2018 Michigan State Wheat Performance Trials

MICHIGAN STATE UNIVERSITY | Extension

MICHIGAN WHEAT PROGRAM

2018 Michigan State Wheat Performance Trials

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Fall planting conditions were excellent before October with much of the acreage being planted early due to early soybean and dry bean harvest. Rains held up planting the remainder of the crop until close to November. The wheat crop went into June with excellent ratings and a USDA forecasted yield of 93 bushel per acre. Disease pressure was low or non-existent. Early in the spring, crop development was 4-7 days behind last year but quickly caught up with higher temperatures in May and June. The onset of grain fill coincided with very hot and dry weather (Figure 1). Physiologically, wheat prefers cool temperatures – especially during grain fill. As temperature goes above 82 F the plant is no longer able to perform normal photosynthesis and accumulation of starches for grain fill. Above 85 F the plant is using all of its energy for respiration (translocation of water from roots through stomate's in the leaves) to keep the plant cool. Dry soil conditions prevent normal respiration resulting in reduced grain fill period resulting in lower yields and smaller seed size. The mean yield across all varieties across all locations was 83.1 bushels per acre, well below the forecasted record yield. This was due primarily to the hot and dry weather conditions.

Figure 1. Temperature and rainfall data from Michigan Automated Weather Station Network, MSU for four of the MSU Wheat Variety Trial Locations.

	Pigeon	Richville	Blissfield	MSU
Days 90 F +	6	9	19	7
Days 85 F +	19	22	30	20
May (in)	2.4	2.1	5.1	4.2
June (in)	1.2	1.5	1.3	1.4
July (in)	0.5	0.9	0.1	1.0

Choosing Varieties

Variety selection is best made using at least three years of data. Varieties selected using data across all locations will likely perform well under a wide range of conditions. Although, performance of a given variety will vary based on testing location. In selecting varieties for a specific location, it is important to identify varieties that perform well near the location where the variety will be grown. Table 4 provides information on which varieties are top performers in each of the five trial locations in 2015 through 2018. Selection and planting of two or more varieties is recommended. As an example, planting varieties that differ in flowering date can allow for staggering of management applications, specifically, fungicides to control Fusarium head blight. When selecting varieties, look at disease resistance as well as yield potential.

Disclaimer: ***MSU makes no endorsement of any wheat variety or brand.***

Experimental

The 2018 State Wheat Performance Trial entries were planted at seven sites in 6 counties: Allegan, Clinton, Huron, Lenawee, Sanilac, and Tuscola. The Allegan County site had significant variability in the topography and soil type across the trial which led to an LSD of 9.9 for yield. Appendix A (below) presents information on each of these sites. Each plot contained 6 rows with 7.5" row spacing and was planted to a length of 18 feet. Plots were trimmed to a length of 12 feet long in the spring for harvesting purposes. Sites were designed as Alpha Lattice with three replications. All seed was treated, but the chemicals and rates used varied according to the preferences of the originating organization. Seeding rates per linear foot of row were standardized to the rate that would equate with a stand of 2.0 million seeds per acre in a solid stand planted in 7.5" rows. Fall fertilizer application varied with cooperator practice. Spring nitrogen was applied as urea (90 lbs/acre actual N) at green-up and Affinity BroadSpec was used for weed control at all sites.

All sites were coordinated under high management with the exception of an additional conventionally managed trial at Tuscola County. Under high management, an additional 30 pounds of nitrogen was applied using streamer bars and 28% N. Prosaro was applied to control late season fungal diseases. The timing of the Prosaro application coincided with the average flowering date of the trial location. The Clinton County

location was planned to compare conventional vs. high management, but the co-op applying nitrogen on the commercial production field of the site drove right through the plots and applied a second dose of 90 pounds of N for a total of 180 pounds of N per acre.

All plots within a location were harvested on a single day. Yield was calculated using the entire area of the plot including the wheel tracks between plots leading to an underestimation of yield. For data reported on a 0-9 scale 0 is the best possible score.

Six of our experimental sites are on private farmland. We are extremely grateful to those growers for accommodating our work and all of the associated inconveniences. Funding for the high-management trial inputs was provided by the Michigan Wheat Program. Questions and comments regarding the research reported here should be directed to Dennis Pennington at pennin34@msu.edu or (269) 832-0497. This report and previous reports, may also be accessed through the Web at http://www.varietytrials.msu.edu/wheat .

Multi-Year Performance Summary

The full trial included 110 entries (49 of which were experimental lines) from 13 organizations, including Michigan State University, and data analyses were conducted using all of these entries. Attached to this narrative is a list of the names and contact information for those organizations. Each row in these tables has data for a single entry. The columns contain averages for a given trait and time period. Data for all of the entries in this trial are not presented here. However, the averages and statistical parameters in this report are based on the entire set of evaluated materials. **Comparisons among entries are only valid within a column**. Tables 1 and 2 are sorted first by grain color, and then in descending order by yield for 2018. Tables 3, 4 and 5 are sorted in alphabetic order by company and entry name. In some instances (e.g. yield), data columns to the right of the 2018 data columns are multi-year averages. Only data for entries included in all of the relevant years' tests are found here. Not all entries have been tested in all years, so the tables have several blank cells. See the section titled 'Experimental' for details on how the trials were conducted and for more detail on what the data in each column represents.

At the bottom of most columns in the tables is the trial average (mean), LSD (least significant difference), and CV (coefficient of variation) for data in that column. LSD values vary among traits and data sets (combinations of sites and years). Differences between the means for two entries that are greater than the LSD for that column are very likely to reflect a genuine difference between the two varieties. If the difference between two means is smaller than the LSD for that column, one should conclude that there is **no evidence that those entries are different for that trait** in the years and sites considered.

Table 1 contains yield data. This data was acquired electronically on the plot combine at the time of harvest. Yield data is standardized to 13.5% moisture. The 2018 yield data contains the multi-site yield averages of only the high management sites and does not include the single site of conventionally managed yield data in Tuscola County. The conventionally managed single site data can be found in Table 4 in the conventional vs. high management results.

Table 2 contains test weight and percent moisture for all locations along with the overall average across locations.

Table 3 contains data on resistance to Fusarium Head Blight (FHB, scab). The 2017 deoxynivalenol (DON, VOM) numbers are reported. Scab data were obtained from heavy disease pressure in an inoculated scab screening nursery. FHB infected grain is spread to provide inoculum and artificial misting provides disease-promoting conditions throughout the entire flowering period. 2018 grain samples will be submitted for DON analysis and will be reported later.

FHB Resistance Traits

Severity: The average percent of infected spikelets in each head.
Incidence: The percent of all spikes in a plot showing infection.
FHB index: The overall infection considering severity and incidence.
DON: Levels of mycotoxin (ppm) present in grain. DON data is from the 2017 crop year.

Levels of DON and severity are the most reliable traits to be used in selecting FHB-resistant varieties.

Table 3 also contains data for flowering date and plant height.

The flowering date indicates the average number of days past January 1st that a given entry reached the point where ½ of its heads were flowering. Plant height is reported as the distance in inches from the ground to the tip of average heads in a plot.

High Management vs. Conventional Management Performance

Table 4 provides a comparison of variety performance under intensive management and conventional management practices. Data on yield, test weight, grain moisture at harvest are provided from conventional management and high management trials at Tuscola County. Conventional management received 90 pounds of N per acre only. The high management received an additional 30 pounds of N per acre applied at Feekes 7 plus Prosaro fungicide applied at Feekes 10.5.1. The last two columns presents the yield advantage of high management in bushels per acre as well as a ranking of the response. A positive number indicates a yield response to high management. A negative number indicates the higher management actually produced a lower yield. Overall means were 1.7 bushels per acre higher for the conventional management treatment.

Milling and Baking Quality

Table 5 contains data for milling and baking quality. Quality data are from the 2017 harvest season and prior. Data were generated by the USDA Eastern Soft Wheat Quality Laboratory in Wooster, Ohio on grain harvested from the Michigan State Variety trial each year. Flour yield is the ratio of the weight of extractable flour to the weight of milled grain, expressed as a percentage. Percent protein in flour is adjusted at 14% moisture. Softness equivalent percent is the softness of the flour, with higher values indicating softer grained wheat. For cookie diameter, a larger diameter is better. Whole grain protein (%) and whole grain hardness are being reported with 0-100, and higher values indicating harder wheat. The quality lab test weight is not identical to the test weight at harvest due to grain drying and grain cleaning prior to quality laboratory test weight evaluation. Solvent Retention Capacity (SRC) can be conducted on flour using several different solvents and reflects different characteristics of flour quality. Soft wheat flour for cookies typically have a target of 95% or less when used by the US baking industry for biscuits and crackers. Sodium carbonate SRC increases as starch damage due to milling increases. Normal values for good milling soft varieties are 68% or less. Lactic acid measures gluten strength with “weak” soft varieties having values below 85% and strong gluten soft varieties having values, typically, above 105% or 110%.

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Appendix A. Trial Site Descriptions for 2018 MSU Wheat Performance Trials.

