2024 Michigan State Wheat Performance Trials

Photo: Planting Wheat Performance Trials, Sanilac County

MICHIGAN STATE UNIVERSITY | Extension

MICHIGAN WHEAT PROGRAM

2024 Michigan State Wheat Performance Trials

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Very little wheat in Michigan was planted early in fall of 2023. In most regions, wheat planting was delayed due to a delay in soybean maturity. There was a short period in mid-late September when planting conditions were good. After that persistent rainfall made it difficult for some to complete all their winter wheat planting. In fact, acres planted in Michigan dropped to 420,000 acres.

Overwintering conditions were favorable across the region with excellent winter survival through spring 2024. Dormancy was broken early in 2024 with some areas breaking dormancy 30 days ahead of 2023. Despite breaking dormancy early, many opted to delay nitrogen (N) applications due to the potential risk for nitrogen loss. However, conditions remained mild and those fields that received earlier than normal N and sulphur (S) applications greened up quickly. As spring progressed, temperatures remained cool along with persistent rainfall resulting in some nitrogen applications being delayed well into stem elongation. Herbicide applications were also delayed resulting in significant bluegrass and chickweed pressure in some fields. Disease levels remained relatively low early in the growing season; however, as fields approached flag leaf, stripe rust began to move across the Great Lakes region resulting in some growers needing to apply a fungicide after T2 (Flag leaf) and before T3 (anthesis). Many opted to apply a T3 for both stripe rust and fusarium head blight (FHB) protection. Powdery mildew, septoria and leaf rust were also being found in fields as the season progressed.

Some fields in the regions saw high levels of cereal leaf beetle populations and feeding requiring control. High levels of beneficial insects were being found in fields across the region. Despite reports of armyworm larvae in some fields, populations and feeding remained low overall.

Crop quality began to be very high, with no reports of fusarium head blight (vomitoxin). Frequent rainfall near harvest caused some problems with preharvest sprout. There were reports of falling number below 225 from some areas of the state. Other areas were above 250. Test weights varied widely. Harvest operations started about 10 days early in most areas of the state.

Temperatures were cooler at all locations compared to 2023. The number of days above 85 F was lowest in 2024 compared to the past 6 years. Precipitation was much more distributed during the growing season compared to the dry spell in June in 2023. The cooler conditions with adequate moisture allowed wheat to grow and produce good yields across the state.

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 2022, 2023 and 2024 growing seasons. 2024 data was reported through July 17, 2024.

	2022			2023			2024		
	Pigeon	Richville	Mason	Pigeon	Richville	Mason	Pigeon	Richville	Mason
Above 90 F	5	5	2	8	4	8	3	1	2
Above 85 F	22	24	22	16	15	21	10	9	14
April (in)	2.19	2.4	4.03	3.39	3.06	3.65	2.19	2.76	2.45
May (in)	2.13	1.64	3.85	1.6	0.98	1.25	2.82	4.14	2.76
June (in)	1.58	2.15	2.43	1.63	1.51	0.79	2.19	3.88	3.89
July (in)	0.93	2.27	2.26	4.1	3.53	1.92	3.52	3.15	4.69

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 2022 through 2024. 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 2024 State Wheat Performance Trial entries were planted in 7 counties: Gratiot, Allegan, Ingham, Huron, Monroe, Sanilac and Tuscola. 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 1.5 million seeds per acre in a solid stand planted in 7.5" rows. Fall fertilizer application varied with cooperator practice.

All sites received split nitrogen application (90 pounds at Feekes 4-5 and 30 pounds at Feekes 6-7), sulfur was applied (24 pounds) with the first nitrogen application, two fungicide applications (T1 and T3) and herbicide application to control weeds.

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.

Five 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 101 entries (55 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 overall yield for 2024. Tables 3 and 4 are sorted in alphabetic order by company and entry name. In some instances (e.g. yield), data columns to the right of the 2024 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 using a Harvest Master II from Juniper Systems. Yield data is standardized to 13.5% moisture. The 2024 yield data contains the multi-year yield averages of for entries included in all of the relevant years' tests.

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). Once 2024 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. 2023 grain samples will be submitted for DON analysis and will be reported later. Spikes were sampled from two replicates of the Ingham County site for **Falling Number (FN).** Spikes were dried five days and then subjected to misting in the greenhouse for three days. Whole meal flour was milled from misted grain using a coffee grinder. FN was then evaluated in two technical replicates on each biological replicate.

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.

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.

Table 4 contains data for **milling and baking quality**. Quality data are from the 2023 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%.

Table 5 contains the list of varieties from each seed company the seed treatments used for each variety.

