

2022 Michigan State Wheat Performance Trials

Photo: Wheat Performance Trials, Tuscola County



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2022 Michigan State Wheat Performance Trials

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Planting last fall was a bit of a challenge. Frequent rainfall slowed drybean and soybean harvest which delayed wheat planting in some areas. Heavy rainfall after planting caused water stress including yellowing of plants and drown out in low areas of the field. Areas with wheel traffic from planting were affected the most. Fields planted that were able to get plants established before heavy rains did very well. In some cases, this was early planted wheat – in other cases it was later planted wheat. It just depended on where you were in the state and when the rain fell on your fields. Planted acres of wheat were 470,000, down 140,000 from a year ago. Water stressed plants that survived the fall did winterkill in many fields, reducing the stand and yield potential.

Spring conditions were fairly good for putting nitrogen, herbicides and fungicides on wheat. We had some cold temperatures that slowed herbicide application, but for the most part, spring applications went okay for most of the wheat crop. Due to the wet fall, crop condition ratings were down from a year ago through most of the spring and early summer.

Crop quality at harvest was much improved this year compared to last year. There have been no reports of preharvest sprout (low falling numbers) and due to dry conditions during flowering, fusarium head blight infections and vomitoxin levels are low or even not detectable. Test weights are widely ranging. Early harvested wheat had good yields (better than expected) with good test weights. Later harvested wheat has suffered from lower test weight. Once physiological maturity was reached, dry down was slow which extended our grain fill period. Then higher temperatures and dry conditions moved in and rapidly completed dry down.

Temperatures across the region were similar to '21. We did not have the excessive heat in '22 compared to '20. There were more days above 85 degrees compared with last year, but days above 90 degrees were similar. Total monthly rainfall was distributed more evenly between months, however there were dry periods in June and July. On June 28, most of the thumb and parts of central Michigan were listed on the drought monitor as abnormally dry (D0) and by July 19 most of that area had progressed to moderate drought (D1).

Figure 1. Number of days above 90 F, 85 F and rainfall data from Michigan Automated Weather Station Network, MSU for three of the MSU Wheat Variety Trial Locations for the 2020, 2021 and 2022 growing seasons. 2022 data was reported through July 26, 2022.

	2020			2021			2022		
	Pigeon	Richville	Mason	Pigeon	Richville	Mason	Pigeon	Richville	Mason
Above 90 F	10	13	10	2	4	2	5	5	2
Above 85 F	30	33	30	15	16	19	22	24	22
April (in)	2.2	2.1	2.6	1.8	0.7	1.5	2.19	2.4	4.03
May (in)	3.3	3.8	4.2	1.2	1.2	2.6	2.13	1.64	3.85
June (in)	1.9	1.4	5.8	1.9	4.9	7	1.58	2.15	2.43
July (in)	2.8	3.2	2.1	2.5	1	1.5	0.93	2.27	2.26

Choosing Varieties

Variety selection is best made using at least three years of data. Varieties selected using data across all locations and multiple years 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 1 provides information on which varieties are top performers in each of the seven trial locations in 2020 through 2022. 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 Design

The 2022 State Wheat Performance Trial entries were planted in 7 counties: Isabella, Hillman, Ingham, Huron, Montcalm, Sanilac and Tuscola. Sanilac location was not harvested due to severe water damage from fall rains post-planting. 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 1.8 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 additional conventionally managed trials at Tuscola and Isabella Counties. Under high management, an additional 30 pounds of nitrogen was applied using streamer nozzles and 28% UAN. Quilt Xcel fungicide was tank mixed with herbicide and applied at Feekes 6. Prosaro fungicide was applied to control late season fungal diseases with application coinciding with the average flowering date of the trial location.

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.

Seven 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 125 entries (63 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 2022. 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 2022 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 Design' 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 2022 yield data contains the multi-site yield averages of only the high management sites and does not include the conventionally managed yield data from Tuscola and Isabella Counties. The conventionally managed 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 2021 deoxynivalenol (DON, VOM) numbers are reported. Once 2022 data from the lab are back, this report will be updated. 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. 2021 grain samples will be submitted for DON analysis and will be reported later. **Preharvest sprouting (PHS)** samples were collected from Ingham County and subjected to misting in the greenhouse for three days and rated for the degree of sprouting. PHS ratings were conducted using a 0-9 scale with 0 having no sprouting and 9 having fully emerged radicle and roots from over 80% of the spike.

The **flowering date** indicates the average number of days past January 1st that a given entry reached the point where 1/2 of its heads were flowering. **Physiological maturity** was recorded as the date when 50% of the peduncles in a plot were turning yellow. **Plant height** is reported as the distance in inches from the ground to the tip of average heads in a plot.

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 2020 crop year.

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

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 and Isabella Counties. 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 6 plus Quilt Xcel fungicide at Feekes 6.0, followed by 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 3.0 and 2.1 bushels per acre higher for the high management treatment at Tuscola and Isabella respectively. Both of these sites had water damage from fall rains.

Milling and Baking Quality

Table 5 contains data for milling and baking quality. Quality data are from the 2021 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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2022 Michigan State University Wheat Performance Trials

Appendix A. Trial Site Descriptions for 2022 MSU Wheat Performance Trials.

	FUSARIUM HEAD BLIGHT NURSERY	HURON COUNTY	Isabella County		Montcalm COUNTY	SANILAC COUNTY	TUSCOLA COUNTY		INGHAM	HILLMAN
			CONV. MANAGED	HIGH MANAGED			CONV. MANAGED	HIGH MANAGED		
COOPERATOR	Michigan State University	Darwin Sneller	Hauck Seed Farm		Woods Seed Farm	JGDM Farms	Micah Laux		Michigan State University	Todd Ableidinger
NEAREST CITY	Lansing	Seabwing	Rosebush		Edmore	Sandusky	Reese		Meridian TWP	Hillman
PLANTING DATE	October 19, 2021	October 20, 2021	October 20, 2021		October 27, 2021	October 6, 2021	September 20, 2021		September 21, 2021	September 22, 2021
HARVEST DATE	July 26, 2022	July 18, 2022	July 20, 2022		July 22, 2022	N/A	July 8, 2022		July 10, 2022	July 25, 2022
SOIL TYPE	Capac loam, 0 to 4 percent slopes & Colwood-Brookston loams	Tappan loam, 0 to 1 percent slopes	Ziegenfuss loam & Ithaca loam, 0 to 4 percent slopes		Tekenink-Spinks loamy sands, 6 to 12 percent slopes	Conover loam, 0 to 3 percent slopes & Parkhill loam and clay loam, 0 to 1 percent slopes	Tappan-Londo loams, 0 to 3 percent slopes		Conover loam, 0 to 4 percent slopes	Algonquin-Springport complex, 0 to 6 percent slopes
PRE-PLANT FERTILIZER	100# 11-52-0 100#0-0-60	100# 11-52-0 50# 0-0-60	100# 11-52-0 100# 0-0-62		100# 46-0-0 100# 0-60	112.50# 12-40-0 10%\$ 1%Z 22.5# 46-0-0 90# 0-0-62	250# 13-13-21 5%\$ 1%B 5%M9%Zn		350# 10-19-18 7.7% s	N/A
COMMENTS	Inoculated / Misted Fusarium Head Blight Screening Nursery.	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 Applied and Fungicides were applied	Site dropped due to water damage	90 lbs. Nitrogen and no Fungicides were applied	Additional 30 lbs. Nitrogen and Fungicides were applied	Additional 30 lbs. Nitrogen and Fungicides were applied	Additional 30 lbs. Nitrogen were applied
AVERAGE YIELD (BUSHEL / ACRE)	N/A	107.1	79.9	82.5	67.1	N/A	90.7	93.4	106.4	85.2
AVERAGE TEST WEIGHT (LBS. / BUSHEL)	N/A	59.3	55.8	55.7	55.5	N/A	60.1	59.8	60.4	56.7
AVERAGE PERCENT GRAIN MOISTURE AT HARVEST	N/A	19.2	14.4	14.7	11.2	N/A	15.5	15.4	14.3	22.0
2022 DATA RECORDED (NUMBER OF REPS)	3	3	3	3	3	0	3	3	3	3
FLAG LEAF FUNGICIDE APPLICATION DATE	N/A	May 24, 2022	N/A	May 24, 2022	May 24, 2022	N/A	N/A	May 23, 2022	May 20, 2022	N/A
FLOWERING FUNGICIDE APPLICATION DATE	N/A	June 8, 2022	N/A	June 8, 2022	June 8, 2022	N/A	N/A	June 2, 2022	June 1, 2022	N/A
GREEN-UP FERTILIZER	90lbs Nitrogen 20 lbs Sulfur	90lbs Nitrogen 20lbs Sulfur	90lbs Nitrogen	90lbs Nitrogen 20 lbs Sulfur	90lbs Nitrogen 20lbs Sulfur	90lbs Nitrogen	90lbs Nitrogen	90lbs Nitrogen	90lbs Nitrogen	75lbs Nitrogen

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Table 1 : Multi-Year Performance Summary (Note: Tables sorted by 2022 High Management Yield, white wheat's grouped before red)