	FUSARIUM HEAD BLIGHT NURSERY	HURON COUNTY	CINTON COUNTY		LENAWEE COUNTY	SANILAC COUNTY	TUSCOLA COUNTY		ALLEGAN COUNTY
			CONV. MANAGED	HIGH MANAGED			CONV. MANAGED	HIGH MANAGED	
COOPERATOR	Michigan State University	Darwin Sneller	Louis Faivour		Woods Seed Farm	JGDM Farms	Stuart Bierlein		Harvey Jipping
NEAREST CITY	Lansing	Seabwing	Saint Johns		Britton	Sandusky	Reese		Hamilton
PLANTING DATE	09/27/17	09/30/17	09/26/17		10/02/17	09/28/17	9/25/2017		10/10/17
HARVEST DATE	N/A	7/17/2018	07/15/18		7/11/2018	7/13/2018	7/18/2018		7/12/2018
SOIL TYPE	Capac loam, 0 to 4 percent slopes & Colwood-Brookston loams	Shebeon loam, 0 to 2 percent slopes	Capac loam, 0 to 4 percent slopes & Parkhill loam, 0 to 2 percent slopes		Lenawee silty clay loam, 0 to 1 percent slopes	Parkhill loam and clay loam, 0 to 2 percent slopes	Tappan-Londo loams, 0 to 2 percent slopes		Capac loam, 0 to 4 percent slopes
PRE-PLANT FERTILIZER	None	150# MESZ + 75# Potash + 25# AMS	200# 9-23-30		275# 11-20-26 + 0.03S	225 lbs. 9-16-24 + 8.8% S	250# 14-10-23+.03S+.005Mn+.008Zn		None
COMMENTS	Inoculated / Misted Fusarium Head Blight Screening Nursery.	Additional 30 lbs. Nitrogen And Fungicides Were Applied.	No Conv. Managed Plots	183 Units of N Were Applied in Total. No Fungicides Were Applied	Additional 30 lbs. Nitrogen And Fungicides Were Applied.	Additional 30 lbs. Nitrogen And Fungicides Were Applied.	90 lbs. Nitrogen and No Fungicides Were Applied.	Additional 30 lbs. Nitrogen And Fungicides Were Applied.	Additional 30 lbs. Nitrogen And Fungicides Were Applied.
AVERAGE YIELD (BUSHELS / ACRE)	N/A	80.8	Not harvested	95.2	88.1	92.1	75.4	73.7	72.0
AVERAGE TEST WEIGHT (LBS. / BUSHEL)	N/A	57.7	Not harvested	60.6	60.0	60.4	15.8	56.8	59.0
AVERAGE PERCENT GRAIN MOISTURE AT HARVEST	N/A	15.4	Not harvested	15.1	13.3	15.5	56.8	15.8	15.6
2018 DATA RECORDED (NUMBER OF REPS)	N/A	3	Not harvested	3	3	3	3	3	3
FUNGICIDE APPLICATION DATE	N/A	6/6/2018	6/2/2018	6/2/2018	5/31/2018	6/6/2018	6/6/2018	6/6/2018	6/2/2018

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Table 1 : Multi-Year Performance Summary (Note: Tables sorted by 2018 High Management Yield, white wheat's grouped before red)

		Yield (Bu/A adjusted to 13.5% Moisture)					Allegan		Clinton		Huron		Lenawee		Sanilac		Tuscola	
Line	Color	2018	Rank	2 Yr Avg 17-18	3 Yr Avg 16-18	4 Yr Avg 15-18	Bu/A	Rank	Bu/A	Rank	Bu/A	Rank	Bu/A	Rank	Bu/A	Rank	Bu/A	Rank
Whitetail	White	86.3	1	91.3			65.4	22	101.7	2	89.3	2	89.7	5	101.9	3	74.9	9
Jupiter	White	85.5	2	90.9	100.6	101.0	62.3	24	101.8	1	85.9	8	85.2	15	103.8	1	80.1	1
MI14W1039	White	84.5	3				67.0	18	90.3	22	81.4	14	96.3	1	99.0	5	77.6	3
MI15W0193	White	84.5	3				74.6	3	101.3	3	78.6	20	86.5	8	98.4	6	72.4	12
MI14W0003	White	84.1	5	89.4			72.4	9	91.8	18	88.6	3	84.1	19	100.7	4	72.3	13
Dyna-Gro 9611W	White	83.6	6	88.3			73.7	6	92.0	16	83.0	10	89.9	4	90.3	19	74.9	9
MI14W0901	White	83.5	7				71.2	12	94.2	8	88.6	3	84.3	17	94.7	10	71.7	15
Dyna-Gro 9362W	White	83.4	8	89.5		90.5	69.4	13	91.8	18	83.8	9	85.6	13	102.3	2	73.9	11
AC Mountain	White	83.0	9	87.0	95.7	95.9	59.4	26	92.2	15	91.2	1	84.7	16	96.6	8	78.6	2
MI15W0461	White	82.9	10				72.3	10	92.5	13	79.4	19	90.1	2	96.6	8	71.1	19
MI14W0190	White	82.5	11	88.7			68.4	15	92.8	11	81.5	13	86.5	8	93.2	12	76.4	5
Dyna-Gro 9242W	White	82.3	12	88.7	96.8	98.2	69.0	14	100.1	4	82.2	12	88.2	6	86.6	23	69.0	25
MI14W1046	White	82.2	13				67.1	17	91.3	21	80.2	17	85.3	14	96.7	7	77.3	4
KWS260	White	81.9	14				77.7	2	93.2	9	75.0	23	85.9	11	85.9	24	75.0	8
MI14W0742	White	81.7	15				73.6	7	86.9	24	87.1	6	86.7	7	91.4	17	67.7	26
E-6012	White	81.6	16	87.2	95.4	95.4	72.6	8	91.9	17	80.4	15	84.0	20	92.9	13	71.7	15
Glacier	White	81.2	17	79.3	88.7	90.3	65.7	21	85.3	26	88.0	5	83.3	22	93.9	11	75.5	6
DF 218 W	White	80.9	18				66.8	19	95.9	6	77.4	21	83.5	21	89.1	20	75.3	7
HS EX 20W	White	80.9	18				63.7	23	99.0	5	73.6	25	90.1	2	91.1	18	71.3	18
Ambassador	White	80.1	20	88.0	96.8	97.7	66.4	20	94.5	7	80.4	15	80.0	26	92.6	14	71.0	20
MI14W0906	White	80.0	21				73.8	4	80.1	27	86.8	7	81.3	24	92.0	15	70.2	23
MCIA Venus	White	79.8	22	85.0	93.7	94.2	71.5	11	87.3	23	80.1	18	84.2	18	88.3	21	70.4	22
Dyna-Gro WX18752W	White	78.9	23				81.1	1	91.5	20	71.1	27	81.2	25	77.2	27	70.9	21
Dyna-Gro WX18751W	White	78.7	24				67.8	16	92.4	14	72.2	26	85.7	12	84.2	25	71.5	17
Aubrey	White	78.4	25	82.8	92.5	94.1	54.9	27	86.8	25	83.0	10	86.3	10	91.5	16	72.2	14
SY 912	White	78.3	26				73.8	4	92.8	11	75.5	22	82.2	23	87.8	22	60.6	27
VA09W-192WS-29	White	76.3	27	85.5			61.5	25	92.9	10	74.1	24	79.0	27	82.7	26	69.7	24
MCIA Jonah	Red	89.5	1				72.7	30	103.9	4	93.9	1	94.2	3	101.0	2	75.1	28
W 204	Red	89.4	2	93.5	101.8		81.7	6	103.5	5	84.4	14	91.9	14	94.4	22	82.0	2
AgriMAXX 438	Red	88.0	3	90.8	101.1	101.0	77.5	11	100.3	12	85.4	5	93.6	5	91.8	33	80.6	3
HS 338 R	Red	88.0	3				77.0	13	97.6	29	92.0	2	90.8	22	100.2	3	74.4	35
W 304	Red	88.0	3	89.1	98.9		83.8	4	98.6	24	84.9	9	92.9	9	93.6	24	76.1	24
SY 100	Red	87.9	6	94.9	104.9		77.1	12	105.3	1	85.7	4	88.6	38	96.7	11	76.9	13
Dyna-Gro WX17775	Red	87.7	7				76.4	16	105.3	1	80.3	35	91.9	14	99.8	5	76.8	16
SY 547	Red	87.1	8	91.0		92.2	98.3	1	90.7	53	82.0	24	87.3	47	90.8	38	74.8	29
Flipper	Red	87.0	9	92.5			72.7	30	99.6	15	84.5	12	93.2	7	102.2	1	74.8	29
AgriMAXX Exp 1884	Red	86.9	10				73.0	28	103.5	5	81.4	28	90.9	19	100.2	3	76.8	16
DF 109 R	Red	86.9	10	92.1	100.9	100.1	80.0	8	96.3	37	80.0	39	93.0	8	99.1	6	77.1	11
RS 902	Red	86.9	10	87.4			77.0	13	96.8	34	85.8	3	96.0	2	97.6	10	71.5	48
W 302	Red	86.6	13	90.0			75.2	18	98.7	22	83.2	19	92.0	12	95.1	21	78.2	4
ISF 718	Red	86.4	14	91.2	101.2		71.2	40	101.5	9	84.6	10	88.7	35	99.0	7	77.8	5
DF 112 R	Red	86.3	15	95.3	104.0	104.3	84.0	3	100.2	13	81.0	30	89.7	28	86.8	57	76.0	25
AgriMAXX 413	Red	86.1	16	91.1	100.5	100.6	70.9	44	99.2	19	85.2	6	92.4	10	94.4	22	77.3	9
DF 105 R	Red	86.0	17	92.5	102.8	101.3	66.3	53	102.5	8	78.6	49	93.8	4	95.7	18	82.2	1
RS 968	Red	85.6	18				74.8	19	97.8	26	81.5	26	90.9	19	96.5	13	75.8	26
Dyna-Gro 9701	Red	85.5	19	91.2			72.0	34	99.6	15	84.1	16	91.5	17	90.6	39	77.0	12
HS EX 19R	Red	85.5	19				77.7	10	99.0	20	83.6	18	88.5	39	89.3	45	76.3	20
W 312	Red	85.5	19				66.2	54	104.9	3	79.3	43	92.3	11	98.4	8	76.2	21
W 303	Red	84.9	22	88.9	97.5		74.1	21	97.4	31	85.1	7	89.0	32	91.4	35	74.3	36