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Table 1 : Multi-Year Performance Summary (Note: Tables sorted by 2023 High Management Yield, white wheat's grouped before red)

Line	Seed Color	Yield (Bu/A adjusted to 13.5% Moisture) 2024 Overall	Rank	2 Yr Avg 23-24	3 Yr Avg 22-24	Allegan 2024 Bu/A	Rank	Central MI 2024 Bu/A	Rank	2 Yr Avg 23-24	3 Yr Avg 22-24	Ingham 2024 Bu/A	Rank	2 Yr Avg 23-24	3 Yr Avg 22-24	Huron 2024 Bu/A	Rank	2 Yr Avg 23-24	3 Yr Avg 22-24	Monroe 2024 Bu/A	Rank	2 Yr Avg 23-24	Sanilac 2024 Bu/A	Rank	2 Yr Avg 23-24	Tuscola 2024 Bu/A	Rank	2 Yr Avg 23-24	3 Yr Avg 22-24
KWS566	W	104.5	1	--	--	104.5	7	108.0	4	--	--	98.9	4	--	--	116.2	2	--	--	99.5	3	--	108.6	7	--	95.9	11	--	--
MCIA White Lightning	W	104.2	2	--	--	105.6	6	105.9	6	--	--	93.9	8	--	--	115.2	4	--	--	96.7	5	--	109.6	1	--	103.0	1	--	--
DF 284 W	W	103.7	3	106.2	--	99.5	12	111.3	2	109.4	--	94.9	7	91.7	--	115.5	3	108.9	--	97.0	4	107.1	109.3	2	117.5	98.4	8	102.7	--
MI21W0040	W	102.8	4	105.8	--	100.9	11	101.7	15	99.6	--	102.3	1	102.0	--	116.6	1	114.0	--	95.6	7	104.1	107.1	10	118.4	95.3	12	96.9	--
DF 271 W	W	102.5	5	106.9	103.1	111.8	3	100.1	16	100.5	93.0	98.2	5	100.3	105.4	113.4	5	111.6	111.6	87.7	17	103.8	105.4	11	120.9	100.9	3	104.5	102.2
Dyna-Gro 9242W	W	102.2	6	102.2	98.2	108.7	5	102.3	12	98.8	91.2	99.7	3	94.8	98.0	109.2	13	107.4	105.4	92.4	10	97.2	108.6	6	114.8	94.5	14	100.3	98.4
KWS567	W	102.2	7	--	--	95.1	16	112.0	1	--	--	93.1	9	--	--	113.1	6	--	--	91.5	13	--	107.7	9	--	102.5	2	--	--
ISF 1115	W	101.5	8	100.4	--	114.9	1	102.7	10	97.7	--	89.3	13	87.2	--	111.8	8	105.1	--	91.3	14	100.3	103.7	14	113.2	97.2	10	99.1	--
Jupiter	W	101.5	9	107.3	102.9	94.4	17	110.9	3	105.2	98.7	90.3	11	98.6	102.1	111.4	9	109.8	111.8	102.1	2	111.5	109.3	3	117.6	92.2	18	100.9	98.8
MI20W0120	W	101.4	10	--	--	114.6	2	94.9	18	--	--	100.7	2	--	--	110.6	11	--	--	92.0	12	--	99.4	17	--	98.0	9	--	--
KWS565	W	101.4	11	--	--	102.4	10	102.5	11	--	--	95.4	6	--	--	109.3	12	--	--	92.0	11	--	108.0	8	--	100.2	4	--	--
AgriMAXX Mackinaw	W	101.3	12	103.1	100.9	111.1	4	103.8	9	99.3	94.3	91.7	10	90.7	97.3	106.4	16	112.2	112.2	93.0	9	100.1	103.6	15	115.3	99.6	5	101.1	99.6
KWS562	W	101.1	13	--	--	103.5	8	104.2	7	--	--	88.6	14	--	--	112.2	7	--	--	102.2	1	--	101.8	16	--	94.9	13	--	--
Whitetail	W	100.8	14	103.3	98.6	96.7	13	103.8	8	105.8	95.6	89.7	12	87.2	92.3	111.0	10	106.5	108.4	95.9	6	102.0	109.1	4	115.6	99.4	6	102.7	98.3