Line	Company	Seed Treatment	Seed Color	Yield (Bu/A adjusted to 13.5% Moisture)																									
				2022				Hillman				Huron				Ingham				Isabella			Montcalm			Tuscola			
				Overall	Rank	21-22	3 Yr Avg	2022	Rank	21-22	3 Yr Avg	2022	Rank	21-22	3 Yr Avg	2022	Rank	21-22	3 Yr Avg	2022	Rank	21-22	2022	Rank	21-22	2022	Rank	21-22	3 Yr Avg
AgriMAXX Mackinac	AgriMAXX Wheat Company	PRIME ST	W	94.2	1	---	---	90.7	1	---	---	112.2	4	---	---	110.5	5	---	---	84.4	5	---	---	70.8	6	96.6	4	---	---
KWS430	KWS Cereals	CruiserMaxx Vibrance Cereals	W	94.1	2	---	---	86.6	5	---	---	105.9	11	---	---	111.4	3	---	---	89.4	3	---	---	79.5	1	91.5	14	---	---
DF 271 W	DF Seeds, LLC	DFender Plus	W	93.7	3	---	---	77.8	15	---	---	118.6	1	---	---	115.3	1	---	---	78.2	16	---	---	77.3	2	94.7	7	---	---
Ambassador	DF Seeds, LLC	DFender	W	92.8	4	92.8	93.7	89.0	2	93	97.2	115.6	3	95.5	99.8	104.9	12	89.3	85.6	89.9	2	95.2	62.9	17	94.8	6	90.9	92.0	
DF 271 W	DF Seeds, LLC	DFender	W	92.5	5	95.1	---	80.0	14	86	---	104.7	13	92.4	---	115.3	1	98.1	---	78.0	17	93.1	76.6	3	100.6	1	106.0	---	
ISF 1115	Irrer Seed Farm	Vibrance Extreme	W	91.4	6	93.3	---	82.2	9	88	---	106.3	9	91.2	---	111.0	4	93.6	---	81.0	13	94.3	70.9	5	96.8	3	99.4	---	
Jupiter	MCIA	Vibrance Extreme	W	91.2	7	93.4	94.8	77.8	16	83	90.6	115.8	2	99.0	102.4	109.2	7	91.6	89.3	85.7	4	96.2	64.0	14	94.7	8	97.6	96.9	
M120W0035	MSU	Dividend Extreme	W	90.2	8	---	---	82.0	10	---	---	111.9	6	---	---	107.4	9	---	---	82.5	10	---	---	66.5	9	91.1	16	---	---
KWS428	KWS Cereals	CruiserMaxx Vibrance Cereals	W	90.0	9	---	---	76.3	19	---	---	104.4	14	---	---	107.2	10	---	---	91.4	1	---	---	67.2	8	93.7	10	---	---
DF 261 W	DF Seeds, LLC	DFender	W	89.5	10	90.4	---	85.0	6	90	---	102.3	15	85.3	---	109.4	6	89.9	---	79.3	15	89.0	62.1	18	99.0	2	98.2	---	
M120W0121	MSU	Dividend Extreme	W	89.5	11	---	---	87.5	4	---	---	100.4	20	---	---	107.8	8	---	---	81.5	12	---	---	69.9	7	89.8	18	---	---
M118W1170	MSU	Dividend Extreme	W	89.3	12	---	---	81.6	12	---	---	104.9	12	---	---	98.4	20	---	---	82.8	8	---	---	72.6	4	95.5	5	---	---
DF 292 W	DF Seeds, LLC	DFender	W	88.9	13	---	---	81.9	11	---	---	106.0	10	---	---	103.2	15	---	---	83.8	7	---	---	65.4	11	93.3	11	---	---
Whitetail	MCIA	Vibrance Extreme	W	87.8	14	89.3	93.5	81.4	13	87	94.5	112.1	5	92.0	97.1	102.4	16	86.8	87.2	75.3	21	88.0	66.1	10	89.6	19	92.3	95.0	
KWS431	KWS Cereals	CruiserMaxx Vibrance Cereals	W	87.4	15	---	---	83.2	8	---	---	100.9	19	---	---	102.3	17	---	---	82.1	11	---	---	63.6	15	92.0	12	---	---
Dyna-Gro 9242W	Dyna-Gro	Dyna Shield Foothold/Awaken ST	W	86.9	16	88.3	92.5	84.7	7	87	97.2	101.6	17	85.6	92.1	104.3	14	86.5	86.6	75.9	20	89.5	60.6	20	94.6	9	92.4	94.3	
Moonlight	MCIA	Vibrance Extreme	W	86.8	17	88.8	91.2	77.7	17	85	91.4	107.5	8	89.9	95.8	97.7	21	84.0	81.9	82.8	9	90.8	63.0	16	91.9	13	94.5	95.6	
Dyna-Gro 9082W	Dyna-Gro	Dyna Shield Foothold/Awaken ST	W	86.5	18	87.5	87.4	88.4	3	91	96.1	101.6	16	82.3	87.8	104.4	13	83.5	79.4	76.7	19	91.4	59.4	21	88.5	20	89.2	86.1	
M116W0133	MCIA	Vibrance Extreme	W	85.9	19	88.5	92.4	74.7	21	83	91.8	108.4	7	91.0	95.4	106.7	11	90.7	91.2	77.9	18	90.6	64.3	13	83.2	21	87.9	91.1	
AgriMAXX Piston	AgriMAXX Wheat Company	PRIME ST	W	85.6	20	---	---	75.8	20	---	---	101.5	18	---	---	100.8	19	---	---	79.5	14	---	---	65.0	12	91.1	15	---	---
AC Mountain	MCIA	Vibrance Extreme	W	85.2	21	86.0	88.0	77.0	18	84	88.3	96.6	21	82.5	89.7	102.1	18	84.5	83.8	84.2	6	90.3	60.7	19	90.4	17	88.6	90.0	
MCIA MARLIN	MCIA	Vibrance Extreme	R	97.2	1	95.5	99.8	93.9	10	96	105.6	115.5	3	96.7	104.3	106.0	39	88.9	86.0	88.0	5	98.1	79.4	1	100.6	7	98.4	103.3	
W 318	Wellman Seeds, Inc	Encase for Wheat	R	96.3	2	---	---	99.2	2	---	---	117.0	1	---	---	104.5	51	---	---	85.5	15	---	---	69.4	21	102.1	2	---	---
W 328	Wellman Seeds, Inc	Encase for Wheat	R	95.8	3	---	---	95.3	5	---	---	113.7	8	---	---	116.8	1	---	---	84.1	25	---	---	69.5	20	95.6	27	---	---
WX22741	Dyna-Gro	Dyna Shield Foothold/Awaken ST	R	95.7	4	---	---	100.7	1	---	---	109.8	19	---	---	112.5	11	---	---	83.0	29	---	---	67.6	31	100.7	6	---	---
MCIA Wharf	MCIA	Vibrance Extreme	R	95.6	5	95.6	98.3	90.9	21	93	99.4	114.9	4	93.3	99.7	112.3	13	95.0	94.1	81.9	38	95.2	76.3	3	97.4	20	101.3	100.1	
DF 119 R	DF Seeds, LLC	DFender	R	95.4	6	93.5	95.6	90.4	22	93	98.4	111.7	14	90.9	99.1	112.2	14	90.6	86.7	92.3	1	98.0	73.1	9	92.5	45	95.2	98.2	
KWS415	KWS Cereals	CruiserMaxx Vibrance Cereals	R	95.1	7	---	---	93.4	12	---	---	116.3	2	---	---	107.3	34	---	---	85.9	13	---	---	74.3	5	93.4	39	---	---
Dyna-Gro 9070	Dyna-Gro	Dyna Shield Foothold/Awaken ST	R	94.7	8	94.3	96.3	87.7	34	86	93.9	110.6	16	92.7	98.8	116.4	2	95.6	91.0	82.2	35	94.9	73.2	8	97.8	17	102.3	101.5	
KWS394	KWS Cereals	CruiserMaxx Vibrance Cereals	R	94.4	9	---	---	91.4	20	---	---	113.7	7	---	---	115.3	3	---	---	85.3	18	---	---	70.3	15	90.3	51	---	---
SY Viper	Grow Pro Genetics	CruiserMaxx Vibrance Cereals	R	94.2	10	92.2	96.1	81.3	53	84	96.2	109.7	20	93.7	100.0	110.2	30	91.8	90.4	85.4	17	95.9	77.9	2	100.7	5	95.6	97.7	
9xp051	Rupp Seeds, Inc	CruiserMaxx Vibrance Cereals	R	93.8	11	---	---	94.8	8	---	---	110.2	18	---	---	110.9	25	---	---	85.2	20	---	---	65.5	46	96.5	24	---	---
DF 131 R	DF Seeds, LLC	DFender	R	93.7	12	94.9	95.8	89.7	26	90	95.7	106.8	35	92.1	97.7	111.8	17	93.4	89.8	89.8	4	97.9	63.9	51	100.2	8	100.7	99.9	
MCIA Flipper	MCIA	Vibrance Extreme	R	93.6	13	93.9	97.5	88.0	30	91	101.5	109.3	23	87.8	97.0	110.7	27	91.4	89.5	85.4	16	97.0	63.3	57	104.9	1	102.2	102.0	
W 324	Wellman Seeds, Inc	Encase for Wheat	R	93.5	14	94.2	---	95.0	7	94	---	106.6	38	85.2	---	114.9	4	95.8	---	77.1	60	94.8	67.9	29	99.9	11	101.3	---	---
801	Albert Lea Seed - Viking	None	R	93.4	15	---	---	89.3	27	---	---	108.9	26	---	---	111.2	20	---	---	80.9	46	---	---	65.1	4	95.1	31	---	---
Synergy EXP2125	Synergy Ag	Surestand	R	93.3	16	---	---	93.9	11	---	---	114.3	6	---	---	105.8	40	---	---	85.0	21	---	---	74.8	48	96.3	25	---	---
WX22793	Dyna-Gro	Dyna Shield Foothold/Awaken ST	R	93.1	17	---	---	97.5	3	---	---	111.0	15	---	---	104.9	48	---	---	84.2	24	---	---	74.2	6	86.9	58	---	---
W 322	Wellman Seeds, Inc	Encase for Wheat	R	93.0	18	94.0	---	85.8	41	90	---	109.4	22	92.0	---	112.8	10	92.1	---	81.2	42	94.6	69.0	23	99.6	13	101.2	---	---
RS 977	Rupp Seeds, Inc	Rancona 100V	R	92.7	19	92.4	94.5	86.3	38	89	96.1	110.5	17	90.5	94.8	111.9	16	94.3	95.2	86.3	10	95.0	70.6	13	90.5	50	92.6	91.9	
DF 121 R	DF Seeds, LLC	DFender	R	92.4	20	95.9	---	92.3	15	91	---	106.4	41	95.6	---	111.4	18	94.7	---	81.3	41	95.9	65.1	47	98.1	15	102.7	---	---
AgriMAXX EXP 2222	AgriMAXX Wheat Company	PRIME ST	R	92.4	21	---	---	85.9	39	---	---	112.2	11	---	---	113.7	6	---	---	79.1	56	---	---	71.3	11	---	---	---	---
Haubert	Synergy Ag	Surestand	R	92.2	22	93.5	---	83.7	48	91	---	101.6	58	86.7	---	113.6	7	95.4	---	91.2	2	97.8	67.5	33	95.5	29	97.1	---	---
Synergy EXP2141	Synergy Ag	Surestand	R	92.0	23	---	---	87.8	33	---	---	108.8	27	---	---	104.4	52	---	---	83.5	28	---	---	69.7	18	97.9	16	---	---
Dyna-Gro 9002	Dyna-Gro	Dyna Shield Foothold/Awaken ST	R	91.7	24	93.2	95.1	90.2	24	93	98.7	109.6	21	90.9	97.3	106.3	37	90.7	89.1	87.4	7	96.6	63.8	52	93.1	40	94.8	95.2	
W 313	Wellman Seeds, Inc	Encase for Wheat	R	91.7	25	90.6	93.9	88.7	28	89	98.3	108.5	29	83.9	92.2	99.4	60	86.3	86.3	82.8	33	91.8	69.3	22	101.4	3	101.5	99.1	
MCIA Red Dragon	MCIA	Vibrance Extreme	R	91.7	26	93.2	94.3	85.9	40	90	99.1	112.4	9	91.8	95.8	108.9	33	91.3	86.7	83.7	27	95.7	66.2	41	93.0	41	97.0	95.5	
RS 912	Rupp Seeds, Inc	Rancona 100V	R	91.5	27	92.6	96.0	85.7	43	89	98.5	106.6	37	89.6	96.0	102.8	56	87.9	88.8	84.4	23	94.0	68.6	25	101.1	4	102.6	100.7	
Dyna-Gro 9172	Dyna-Gro	Dyna Shield Foothold/Awaken ST	R	91.3	28	92.6	95.2	82.7	51	90	96.8	102.2	57	83.7	93.2	111.4	19	91.8	92.0	86.2	11	96.7	67.2	35	98.3	14	100.4	98.8	
DF 112 R	DF Seeds, LLC	DFender	R	91.3	29	92.5	94.1	83.7	47	88	96.1	112.2	10	95.6	98.6	106.9	36	88.1	82.0	85.2	19	95.3	66.2	41	93.7	37	95.4	95.9	
AgriMAXX 505	AgriMAXX Wheat Company	PRIME ST	R	91.3	30	91.9	94.7	87.6	35	89	96.7	98.6	62	85.3	93.0	113.5	9	92.8	91.6	81.3	40	92.8	69.9	17	96.7	22	99.3	97.6	
M120R0011	MSU	Dividend Extreme	R	91.3	31																								