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Table 1 : Multi-Year Performance Summary (Note: Tables sorted by 2018 High Management Yield, white wheat's grouped before red)

		Yield (Bu/A adjusted to 13.5% Moisture)					Allegan		Clinton		Huron		Lenawee		Sanilac		Tuscola	
				2 Yr Avg	3 Yr Avg	4 Yr Avg												
Line	Color	2018	Rank	17-18	16-18	15-18	Bu/A	Rank	Bu/A	Rank	Bu/A	Rank	Bu/A	Rank	Bu/A	Rank	Bu/A	Rank
MCIA Red Dragon	Red	84.8	23	85.3	94.1	95.8	71.2	40	97.3	32	84.6	10	90.9	19	97.8	9	71.1	50
SRW 9606	Red	84.8	23				71.9	35	99.9	14	82.6	20	87.5	46	91.4	35	77.8	5
DF 118 R	Red	84.7	25	92.4			84.2	2	93.4	46	79.0	47	88.3	42	90.3	41	74.6	32
LWX 1825	Red	84.7	25				83.3	5	94.5	41	79.1	45	89.8	27	93.6	24	71.1	50
AgriMAXX 473	Red	84.3	27				73.2	27	97.7	27	82.4	21	88.7	35	89.0	47	76.2	21
MI14R1140	Red	84.3	27				80.3	7	89.1	57	84.5	12	82.7	59	96.6	12	76.9	13
W 316	Red	84.3	27				76.8	15	93.7	45	80.9	31	88.5	39	90.4	40	77.3	9
AgriMAXX 486	Red	84.2	30				72.1	33	99.5	17	80.9	31	87.3	47	89.6	44	77.6	8
SRW 9415	Red	84.2	30				76.0	17	96.2	38	79.1	45	89.0	32	90.3	41	76.9	13
MI14R0009	Red	83.9	32	84.7			73.4	23	94.3	42	78.9	48	96.5	1	96.1	16	68.5	58
9203	Red	83.8	33				68.6	49	98.8	21	84.2	15	87.1	49	96.0	17	72.0	46
MI15R0388	Red	83.7	34				69.0	47	93.8	43	80.7	33	89.4	31	95.3	20	77.7	7
LWX 1855	Red	83.6	35				73.3	26	93.8	43	82.4	21	90.3	24	87.0	54	76.2	21
MI15R0068	Red	83.5	36				78.2	9	93.2	48	82.3	23	82.9	58	95.7	18	72.8	43
Dyna-Gro 9552	Red	83.4	37		99.8	99.6	71.0	43	96.8	34	81.2	29	88.3	42	91.9	31	74.0	39
6771 EXP	Red	83.3	38				72.9	29	103.1	7	72.6	59	88.3	42	93.3	27	72.8	43
HS EX 18R	Red	83.2	39				66.7	52	101.3	10	81.9	25	86.2	52	92.6	29	73.5	42
MCIA Harpoon	Red	83.0	40	88.5	95.9	97.4	74.5	20	91.8	52	81.5	26	89.7	28	87.4	52	74.7	31
MI14R0011	Red	83.0	40	85.7			72.3	32	92.1	51	80.1	38	92.0	12	90.2	43	73.6	41
AgriMAXX 485	Red	82.9	42				73.4	23	90.6	54	79.3	43	91.9	14	87.0	54	76.4	18
AgriMAXX Exp 1889	Red	82.7	43				67.1	51	98.1	25	78.4	50	88.0	45	93.5	26	74.6	32
MCIA Whale	Red	82.7	43	87.6	95.6	97.3	65.8	55	101.0	11	74.5	58	88.4	41	96.5	13	74.5	34
Dyna-Gro WX18724	Red	82.5	45				71.5	38	99.4	18	76.9	52	90.2	25	88.0	50	70.7	52
RS 910	Red	82.3	46	91.1	99.2	99.0	69.6	46	97.1	33	74.9	56	88.7	35	89.3	45	76.4	18
SRW 8550	Red	82.3	46				71.1	42	95.3	40	83.7	17	86.0	53	84.2	59	74.1	38
RS 961	Red	81.7	48				68.1	50	98.7	22	75.3	55	89.5	30	92.3	30	70.1	53
AgriMAXX 463	Red	81.6	49		96.0		71.9	35	92.4	50	80.0	39	86.4	51	87.0	54	73.9	40
Sunburst	Red	81.5	50	87.5	95.7	97.2	65.1	56	97.7	27	79.5	42	90.5	23	88.4	49	70.1	53
Dyna-Gro 9811	Red	81.4	51				71.8	37	88.3	59	85.1	7	84.0	56	85.4	58	75.2	27
ISF 610	Red	81.1	52	89.6			61.8	57	93.3	47	80.4	34	88.8	34	91.4	35	74.2	37
Dyna-Gro 9862	Red	80.7	53				69.0	47	95.5	39	75.8	53	90.1	26	87.1	53	68.9	55
LCS3204	Red	80.7	53				71.3	39	89.5	56	80.0	39	85.8	55	88.5	48	71.7	47
Kokosing	Red	80.4	55				73.4	23	93.1	49	75.5	54	84.0	56	87.8	51	71.2	49
L11639	Red	80.4	55				73.5	22	97.5	30	74.9	56	80.1	60	91.9	31	68.2	59
W 305	Red	80.4	55	86.9			50.9	60	96.5	36	80.2	37	91.2	18	96.4	15	72.8	43
Starburst	Red	79.9	58	87.6			69.7	45	87.4	60	72.5	60	93.3	6	91.7	34	68.6	57
MCIA Red Devil	Red	77.8	59	84.9	94.5	94.8	59.0	58	90.0	55	78.4	50	86.7	50	92.7	28	64.9	60
L11621	Red	77.0	60	87.0			57.7	59	88.9	58	80.3	35	85.9	54	81.6	60	68.9	55
	CV	5.6	-	4.8	4.9	5.9	9.9		3.6		3.5		3.2		3.6		3.6	
	LSD	4.8	-	4.1	3.5	3.6	9.9		4.8		4.0		4.0		4.6		5.3	
	Mean	83.1	-	88.5	97.4	96.8	72.0		95.2		80.8		88.1		92.1		73.7	

2018 Michigan State University Wheat Performance Trials

Table 2. Multi-Location Performance Summary for Test Weight and Percent Moisture.