Ambassador	W	100.0	15	100.0	99.1	103.3	9	107.9	5	99.5	96.3	84.8	17	84.9	91.6	106.7	15	108.5	110.8	89.0	16	99.6	108.9	5	108.6	99.1	7	99.3	97.8
Moonlight	W	96.5	16	95.8	93.3	95.9	15	99.2	17	92.0	88.9	84.2	18	79.6	85.7	106.9	14	102.8	104.3	90.0	15	96.6	105.4	12	108.6	93.6	16	95.6	94.4
Dyna-Gro 9313W	W	96.1	17	98.1	--	96.5	14	101.9	13	96.7	--	86.6	16	84.7	--	103.6	17	103.1	--	84.8	18	95.3	105.3	13	109.1	93.9	15	100.0	--
VA19MAS7-519-1WS-R110	W	96.1	18	--	--	93.7	18	101.7	14	--	--	87.8	15	--	--	102.9	18	--	--	95.0	8	--	97.9	18	--	93.4	17	--	--
KWS529	R	106.6	1	--	--	112.1	8	105.0	32	--	--	96.9	31	--	--	119.8	1	--	--	92.5	42	--	113.6	2	--	106.1	1	--	--
ISF 780	R	106.2	2	102.3	--	112.8	6	106.7	21	99.5	--	96.2	36	90.3	--	113.5	18	104.6	--	99.6	13	100.8	109.7	10	117.9	105.1	2	100.7	--
DF 144 R	R	106.1	3	--	--	111.8	9	110.0	8	--	--	97.0	30	--	--	114.4	14	--	--	97.5	19	--	111.9	3	--	100.0	16	--	--
ISF 790	R	105.8	4	103.9	--	111.2	13	106.9	20	101.0	--	96.4	34	95.0	--	117.5	2	115.1	--	95.6	30	93.9	110.5	8	116.2	102.5	6	102.0	--
Dyna-Gro 9533	R	105.6	5	--	--	123.5	1	108.3	13	--	--	102.0	6	--	--	112.3	23	--	--	86.8	61	--	106.5	38	--	100.0	17	--	--
ISF 2411	R	105.1	6	101.9	--	110.1	19	101.5	54	98.8	--	109.9	1	97.7	--	108.1	46	104.1	--	102.7	2	100.6	106.1	42	113.2	97.1	43	97.1	--
MCIA 23004	R	105.0	7	--	--	110.1	18	103.4	41	--	--	102.1	5	--	--	115.3	11	--	--	95.7	28	--	111.2	7	--	97.5	38	--	--
MI20R0210	R	105.0	8	103.9	100.2	110.4	16	110.0	7	101.3	92.5	95.9	38	92.7	99.7	114.6	13	114.7	112.0	99.7	11	101.6	108.1	20	115.7	96.0	51	97.3	96.7
Dyna-Gro 9422	R	104.8	9	109.6	--	105.8	37	107.7	16	--	--	96.4	35	94.4	--	115.8	6	117.5	--	101.0	7	109.4	105.8	47	120.9	101.4	8	106.9	--
AgriMAXX 545	R	104.6	10	--	--	107.1	30	103.9	38	--	--	101.3	10	--	--	111.4	29	--	--	101.1	6	--	107.2	30	--	100.0	17	--	--
Dyna-Gro 9151	R	104.5	11	104.7	100.5	113.9	3	107.7	15	103.9	95.8	95.6	42	92.3	96.6	110.8	34	114.5	112.1	99.4	14	102.3	106.2	40	113.7	98.1	34	101.7	97.7
MI21R0058	R	104.5	12	105.0	--	99.7	57	115.1	1	103.9	--	100.9	12	98.7	--	115.6	8	106.8	--	93.3	38	99.8	106.8	35	118.8	100.0	15	101.8	--
AgriMAXX EXP 2314	R	104.3	13	--	--	107.5	27	106.5	23	--	--	98.6	24	--	--	113.0	21	--	--	95.2	32	--	108.3	18	--	100.9	12	--	--
KWS527	R	104.2	14	--	--	108.7	24	111.5	5	--	--	104.4	2	--	--	108.8	42	--	--	91.9	46	--	102.9	57	--	101.1	9	--	--
Dyna-Gro 9553	R	103.9	15	--	--	105.0	42	105.2	30	--	--	100.0	14	--	--	114.4	15	--	--	97.6	18	--	107.3	27	--	97.9	35	--	--