2022 Michigan State University Wheat Performance Trials

Table 1 : Multi-Year Performance Summary (Note: Tables sorted by 2022 High Management Yield, white wheat's grouped before red)

Line	Company	Seed Treatment	Seed Color	Yield (Bu/A adjusted to 13.5% Moisture)				Hillman				Huron				Ingham				Isabella			Montcalm		Tuscola							
				2022	2 Yr Avg	3 Yr Avg	20-22	2022	2 Yr Avg	3 Yr Avg	20-22	2022	2 Yr Avg	3 Yr Avg	20-22	2022	2 Yr Avg	3 Yr Avg	20-22	2022	2 Yr Avg	2022	Bu/A	Rank	2022	Bu/A	Rank	2022	Bu/A	Rank	21-22	20-22
				Overall	Rank	21-22	20-22	Bu/A	Rank	21-22	20-22	Bu/A	Rank	21-22	20-22	Bu/A	Rank	21-22	20-22	Bu/A	Rank	21-22	Bu/A	Rank	21-22	Bu/A	Rank	21-22	Bu/A	Rank	21-22	20-22
DF 121 R	DF Seeds, LLC	DFender Plus	R	90.4	46	---	---	80.7	56	---	---	106.1	43	---	---	112.3	12	---	---	78.2	59	---	69.7	19	95.2	30	---	---				
MCIA Jonah	MCIA	Vibrance Extreme	R	89.9	47	90.9	94.4	82.8	50	86	95.2	108.3	31	91.4	95.3	111.2	20	92.4	92.3	83.0	31	93.2	63.0	60	91.1	49	91.4	94.8				
MI20R0012	MSU	Dividend Extreme	R	89.6	48	---	---	91.9	18	---	---	105.0	47	---	---	97.6	64	---	---	84.9	22	---	64.1	50	94.4	34	---	---				
GP 381	Grow Pro Genetics	CruiserMaxx Vibrance Cereals	R	89.6	49	---	---	92.7	14	---	---	102.6	56	---	---	105.7	42	---	---	81.2	43	---	63.8	53	91.9	46	---	---				
KWS405	KWS Cereals	CruiserMaxx Vibrance Cereals	R	89.6	50	---	---	95.1	6	---	---	95.5	65	---	---	110.8	26	---	---	86.4	9	---	58.2	64	91.9	47	---	---				
MI20R0210	MSU	Dividend Extreme	R	89.6	51	---	---	78.9	62	---	---	106.7	36	---	---	113.8	5	---	---	74.9	65	---	67.8	30	95.5	28	---	---				
Dyna-Gro 9151	Dyna-Gro	Dyna Shield Foothold/Awaken ST	R	89.4	52	90.7	93.8	87.8	32	88	96.6	107.2	34	86.5	93.0	105.2	46	90.7	91.5	79.7	52	92.6	66.7	37	89.7	54	95.2	94.3				
HS 338 R	Harrington Seeds, Inc	CruiserMaxx Vibrance Cereals	R	89.2	53	90.8	93.9	85.7	42	89	97.3	100.7	60	84.9	92.3	100.6	59	88.7	87.9	86.0	12	95.3	67.4	34	94.7	32	96.0	98.1				
KWS414	KWS Cereals	CruiserMaxx Vibrance Cereals	R	89.1	54	---	---	79.7	60	---	---	105.5	45	---	---	104.5	50	---	---	81.9	37	---	67.0	36	95.7	26	---	---				
MCIA 2000	MCIA	Vibrance Extreme	R	88.7	55	92.1	---	80.9	54	85	---	104.2	50	90.0	---	105.1	47	91.3	---	80.4	51	94.7	67.5	32	94.1	36	99.5	---				
Dyna-Gro 9182	Dyna-Gro	Dyna Shield Foothold/Awaken ST	R	88.7	56	90.7	94.1	80.2	58	87	96.6	106.4	40	90.5	96.1	103.0	54	87.9	88.7	79.2	54	91.8	65.5	44	97.7	19	96.1	95.0				
AgriMAXX 513	AgriMAXX Wheat Company	PRIME ST	R	88.2	57	90.9	---	91.8	19	92	---	101.0	59	87.6	---	105.5	44	90.9	---	81.0	45	92.8	64.5	49	85.5	61	91.4	---				
9xp216	Rupp Seeds, Inc	CruiserMaxx Vibrance Cereals	R	87.9	58	---	---	80.8	55	---	---	108.3	32	---	---	90.5	65	---	---	87.3	8	---	68.0	27	92.8	42	---	---				
SY 576	Grow Pro Genetics	CruiserMaxx Vibrance Cereals	R	87.8	59	88.6	89.4	90.3	23	91	95.1	103.8	51	85.8	90.9	99.3	61	84.0	83.7	82.5	34	91.4	60.9	63	90.0	52	90.5	87.9				
W 300	Wellman Seeds, Inc	Encase for Wheat	R	87.7	60	87.8	---	88.4	29	90	---	103.6	52	84.6	---	99.0	63	85.6	---	79.0	57	85.8	63.8	55	92.7	44	93.5	---				
MCIA Whale	MCIA	Vibrance Extreme	R	87.7	61	87.8	91.3	79.8	59	83	92.7	98.0	63	84.4	92.2	111.0	23	89.2	91.0	87.8	6	96.1	63.2	59	86.6	59	86.6	89.3				
MI16R0906	MSU	Dividend Extreme	R	86.9	62	90.7	93.7	76.3	64	82	91.7	106.5	39	91.3	97.5	105.6	43	91.2	90.8	85.7	14	95.3	63.8	54	83.2	62	93.4	94.9				
Sunburst	MCIA	Vibrance Extreme	R	86.6	63	88.9	92.4	79.3	61	86	94.4	99.9	61	87.4	92.6	101.9	57	86.3	89.0	80.6	50	92.0	68.1	26	89.9	53	93.1	93.8				
SY 547	Grow Pro Genetics	CruiserMaxx Vibrance Cereals	R	86.5	64	89.6	93.1	82.5	52	88	97.4	104.2	49	85.0	92.2	106.2	38	87.5	87.8	76.3	63	92.4	61.4	62	88.1	57	94.8	94.8				
KWS411	KWS Cereals	CruiserMaxx Vibrance Cereals	R	86.3	65	---	---	73.8	65	---	---	104.3	48	---	---	102.8	55	---	---	80.9	47	---	66.5	38	89.5	55	---	---				
			Mean	90.9		91.9	94.2	86.1		88.9	96.2	107.7		89.7	95.6	107.1		90.3	88.9	82.8		93.9	67.5		94.2		96.6	96.1				
			CV	2.9		3.0	2.5	6.4		3.4	2.6	3.3		3.8	3.0	2.7		1.7	1.7	7.0		2.5	7.2		4.4		3.0	2.6				
			LSD	3.0		2.2	2.1	8.9		4.2	3.9	5.8		5.0	3.8	4.6		4.6	3.8	9.3		4.5	7.9		6.7		4.7	4.2				