Line	Color	Overall		Allegan		Clinton		Huron		Lenawee		Sanilac		Tuscola	
		TW	% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW	% Moist
Whitetail	White	57.7	14.0	51.6	13.7	59.2	14.2	56.7	14.4	58.0	12.3	59.2	14.4	55.7	14.9
Jupiter	White	58.0	14.3	56.7	14.2	60.1	14.5	56.8	14.2	57.7	12.2	60.0	15.6	56.1	15.2
MI14W1039	White	56.7	13.5	56.5	13.8	57.7	13.3	54.1	13.2	58.4	12.6	57.8	13.7	55.7	14.8
MI15W0193	White	56.4	14.0	56.4	15.2	58.7	14.6	54.5	14.0	56.3	12.1	58.5	14.6	54.9	14.9
MI14W0003	White	58.6	15.3	58.6	15.7	59.9	15.4	58.3	15.7	59.2	13.2	59.3	16.8	56.4	16.1
Dyna-Gro 9611W	White	59.0	15.0	58.6	15.5	60.8	15.2	57.6	15.5	59.5	13.1	61.6	16.6	56.5	15.0
MI14W0901	White	59.1	14.8	60.7	14.8	60.9	14.8	57.2	15.5	60.4	13.4	60.0	14.6	57.3	15.7
Dyna-Gro 9362W	White	59.8	15.5	59.4	14.9	60.9	15.6	57.9	15.7	60.7	14.0	61.7	15.4	58.4	16.8
AC Mountain	White	57.8	14.4	56.7	14.7	59.2	14.6	56.5	14.8	57.8	12.5	59.6	15.0	56.3	15.3
MI15W0461	White	59.4	15.0	57.0	14.4	61.0	15.2	57.0	14.5	60.4	13.5	61.1	15.7	57.9	16.2
MI14W0190	White	59.3	14.7	59.9	16.3	61.5	15.1	56.7	14.4	60.5	13.2	61.6	16.1	56.9	15.3
Dyna-Gro 9242W	White	59.9	15.4	59.1	15.5	61.1	15.2	59.1	16.1	60.6	13.7	61.4	16.1	57.6	16.2
MI14W1046	White	57.6	14.4	56.3	13.8	59.4	14.5	56.2	14.3	57.7	12.5	58.5	15.6	56.5	15.7
KWS260	White	59.7	15.3	59.6	15.2	61.6	15.6	58.1	15.7	60.6	13.4	61.5	15.9	57.4	15.9
MI14W0742	White	58.2	14.7	58.8	15.5	59.8	15.0	57.2	15.3	59.3	13.2	59.7	15.0	55.6	15.3
E-6012	White	58.4	14.5	58.5	14.0	58.6	13.7	57.7	15.7	59.7	13.2	61.1	15.6	55.7	14.5
Glacier	White	59.3	15.4	59.0	16.6	60.9	15.7	58.0	15.7	59.9	13.3	60.2	15.5	57.7	16.6
DF 218 W	White	59.6	15.5	58.4	15.9	61.3	15.5	58.7	15.7	60.6	13.5	60.3	17.0	57.1	16.1
HS EX 20W	White	60.3	15.5	61.0	15.3	61.5	15.0	58.6	16.3	62.2	14.4	61.8	16.0	57.7	15.8
Ambassador	White	57.1	13.9	55.9	13.6	58.2	13.6	56.0	14.3	56.7	11.9	58.6	13.7	56.4	15.8
MI14W0906	White	59.0	14.4	59.6	15.0	59.9	14.1	57.9	14.9	60.8	13.6	60.5	15.3	56.5	14.6
MCIA Venus	White	58.1	14.7	59.2	14.4	59.3	14.6	57.1	15.6	59.0	12.8	59.8	14.6	56.0	15.7
Dyna-Gro WX18752W	White	58.3	14.9	60.8	15.8	59.6	14.8	57.5	15.2	59.5	13.4	59.7	16.7	55.7	14.9
Dyna-Gro WX18751W	White	59.1	14.9	57.4	14.9	61.5	15.4	58.1	15.6	59.6	13.1	60.8	14.9	56.2	15.3
Aubrey	White	60.7	16.2	59.4	16.2	62.1	15.7	59.7	16.9	61.5	14.7	61.2	15.7	59.1	17.6
SY 912	White	60.3	15.9	59.7	15.9	62.2	16.6	58.3	16.0	61.9	14.3	61.7	16.3	57.7	16.6
VA09W-192WS-29	White	59.2	14.5	59.3	14.7	60.3	14.0	58.5	14.8	59.2	12.5	61.4	15.9	57.1	15.8
MCIA Jonah	Red	57.5	14.5	57.3	15.5	58.1	14.2	14.7	56.7	58.4	12.8	59.0	15.1	15.0	56.8
W 204	Red	60.0	15.7	60.8	15.3	61.4	15.5	59.0	17.3	61.6	13.9	61.5	15.9	57.0	15.8
AgriMAXX 438	Red	57.9	14.7	56.8	16.1	59.9	15.3	56.3	14.4	58.5	13.0	59.3	15.5	55.9	15.4
HS 338 R	Red	60.3	15.8	60.8	14.9	61.9	16.2	59.3	16.3	61.0	14.0	60.8	15.3	58.7	17.1
W 304	Red	58.8	15.1	58.8	15.6	60.0	15.3	57.6	15.4	59.9	13.2	60.4	15.4	56.5	16.1
SY 100	Red	56.5	13.9	56.8	14.8	58.6	14.5	55.5	14.5	57.4	12.1	56.5	13.6	54.7	14.9
Dyna-Gro WX17775	Red	58.3	14.4	59.1	14.6	60.2	14.9	56.3	14.7	59.5	12.7	59.4	14.8	56.3	15.1
SY 547	Red	60.0	15.0	61.6	15.1	61.1	14.9	60.3	15.9	60.7	13.2	61.3	15.3	57.1	16.0
Flipper	Red	57.9	14.7	56.8	14.8	59.7	15.0	56.2	14.8	58.8	13.2	59.0	14.5	56.2	16.1
AgriMAXX Exp 1884	Red	58.3	14.4	58.1	15.1	59.9	14.4	56.2	14.8	59.8	13.2	60.2	14.3	56.0	15.4
DF 109 R	Red	57.9	14.9	57.1	16.8	60.1	16.0	56.1	14.5	58.8	13.2	59.5	15.5	55.7	15.5
RS 902	Red	58.9	15.0	58.6	15.7	60.3	15.0	58.1	15.8	59.9	13.1	60.6	15.4	56.2	15.8
W 302	Red	59.0	15.1	60.1	15.9	61.0	15.4	57.5	15.6	60.0	13.0	60.7	15.4	56.4	16.1
ISF 718	Red	60.0	15.7	59.5	16.2	61.3	15.8	58.5	15.9	60.6	14.2	61.3	15.7	58.7	17.1
DF 112 R	Red	57.9	14.1	61.3	14.3	59.5	14.2	56.5	14.9	59.6	12.9	59.3	14.4	55.1	14.3
AgriMAXX 413	Red	58.3	14.3	58.9	15.1	59.8	14.1	56.3	15.0	59.5	13.0	60.3	14.7	56.1	14.9
DF 105 R	Red	58.4	14.4	57.4	14.7	60.1	14.6	56.8	15.1	59.7	12.7	59.4	15.1	56.2	14.8
RS 968	Red	59.1	14.6	60.0	15.6	60.3	14.3	57.5	15.0	60.6	13.3	60.7	15.1	56.8	15.3
Dyna-Gro 9701	Red	58.7	14.8	58.4	15.1	60.1	14.7	57.4	15.1	59.2	12.8	60.6	16.1	56.7	15.7
HS EX 19R	Red	59.8	14.9	60.1	16.1	61.4	15.7	60.0	15.6	60.5	13.1	60.5	14.8	56.8	15.3

2018 Michigan State University Wheat Performance Trials

Table 2. Multi-Location Performance Summary for Test Weight and Percent Moisture.

Line	Color	Overall		Allegan		Clinton		Huron		Lenawee		Sanilac		Tuscola	
		TW	% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW	% Moist
W 312	Red	58.5	14.6	56.4	14.5	60.0	14.5	57.5	15.8	59.8	13.1	59.7	14.8	55.7	14.8
W 303	Red	59.2	15.3	59.3	15.7	60.7	15.7	58.0	16.1	60.0	13.7	61.1	14.6	57.0	16.1
MCIA Red Dragon	Red	58.6	15.0	57.8	15.8	60.7	15.5	56.5	15.4	59.1	13.0	60.6	15.3	56.8	15.9
SRW 9606	Red	58.5	14.6	58.2	16.1	60.2	15.1	57.6	15.4	58.7	12.6	60.2	14.5	56.2	15.5
DF 118 R	Red	59.4	14.9	59.7	15.5	60.5	15.7	58.6	15.1	60.3	13.4	60.4	14.9	57.4	15.4
LWX 1825	Red	59.5	15.0	61.1	15.6	61.1	15.4	58.5	15.4	60.8	13.3	60.8	15.4	56.6	15.4
AgriMAXX 473	Red	59.1	14.8	58.8	15.4	61.4	15.6	57.9	15.1	59.6	12.9	60.6	15.2	56.6	15.5
MI14R1140	Red	59.0	14.6	60.3	14.5	59.6	14.1	57.3	14.7	60.7	13.4	59.4	14.6	57.9	16.2
W 316	Red	59.2	14.7	60.3	14.9	59.9	14.9	58.2	15.3	60.4	13.1	60.7	15.0	57.5	15.2
AgriMAXX 486	Red	59.4	14.9	59.3	15.9	60.6	14.8	59.0	15.9	60.6	13.2	60.5	15.2	56.8	15.4
SRW 9415	Red	59.4	15.3	59.8	16.5	61.1	15.7	58.5	15.9	60.2	13.7	60.7	15.6	57.0	15.6
MI14R0009	Red	60.4	16.0	61.9	16.7	62.3	16.1	58.8	17.0	62.5	14.4	60.8	15.4	57.9	16.9
9203	Red	59.2	15.6	57.2	16.6	60.9	16.1	57.4	15.5	59.7	13.4	60.8	16.5	57.9	16.7
MI15R0388	Red	58.5	14.8	59.1	15.5	59.3	14.5	57.0	15.3	60.2	13.3	60.0	15.3	56.7	15.8
LWX 1855	Red	59.1	14.8	58.1	16.1	60.8	15.1	57.5	15.1	60.1	12.8	60.4	15.4	56.9	15.9
MI15R0068	Red	57.3	14.0	57.3	14.2	58.9	14.5	56.1	14.5	57.0	11.7	58.8	14.4	56.0	15.1
Dyna-Gro 9552	Red	59.3	15.0	59.0	15.4	61.1	15.7	58.4	15.0	60.2	13.3	59.9	15.9	57.0	15.3
6771 EXP	Red	59.0	15.2	58.4	15.8	61.4	15.6	57.6	15.4	59.5	13.5	60.0	15.7	56.9	15.8
HS EX 18R	Red	58.9	14.8	60.5	16.2	58.7	13.3	58.0	15.3	60.0	13.5	61.0	16.2	57.7	16.0
MCIA Harpoon	Red	58.0	14.2	59.9	14.6	58.7	13.7	55.9	14.3	60.4	13.1	59.7	14.6	56.0	15.3
MI14R0011	Red	60.7	15.7	61.7	18.1	62.6	15.7	58.3	15.6	61.7	13.5	62.8	17.3	58.9	16.7
AgriMAXX 485	Red	59.9	15.2	60.9	16.5	61.6	15.7	59.7	15.4	60.4	13.9	61.5	15.1	57.0	15.9
AgriMAXX Exp 1889	Red	59.0	15.2	59.4	16.7	60.3	14.9	58.5	15.9	59.6	13.6	60.4	15.8	56.8	16.1
MCIA Whale	Red	58.7	15.1	58.5	15.4	60.8	15.5	58.2	15.8	58.7	12.8	60.1	15.9	56.1	15.6
Dyna-Gro WX18724	Red	59.7	14.9	61.5	15.7	61.2	15.1	58.4	15.1	60.9	13.1	61.9	15.7	57.0	15.8
RS 910	Red	60.2	15.5	61.2	16.3	61.9	15.7	58.7	15.6	61.8	13.8	61.5	15.7	57.5	16.6
SRW 8550	Red	59.1	15.1	60.0	15.8	60.5	15.1	58.5	15.6	59.7	13.3	60.8	16.0	56.7	15.7
RS 961	Red	59.6	15.2	60.1	15.5	62.1	16.2	57.2	14.8	60.6	13.5	61.3	15.4	57.3	16.2
AgriMAXX 463	Red	57.9	14.2	58.7	14.3	59.9	14.4	55.4	14.0	60.3	13.4	59.1	14.8	55.2	14.7
Sunburst	Red	60.9	15.9	60.1	16.5	63.5	16.3	58.5	15.8	62.4	13.9	62.0	18.1	58.5	16.0
Dyna-Gro 9811	Red	59.0	15.1	58.5	16.0	60.2	15.0	57.1	15.2	61.0	13.8	61.0	15.9	56.5	15.7
ISF 610	Red	59.3	15.1	59.9	16.0	60.4	14.8	56.5	15.1	62.0	14.0	60.8	15.9	57.1	15.9
Dyna-Gro 9862	Red	59.5	15.1	61.1	16.3	61.4	15.4	58.0	15.6	60.2	13.7	60.8	14.6	57.3	15.9
LCS3204	Red	61.2	16.4	61.5	16.7	62.5	16.4	59.6	16.6	62.8	15.0	62.8	17.1	58.8	17.3
Kokosing	Red	59.2	14.8	58.9	14.7	60.5	14.8	57.2	15.0	60.8	13.7	60.7	14.6	57.5	15.9
L11639	Red	60.7	15.6	61.6	16.2	62.1	15.5	59.2	16.1	62.8	14.6	61.9	15.7	58.1	16.0
W 305	Red	59.2	15.2	58.6	16.3	60.9	15.1	57.9	15.2	60.6	13.7	59.5	15.9	57.4	16.3
Starburst	Red	60.5	15.5	60.9	17.4	62.4	15.5	58.7	15.6	61.4	13.5	62.0	16.3	58.6	16.9
MCIA Red Devil	Red	60.0	15.5	59.9	16.3	62.5	16.5	59.1	15.9	61.1	14.0	61.2	15.7	56.7	15.6
L11621	Red	60.9	15.7	61.3	16.2	61.7	15.1	59.6	16.3	62.6	14.3	62.6	16.2	58.4	16.8
	CV	1.0	2.6	2.1	4.0	1.0	4.6	1.7	3.4	0.6	1.8	0.6	2.2	0.7	2.4
	LSD	0.5	0.3	1.7	0.9	0.8	0.9	1.4	0.7	0.5	0.3	0.5	0.5	0.6	0.5
	Mean	59.0	15.0	59.0	15.6	60.6	15.1	57.7	15.4	60.0	13.3	60.4	15.5	56.8	15.8