AgriMAXX 516	R	103.9	16	105.4	100.1	110.2	17	105.5	28	102.1	94.9	93.5	47	90.8	97.6	106.4	54	106.8	107.5	102.6	4	107.7	107.1	31	119.3	101.5	7	105.9	100.4
KWS525	R	103.8	17	--	--	104.6	44	105.8	25	--	--	91.1	55	--	--	108.7	43	--	--	104.1	1	--	107.7	22	--	104.2	3	--	--
XP2439	R	103.6	18	--	--	114.3	2	101.9	53	--	--	92.2	52	--	--	113.9	16	--	--	96.0	24	--	108.1	20	--	99.0	27	--	--
MCIA Flipper	R	103.6	19	104.7	102.8	113.4	4	97.5	65	93.6	90.9	100.0	15	98.2	102.3	116.6	4	120.1	116.5	97.3	20	101.5	107.1	32	115.5	93.2	61	99.6	101.4
MCIA MARLIN	R	103.6	20	106.8	104.8	104.6	43	105.5	29	104.5	99.0	99.2	21	98.5	101.0	116.4	5	112.8	113.7	91.0	49	98.4	108.6	15	118.8	99.5	23	107.9	105.5
AgriMAXX EXP 2405	R	103.5	21	--	--	98.1	61	104.7	33	--	--	103.8	3	--	--	111.9	24	--	--	100.9	8	--	109.3	12	--	95.9	52	--	--
Frantz	R	103.4	22	--	--	105.4	41	107.7	17	--	--	99.7	16	--	--	113.0	20	--	--	96.9	22	--	105.8	45	--	95.6	53	--	--
FS 600	R	101.2	52	--	--	98.2	60	104.4	36	--	--	101.6	9	--	--	109.9	38	--	--	90.1	54	--	106.7	36	--	97.5	39	--	--
KWS490	R	103.4	24	105.5	--	108.4	26	103.3	43	104.9	--	92.4	51	86.2	--	111.2	30	110.5	--	95.7	29	101.1	109.1	13	120.4	103.5	4	110.0	--
MCIA Wharf	R	103.3	25	101.7	100.1	105.6	39	112.4	2	102.3	95.6	92.7	50	84.6	93.8	112.8	22	109.4	111.3	93.7	37	98.9	109.4	11	114.4	96.8	47	100.6	99.5
Nova	R	103.3	26	--	--	106.3	33	105.6	27	--	--	95.6	43	--	--	115.8	7	--	--	92.3	43	--	107.6	24	--	100.0	19	--	--
KWS501	R	103.1	27	--	--	99.7	56	109.4	10	--	--	97.6	27	--	--	109.0	41	--	--	95.6	31	--	110.1	9	--	100.3	14	--	--
DF 2407 R	R	103.0	28	--	--	110.9	14	109.5	9	--	--	101.1	11	--	--	107.3	50	--	--	86.7	62	--	105.9	44	--	99.7	20	--	--
AgriMAXX 498	R	102.9	29	103.7	99.6	100.8	54	102.8	46	96.4	91.5	98.1	25	95.9	101.8	114.7	12	109.5	105.2	92.2	44	99.1	108.6	16	117.1	103.3	5	104.0	99.8
801	R	102.8	30	--	--	103.3	48	102.5	51	--	--	94.8	45	--	--	107.2	51	--	--	102.6	5	--	111.8	4	--	97.2	42	--	--
Dyna-Gro 9172	R	102.7	31	104.3	100.4	106.1	35	103.8	40	99.9	95.4	93.7	46	92.4	98.7	115.6	9	112.5	109.0	97.2	21	104.2	107.7	23	118.3	95.0	55	98.4	98.3
AgriMAXX 505	R	102.6	32	104.6	100.1	101.8	51	103.1	45	99.6	93.5	99.4	20	95.5	101.5	111.7	25	110.6	106.6	99.8	10	106.5	105.6	48	115.5	96.7	48	99.9	98.9
FS 606	R	99.7	63	--	--	107.2	29	99.0	62	--	--	91.4	54	--	--	106.2	55	--	--	92.6	40	--	101.8	61	--	99.7	22	--	--
DF 2403 R	R	102.6	34	--	--	105.8	36	112.1	3	--	--	90.8	57	--	--	111.7	26	--	--	97.6	17	--	107.3	28	--	92.7	63	--	--
Dyna-Gro 9570	R	102.5	35	--	--	110.6	15	100.5	60	--	--	101.9	7	--	--	110.9	33	--	--	98.3	15	--	96.8	67	--	98.6	30	--	--