2022 Michigan State University Wheat Performance Trials

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

Line	Seed Color	Overall		Hillman		Huron		Ingham		Isabella		Montcalm		Tuscola	
		% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW
AgriMAXX 498	Red	17.9	56.4	29.0	51.5	20.1	57.6	15.2	59.9	15.9	55.7	11.4	55.2	16.0	58.5
AgriMAXX 505	Red	15.5	60.4	19.9	60.2	18.2	61.2	13.6	62.8	14.7	58.2	12.2	58.0	14.6	61.8
AgriMAXX 513	Red	14.7	59.0	18.9	60.7	17.2	61.5	13.2	60.0	14.2	56.2	11.0	55.7	13.9	60.1
AgriMAXX 516	Red	17.0	58.3	21.7	58.0	23.7	57.6	15.4	60.8	14.4	56.5	11.9	57.2	14.9	59.6
AgriMAXX EXP 2105	Red	15.4	59.0	20.6	59.4	15.8	61.4	13.8	60.7	14.8	56.5	12.0	56.9	---	---
AgriMAXX EXP 2110	Red	15.7	58.1	21.7	56.8	17.2	60.8	14.0	60.9	14.6	56.7	11.0	55.4	---	---
AgriMAXX EXP 2222	Red	17.4	58.6	26.1	54.7	18.7	61.2	14.6	61.7	15.3	57.2	12.0	57.9	---	---
AgriMAXX Mackinac	White	14.0	58.6	16.0	60.0	15.7	60.1	13.3	61.0	14.5	56.5	10.1	53.8	14.5	60.1
AgriMAXX Piston	White	17.0	55.6	29.0	52.0	17.9	57.3	13.6	60.3	14.8	53.7	9.8	52.5	16.8	58.0
801	Red	15.8	59.5	19.7	59.0	18.5	60.5	14.5	61.0	14.3	57.1	12.8	58.6	14.9	60.8
Ambassador	White	15.2	57.7	19.8	58.3	18.1	58.7	14.0	60.5	13.6	53.9	10.5	55.2	15.1	59.8
DF 112 R	Red	14.6	58.1	18.2	58.6	16.9	59.4	13.7	59.3	13.8	55.6	11.2	55.8	13.9	59.9
DF 119 R	Red	16.0	59.1	20.4	59.6	18.6	60.5	15.1	60.7	14.8	57.3	12.0	56.4	14.7	59.9
DF 121 R	Red	16.2	59.2	20.3	59.5	18.9	60.6	16.1	60.0	15.0	58.1	11.7	56.6	14.9	60.5
DF 131 R	Red	16.6	58.8	22.6	57.9	21.2	58.8	14.4	60.4	15.1	58.6	11.3	56.4	14.9	60.8
DF 261 W	White	16.9	56.0	26.6	53.2	20.8	56.1	13.5	60.3	14.3	54.7	9.8	52.8	16.3	58.7
DF 271 W	White	14.3	58.7	16.1	59.2	16.3	59.5	13.8	61.0	14.2	56.6	11.0	55.4	14.4	60.5
DF 292 W	White	15.0	57.6	22.0	56.0	15.3	59.3	14.2	60.1	13.6	56.3	9.7	54.3	15.3	59.4
DF 121 R	Red	16.1	59.4	20.4	59.2	19.0	60.6	14.6	60.6	15.0	56.8	12.8	58.8	14.8	60.6
DF 271 W	White	14.5	58.3	15.2	59.5	17.3	59.4	14.4	60.6	14.9	56.0	10.6	54.3	14.6	60.1
Dyna-Gro 9002	Red	15.8	58.4	20.7	58.4	19.1	59.9	13.5	60.0	14.8	58.2	11.4	55.6	15.3	58.2
Dyna-Gro 9070	Red	15.9	58.6	21.1	57.9	19.8	59.1	14.0	60.4	14.1	57.1	11.7	56.9	14.4	60.3
Dyna-Gro 9151	Red	15.4	60.2	20.0	59.5	17.6	62.0	13.7	61.7	14.6	59.0	12.0	57.4	14.6	61.6
Dyna-Gro 9172	Red	17.1	58.6	25.3	56.4	20.5	59.7	14.6	60.1	15.0	57.9	11.8	56.8	15.1	60.7
Dyna-Gro 9182	Red	16.0	59.1	20.7	59.6	18.4	61.0	15.3	61.1	14.6	55.2	12.1	56.7	14.9	60.8
Dyna-Gro 9352	Red	15.7	57.5	18.8	56.1	20.4	59.2	13.9	59.3	14.1	54.9	11.3	55.2	15.9	60.1
Dyna-Gro 9082W	White	16.8	58.1	23.3	56.5	22.2	59.0	14.7	62.2	15.5	54.6	10.2	54.5	15.0	61.5

2022 Michigan State University Wheat Performance Trials

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

Line	Seed Color	Overall		Hillman		Huron		Ingham		Isabella		Montcalm		Tuscola	
		% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW
Dyna-Gro 9242W	White	14.9	58.9	19.7	59.3	15.3	61.7	14.6	61.7	14.0	54.0	11.3	54.8	14.8	61.9
WX22741	Red	14.6	57.0	16.6	58.6	18.2	58.8	13.5	58.0	14.4	54.6	10.2	53.7	14.8	58.0
WX22793	Red	15.1	59.3	17.1	60.3	18.2	60.7	13.5	60.1	14.4	56.7	12.4	57.6	14.8	60.1
GP 381	Red	14.2	58.6	15.2	61.5	16.7	60.5	14.2	59.2	14.1	55.5	10.9	54.7	14.3	60.0
GP 747	Red	16.1	56.0	22.3	54.6	21.7	56.6	13.4	58.3	14.3	54.6	10.8	54.9	13.8	57.3
SY 547	Red	15.6	57.8	22.4	56.1	18.0	60.3	13.5	59.8	13.9	53.9	11.2	55.7	14.7	60.8
SY 576	Red	15.9	56.9	23.2	55.7	20.4	57.6	13.7	60.3	14.3	54.5	9.2	52.8	14.7	60.7
SY Viper	Red	17.8	58.0	29.0	53.5	19.6	59.6	14.5	60.8	15.0	56.1	12.7	58.3	16.2	59.8
HS 338 R	Red	14.7	59.6	15.7	62.2	18.0	60.8	14.0	62.0	13.7	54.6	11.9	56.6	15.0	61.1
HS358R EXP	Red	16.3	59.2	24.2	57.0	17.4	61.4	14.2	60.6	15.1	57.9	12.2	57.9	14.9	60.5
ISF 1115	White	14.7	58.3	15.9	59.4	19.0	58.5	13.3	61.1	15.2	56.8	10.3	53.7	14.5	60.4
KWS394	Red	15.6	57.0	21.2	56.4	18.9	58.3	14.2	60.5	14.0	53.1	10.8	54.1	14.5	59.5
KWS398	Red	19.4	55.7	30.5	49.2	25.2	54.4	14.4	61.2	17.5	55.7	11.1	54.7	17.5	58.8
KWS405	Red	17.5	58.4	27.9	54.6	21.4	59.4	14.0	61.5	15.2	57.9	11.8	56.3	15.0	61.0
KWS411	Red	17.8	58.1	31.7	52.3	17.6	61.5	15.5	60.9	14.9	56.6	11.4	56.5	15.5	60.9
KWS414	Red	16.1	55.7	26.8	51.2	16.6	58.3	14.0	58.4	13.7	54.9	9.8	53.7	15.4	57.5
KWS415	Red	18.9	54.4	31.1	48.2	23.1	54.9	13.9	58.5	16.0	53.4	11.4	54.7	17.8	56.7
KWS428	White	15.7	58.6	22.0	55.6	17.1	60.7	14.1	60.0	14.4	56.9	11.7	57.4	14.6	61.1
KWS430	White	18.1	57.9	27.8	53.5	20.1	60.2	15.4	60.8	15.3	55.4	12.6	58.3	17.4	58.9
KWS431	White	17.1	57.4	29.9	51.8	17.0	60.8	15.6	61.4	14.1	54.8	10.5	54.5	15.6	61.0
AC Mountain	White	16.1	56.6	21.3	55.6	20.1	57.3	14.3	60.1	15.4	53.3	10.4	54.2	15.2	59.1
Jupiter	White	15.6	57.2	19.5	56.7	19.9	59.7	13.4	58.7	14.1	54.8	10.2	53.9	16.2	59.5
MCIA 2000	Red	15.7	59.1	19.9	59.6	19.1	60.0	13.4	60.2	14.8	57.8	11.8	56.6	15.3	60.1
MCIA Wharf	Red	14.5	57.7	17.9	57.7	16.0	60.3	13.5	58.2	13.8	56.1	10.7	55.0	15.1	59.0
MCIA Flipper	Red	15.4	58.3	19.6	56.9	16.9	60.2	14.5	60.1	14.6	57.0	11.7	55.9	15.2	59.8
MCIA Jonah	Red	18.1	55.7	27.9	52.3	25.8	54.6	14.0	60.5	14.1	55.2	10.4	53.0	16.3	58.5
MCIA MARLIN	Red	17.3	57.9	22.1	56.3	22.1	58.2	15.0	61.0	14.5	55.3	12.8	57.8	17.2	59.0

2022 Michigan State University Wheat Performance Trials

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

Line	Seed Color	Overall		Hillman		Huron		Ingham		Isabella		Montcalm		Tuscola	
		% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW
MCIA Red Dragon	Red	14.8	58.7	17.4	58.6	17.7	59.9	13.7	61.5	14.5	56.4	11.2	55.3	14.6	60.3
MCIA Whale	Red	18.9	56.0	30.3	51.4	23.4	56.5	14.8	61.4	14.7	54.4	10.9	55.0	19.6	57.0
MI16W0133	White	15.5	56.2	20.9	54.0	16.5	59.4	14.4	60.6	13.8	52.8	9.4	52.8	17.7	57.4
MCIA .357	Red	15.8	57.9	18.5	57.9	19.6	59.1	15.6	59.6	14.2	54.8	11.9	56.2	15.3	60.0
Moonlight	White	14.6	57.1	18.6	56.5	16.9	58.6	14.3	60.1	13.2	54.2	10.1	53.8	14.6	59.6
Sunburst	Red	19.2	57.9	33.7	51.4	22.4	60.4	15.1	61.8	14.6	54.8	12.7	58.0	16.8	61.2
Whitetail	White	14.9	57.2	19.5	57.0	16.3	60.0	14.1	60.9	14.3	51.5	10.0	54.2	15.3	59.5
MI16R0906	Red	17.0	55.7	21.3	53.8	22.8	56.1	14.4	59.9	14.5	53.7	10.5	53.9	18.4	56.7
MI18W1170	White	15.4	60.7	17.7	61.3	17.6	61.7	14.4	61.5	15.2	57.7	13.0	59.2	14.7	62.7
MI20R0011	Red	13.7	56.7	14.7	59.1	16.5	58.1	13.7	59.3	13.5	53.3	9.3	52.6	14.4	57.8
MI20R0012	Red	16.5	58.6	24.3	57.5	18.5	60.6	15.1	61.1	14.2	56.3	11.0	55.7	16.0	60.5
MI20R0013	Red	14.5	58.5	16.3	58.5	16.9	60.7	13.9	61.5	14.3	54.1	11.0	55.1	14.4	60.9
MI20R0210	Red	15.8	56.6	22.9	55.5	17.7	58.9	13.9	59.6	15.0	52.4	10.5	54.5	15.0	58.8
MI20W0035	White	15.9	58.4	21.3	56.9	18.7	60.0	14.4	61.2	14.6	56.7	11.3	54.9	15.0	60.8
MI20W0121	White	18.2	58.3	26.7	54.6	23.0	57.8	14.4	61.9	16.2	56.8	12.8	57.6	16.3	61.1
RS 977	Red	14.7	58.2	18.7	58.5	16.4	59.4	13.7	59.7	14.1	55.9	11.1	56.1	14.1	59.8
RS 912	Red	16.2	59.1	20.3	59.2	19.9	60.3	14.8	61.0	14.6	56.1	12.1	57.2	15.3	61.1
9xp051	Red	17.2	58.1	24.0	56.3	23.5	57.5	14.5	59.3	15.0	58.2	11.1	56.3	15.1	60.6
9xp216	Red	16.1	57.8	17.5	58.0	21.0	58.4	14.9	59.5	15.0	56.4	11.7	55.1	16.3	59.4
Synergy EXP2125	Red	14.6	56.8	15.2	59.8	19.7	58.1	14.1	57.7	14.1	56.3	8.9	52.0	15.6	57.0
Synergy EXP2141	Red	16.1	57.4	20.8	55.6	21.1	59.2	14.6	60.4	13.9	54.7	11.3	54.8	15.0	59.6
Haubert	Red	16.2	58.8	21.7	56.9	19.8	59.5	14.5	60.8	15.1	58.4	12.0	56.8	14.3	60.6
Tyson	Red	16.5	58.3	23.4	57.8	20.4	58.9	13.6	60.7	15.2	56.9	11.1	55.5	15.4	60.2
W 300	Red	14.5	58.7	17.8	58.8	16.2	60.4	13.8	60.6	14.0	56.7	10.6	55.2	14.4	60.5
W 304	Red	16.9	58.2	23.3	55.5	22.5	58.5	14.0	61.0	14.9	56.5	12.0	57.1	14.6	60.3
W 305	Red	16.0	58.7	18.9	59.3	22.8	58.5	14.3	61.9	13.9	55.4	11.3	56.0	14.6	61.1
W 313	Red	16.2	59.6	19.5	59.7	19.8	60.8	14.8	60.7	15.1	57.7	12.4	57.5	15.3	61.1

