431.432.336.362.240.830.136.917.7IA21042.234.233.937.456.140.532.39.416.7IA21041.52.7.132.937.756.937.22.639.717.7IN 1701CN1.732.540.533.356.940.830.957.218.1MN 2001SP2.037.8

			Varie	ety Trial	Results						
7		Maturity		Yield	Bushels pe	er Acre					
Source	Variety	group	Tuscola	Lapeer	Gratiot	KBS	Average	Ht. In	Protein	Oil	Seeds/lb
Sunopta	Sunopta SR-53LF	2.1	N/A	37.9	33.4	53.7	2	33	39.1	16.9	2451
Sunopta	Sunopta S20G7	2.0	31.3	33.9	40.1	57.1	40.6	29	38.1	17.4	2264
Sunopta	Sunopta SL9-L6	N/A	N/A	40.5	30.6	49.8	2	31	40.9	16.5	2177
	GRAND MEAN		33.1	36.4	36.3	57.5					
	Max.		43.9	46.9	47.7	67.5	<sup>1</sup> See c	omments o	n growing		
	Min.		14.7	23.8	25.4	19.5		litions for Tuscola County. ages not included due to			
	LSD		7.6	10.0	7.7	9.6	missi	ing location yield.			
	CV		13.7	16.5	12.7	10.0	N/A =	= not availa	ble		

### 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 Ridgetown, Ontario to over 80 attendees.

On August 13, 2013, the management team from the North Central Region (NCR) Sustainable Agriculture Research and Education (SARE) Program toured Michigan reviewing the Michigan SARE program. The variety trials project was reviewed on site at the Caro, Michigan location. As part of the review, NCR SARE produced a video of project investigator Dan Rossman discussing the project. That video has been posted by NCR SARE at http://www.youtube.com/watch?v=A8KCiwoJ\_mo

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

# Seed Sources

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

**D.F. Seeds Inc.** John Diehl 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

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 MN Crop Impl

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 Roger Wippler

 1066 Bogue Street
 1900 Hendon

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 St. Paul, MN 55

 517-355-0271 Ext. 188
 612-625-7766

Schillinger Genetics, Inc. Corey Nikkel 4401 Westown Parkway, Suite 225 West Des Moies, 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





# **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 Coun	ity
Nearest city:	Hickory Corners
Cooperator:	W.K. Kellogg Biological Station
Soil type:	Kalamazoo sandy loam





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

Continued on next page.

# 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
<b>Tuscola County</b>	
Nearest city:	Caro
Cooperator:	Mark and Steven Vollmar
Soil type:	Tappen-Londo Ioam
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.

				Y	ield – Bu/A						
Source	Variety	Maturity group	Tuscola	lsabella	Lapeer	KBS	Average Bu/A	Average Ht. In. <sup>1</sup>	Average Protein	Average Oil	Average Seeds/Ib
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 2102	_	56.5	41.0	51.0	34.2	45.7	36	38.9	16.9	1898
Iowa State University	IA 2103	_	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	2378
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	e2002		62.5	53.6	50.1	36.6	50.8	36	38.1	17.5	2515
Schillinger Genetics	XP 2272	-	60.8	53.0	50.6	37.7	50.8	36	41.8	17.5	2750
		2.2									
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 tinued on n	2126

		Y	ield = Bu/A	4							
Source	Variety	Maturity group	Tuscola	Isabella	Lapeer	KBS	Average Bu/A	Average Ht. In. <sup>1</sup>	Average Protein	Average Oil	Average Seeds/lb
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
	Grand Mean	59.5	47.5	56.6	33.7		<ul> <li><sup>1</sup> Average height of Tuscola and Isabella sites only.</li> <li><sup>2</sup> See Growing Conditions/comments for Kalamazoo County.</li> </ul>				
	Maximum	71.2	66.2	71.3	54.0						
	Minimum	39.6	28.1	40.3	16.3						
	LSD		13.0	14.2	12.8	21.3					
	CV		13.2	17.9	13.6	38.1 <sup>2</sup>		1			

# **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 Moies, 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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