DF 2401 R	R	102.5	36	--	--	106.8	31	106.2	24	--	--	101.6	8	--	--	115.4	10	--	--	91.2	48	--	101.8	62	--	94.5	57	--	--
16VDH-SRW03-023	R	102.4	37	--	--	111.6	11	100.7	57	--	--	99.2	21	--	--	108.6	44	--	--	93.8	36	--	105.6	49	--	97.4	40	--	--
Dyna-Gro 9593	R	102.4	38	--	--	103.8	47	102.6	50	--	--	99.7	17	--	--	110.5	36	--	--	90.8	51	--	108.3	19	--	101.1	10	--	--
MI21R0089	R	102.4	39	103.3	--	101.0	53	96.7	66	93.5	--	100.5	13	98.6	--	113.9	17	111.9	--	99.7	11	101.3	106.9	34	114.5	97.9	36	100.0	--
GP 893	R	102.3	40	--	--	99.1	58	111.9	4	--	--	95.7	41	--	--	106.0	56	--	--	95.9	26	--	115.8	1	--	92.0	64	--	--
KWS508	R	102.3	41	--	--	105.5	40	104.7	34	--	--	97.8	26	--	--	104.4	64	--	--	92.5	41	--	111.2	6	--	99.7	21	--	--
FS 623	R	101.6	49	--	--	103.3	48	108.9	11	--	--	93.2	49	--	--	110.0	37	--	--	90.0	55	--	106.6	37	--	99.5	24	--	--
AgriMAXX 513	R	102.1	43	101.0	96.5	113.1	5	103.4	42	99.4	93.2	95.5	44	87.8	93.7	105.9	57	105.0	103.7	96.6	23	97.2	102.8	58	116.2	97.3	41	100.5	95.5
DF 2402 R	R	102.0	44	--	--	109.4	22	106.6	22	--	--	96.2	37	--	--	106.7	53	--	--	92.0	45	--	105.2	50	--	97.9	36	--	--
Dyna-Gro 9182	R	102.0	45	99.6	97.2	105.7	38	107.1	19	96.9	91.0	89.7	59	89.1	93.7	111.2	31	107.8	107.3	95.9	25	94.5	107.4	26	113.1	96.9	45	96.3	96.8
DF 131 R	R	101.7	46	101.7	101.3	106.4	32	110.6	6	100.2	96.8	99.6	18	92.0	98.6	107.5	49	109.4	108.5	83.6	65	91.4	107.2	29	115.9	96.9	46	101.6	101.2
DF 112 R	R	101.7	47	103.4	101.6	110.0	20	103.2	44	103.0	97.0	90.0	58	90.7	96.1	109.7	39	112.4	112.4	91.6	47	91.4	109.0	14	118.1	98.2	33	104.7	101.0
Dyna-Gro 9542	R	101.7	47	--	--	103.9	46	102.7	47	--	--	88.7	61	--	--	117.1	3	--	--	94.5	34	--	104.1	54	--	100.7	13	--	--
FS 743	R	103.4	23	--	--	--	--	108.1	14	--	--	--	--	--	--	110.9	32	--	--	88.5	60	--	106.0	43	--	--	--	--	--
FS 745	R	101.6	50	--	--	108.6	25	107.6	18	--	--	89.7	60	--	--	109.7	39	--	--	89.3	57	--	107.5	25	--	99.0	28	--	--
MI20R0096	R	101.6	51	100.3	--	111.4	12	103.8	39	98.4	--	93.2	48	87.4	--	105.3	60	104.5	--	98.3	16	100.0	98.4	65	110.1	100.9	11	101.3	--
FS WX24A	R	102.2	42	--	--	--	--	104.6	35	--	--	--	--	--	--	104.9	63	--	--	94.5	34	--	104.7	52	--	--	--	--	--
GP 543	R	101.1	53	--	--	106.3	34	104.3	37	--	--	99.5	19	--	--	108.5	45	--	--	84.7	64	--	105.1	51	--	99.1	26	--	--
MCIA 2004	R	101.0	54	102.2	100.6	96.7	63	108.4	12	105.2	99.3	91.1	56	93.5	95.8	105.7	59	104.7	108.6	100.1	9	100.5	108.5	17	109.3	96.3	50	99.9	98.7