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

Line	Seed Color	Overall		Hillman		Huron		Ingham		Isabella		Montcalm		Tuscola	
		% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW
W 318	Red	15.5	58.0	20.6	58.0	17.0	59.7	14.5	58.6	14.7	56.8	10.9	55.1	14.9	59.8
W 322	Red	15.3	59.4	19.7	59.4	16.9	61.0	13.8	61.1	14.8	57.0	12.0	57.1	14.6	60.8
W 324	Red	17.3	58.6	24.2	57.0	22.7	58.0	14.3	60.9	15.1	57.2	11.9	57.9	15.3	60.7
W 326	Red	14.0	56.5	15.8	58.8	15.1	59.2	13.7	56.6	14.3	54.9	10.0	52.7	15.3	57.0
W 328	Red	16.3	57.9	23.9	55.7	17.8	59.5	14.0	59.9	15.0	57.5	11.1	56.0	16.1	58.6
	Mean	16.1	57.8	22.0	56.6	19.1	59.3	14.2	60.3	14.7	55.7	11.2	55.4	15.4	59.8
	CV	4.0	1.0	5.7	1.5	10.4	1.7	5.8	1.0	3.8	1.6	2.9	0.9	5.3	2.5
	LSD	1.3	1.1	2.0	1.4	3.2	1.7	1.3	1.0	0.9	1.4	0.5	0.8	1.3	2.4

2022 Michigan State University Wheat Performance Trials

Table 3. Fusarium Head Blight Resistance, lodging, pre-harvest sprouting, plant height and flowering data.

Line	Seed Color	Awn	Chaff Color	Fusarium Head Blight					% Lodging (0-100)**	Preharvest Sprouting (0-9)**	Plant Height (inches)	Flowering Date Days past Jan. 1	Physiological Maturity Days past Jan. 1	Grain Fill Period # of days
				Severity 2022	Incidence 2022	Index 2022	DON ppm 2021	FHB Rating*						
AgriMAXX 498	Red	Awnletted	White	52.0	53.0	27.6	23.0	TBD	43.3	1.5	37.3	150	181	31
AgriMAXX 505	Red	Awned	White	35.0	47.0	16.5	22.8	TBD	0	2.0	35.6	151	180	29
AgriMAXX 513	Red	Awned	White	33.0	53.0	17.5	22.7	TBD	5	1.5	35.5	151	179	28
AgriMAXX 516	Red	Awned	White	32.0	57.0	18.2	18.0	TBD	3.3	2.5	35.1	151	182	31
AgriMAXX EXP 2105	Red	Awned	White	42.0	57.0	23.9	---	TBD	26.7	3.0	36.1	152	181	29
AgriMAXX EXP 2110	Red	Awned	White	38.0	65.0	24.7	---	TBD	26.7	1.5	34.4	152	181	29
AgriMAXX EXP 2222	Red	Awned	White	38.0	67.0	25.5	---	TBD	6.7	3.5	35.3	151	182	31
AgriMAXX Mackinac	White	Awnletted	White	35.0	62.0	21.7	---	TBD	5	7.8	34	152	181	29
AgriMAXX Piston	White	Awnless	White	35.0	52.0	18.2	---	TBD	0	6.5	35.3	152	180	28
801	Red	Awned	White	30.0	43.0	12.9	---	TBD	38.3	1.8	37.4	151	182	31
Ambassador	White	Awnletted	White	87.0	55.0	47.9	52.1	TBD	1.7	5.8	37.2	151	179	28
DF 112 R	Red	Awned	White	40.0	52.0	20.8	36.5	TBD	41.7	3.0	36	151	180	29
DF 119 R	Red	Awnletted	White	33.0	77.0	25.4	16.8	TBD	0	1.5	36	151	179	28
DF 121 R	Red	Awned	White	42.0	65.0	27.3	23.9	TBD	0	0.8	33.6	152	181	29
DF 131 R	Red	Awned	White	33.0	52.0	17.2	22.5	TBD	20	1.5	34.8	151	182	31
DF 261 W	White	Awnletted	White	38.0	55.0	20.9	20.7	TBD	16.7	7.5	35.6	151	180	29
DF 271 W	White	Awnletted	White	42.0	53.0	22.3	23.3	TBD	0	7.8	34.1	152	182	30
DF 292 W	White	Awned	White	35.0	63.0	22.1	---	TBD	3.3	6.0	35.3	152	182	30
DF 121 R	Red	Awned	White	33.0	50.0	16.5	---	TBD	0	1.5	33.5	152	182	30
DF 271 W	White	Awnletted	White	32.0	55.0	17.6	---	TBD	0	8.0	33.3	152	181	29
Dyna-Gro 9002	Red	Awned	White	35.0	58.0	20.3	22.6	TBD	23.3	5.3	36.9	151	180	29
Dyna-Gro 9070	Red	Awned	White	33.0	50.0	16.5	15.8	TBD	16.7	2.3	36.1	150	179	29
Dyna-Gro 9151	Red	Awned	White	38.0	60.0	22.8	18.7	TBD	0	0.8	34.9	151	179	28
Dyna-Gro 9172	Red	Awned	White	33.0	50.0	16.5	20.1	TBD	0	2.0	34.9	151	180	29
Dyna-Gro 9182	Red	Awnless	White	28.0	48.0	13.4	12.0	TBD	18.3	2.0	34.9	152	181	29
Dyna-Gro 9352	Red	Awnletted	White	48.0	42.0	20.2	---	TBD	40	4.3	36.1	150	179	29
Dyna-Gro 9082W	White	Awned	White	35.0	53.0	18.6	34.0	TBD	0	6.8	34.5	150	182	32
Dyna-Gro 9242W	White	Awnletted	White	52.0	60.0	31.2	21.7	TBD	0	7.3	37.1	151	181	30
WX22741	Red	Awned	White	37.0	63.0	23.3	---	TBD	16	2.0	36.7	151	182	31
WX22793	Red	Awned	White	38.0	65.0	24.7	---	TBD	5	3.3	35.5	152	180	28
GP 381	Red	Awnless	White	43.0	52.0	22.4	---	TBD	0	4.8	33.4	151	180	29
GP 747	Red	Awned	White	42.0	65.0	27.3	---	TBD	0	2.5	35.6	151	181	30
SY 547	Red	Awnless	White	32.0	52.0	16.6	20.4	TBD	0	3.0	37.3	150	175	25

2022 Michigan State University Wheat Performance Trials

Table 3. Fusarium Head Blight Resistance, lodging, pre-harvest sprouting, plant height and flowering data.

Line	Seed Color	Awn	Chaff Color	Fusarium Head Blight					% Lodging (0-100)**	Preharvest Sprouting (0-9)**	Plant Height (inches)	Flowering Date Days past Jan. 1	Physiological Maturity Days past Jan. 1	Grain Fill Period # of days
				Severity 2022	Incidence 2022	Index 2022	DON ppm 2021	FHB Rating*						
SY 576	Red	Awned	White	43.0	45.0	19.4	12.6	TBD	0	1.3	37.1	152	182	30
SY Viper	Red	Awnletted	White	35.0	63.0	22.1	18.1	TBD	53.3	0.8	38.4	150	177	27
HS 338 R	Red	Awnletted	White	33.0	53.0	17.5	14.8	TBD	36.7	1.3	36.2	150	179	29
HS358R EXP	Red	Awned	White	43.0	62.0	26.7	---	TBD	16.7	2.3	34.2	152	181	29
ISF 1115	White	Awnletted	White	52.0	55.0	28.6	17.8	TBD	0	8.0	33.7	152	181	29
KWS394	Red	Awnless	White	25.0	47.0	11.8	---	TBD	8.3	2.0	34.9	150	181	31
KWS398	Red	Awnless	White	32.0	40.0	12.8	---	TBD	0	0.8	35.2	152	183	31
KWS405	Red	Awnless	White	30.0	60.0	18.0	---	TBD	1.7	1.5	37	151	182	31
KWS411	Red	Awned	White	37.0	60.0	22.2	---	TBD	16.7	2.8	36.1	151	182	31
KWS414	Red	Awned	White	62.0	58.0	36.0	---	TBD	6.7	2.3	33.3	152	182	30
KWS415	Red	Awnletted	White	37.0	50.0	18.5	---	TBD	23.3	1.0	35.3	150	181	31
KWS428	White	Awnletted	White	35.0	57.0	20.0	---	TBD	20	8.5	35.9	151	181	30
KWS430	White	Awnless	White	65.0	45.0	29.3	---	TBD	0	8.3	33.6	152	182	30
KWS431	White	Awned	White	48.0	57.0	27.4	---	TBD	0	8.0	34.3	152	183	31
AC Mountain	White	Awnletted	White	62.0	40.0	24.8	36.7	TBD	0	8.3	38.4	152	181	29
Jupiter	White	Awnletted	Bronze	65.0	57.0	37.1	44.1	TBD	1.7	7.3	35.4	152	182	30
MCIA 2000	Red	Awned	White	47.0	63.0	29.6	23.6	TBD	20	2.0	34.1	153	182	29
MCIA Wharf	Red	Awnletted	White	28.0	52.0	14.6	14.7	TBD	23.3	2.8	31.1	150	182	32
MCIA Flipper	Red	Awnletted	White	52.0	63.0	32.8	26.4	TBD	3.3	2.3	33.9	150	179	29
MCIA Jonah	Red	Awnletted	White	62.0	53.0	32.9	20.1	TBD	5	0.8	36.1	150	182	32
MCIA MARLIN	Red	Awnletted	White	43.0	75.0	32.3	22.5	TBD	65	2.5	35.5	151	179	28
MCIA Red Dragon	Red	Awnless	White	38.0	47.0	17.9	19.0	TBD	0	0.5	40.8	151	176	25
MCIA Whale	Red	Awnletted	White	53.0	63.0	33.4	18.6	TBD	0	2.8	36.3	152	182	30
MI16W0133	White	Awned	White	68.0	48.0	32.6	55.0	TBD	0	8.0	34.7	152	183	31
MCIA .357	Red	Awnletted	White	40.0	60.0	24.0	24.8	TBD	0	2.5	31.4	150	179	29
Moonlight	White	Awnletted	White	80.0	72.0	57.6	31.0	TBD	0	6.0	36.4	151	177	26
Sunburst	Red	Awnless	White	60.0	48.0	28.8	24.1	TBD	0	0.0	33	152	182	30
Whitetail	White	Awnletted	White	65.0	60.0	39.0	29.8	TBD	11.7	8.8	35.7	151	181	30
MI16R0906	Red	Awnletted	White	73.0	55.0	40.2	19.2	TBD	16.7	2.0	34.4	150	183	33
MI18W1170	White	Awnletted	White	50.0	60.0	30.0	---	TBD	10	2.8	39.3	150	174	24
MI20R0011	Red	Awnless	White	52.0	68.0	35.4	---	TBD	3.3	2.0	36	150	181	31
MI20R0012	Red	Awned	White	40.0	62.0	24.8	---	TBD	66.7	1.8	36.8	151	183	32
MI20R0013	Red	Awnless	Bronze	42.0	62.0	26.0	---	TBD	1.7	0.5	37	150	182	32

2022 Michigan State University Wheat Performance Trials

Table 3. Fusarium Head Blight Resistance, lodging, pre-harvest sprouting, plant height and flowering data.