2018 Michigan State University Wheat Performance Trials

Table 3. Fusarium Head Blight Resistance, plant height and flowering data.

Line	Color	Fusarium Head Blight Severity 2018	Fusarium Head Blight Incidence 2018	Fusarium Head Blight Index 2018	DON ppm Avg 15-17	Plant Height (inches)	Flowering Date Days past Jan. 1
Ambassador	White	85.0	91.7	77.8	4.9	31.7	148.3
AgriMAXX 413	Red	63.3	88.3	56.4	2.6	32.0	148.0
AgriMAXX 438	Red	60.0	75.0	45.8	0.9	32.8	147.7
AgriMAXX 463	Red	18.3	93.3	17.3	------	30.8	148.3
AgriMAXX 473	Red	36.7	76.7	28.3	------	32.5	149.7
AgriMAXX 485	Red	46.7	78.3	38.3	------	30.2	149.3
AgriMAXX 486	Red	68.3	90.0	61.5	------	32.2	149.3
AgriMAXX Exp 1884	Red	60.0	95.0	57.0	------	31.9	149.3
AgriMAXX Exp 1889	Red	65.0	90.0	58.3	------	31.0	148.3
LCS3204	Red	11.7	73.3	8.8	------	33.7	148.3
9203	Red	41.7	85.0	52.0	------	31.5	148.0
SRW 8550	Red	51.7	83.3	42.9	------	32.4	150.3
SRW 9415	Red	60.0	80.0	48.0	------	30.7	149.3
SRW 9606	Red	50.0	93.3	47.0	------	31.2	149.7
Aubrey	White	28.3	75.0	21.7	1.7	33.7	147.7
DF 105 R	Red	66.7	85.0	56.7	1.2	30.8	148.0
DF 109 R	Red	73.3	91.7	67.0	1.5	33.0	148.3
DF 112 R	Red	73.3	91.7	67.3	1.5	31.0	148.7
DF 118 R	Red	63.3	76.7	48.7	------	32.7	149.0
DF 218 W	White	50.0	90.0	46.3	------	29.2	151.3
Dyna-Gro 9242W	White	35.0	81.7	29.3	0.9	32.5	149.0
Dyna-Gro 9362W	White	68.3	81.7	55.8	1.1	32.5	147.7
Dyna-Gro 9552	Red	70.0	86.7	60.8	2.6	29.5	148.7
Dyna-Gro 9611W	White	81.7	91.7	74.9	2.1	30.0	149.3
Dyna-Gro 9701	Red	58.3	83.3	48.9	0.6	33.3	148.3
Dyna-Gro 9811	Red	73.3	93.3	68.4	------	33.7	149.7
Dyna-Gro 9862	Red	51.7	78.3	41.6	------	29.3	148.7
Dyna-Gro WX17775	Red	66.7	70.0	48.8	------	31.2	149.0
Dyna-Gro WX18724	Red	60.0	88.3	53.3	------	31.5	148.3
Dyna-Gro WX18751W	White	50.0	95.0	47.5	------	30.5	149.3
Dyna-Gro WX18752W	White	36.7	90.0	33.3	------	31.0	150.7
Glacier	White	26.7	66.7	17.8	2.8	34.0	147.3
HS 338 R	Red	35.0	85.0	29.7	------	31.7	148.0
HS EX 18R	Red	50.0	91.7	46.2	------	27.8	148.3
HS EX 19R	Red	61.7	90.0	55.1	------	32.5	147.7
HS EX 20W	White	21.7	86.7	18.8	------	32.5	150.0
6771 EXP	Red	56.7	91.7	35.4	------	30.5	148.3
ISF 610	Red	41.7	88.3	37.6	------	31.8	148.0
ISF 718	Red	43.3	91.7	40.0	------	33.0	149.0
L11621	Red	63.3	91.7	58.3	0.9	30.3	150.7
L11639	Red	33.3	86.7	28.6	------	32.5	148.7
KWS260	White	66.7	91.7	61.2	------	30.5	148.0
LWX 1825	Red	63.3	81.7	51.6	------	32.9	150.0
LWX 1855	Red	43.3	88.3	38.2	------	33.0	149.0
AC Mountain	White	65.0	76.7	52.3	3.2	36.9	149.7
E-6012	White	75.0	93.3	70.1	------	30.9	149.7
Jupiter	White	76.7	86.7	66.5	3.5	30.2	146.7
MCIA Jonah	Red	66.7	80.0	53.8	------	32.4	148.3

2018 Michigan State University Wheat Performance Trials

Table 3. Fusarium Head Blight Resistance, plant height and flowering data.