2024 Michigan State University Wheat Performance Trials

Table 1 : Multi-Year Performance Summary (Note: Tables sorted by 2023 High Management Yield, white wheat's grouped before red)

Line	Seed Color	Yield (Bu/A adjusted to 13.5% Moisture) 2024 Overall	Rank	2 Yr Avg 23-24	3 Yr Avg 22-24	Allegan 2024 Bu/A	Rank	Central MI 2024 Bu/A	Rank	2 Yr Avg 23-24	3 Yr Avg 22-24	Ingham 2024 Bu/A	Rank	2 Yr Avg 23-24	3 Yr Avg 22-24	Huron 2024 Bu/A	Rank	2 Yr Avg 23-24	3 Yr Avg 22-24	Monroe 2024 Bu/A	Rank	2 Yr Avg 23-24	Sanilac 2024 Bu/A	Rank	2 Yr Avg 23-24	Tuscola 2024 Bu/A	Rank	2 Yr Avg 23-24	3 Yr Avg 22-24
OH18-65-54	R	100.8	55	--	--	111.7	10	101.3	56	--	--	95.8	40	--	--	106.7	52	--	--	91.0	50	--	104.1	53	--	94.8	56	--	--
KWS500	R	100.7	56	--	--	101.0	52	100.7	58	--	--	99.0	23	--	--	113.4	19	--	--	90.8	52	--	101.9	60	--	98.3	32	--	--
DF 121 R	R	100.6	57	102.2	99.7	109.2	23	99.9	61	100.2	93.4	96.5	33	96.2	101.4	104.3	65	102.3	103.6	95.8	27	97.5	102.1	59	114.6	96.6	49	102.3	100.4
DF 119 R	R	100.5	58	101.3	99.3	96.8	62	102.6	49	86.8	88.7	97.4	28	96.7	101.8	105.0	62	111.5	111.6	102.7	3	102.0	105.8	46	114.1	93.4	59	96.5	95.2
GP 015	R	100.5	59	--	--	107.4	28	98.8	63	--	--	96.6	32	--	--	110.6	35	--	--	89.9	56	--	102.9	56	--	96.9	44	--	--
XP2401	R	100.4	60	--	--	99.0	59	102.5	52	--	--	95.8	39	--	--	111.7	27	--	--	88.8	59	--	111.2	5	--	93.6	58	--	--
MCIA Jonah	R	100.2	61	103.1	99.7	96.5	64	105.7	26	97.8	92.9	91.5	53	93.1	99.1	111.7	27	108.5	108.4	90.2	53	100.9	107.0	33	115.8	98.7	29	102.2	98.5
MCIA Barracuda	R	100.0	62	105.4	102.6	100.3	55	105.2	31	103.0	98.6	97.4	29	96.4	99.6	105.8	58	111.0	113.0	92.6	39	103.0	103.5	55	118.0	95.1	54	101.1	99.2
FS WX24B	R	102.6	33	--	--	109.6	21	98.3	64	--	--	102.7	4	--	--	107.7	47	--	--	94.9	33	--	106.4	39	--	98.4	31	--	--
MCIA .357	R	99.7	64	102.0	99.3	112.7	7	102.7	48	96.1	90.5	88.4	62	88.8	94.2	105.1	61	114.1	112.3	89.3	58	95.0	106.2	41	117.2	93.3	60	100.4	100.3
Enterprise	R	96.7	65	--	--	104.5	45	101.3	55	--	--	86.0	65	--	--	103.8	66	--	--	86.6	63	--	101.7	63	--	93.2	62	--	--
Sunburst	R	95.4	66	99.3	96.6	92.1	65	100.6	59	97.1	91.6	87.9	64	85.3	90.8	107.7	48	108.7	105.8	80.9	66	89.5	99.1	64	113.1	99.5	25	102.2	98.1
VA19FHB-36	R	92.4	67	--	--	102.4	50	95.2	67	--	--	87.9	63	--	--	94.3	67	--	--	77.1	67	--	97.8	66	--	92.0	65	--	--
Mean		101.7		103.0	99.9	104.7		104.4		99.8	94.1	95.1		92.2	97.2	110.3		109.7	109.5	93.6		100.3	105.9		115.7	97.9		101.2	98.8
CV		2.8		2.9	2.7	2.4		5.4		3.0	3.4	5.5		4.2	3.4	3.7		2.0	1.9	8.4		4.0	3.4		1.7	3.6		1.9	2.2
LSD		2.6		2.3	2.2	4.1		9.0		6.2	5.1	8.4		5.5	4.0	6.5		6.3	4.8	12.7		7.0	5.8		5.9	5.7		4.5	4.0