Line	Seed Color	Awn	Chaff Color	Fusarium Head Blight					% Lodging (0-100)**	Preharvest Sprouting (0-9)**	Plant Height (inches)	Flowering Date Days past Jan. 1	Physiological Maturity Days past Jan. 1	Grain Fill Period # of days
				Severity 2022	Incidence 2022	Index 2022	DON ppm 2021	FHB Rating*						
MI20R0210	Red	Awned	White	45.0	58.0	26.1	---	TBD	0	2.5	33.8	151	181	30
MI20W0035	White	Awnletted	White	52.0	72.0	37.4	---	TBD	0	6.3	36.6	150	181	31
MI20W0121	White	Awnletted	White	57.0	62.0	35.3	---	TBD	6.7	6.3	37.4	152	182	30
RS 977	Red	Awned	White	48.0	67.0	32.2	17.3	TBD	6	4.0	34.7	152	183	31
RS 912	Red	Awnless	White	52.0	57.0	29.6	14.5	TBD	23.3	1.3	35.7	151	180	29
9xp051	Red	Awned	White	33.0	62.0	20.5	---	TBD	1.7	1.5	35.1	151	181	30
9xp216	Red	Awnletted	White	41.0	58.0	23.8	---	TBD	20	2.0	35.2	150	179	29
Synergy EXP2125	Red	Awned	White	37.0	57.0	21.1	---	TBD	25	2.8	36.2	151	182	31
Synergy EXP2141	Red	Awnless	White	33.0	58.0	19.1	---	TBD	1.7	2.3	35	150	180	30
Haubert	Red	Awned	White	38.0	58.0	22.0	18.8	TBD	16.7	2.5	36.2	152	182	30
Tyson	Red	Awned	White	28.0	50.0	14.0	11.9	TBD	0	2.5	34.6	150	181	31
W 300	Red	Awned	White	35.0	67.0	23.5	10.7	TBD	3.3	0.0	35	151	181	30
W 304	Red	Awned	White	32.0	60.0	19.2	12.2	TBD	0	0.5	34.8	152	181	29
W 305	Red	Awnletted	White	42.0	68.0	28.6	12.4	TBD	0	1.8	34.7	151	181	30
W 313	Red	Awnless	White	38.0	45.0	17.1	13.9	TBD	10	2.3	35.1	152	181	29
W 318	Red	Awned	White	43.0	42.0	18.1	---	TBD	20	1.3	35.7	151	180	29
W 322	Red	Awned	White	37.0	58.0	21.5	15.0	TBD	16.7	1.5	36.7	151	180	29
W 324	Red	Awned	White	30.0	53.0	15.9	23.3	TBD	1.7	2.5	34.6	151	181	30
W 326	Red	Awned	White	37.0	63.0	23.3	---	TBD	21.7	2.8	36.4	151	181	30
W 328	Red	Awned	White	27.0	48.0	13.0	---	TBD	8.3	3.5	36.3	151	181	30
Mean				42.0	57.0				12.1		35.4	151.0	181.0	
CV				16.3	15.4				147.5		2.7	0.3	0.5	
LSD				11.0	14.0				28.7		1.5	1.0	2.0	

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Table 4. Conventional (Conv.) vs High Management (HM) Yield Results.

Line	Seed Color	Tuscola High Management			Tuscola Conventional Management			Tuscola HM - Conv.		Isabella High Management			Isabella Conventional Management			Isabella HM - Conv.	
		Bu/A	% Moist	TW	Bu/A	% Moist	TW	Difference	Rank	Bu/A	% Moist	TW	Bu/A	% Moist	TW	Difference	Rank
AgriMAXX 498	Red	91.5	16.0	58.5	88.9	15.9	58.8	2.7	49	81.5	15.9	55.7	73.8	14.0	53.4	7.8	21
AgriMAXX 505	Red	96.7	14.6	61.8	91.7	15.1	61.8	5.1	26	81.3	14.7	58.2	82.6	14.8	58.8	-1.3	53
AgriMAXX 513	Red	85.5	13.9	60.1	87.3	14.1	61.6	-1.8	75	81.0	14.2	56.2	90.7	14.5	57.5	-9.7	85
AgriMAXX 516	Red	89.4	14.9	59.6	94.8	15.5	63.4	-5.4	79	80.6	14.4	56.5	88.7	14.9	58.4	-8.1	83
AgriMAXX EXP 2105	Red	---	---	---	---	---	---	---	---	76.5	14.8	56.5	83.4	14.8	58.6	-6.9	79
AgriMAXX EXP 2110	Red	---	---	---	---	---	---	---	---	79.4	14.6	56.7	68.9	14.9	57.7	10.4	14
AgriMAXX EXP 2222	Red	---	---	---	---	---	---	---	---	79.1	15.3	57.2	81.3	15.1	59.6	-2.3	59
AgriMAXX Mackinac	White	96.6	14.5	60.1	91.6	15.1	59.7	5.0	27	84.4	14.5	56.5	63.4	15.1	56.9	21.0	1
AgriMAXX Piston	White	91.1	16.8	58.0	87.9	15.9	58.6	3.2	47	79.5	14.8	53.7	84.2	13.5	53.6	-4.7	74
801	Red	95.1	14.9	60.8	93.2	14.7	61.2	1.8	54	80.9	14.3	57.1	86.2	14.5	57.7	-5.3	75
Ambassador	White	94.8	15.1	59.8	91.4	15.2	59.9	3.4	45	89.9	13.6	53.9	91.0	13.0	54.5	-1.1	51
DF 112 R	Red	93.7	13.9	59.9	90.2	14.6	59.8	3.5	44	85.2	13.8	55.6	79.1	14.0	55.6	6.2	25
DF 119 R	Red	92.5	14.7	59.9	88.4	16.0	59.4	4.2	40	92.3	14.8	57.3	80.6	14.3	55.9	11.7	12
DF 121 R	Red	98.1	14.9	60.5	87.6	16.0	59.3	10.5	3	81.3	15.0	58.1	88.8	15.2	59.0	-7.4	81
DF 131 R	Red	100.2	14.9	60.8	94.2	15.2	60.6	5.9	21	89.8	15.1	58.6	78.3	15.2	58.5	11.5	13
DF 261 W	White	99.0	16.3	58.7	91.7	14.9	60.1	7.3	9	79.3	14.3	54.7	81.7	14.0	55.3	-2.5	61
DF 271 W	White	100.6	14.4	60.5	95.8	14.5	60.6	4.8	28	78.0	14.2	56.6	73.2	14.1	57.0	4.8	30
DF 292 W	White	93.3	15.3	59.4	87.5	15.1	59.8	5.8	22	83.8	13.6	56.3	74.9	13.9	56.0	8.9	15
DF 121 R	Red	95.2	14.8	60.6	94.8	14.9	61.0	0.4	65	78.2	15.0	56.8	84.5	14.8	58.2	-6.3	77
DF 271 W	White	94.7	14.6	60.1	98.6	14.5	61.0	-3.9	78	78.2	14.9	56.0	72.7	14.0	56.2	5.5	27
Dyna-Gro 9002	Red	93.1	15.3	58.2	93.9	14.6	61.3	-0.8	72	87.4	14.8	58.2	84.8	14.9	57.9	2.6	38
Dyna-Gro 9070	Red	97.8	14.4	60.3	93.3	14.5	60.3	4.5	33	82.2	14.1	57.1	84.0	14.5	57.9	-1.8	55
Dyna-Gro 9151	Red	89.7	14.6	61.6	90.8	14.6	62.0	-1.0	73	79.7	14.6	59.0	77.8	15.1	59.1	1.9	41
Dyna-Gro 9172	Red	98.3	15.1	60.7	94.2	15.8	60.3	4.1	41	86.2	15.0	57.9	74.4	15.1	57.3	11.8	11
Dyna-Gro 9182	Red	97.7	14.9	60.8	91.7	15.2	61.0	6.0	20	79.2	14.6	55.2	75.8	14.5	55.6	3.3	34
Dyna-Gro 9352	Red	99.8	15.9	60.1	91.3	16.5	59.6	8.5	5	83.8	14.1	54.9	65.2	14.3	54.9	18.6	3
Dyna-Gro 9082W	White	88.5	15.0	61.5	87.9	13.9	59.8	0.6	63	76.7	15.5	54.6	78.8	14.3	57.9	-2.1	58
Dyna-Gro 9242W	White	94.6	14.8	61.9	88.2	15.7	61.1	6.4	15	75.9	14.0	54.0	84.8	13.4	54.4	-8.9	84
WX22741	Red	100.7	14.8	58.0	94.0	14.9	58.0	6.6	12	83.0	14.4	54.6	82.7	14.1	56.3	0.4	45
WX22793	Red	86.9	14.8	60.1	94.3	14.8	61.3	-7.5	82	84.2	14.4	56.7	76.9	16.1	55.9	7.3	24
GP 381	Red	91.9	14.3	60.0	86.6	13.9	60.5	5.4	23	81.2	14.1	55.5	85.3	14.0	56.8	-4.1	69
GP 747	Red	96.7	13.8	57.3	97.3	15.0	58.0	-0.6	71	75.6	14.3	54.6	77.6	14.0	55.7	-2.0	56
SY 547	Red	88.1	14.7	60.8	87.9	15.5	60.6	0.2	67	76.3	13.9	53.9	72.7	13.6	52.8	3.7	33
SY 576	Red	90.0	14.7	60.7	82.3	15.0	60.5	7.7	7	82.5	14.3	54.5	74.2	14.6	56.0	8.3	18

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Table 4. Conventional (Conv.) vs High Management (HM) Yield Results.