Line	Color	Fusarium Head Blight Severity 2018	Fusarium Head Blight Incidence 2018	Fusarium Head Blight Index 2018	DON ppm Avg 15-17	Plant Height (inches)	Flowering Date Days past Jan. 1
Kokosing	Red	26.7	81.7	21.7	------	33.2	147.3
MCIA Harpoon	Red	35.0	90.0	31.6	0.5	31.5	149.7
Flipper	Red	78.3	91.7	72.1	------	29.7	149.0
MCIA Red Devil	Red	66.7	90.0	60.8	1.5	34.0	147.3
MCIA Red Dragon	Red	50.0	76.7	39.0	0.6	35.5	150.0
MCIA Venus	White	75.0	91.7	68.8	2.7	33.7	147.0
MCIA Whale	Red	40.0	81.7	32.8	3.7	31.4	147.0
Starburst	Red	46.7	94.0	43.8	1.0	26.3	147.7
Sunburst	Red	46.7	80.0	39.1	1.3	28.4	147.7
MI14R0009	Red	58.3	83.3	48.7	1.9	33.0	151.0
MI14R0011	Red	38.3	65.0	24.9	1.3	28.7	149.7
MI14R1140	Red	56.7	85.0	48.0	2.4	32.7	149.0
MI14W0003	White	78.3	85.0	66.7	3.0	35.2	151.3
Whitetail	White	68.3	80.0	55.3	2.2	30.5	146.7
MI14W0190	White	13.3	83.3	11.0	0.6	31.9	148.0
MI14W0742	White	80.0	81.7	65.3	5.4	32.9	147.7
MI14W0901	White	96.7	98.3	95.0	3.4	32.2	150.0
MI14W0906	White	75.0	95.0	71.3	2.6	33.8	148.3
MI14W1039	White	53.3	85.0	44.7	7.0	32.5	147.3
MI14W1046	White	58.3	68.3	40.5	3.0	32.5	149.0
MI15R0068	Red	60.0	83.3	49.5	10.2	30.5	149.3
MI15R0388	Red	53.3	93.3	49.8	2.6	32.9	146.0
MI15W0193	White	38.3	73.3	28.3	2.6	32.5	147.0
MI15W0461	White	71.7	93.3	66.9	3.6	32.4	148.3
VA09W-192WS-29	White	51.7	83.3	43.8	2.9	29.0	148.3
RS 968	Red	68.3	88.3	60.3	------	32.2	150.0
RS 902	Red	41.7	88.3	36.8	2.8	32.8	149.0
RS 910	Red	45.0	88.3	40.0	1.4	32.5	148.7
RS 961	Red	32.7	78.3	26.1	------	29.2	147.0
SY 100	Red	58.3	88.3	51.8	2.0	30.0	150.7
SY 547	Red	61.7	83.3	51.3	1.8	33.9	148.0
SY 912	White	18.3	83.3	15.0	------	34.0	148.3
W 204	Red	50.0	93.3	46.9	0.9	31.2	147.0
W 302	Red	71.7	93.3	67.0	0.8	31.2	149.7
W 303	Red	48.3	83.3	41.2	0.7	30.7	149.0
W 304	Red	46.7	91.7	42.8	0.5	32.7	149.0
W 305	Red	21.7	76.7	16.6	0.6	30.2	149.0
W 312	Red	55.0	88.3	48.8	------	32.2	148.0
W 316	Red	58.3	78.3	46.3	------	32.9	149.3
	CV	0.3	0.1	45.5	2.3	4.4	148.6
	LSD	18.0	15.1	21.5	-----	2.1	-----
	Mean	52.6	83.5	-----	-----	31.6	1.5

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Table 4. Conventional vs High Management Yield Results.

Line	Color	Tuscola - Conventional			Tuscola - High Management			HM - Conventional	
		Bu/A	% Moist	TW	Bu/A	% Moist	TW	Difference	Rank
AgriMAXX 413	Red	80.7	14.9	56.1	77.3	14.8	56.3	-3.4	74
AgriMAXX 438	Red	78.4	15.4	55.9	80.6	14.8	55.3	2.2	14
AgriMAXX 463	Red	73.5	14.7	55.2	73.9	14.6	55.8	0.4	31
AgriMAXX 473	Red	79.5	15.5	56.6	76.2	15.3	56.8	-3.3	72
AgriMAXX 486	Red	77.5	15.4	56.8	77.6	14.5	56.4	0.1	38
AgriMAXX 485	Red	75.0	15.9	57.0	76.4	15.4	57	1.4	22
AgriMAXX Exp 1884	Red	81.8	15.4	56.0	76.8	14.5	55.9	-5	89
AgriMAXX Exp 1889	Red	75.6	16.1	56.8	74.6	15.5	57.4	-1	47
LCS3204	Red	67.8	17.3	58.8	71.7	16.6	58.8	3.9	7
Diener 505W	Red	77.1	15.4	56.4	72.3	14.8	57	-4.8	87
9203	Red	73.1	16.7	57.9	72	16.7	57.8	-1.1	49
SRW 8550	Red	79.0	15.7	56.7	74.1	14.7	55.9	-4.9	88
SRW 9415	Red	79.2	15.6	57.0	76.9	14.9	57	-2.3	63
SRW 9606	Red	76.6	15.5	56.2	77.8	14.9	56.2	1.2	26
Ambassador	White	77.0	15.8	56.4	71	14.2	55.8	-6	97
Aubrey	White	70.4	17.6	59.1	72.2	17.2	59.6	1.8	17
DF 105 R	Red	77.1	14.8	56.2	82.2	14.8	56.4	5.1	4
DF 109 R	Red	79.4	15.5	55.7	77.1	15.3	56.4	-2.3	65
DF 112 R	Red	83.3	14.3	55.1	76	14.4	55.4	-7.3	102
DF 118 R	Red	79.7	15.4	57.4	74.6	14.9	56.7	-5.1	91
DF 218 W	White	73.8	16.1	57.1	75.3	15.5	57.8	1.5	20
DF EX 1801	Red	68.9	15.6	56.9	69.5	15.1	56.5	0.6	30
DF EX 1802	Red	70.5	15.0	56.0	70.6	14.8	56	0.1	38
DF EX 1803	Red	73.7	16.2	57.0	71.4	15	56.5	-2.3	63
DF EX 1804	Red	70.4	15.6	56.9	67.1	15.3	56.7	-3.3	73
DF EX 1805	Red	74.5	15.9	57.0	70.3	14.9	56.4	-4.2	81
DF EX 1807	Red	76.5	15.8	55.9	78.7	15.5	56	2.2	13
DF EX 1808	Red	78.3	15.6	56.3	70.3	14.8	56.1	-8	106
Dyna-Gro 9242W	White	78.3	16.2	57.6	69	15.5	57.5	-9.3	109
Dyna-Gro 9362W	White	76.3	16.8	58.4	73.9	16.4	58.4	-2.4	66
Dyna-Gro 9552	Red	76.4	15.3	57.0	74	15	56.8	-2.4	67
Dyna-Gro 9611W	White	79.9	15.0	56.5	74.9	16.2	57.8	-5	89
Dyna-Gro 9701	Red	79.4	15.7	56.7	77	15.6	57.3	-2.4	67
Dyna-Gro 9811	Red	78.9	15.7	56.5	75.2	15.4	56.8	-3.7	78
Dyna-Gro 9862	Red	78.1	15.9	57.3	68.9	15.1	56.2	-9.2	108
Dyna-Gro WX17775	Red	79.9	15.1	56.3	76.8	14.1	55.2	-3.1	71
Dyna-Gro WX18724	Red	69.8	15.8	57.0	70.7	14.8	56.8	0.9	29
Dyna-Gro WX18751W	White	75.1	15.3	56.2	71.5	14.3	56.1	-3.6	76
Dyna-Gro WX18752W	White	69.0	14.9	55.7	70.9	14.6	55.6	1.9	16
Glacier	White	73.9	16.6	57.7	75.5	15.8	57.8	1.6	19
HS 338 R	Red	78.1	17.1	58.7	74.4	16.7	58.4	-3.7	77
HS EX 18R	Red	78.1	16.0	57.7	73.5	15.8	57.4	-4.6	85
HS EX 19R	Red	77.9	15.3	56.8	76.3	15.3	57.2	-1.6	52
HS EX 20W	White	73.3	15.8	57.7	71.3	15.2	57.5	-2	59
ISF 610	Red	74.2	15.9	57.1	74.2	16.1	57.1	0	40

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Table 4. Conventional vs High Management Yield Results.

Line	Color	Tuscola - Conventional			Tuscola - High Management			HM - Conventional	
		Bu/A	% Moist	TW	Bu/A	% Moist	TW	Difference	Rank
ISF 718	Red	78.2	17.1	58.7	77.8	16.1	58.2	-0.4	44
L11621	Red	80.3	16.8	58.4	68.9	15.7	58.2	-11.4	110
L11639	Red	72.8	16.0	58.1	68.2	15.6	58	-4.6	85
6771 EXP	Red	78.4	15.8	56.9	72.8	15.1	56.2	-5.6	95
KWS260	White	78.1	15.9	57.4	75	16	57.9	-3.1	70
LWX 1825	Red	76.3	15.4	56.6	71.1	14.5	56.6	-5.2	92
LWX 1855	Red	77.9	15.9	56.9	76.2	14.9	56.5	-1.7	54
AC Mountain	White	74.4	15.3	56.3	78.6	14.8	56.3	4.2	6
E-6012	White	70.4	14.5	55.7	71.7	14.3	56	1.3	23
Jupiter	White	79.7	15.2	56.1	80.1	15.1	56.3	0.4	32
K171	Red	81.5	15.7	55.8	75.1	15	55.4	-6.4	100
K172	Red	74.3	15.4	55.6	66.5	15	55.2	-7.8	104
Kokosing	Red	75.5	15.9	57.5	71.2	15	56.8	-4.3	84
MCIA J1701	Red	81.9	17.0	57.3	73.7	15.8	57.5	-8.2	107
MCIA J1702	Red	72.1	14.8	55.6	70.3	15.6	56.8	-1.8	55
MCIA J1703	Red	73.9	15.2	56.1	77.6	14.4	56.2	3.7	9
MCIA J1704	Red	82.6	16.3	57.9	75.7	15.1	57.5	-6.9	101
MCIA Harpoon	Red	72.1	15.3	56.0	74.7	14	55.2	2.6	12
Flipper	Red	78.7	16.1	56.2	74.8	15.8	56	-3.9	79
MCIA Jonah	Red	74.8	15.8	56.0	75.1	15	56.8	0.3	34
MCIA K3	Red	76.8	14.8	55.6	71.2	13.9	54.8	-5.6	94
MCIA M6B1	Red	68.7	17.0	57.8	75.8	16.2	57.7	7.1	2
MCIA Red Devil	Red	66.7	15.6	56.7	64.9	15.4	57.2	-1.8	55
MCIA Red Dragon	Red	74.5	15.9	56.8	71.1	14.7	55.9	-3.4	74
MCIA Venus	White	68.4	15.7	56.0	70.4	14.8	56	2	15
MCIA W17-1	Red	77.4	16.3	57.0	73.3	15.8	56.8	-4.1	80
MCIA Whale	Red	71.1	15.6	56.1	74.5	15.3	56.6	3.4	10
ML17101	Red	68.5	16.0	57.9	75.7	16.1	58.5	7.2	1
ML17-2	Red	74.9	17.2	58.8	76.2	16.4	58.6	1.3	23
ML17-3	Red	75.5	14.7	56.1	80	14.2	55.7	4.5	5
MS17101	Red	77.3	15.6	56.8	78.6	15.3	56.6	1.3	23
MS17102	Red	69.0	15.3	55.3	67	15.1	55.1	-2	59
Starburst	Red	68.2	16.9	58.6	68.6	16.3	58.5	0.4	32
Sunburst	Red	78.0	16.0	58.5	70.1	16.3	58.7	-7.9	105
MI14R0009	Red	72.7	16.9	57.9	68.5	16.6	58.3	-4.2	81
MI14R0011	Red	73.3	16.7	58.9	73.6	16.2	58.5	0.3	34
MI14R1140	Red	77.2	16.2	57.9	76.9	15.8	57.3	-0.3	43
MI14W0003	White	72.3	16.1	56.4	72.3	15.4	56.8	0	40
Whitetail	White	80.7	14.9	55.7	74.9	14.3	55.4	-5.8	96
MI14W0190	White	77.4	15.3	56.9	76.4	15.5	57.1	-1	47
MI14W0742	White	70.2	15.3	55.6	67.7	14.9	55.9	-2.5	69
MI14W0901	White	75.9	15.7	57.3	71.7	15.5	57.9	-4.2	81
MI14W0906	White	72.3	14.6	56.5	70.2	13.3	55.1	-2.1	62
MI14W1039	White	76.1	14.8	55.7	77.6	14.4	56.2	1.5	20