2024 Michigan State University Wheat Performance Trials

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

Line	Seed Color	Overall		Allegan		Central MI		Ingham		Huron		Monroe		Sanilac		Tuscola	
		% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW
AgriMAXX 498	Red	17.9	56.2	21.6	55.4	20.0	54.4	14.4	59.1	21.1	56.6	14.4	57.3	20.3	54.5	13.5	56.2
AgriMAXX 505	Red	18.2	58.7	22.9	59.0	20.8	55.7	13.9	59.9	21.3	58.6	14.3	59.8	18.3	58.4	16.3	59.2
AgriMAXX 513	Red	16.4	57.9	18.6	60.1	15.4	55.7	13.7	59.7	20.6	58.0	14.0	57.8	18.9	57.1	13.4	57.1
AgriMAXX 516	Red	18.3	57.0	24.0	56.6	20.4	55.0	14.5	59.9	20.6	56.6	14.3	58.4	20.1	55.2	14.0	57.3
AgriMAXX 545	Red	16.7	56.4	21.4	57.5	18.9	55.0	13.5	58.6	19.2	56.2	13.5	57.4	17.5	53.9	12.8	56.3
AgriMAXX EXP 2314	Red	18.7	56.5	24.1	56.3	21.2	55.0	13.7	59.5	21.5	56.0	13.7	57.2	22.7	53.8	14.1	57.5
AgriMAXX EXP 2405	Red	18.4	56.3	23.0	55.6	18.2	54.0	14.2	59.5	21.5	55.5	14.2	57.3	20.4	55.1	17.1	57.4
AgriMAXX Mackinaw	White	15.9	57.0	16.0	59.5	20.2	55.1	13.8	58.6	17.6	56.1	13.4	56.6	16.4	56.5	13.6	56.6
801	Red	18.1	57.4	22.5	57.0	18.6	54.8	14.5	60.2	21.4	57.2	14.2	58.4	18.7	56.0	16.4	58.3
Ambassador	White	15.2	55.6	17.2	58.2	15.9	53.9	13.1	56.2	19.3	55.6	12.7	55.5	15.3	54.8	12.7	54.7
DF 112 R	Red	15.4	56.2	17.8	57.9	16.3	54.0	13.2	57.3	18.2	56.7	12.4	55.8	16.0	55.5	13.9	56.3
DF 119 R	Red	17.1	57.4	17.1	58.1	18.1	55.1	13.9	59.1	21.4	56.8	14.1	57.9	17.6	56.8	17.2	58.0
DF 121 R	Red	18.7	57.7	22.9	58.2	21.4	56.1	14.6	60.4	22.5	56.7	14.7	58.8	20.6	55.7	14.0	58.0
DF 131 R	Red	18.5	56.6	24.8	56.0	20.3	54.8	14.4	60.6	21.5	56.1	13.5	57.1	20.1	54.8	15.0	56.8
DF 144 R	Red	17.2	56.1	23.4	55.8	18.3	54.2	13.2	58.4	19.9	55.9	13.3	56.8	17.2	54.3	15.0	57.2
DF 2401 R	Red	17.1	57.1	20.4	58.9	20.6	55.0	13.8	58.9	19.5	57.5	13.6	57.1	17.7	55.9	14.1	56.6
DF 2402 R	Red	17.2	57.1	19.8	58.5	17.9	54.7	14.2	59.4	21.4	57.4	13.7	57.1	19.5	56.5	13.8	56.3
DF 2403 R	Red	17.7	56.2	22.5	54.7	17.1	52.6	14.0	59.6	20.9	56.3	14.1	57.5	18.0	55.5	17.5	57.4
DF 2407 R	Red	17.9	55.9	25.0	54.5	17.1	54.6	13.3	58.0	20.3	55.8	13.5	56.1	20.9	55.1	15.2	56.9
DF 271 W	White	15.6	56.9	17.3	59.0	17.1	54.2	14.1	59.1	17.5	56.4	13.5	56.6	15.6	56.5	13.9	56.1
DF 284 W	White	16.8	55.2	21.6	54.4	17.8	54.1	13.8	57.5	19.7	55.3	13.7	55.6	17.6	54.0	13.1	55.8
FS 600	Red	17.5	58.9	22.8	58.0	16.7	56.3	14.4	60.7	20.2	59.1	14.6	59.5	17.6	58.7	16.2	59.6
FS 606	Red	18.6	59.1	22.1	59.1	20.6	57.4	14.4	61.6	21.6	58.9	14.8	59.5	19.9	58.2	16.6	59.0
FS 623	Red	17.4	57.8	20.3	58.9	20.2	57.0	14.0	59.6	21.6	57.6	13.8	57.3	18.1	56.9	14.0	57.3
FS 743	Red	19.0	56.7	--	--	20.6	54.9	--	--	20.7	57.7	14.3	58.3	20.3	56.0	--	--
FS 745	Red	17.9	56.7	23.1	56.5	20.4	54.8	14.1	59.6	20.4	57.1	14.2	57.4	18.5	54.9	14.7	56.6
FS WX24A	Red	17.6	57.4	--	--	18.3	56.3	--	--	20.5	57.8	13.7	58.0	17.9	57.3	--	--
FS WX24B	Red	17.3	56.6	21.3	54.5	18.1	54.8	14.0	59.6	21.5	57.1	14.1	57.0	18.1	56.4	14.2	57.0
GP 015	Red	17.6	57.6	18.8	59.6	20.6	56.4	14.0	59.0	21.8	57.4	13.9	57.6	19.1	56.7	15.0	56.9
GP 543	Red	18.4	56.7	21.0	56.8	21.5	55.4	14.5	59.8	22.6	56.1	14.0	56.0	19.9	56.2	15.4	56.8
GP 893	Red	16.7	56.7	20.0	57.9	18.5	55.6	13.9	58.6	19.9	56.7	13.9	57.0	15.9	54.5	15.1	56.5