Line	Seed Color	Tuscola High Management			Tuscola Conventional Management			Tuscola HM - Conv.		Isabella High Management			Isabella Conventional Management			Isabella HM - Conv.	
		Bu/A	% Moist	TW	Bu/A	% Moist	TW	Difference	Rank	Bu/A	% Moist	TW	Bu/A	% Moist	TW	Difference	Rank
SY Viper	Red	100.7	16.2	59.8	95.9	17.3	58.9	4.8	29	85.4	15.0	56.1	89.3	13.8	55.6	-3.9	66
HS 338 R	Red	94.7	15.0	61.1	93.6	14.4	61.6	1.1	59	86.0	13.7	54.6	88.1	14.1	56.6	-2.1	57
HS358R EXP	Red	94.2	14.9	60.5	88.0	15.8	60.1	6.3	16	82.1	15.1	57.9	82.8	15.5	57.7	-0.7	50
ISF 1115	White	96.8	14.5	60.4	90.0	14.5	60.9	6.8	11	81.0	15.2	56.8	64.8	14.2	55.0	16.2	4
KWS394	Red	90.3	14.5	59.5	88.9	15.2	58.8	1.4	57	85.3	14.0	53.1	84.6	13.2	52.9	0.7	44
KWS398	Red	86.0	17.5	58.8	88.2	17.0	59.4	-2.2	77	90.9	17.5	55.7	82.2	16.4	55.5	8.8	16
KWS405	Red	91.9	15.0	61.0	91.2	15.3	61.2	0.6	62	86.4	15.2	57.9	77.8	14.0	54.0	8.5	17
KWS411	Red	89.5	15.5	60.9	88.8	15.4	61.3	0.7	61	80.9	14.9	56.6	73.0	14.4	55.9	7.9	20
KWS414	Red	95.7	15.4	57.5	91.4	14.8	58.7	4.3	37	81.9	13.7	54.9	68.1	15.1	53.5	13.8	8
KWS415	Red	93.4	17.8	56.7	88.3	17.8	56.8	5.1	25	85.9	16.0	53.4	85.6	14.6	55.0	0.3	46
KWS428	White	93.7	14.6	61.1	86.8	14.9	60.9	6.8	10	91.4	14.4	56.9	76.5	14.0	53.9	14.9	7
KWS430	White	91.5	17.4	58.9	88.6	16.6	60.0	2.9	48	89.4	15.3	55.4	86.5	14.1	54.2	3.0	36
KWS431	White	92.0	15.6	61.0	92.1	15.2	61.7	0.0	68	82.1	14.1	54.8	79.1	14.6	55.5	3.0	35
AC Mountain	White	90.4	15.2	59.1	85.1	15.6	59.1	5.2	24	84.2	15.4	53.3	79.4	13.5	54.8	4.8	28
Jupiter	White	94.7	16.2	59.5	94.3	16.9	59.3	0.5	64	85.7	14.1	54.8	88.9	13.4	54.2	-3.1	65
MCIA 2000	Red	94.1	15.3	60.1	88.0	15.7	59.8	6.1	17	80.4	14.8	57.8	79.4	15.3	58.7	0.9	43
MCIA Wharf	Red	97.4	15.1	59.0	97.1	15.0	59.0	0.3	66	81.9	13.8	56.1	86.1	14.8	53.3	-4.2	70
MCIA Flipper	Red	104.9	15.2	59.8	102.5	14.8	61.2	2.3	51	85.4	14.6	57.0	79.7	14.1	56.8	5.8	26
MCIA Jonah	Red	91.1	16.3	58.5	97.5	16.0	59.1	-6.4	81	83.0	14.1	55.2	81.2	14.1	53.7	1.8	42
MCIA MARLIN	Red	100.6	17.2	59.0	102.5	17.2	59.4	-2.0	76	88.0	14.5	55.3	87.7	14.2	55.2	0.3	47
MCIA Red Dragon	Red	93.0	14.6	60.3	88.8	15.2	59.9	4.3	38	83.7	14.5	56.4	80.9	14.6	56.2	2.8	37
MCIA Whale	Red	86.6	19.6	57.0	78.0	18.6	57.9	8.6	4	87.8	14.7	54.4	90.2	14.1	53.5	-2.5	60
MI16W0133	White	83.2	17.7	57.4	81.0	17.1	58.0	2.1	52	77.9	13.8	52.8	78.2	13.6	52.9	-0.3	49
MCIA .357	Red	99.9	15.3	60.0	88.4	15.3	59.9	11.5	2	79.1	14.2	54.8	81.7	14.0	54.3	-2.7	62
Moonlight	White	91.9	14.6	59.6	85.4	15.8	58.7	6.5	14	82.8	13.2	54.2	75.3	12.9	53.2	7.5	23
Sunburst	Red	89.9	16.8	61.2	85.5	16.3	62.4	4.4	35	80.6	14.6	54.8	85.1	13.7	53.9	-4.5	72
Whitetail	White	89.6	15.3	59.5	88.7	15.1	59.8	0.9	60	75.3	14.3	51.5	82.6	13.1	53.4	-7.3	80
MI16R0906	Red	83.2	18.4	56.7	90.8	17.7	57.8	-7.6	83	85.7	14.5	53.7	81.8	14.4	54.3	3.9	32
MI18W1170	White	95.5	14.7	62.7	89.5	14.7	62.5	6.0	19	82.8	15.2	57.7	67.5	14.4	54.8	15.4	6
MI20R0011	Red	93.6	14.4	57.8	94.0	14.7	60.1	-0.5	70	83.0	13.5	53.3	69.7	12.7	53.2	13.4	10
MI20R0012	Red	94.4	16.0	60.5	89.9	15.7	60.8	4.5	34	84.9	14.2	56.3	82.8	14.3	56.9	2.2	40
MI20R0013	Red	96.7	14.4	60.9	94.9	15.0	60.7	1.8	55	82.9	14.3	54.1	87.0	14.2	56.4	-4.1	68
MI20R0210	Red	95.5	15.0	58.8	91.0	15.6	59.3	4.6	31	74.9	15.0	52.4	82.4	13.9	54.9	-7.5	82
MI20W0035	White	91.1	15.0	60.8	86.9	15.1	61.0	4.2	39	82.5	14.6	56.7	83.7	13.9	55.0	-1.2	52

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Table 4. Conventional (Conv.) vs High Management (HM) Yield Results.

Line	Seed Color	Tuscola High Management			Tuscola Conventional Management			Tuscola HM - Conv.		Isabella High Management			Isabella Conventional Management			Isabella HM - Conv.	
		Bu/A	% Moist	TW	Bu/A	% Moist	TW	Difference	Rank	Bu/A	% Moist	TW	Bu/A	% Moist	TW	Difference	Rank
MI20W0121	White	89.8	16.3	61.1	85.5	17.8	60.0	4.3	36	81.5	16.2	56.8	86.0	14.7	56.9	-4.5	71
RS 977	Red	90.5	14.1	59.8	90.8	14.5	60.0	-0.3	69	86.3	14.1	55.9	78.8	14.1	56.0	7.5	22
RS 912	Red	101.1	15.3	61.1	93.1	15.3	61.0	8.0	6	84.4	14.6	56.1	76.3	13.9	53.8	8.1	19
9xp051	Red	96.5	15.1	60.6	89.9	14.9	60.5	6.6	13	85.2	15.0	58.2	84.9	14.9	58.3	0.2	48
9xp216	Red	92.8	16.3	59.4	94.0	15.8	59.9	-1.2	74	87.3	15.0	56.4	68.5	14.6	55.7	18.8	2
Synergy EXP2125	Red	96.3	15.6	57.0	94.7	14.9	58.1	1.6	56	85.0	14.1	56.3	80.2	13.7	55.5	4.8	28
Synergy EXP2141	Red	97.9	15.0	59.6	93.8	15.0	60.1	4.0	42	83.5	13.9	54.7	79.3	14.1	55.1	4.2	31
Haubert	Red	95.5	14.3	60.6	90.9	15.3	60.3	4.6	30	91.2	15.1	58.4	75.1	14.4	57.1	16.1	5
Tyson	Red	99.9	15.4	60.2	95.4	15.3	60.0	4.6	32	78.5	15.2	56.9	93.7	15.0	58.5	-15.2	86
W 300	Red	92.7	14.4	60.5	86.6	14.5	60.7	6.1	18	79.0	14.0	56.7	83.6	14.4	58.3	-4.6	73
W 304	Red	97.7	14.6	60.3	94.4	15.2	60.3	3.3	46	80.8	14.9	56.5	86.1	14.9	57.4	-5.3	76
W 305	Red	94.7	14.6	61.1	93.4	14.9	61.0	1.3	58	81.2	13.9	55.4	82.8	14.0	56.0	-1.6	54
W 313	Red	101.4	15.3	61.1	88.5	15.1	61.0	12.9	1	82.8	15.1	57.7	85.7	14.1	56.4	-2.9	64
W 318	Red	102.1	14.9	59.8	98.4	14.5	60.1	3.7	43	85.5	14.7	56.8	72.1	14.5	56.6	13.4	9
W 322	Red	99.6	14.6	60.8	97.1	14.9	61.6	2.5	50	81.2	14.8	57.0	84.1	14.7	58.7	-2.9	63
W 324	Red	99.9	15.3	60.7	92.6	15.6	61.9	7.3	8	77.1	15.1	57.2	81.1	14.9	56.8	-4.0	67
W 326	Red	92.7	15.3	57.0	98.4	14.9	58.2	-5.7	80	76.8	14.3	54.9	74.2	14.7	56.6	2.5	39
W 328	Red	95.6	16.1	58.6	93.4	16.2	60.8	2.1	53	84.1	15.0	57.5	90.5	14.9	57.9	-6.4	78
	Mean	94.2	15.4	59.8	91.2	15.5	60.0	3.0		82.8	14.7	55.7	80.6	14.4	55.9	2.1	
	CV	4.4	5.3	2.5	2.9	7.1	2.4			7.0	3.8	1.6	9.1	5.2	3.0		
	LSD	6.7	1.3	2.4	4.3	1.8	2.3			9.3	0.9	1.4	11.8	1.2	2.7		

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Table 5. Milling and baking qualities.