2018 Michigan State University Wheat Performance Trials

Table 4. Conventional vs High Management Yield Results.

Line	Color	Tuscola - Conventional			Tuscola - High Management			HM - Conventional	
		Bu/A	% Moist	TW	Bu/A	% Moist	TW	Difference	Rank
MI14W1046	White	77.1	15.7	56.5	77.3	15.1	56	0.2	36
MI15R0068	Red	78.8	15.1	56.0	72.8	15	56.2	-6	97
MI15R0388	Red	73.9	15.8	56.7	77.7	15.1	56.3	3.8	8
MI15W0193	White	72.4	14.9	54.9	72.4	14.4	55.1	0	40
MI15W0461	White	78.6	16.2	57.9	71.1	15.8	57.4	-7.5	103
VA09W-192WS-29	White	66.4	15.8	57.1	69.7	14.8	56.5	3.3	11
RS 968	Red	74.8	15.3	56.8	75.8	15	56.7	1	28
RS 902	Red	72.1	15.8	56.2	71.5	15.6	56.7	-0.6	45
RS 910	Red	78.0	16.6	57.5	76.4	14.9	56.5	-1.6	51
RS 961	Red	76.1	16.2	57.3	70.1	15.1	56.3	-6	97
SY 100	Red	78.6	14.9	54.7	76.9	14.6	54.4	-1.7	53
SY 547	Red	76.2	16.0	57.1	74.8	16	58	-1.4	50
SY 912	White	62.6	16.6	57.7	60.6	16.1	57.2	-2	59
EX 808	Red	72.1	15.6	57.2	73.7	15.3	57.3	1.6	18
W 204	Red	76.7	15.8	57.0	82	15.6	56.9	5.3	3
W 302	Red	79.0	16.1	56.4	78.2	15.3	56.1	-0.8	46
W 303	Red	74.1	16.1	57.0	74.3	16.1	57.4	0.2	36
W 304	Red	74.9	16.1	56.5	76.1	15.6	56.8	1.2	27
W 305	Red	78.2	16.3	57.4	72.8	15.9	57.6	-5.4	93
W 312	Red	78.1	14.8	55.7	76.2	14.7	56.2	-1.9	57
W 316	Red	79.2	15.2	57.5	77.3	15	57	-1.9	58
	CV	3.3	2.4	0.7	3.6	2.1	0.6		
	LSD	3.4	0.5	0.6	5.3	0.6	0.7		
	Mean	75.4	15.8	56.8	73.7	15.3	56.8		

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Table 5. Milling and baking qualities.

Line	Color	Percent Flour Yield	Percent Protein In Flour (at 14%)	Softness Equivalent Percent	Sodium Carbonate SRC (%)	Lactic Acid SRC (%)	Cookie Diameter (cm)	NIR Kernel Protein	SKCS Kernel Hard
AgriMAXX 413	Red	70.2	8.2	53.9	64.5	80.7	19.1	9.8	30.9
AgriMAXX 438	Red	71.1	7.4	63.6	63.8	103.1	19.3	9.0	11.0
AgriMAXX 463	Red	65.1	8.7	53.9	68.5	104.2	18.6	10.2	22.8
AgriMAXX 473	Red	-----	-----	-----	-----	-----	-----	-----	-----
AgriMAXX 486	Red	-----	-----	-----	-----	-----	-----	-----	-----
AgriMAXX 485	Red	-----	-----	-----	-----	-----	-----	-----	-----
AgriMAXX Exp 1884	Red	-----	-----	-----	-----	-----	-----	-----	-----
AgriMAXX Exp 1889	Red	-----	-----	-----	-----	-----	-----	-----	-----
LCS3204	Red	-----	-----	-----	-----	-----	-----	-----	-----
Diener 505W	Red	-----	-----	-----	-----	-----	-----	-----	-----
9203	Red	-----	-----	-----	-----	-----	-----	-----	-----
SRW 8550	Red	-----	-----	-----	-----	-----	-----	-----	-----
SRW 9415	Red	-----	-----	-----	-----	-----	-----	-----	-----
SRW 9606	Red	-----	-----	-----	-----	-----	-----	-----	-----
Ambassador	White	71.1	7.5	58.6	62.8	86.8	19.0	9.5	6.1
Aubrey	White	68.3	8.5	56.4	65.4	98.3	18.7	10.6	24.1
DF 105 R	Red	69.6	8.2	53.2	64.6	80.4	19.0	10.0	28.4
DF 109 R	Red	70.6	7.9	62.5	64.5	107.0	19.4	9.5	13.4
DF 112 R	Red	69.7	7.7	54.4	65.8	84.7	18.8	9.3	25.9
DF 118 R	Red	-----	-----	-----	-----	-----	-----	-----	-----
DF 218 W	White	-----	-----	-----	-----	-----	-----	-----	-----
DF EX 1801	Red	-----	-----	-----	-----	-----	-----	-----	-----
DF EX 1802	Red	-----	-----	-----	-----	-----	-----	-----	-----
DF EX 1803	Red	69.2	8.3	59.3	65.2	99.8	19.0	10.2	17.1
DF EX 1804	Red	69.1	8.3	59.0	65.2	94.5	19.0	10.3	18.1
DF EX 1805	Red	70.0	7.8	57.1	65.0	110.8	18.7	9.4	18.4
DF EX 1807	Red	67.5	8.5	58.5	63.9	112.7	19.3	9.8	16.6
DF EX 1808	Red	-----	-----	-----	-----	-----	-----	-----	-----
Dyna-Gro 9242W	White	-----	-----	-----	-----	-----	-----	-----	-----
Dyna-Gro 9362W	White	-----	-----	-----	-----	-----	-----	-----	-----
Dyna-Gro 9552	Red	69.1	7.8	61.6	67.4	99.5	18.6	9.8	12.6
Dyna-Gro 9611W	White	-----	-----	-----	-----	-----	-----	-----	-----
Dyna-Gro 9701	Red	-----	-----	-----	-----	-----	-----	-----	-----
Dyna-Gro 9811	Red	-----	-----	-----	-----	-----	-----	-----	-----
Dyna-Gro 9862	Red	-----	-----	-----	-----	-----	-----	-----	-----
Dyna-Gro WX17775	Red	-----	-----	-----	-----	-----	-----	-----	-----
Dyna-Gro WX18724	Red	-----	-----	-----	-----	-----	-----	-----	-----
Dyna-Gro WX18751W	White	-----	-----	-----	-----	-----	-----	-----	-----
Dyna-Gro WX18752W	White	-----	-----	-----	-----	-----	-----	-----	-----
Glacier	White	67.8	8.6	58.1	65.1	103.8	18.2	10.4	21.6
HS 338 R	Red	-----	-----	-----	-----	-----	-----	-----	-----
HS EX 18R	Red	-----	-----	-----	-----	-----	-----	-----	-----
HS EX 19R	Red	-----	-----	-----	-----	-----	-----	-----	-----
HS EX 20W	White	-----	-----	-----	-----	-----	-----	-----	-----
ISF 610	Red	-----	-----	-----	-----	-----	-----	-----	-----
ISF 718	Red	-----	-----	-----	-----	-----	-----	-----	-----

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Table 5. Milling and baking qualities.

Line	Color	Percent Flour Yield	Percent Protein In Flour (at 14%)	Softness Equivalent Percent	Sodium Carbonate SRC (%)	Lactic Acid SRC (%)	Cookie Diameter (cm)	NIR Kernel Protein	SKCS Kernel Hard
L11621	Red	-----	-----	-----	-----	-----	-----	-----	-----
L11639	Red	-----	-----	-----	-----	-----	-----	-----	-----
6771 EXP	Red	-----	-----	-----	-----	-----	-----	-----	-----
KWS260	White	-----	-----	-----	-----	-----	-----	-----	-----
LWX 1825	Red	-----	-----	-----	-----	-----	-----	-----	-----
LWX 1855	Red	-----	-----	-----	-----	-----	-----	-----	-----
AC Mountain	White	69.6	8.0	54.0	63.3	79.6	19.0	9.5	18.9
E-6012	White	-----	-----	-----	-----	-----	-----	-----	-----
Jupiter	White	69.2	7.8	57.3	67.3	90.6	18.8	9.7	18.3
MCIA Jonah	Red	-----	-----	-----	-----	-----	-----	-----	-----
K172	Red	-----	-----	-----	-----	-----	-----	-----	-----
Kokosing	Red	-----	-----	-----	-----	-----	-----	-----	-----
MCIA J1701	Red	-----	-----	-----	-----	-----	-----	-----	-----
MCIA J1702	Red	-----	-----	-----	-----	-----	-----	-----	-----
MCIA J1703	Red	-----	-----	-----	-----	-----	-----	-----	-----
MCIA J1704	Red	-----	-----	-----	-----	-----	-----	-----	-----
MCIA Harpoon	Red	65.7	8.4	55.4	68.5	99.4	18.7	9.7	22.4
Flipper	Red	-----	-----	-----	-----	-----	-----	-----	-----
MCIA K3	Red	-----	-----	-----	-----	-----	-----	-----	-----
MCIA M6B1	Red	-----	-----	-----	-----	-----	-----	-----	-----
MCIA Red Devil	Red	66.9	8.6	57.4	69.5	93.1	18.7	10.3	31.8
MCIA Red Dragon	Red	69.7	7.9	58.7	65.4	110.8	19.0	9.6	8.4
MCIA Venus	White	71.1	7.6	57.4	67.6	87.7	18.3	9.1	22.9
MCIA W17-1	Red	-----	-----	-----	-----	-----	-----	-----	-----
MCIA Whale	Red	68.1	7.8	56.9	69.3	96.5	18.8	9.7	24.5
ML17101	Red	-----	-----	-----	-----	-----	-----	-----	-----
ML17-2	Red	-----	-----	-----	-----	-----	-----	-----	-----
ML17-3	Red	-----	-----	-----	-----	-----	-----	-----	-----
MS17101	Red	-----	-----	-----	-----	-----	-----	-----	-----
MS17102	Red	68.0	7.9	53.7	66.0	108.3	18.2	10.1	25.0
Starburst	Red	-----	-----	-----	-----	-----	-----	-----	-----
Sunburst	Red	64.2	8.2	51.1	76.0	97.1	17.6	9.9	46.6
MI14R0009	Red	67.1	7.1	56.3	67.7	92.6	18.3	8.6	22.5
MI14R0011	Red	64.3	7.4	53.2	75.2	101.4	17.8	9.2	39.7
MI14R1140	Red	-----	-----	-----	-----	-----	-----	-----	-----
MI14W0003	White	-----	-----	-----	-----	-----	-----	-----	-----
Whitetail	White	70.7	6.9	62.6	68.0	92.0	18.9	8.9	6.8
MI14W0190	White	69.1	7.5	53.7	64.8	88.0	18.8	9.3	28.3
MI14W0742	White	-----	-----	-----	-----	-----	-----	-----	-----
MI14W0901	White	-----	-----	-----	-----	-----	-----	-----	-----
MI14W0906	White	-----	-----	-----	-----	-----	-----	-----	-----
MI14W1039	White	-----	-----	-----	-----	-----	-----	-----	-----
MI14W1046	White	-----	-----	-----	-----	-----	-----	-----	-----

2018 Michigan State University Wheat Performance Trials

Table 5. Milling and baking qualities.

Line	Color	Percent Flour Yield	Percent Protein In Flour (at 14%)	Softness Equivalent Percent	Sodium Carbonate SRC (%)	Lactic Acid SRC (%)	Cookie Diameter (cm)	NIR Kernel Protein	SKCS Kernel Hard
MI15R0068	Red	-----	-----	-----	-----	-----	-----	-----	-----
MI15R0388	Red	-----	-----	-----	-----	-----	-----	-----	-----
MI15W0193	White	-----	-----	-----	-----	-----	-----	-----	-----
MI15W0461	White	-----	-----	-----	-----	-----	-----	-----	-----
VA09W-192WS-29	White	70.4	7.9	54.3	66.4	72.4	18.2	9.8	16.4
RS 968	Red	-----	-----	-----	-----	-----	-----	-----	-----
RS 902	Red	-----	-----	-----	-----	-----	-----	-----	-----
RS 910	Red	67.3	8.1	58.4	70.5	103.5	18.3	9.7	33.9
RS 961	Red	-----	-----	-----	-----	-----	-----	-----	-----
SY 100	Red	70.0	7.1	59.3	63.8	80.6	19.5	9.2	8.9
SY 547	Red	-----	-----	-----	-----	-----	-----	-----	-----
SY 912	White	-----	-----	-----	-----	-----	-----	-----	-----
EX 808	Red	-----	-----	-----	-----	-----	-----	-----	-----
W 204	Red	67.2	6.7	62.3	69.4	81.2	19.5	8.7	23.5
W 302	Red	65.6	7.5	52.2	69.1	82.3	18.2	9.1	40.2
W 303	Red	-----	-----	-----	-----	-----	-----	-----	-----
W 304	Red	70.6	7.2	64.4	63.8	84.4	19.9	9.2	6.7
W 305	Red	-----	-----	-----	-----	-----	-----	-----	-----
W 312	Red	-----	-----	-----	-----	-----	-----	-----	-----
W 316	Red	-----	-----	-----	-----	-----	-----	-----	-----

Varieties entered in the 2018 Michigan State University Wheat Performance Trials

AgriMAXX Wheat Company
AgriMAXX 413
AgriMAXX 438
AgriMAXX 463
AgriMAXX 473
AgriMAXX 486
AgriMAXX 485
AgriMAXX Exp 1884
AgriMAXX Exp 1889

Albert Lea Seed
LCS3204

CROPLAN by Winfield United
9203
SRW 8550
SRW 9415
SRW 9606

DF Seeds Inc.
Ambassador
Aubrey
DF 105 R
DF 109 R
DF 112 R
DF 118 R
DF 218 W

Dyna-Gro Seed
Dyna-Gro 9242W
Dyna-Gro 9362W
Dyna-Gro 9552
Dyna-Gro 9611W
Dyna-Gro 9701
Dyna-Gro 9811
Dyna-Gro 9862
Dyna-Gro WX17775
Dyna-Gro WX18724
WX18751W
WX18752W
W 316

Harrington Seeds Inc.
Glacier
HS 338 R
HS EX 18R
HS EX 19R
HS EX 20W

Irrer Seed Farm
ISF 610
ISF 718
L11621
L11639
6771 EXP

KWS Cereals
KWS260

Legacy Seeds Inc.
LWX 1825
LWX 1855

Michigan Crop Improvement Association
AC Mountain
E-6012
Jupiter
Kokosing
MCIA Harpoon
Flipper
MCIA Red Devil
MCIA Red Dragon
MCIA Venus
MCIA Whale
Starburst
Sunburst

Michigan State University
MI14R0009
MI14R0011
MI14R1140
MI14W0003
Whitetail
MI14W0190
MI14W0742
MI14W0901
MI14W0906
MI14W1039
MI14W1046
MI15R0068
MI15R0388
MI15W0193
MI15W0461
VA09W-192WS-29

Rupp Seeds Inc.
9xp816
RS 902
RS 910
RS 961

Syngenta - AgriPro
SY 100
SY 547
SY 912

Wellman Seeds Inc.
W 204
W 302
W 303
W 304
W 305
W 312

Organizations Participating in the 2018 Michigan State University Wheat Performance Trials

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7167 Highbanks Road
Mascoutah, IL 62258
Phone: 855-629-9432

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

BioTown Seeds
P.O. Box 299
Reynolds, IN 47980
Phone: 219-984-6038

CROPLAN by Winfield United
129 Strickland Hinton Road
Zebulon, NC 27597
Phone: 804-291-6785

D.F. Seeds, Inc.
P.O. Box 159
905 S. Jackson St.
Dansville, MI 48819
Phone: 517-623-6161

Dyna-Gro Seed
4648 S Garfield Rd
Auburn, MI 48611
Phone: 989-662-0000

Harrington Seeds, Inc.
2586 Bradleyville Road
Reese, MI 48757
Phone: 989-868-4750

Irrer Seed Farm
9621 Dexter Trail
Fowler, MI 48835
Phone: 517-719-5710

KWS Cereals
4101 Colleen Drive
Champaign, IL 61822
Phone: 330-439-3341

Legacy Seeds Inc.
290 Depot Street
PO Box 68
Scandinavia, WI 54977
Phone: 715-467-2555

Michigan Crop Improvement Association
2905 Jolly Road
Okemos, MI 48864
Phone: 517-332-3546

Rupp Seeds, Inc.
17919 Co Rd. B
Wauseon, OH 43567
Phone: 419-337-1841

Syngenta
14031 Trestle Road
Highland, IL 64229
Phone: 765-412-5420

Wellman Seeds, Inc.
23778 Delphos Jennings Road
Delphos, OH 45833
Phone: 800-717-7333