Line	Seed Color	NIR Kernel Protein (at 12%)	SKCS Kernel Hardness	Adjusted Flour Yield (%)	Softness Equivalent (%)	Flour Protein (at 14%)	Lactic Acid SRC (%)	Sodium Carbonate SRC (%)	Cookie Diameter (cm)
AgriMAXX 498	Red	10.4	22.6	69.8	58.7	8.4	116.4	67.8	20.0
AgriMAXX 505	Red	12.5	12.7	64.3	60.9	10.1	172.4	79.0	17.9
AgriMAXX 513	Red	12.5	69.3	66.3	39.7	10.8	139.9	88.1	16.3
AgriMAXX 516	Red	10.7	27.9	67.7	59.2	8.6	116.4	71.9	19.9
AgriMAXX EXP 2105	Red	---	---	---	---	---	---	---	---
AgriMAXX EXP 2110	Red	---	---	---	---	---	---	---	---
AgriMAXX EXP 2222	Red	---	---	---	---	---	---	---	---
AgriMAXX Mackinac	White	---	---	---	---	---	---	---	---
AgriMAXX Piston	White	---	---	---	---	---	---	---	---
801	Red	---	---	---	---	---	---	---	---
Ambassador	White	11.7	32.6	66.7	47.8	9.1	125.6	75.6	18.6
DF 112 R	Red	11.7	14.8	66.8	59.9	9.4	126.5	70.4	19.7
DF 119 R	Red	11.6	7.4	65.2	59.8	9.5	138.6	73.9	19.0
DF 121 R	Red	11.3	28.4	66.2	58.1	8.7	138.0	70.7	18.8
DF 131 R	Red	11.3	26.6	67.2	58.5	9.2	103.5	71.7	18.9
DF 261 W	White	11.8	22.4	67.7	51.9	9.3	164.9	72.8	19.1
DF 271 W	White	11.2	22.6	67.8	54.0	9.0	109.8	72.2	19.1
DF 292 W	White	---	---	---	---	---	---	---	---
DF 121 R	Red	---	---	---	---	---	---	---	---
DF 271 W	White	---	---	---	---	---	---	---	---
Dyna-Gro 9002	Red	11.7	5.6	65.7	59.6	9.4	141.7	68.7	19.3
Dyna-Gro 9070	Red	12.1	18.2	64.9	56.4	9.7	151.5	69.7	18.7
Dyna-Gro 9151	Red	12.0	13.5	64.3	59.4	9.8	163.9	78.8	18.0
Dyna-Gro 9172	Red	11.1	20.8	67.2	59.1	9.3	134.0	71.6	19.2
Dyna-Gro 9182	Red	12.1	22.5	65.3	56.2	9.8	136.3	70.2	19.0
Dyna-Gro 9352	Red	---	---	---	---	---	---	---	---
Dyna-Gro 9082W	White	11.0	35.2	66.3	55.1	9.0	117.2	71.5	18.9
Dyna-Gro 9242W	White	11.0	26.6	65.8	55.1	8.8	121.9	71.4	19.1
WX22741	Red	---	---	---	---	---	---	---	---
WX22793	Red	---	---	---	---	---	---	---	---
GP 381	Red	---	---	---	---	---	---	---	---
GP 747	Red	---	---	---	---	---	---	---	---
SY 547	Red	11.3	29.7	64.9	54.8	9.2	120.5	72.9	19.0
SY 576	Red	11.4	41.4	63.6	52.1	9.2	107.0	75.9	19.0
SY Viper	Red	11.8	15.6	65.6	56.1	9.3	120.6	78.5	19.2
HS 338 R	Red	11.7	8.5	67.1	59.5	9.7	147.1	73.6	18.5
HS358R EXP	Red	---	---	---	---	---	---	---	---
ISF 1115	White	11.3	16.0	67.6	56.3	9.2	134.6	70.6	18.8
KWS394	Red	---	---	---	---	---	---	---	---
KWS398	Red	---	---	---	---	---	---	---	---
KWS405	Red	---	---	---	---	---	---	---	---
KWS411	Red	---	---	---	---	---	---	---	---
KWS414	Red	---	---	---	---	---	---	---	---
KWS415	Red	---	---	---	---	---	---	---	---
KWS428	White	---	---	---	---	---	---	---	---
KWS430	White	---	---	---	---	---	---	---	---
KWS431	White	---	---	---	---	---	---	---	---
AC Mountain	White	11.1	14.5	66.5	57.3	9.1	101.3	67.5	19.6
Jupiter	White	10.7	13.1	68.2	61.1	8.7	119.4	71.4	18.9
MCIA 2000	Red	11.3	19.2	65.5	62.2	9.0	137.0	72.8	19.3
MCIA Wharf	Red	10.8	7.8	65.6	57.8	8.6	107.8	70.2	19.7
MCIA Flipper	Red	11.3	15.0	67.1	58.9	8.7	110.9	68.9	19.4
MCIA Jonah	Red	10.9	10.9	67.8	62.4	8.8	130.4	66.8	20.2
MCIA MARLIN	Red	11.0	23.7	67.7	56.1	8.7	121.6	72.3	19.4
MCIA Red Dragon	Red	11.7	16.9	66.4	54.5	9.2	131.4	72.0	19.2
MCIA Whale	Red	12.0	28.7	67.0	54.7	9.2	114.3	72.0	18.6
MI16W0133	White	11.5	17.8	64.9	60.3	9.4	122.7	73.2	18.9
MCIA .357	Red	11.0	26.8	65.8	52.4	8.5	107.6	69.6	19.0
Moonlight	White	12.4	25.4	66.1	53.1	9.9	126.7	71.8	18.9

2021 Michigan State University Wheat Performance Trials

Table 5. Milling and baking qualities.

Line	Seed Color	NIR Kernel Protein (at 12%)	SKCS Kernel Hardness	Adjusted Flour Yield (%)	Softness Equivalent (%)	Flour Protein (at 14%)	Lactic Acid SRC (%)	Sodium Carbonate SRC (%)	Cookie Diameter (cm)
Sunburst	Red	12.3	41.2	61.2	49.5	10.1	129.1	80.1	17.7
Whitetail	White	11.7	22.3	66.8	56.9	9.2	112.4	72.0	18.8
MI16R0906	Red	10.3	26.0	66.3	56.9	8.3	126.1	72.1	19.1
MI18W1170	White	8.3	12.3	67.4	64.4	6.3	101.4	73.6	19.2
MI20R0011	Red	8.8	---4.9	68.9	59.8	6.6	89.4	65.7	19.7
MI20R0012	Red	8.2	---3.7	69.1	69.3	6.5	104.8	72.5	20.0
MI20R0013	Red	8.1	---7.9	68.9	67.0	6.3	98.5	71.6	19.3
MI20R0210	Red	8.7	---2.8	69.7	66.7	6.5	92.4	70.1	20.2
MI20W0035	White	8.3	6.5	68.0	62.7	6.3	102.2	68.7	19.8
MI20W0121	White	10.5	17.6	67.5	64.1	8.3	94.6	74.0	19.3
RS 977	Red	11.9	25.8	64.8	50.4	9.8	119.0	68.6	19.0
RS 912	Red	11.7	19.7	65.6	55.7	9.3	126.7	70.9	18.9
9xp051	Red	---	---	---	---	---	---	---	---
9xp216	Red	---	---	---	---	---	---	---	---
Synergy EXP2125	Red	---	---	---	---	---	---	---	---
Synergy EXP2141	Red	---	---	---	---	---	---	---	---
Haubert	Red	11.5	9.4	67.8	62.7	9.4	131.7	69.6	19.5
Tyson	Red	11.4	19.1	66.7	62.6	9.4	136.4	70.7	19.4
W 300	Red	11.6	24.1	65.9	56.3	9.8	125.8	65.9	19.4
W 304	Red	11.4	15.7	68.7	61.7	9.3	126.6	68.7	19.8
W 305	Red	12.1	58.8	66.7	44.7	10.7	112.1	81.0	17.4
W 313	Red	11.9	30.6	66.0	52.0	9.4	119.8	71.0	19.4
W 318	Red	---	---	---	---	---	---	---	---
W 322	Red	11.5	29.0	64.2	55.8	9.3	138.9	75.4	18.3
W 324	Red	11.1	21.4	65.8	59.3	9.1	132.9	72.0	19.0
W 326	Red	---	---	---	---	---	---	---	---
W 328	Red	---	---	---	---	---	---	---	---

Commercially Available Varieties entered in the 2022 Michigan State University Wheat Performance Trials

AgriMAXX Wheat Company

AgriMAXX 498
AgriMAXX 505
AgriMAXX 513
AgriMAXX 516
AgriMAXX EXP 2105
AgriMAXX EXP 2110
AgriMAXX EXP 2222
AgriMAXX Mackinac
AgriMAXX Piston

Albert Lea Seeds

801

DF Seeds Inc.

Ambassador
DF 112 R
DF 119 R
DF 121 R
DF 131 R
DF 261 W
DF 271 W
DF EX 2201 W
DF EX 2203 R
DF EX 2204 R
DF EX 2205 R
DF EX 2206 R
DF EX 2210 R
DF EX 2211 W

Dyna-Gro Seed

Dyna-Gro 9002
Dyna-Gro 9070
Dyna-Gro 9151
Dyna-Gro 9172
Dyna-Gro 9182
Dyna-Gro 9352
Dyna-Gro 9082W
Dyna-Gro 9242W
WX22741
WX22793

Grow Pro Genetics

GP 381
GP 463
GP 747
SY 100
SY 547
SY 576
SY Viper

Harrington Seeds Inc.

HS338R
HS358R EXP

Irrer Seed Farm

ISF 12205

KWS Cereals

KWS394
KWS398
KWS405
KWS411
KWS414
KWS415
KWS428
KWS430
KWS431

Michigan Crop Improvement

Association
AC Mountain
Jupiter
MCIA 2000
MCIA 2004
MCIA 21001
MCIA 21002
MCIA 21003
MCIA 21004
MCIA 21005
MCIA 21006
MCIA Wharf
MCIA 21008
MCIA Flipper
MCIA Jonah

MCIA MARLIN

MCIA Red Dragon
MCIA Whale
MI16W0133
MI17R0357
Moonlight
Sunburst
Whitetail

Michigan State University

MI16R0906
MI18W1170
MI20R0011
MI20R0012
MI20R0013
MI20R0210
MI20W0035
MI20W0121

Rupp Seeds Inc.

RS 977
RS 912
9xp051
9xp216

Synergy Ag

Synergy EXP2125
Synergy EXP2141
Haubert
Tyson

Wellman Seeds Inc.

W 300
W 304
W 305
W 313
W 318
W 322
W 324
W 326
W 328

Organizations Participating in the 2022 Michigan State University Wheat Performance Trials

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

Agripro
1521 N. Convent St. Suite 200
Bourbonnais, IL 60914
Phone: 815-370-3291

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

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

Local Seed Company LLC
802 Rozelle St
Memphis, TN 38104
Phone: 901-260-6000

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

Synergy Ag
6150 N. Co Rd. 33
Tiffin, OH 44883
Phone: 419-355-6708

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