2024 Michigan State University Wheat Performance Trials

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

Line	Seed Color	Overall		Allegan		Central MI		Ingham		Huron		Monroe		Sanilac		Tuscola	
		% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW
ISF 1115	White	15.6	57.0	17.7	58.6	16.5	55.0	13.7	59.1	17.5	56.2	13.5	56.6	15.0	56.5	15.1	57.1
ISF 780	Red	15.9	56.4	18.7	58.3	18.0	54.2	13.4	57.7	18.2	56.9	13.4	56.6	16.2	55.5	13.4	55.9
ISF 790	Red	17.9	56.8	21.8	54.2	21.1	56.0	14.0	59.4	21.0	57.3	14.9	56.8	17.8	56.5	14.6	57.0
ISF 2411	Red	18.1	58.9	21.8	59.3	20.3	56.8	14.9	61.5	21.7	58.0	15.3	60.0	18.0	58.1	14.4	58.5
KWS490	Red	18.3	56.6	25.3	54.4	21.0	55.1	14.1	60.2	21.4	56.8	13.3	57.4	19.9	56.4	13.2	55.7
KWS500	Red	18.0	56.7	22.7	55.9	18.9	54.3	14.1	59.5	21.4	56.5	14.3	57.5	19.3	56.0	15.4	57.4
KWS501	Red	18.5	57.0	24.0	56.3	22.3	56.1	13.9	59.5	20.9	56.6	14.2	57.3	18.7	56.0	15.7	57.5
KWS508	Red	18.1	56.8	23.0	55.6	20.3	56.0	13.9	59.6	21.7	56.0	14.3	57.6	17.9	55.8	15.7	56.8
KWS525	Red	18.2	57.0	26.1	55.3	16.9	54.0	14.1	60.1	20.5	57.7	15.2	59.0	20.4	55.6	14.0	57.0
KWS527	Red	17.4	57.0	21.9	56.6	19.0	54.8	13.8	60.3	20.9	57.1	14.2	57.6	18.6	56.9	13.2	55.6
KWS529	Red	17.3	55.9	22.4	54.8	19.4	55.5	13.6	58.6	20.4	56.3	13.8	56.1	18.8	54.9	13.0	55.0
KWS562	White	17.8	54.9	26.7	49.8	16.1	52.8	13.7	58.4	19.9	56.2	14.5	57.7	20.1	53.8	13.7	55.5
KWS565	White	20.9	55.8	32.0	50.4	21.6	53.6	16.6	60.6	22.9	57.4	16.6	58.1	22.8	53.9	13.8	56.4
KWS566	White	18.1	55.9	22.3	56.8	19.9	54.0	14.2	59.0	21.6	55.7	13.9	56.0	19.2	54.6	15.3	55.4
KWS567	White	18.6	56.0	25.4	53.6	19.4	54.7	13.9	59.2	20.5	55.6	13.5	57.2	20.3	54.2	16.9	57.2
Jupiter	White	18.0	55.9	27.6	53.8	20.5	55.5	13.0	56.9	18.0	57.0	14.4	57.3	16.8	54.9	15.6	56.0
MCIA .357	Red	16.6	56.8	17.4	57.8	20.2	55.7	13.6	58.1	20.1	56.7	13.8	56.6	16.8	55.7	14.3	56.9
MCIA 2004	Red	18.5	57.6	22.7	57.2	21.4	56.0	14.0	60.2	22.6	57.0	14.2	58.5	19.3	56.0	15.0	58.0
MCIA 23004	Red	18.2	56.0	25.5	52.5	19.1	54.3	14.0	59.8	20.5	56.1	13.9	57.7	18.7	54.8	15.5	57.1
MCIA White Lightning	White	17.1	54.8	23.6	53.5	20.4	53.1	13.6	58.1	19.0	55.0	13.3	56.0	16.6	53.5	13.3	54.7
MCIA MARLIN	Red	18.0	56.8	23.8	56.0	19.6	55.0	14.3	59.9	21.2	57.0	14.8	56.8	18.7	56.1	13.7	56.6
MCIA Barracuda	Red	16.4	57.3	17.2	57.6	19.0	56.2	13.8	59.0	19.9	56.6	13.9	57.7	15.9	57.1	15.5	56.9
MCIA Flipper	Red	17.0	57.2	17.6	58.9	19.7	55.1	13.9	58.4	21.1	57.1	13.9	56.7	15.7	56.5	17.3	57.4
MCIA Jonah	Red	18.4	55.7	24.4	53.7	18.1	52.8	14.0	58.9	21.7	56.2	14.3	57.0	21.3	55.0	15.1	56.0
MCIA Wharf	Red	15.0	56.1	15.1	57.1	19.2	55.4	12.6	57.4	18.3	56.4	11.6	54.9	15.1	55.1	13.4	56.3
Moonlight	White	14.7	55.8	14.9	58.3	15.8	53.0	13.0	57.9	18.0	56.2	12.5	55.2	14.8	54.8	14.1	55.3
Sunburst	Red	19.1	57.6	28.6	54.7	20.9	56.7	14.0	59.8	22.5	59.2	13.7	57.7	20.8	57.7	13.2	57.1
Whitetail	White	15.7	56.0	21.0	57.2	16.5	55.1	11.9	56.1	18.6	56.1	13.1	56.4	15.9	55.7	13.1	55.5
MI20R0096	Red	15.8	56.3	18.1	58.0	16.2	54.2	13.0	57.8	19.1	56.4	13.7	56.8	17.6	55.5	12.8	55.0
MI20R0210	Red	18.0	56.4	23.8	56.5	20.8	54.8	14.3	59.7	20.4	56.7	13.9	57.6	18.6	54.1	14.5	55.6
MI20W0120	White	14.5	55.8	15.3	58.2	16.9	52.5	13.3	58.3	16.0	55.1	12.7	55.6	14.9	55.5	12.7	55.6

2024 Michigan State University Wheat Performance Trials

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

Line	Seed Color	Overall		Allegan		Central MI		Ingham		Huron		Monroe		Sanilac		Tuscola	
		% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW	% Moist	TW
MI21R0058	Red	18.6	56.5	23.3	55.5	22.1	55.3	13.7	59.3	20.6	56.9	14.1	56.7	20.4	54.6	15.9	57.3
MI21R0089	Red	18.2	57.2	24.1	56.6	21.8	55.3	14.8	60.9	22.4	57.3	14.6	58.2	17.2	56.6	12.2	55.3
MI21W0040	White	16.7	57.6	17.8	58.8	18.5	55.2	14.3	59.1	20.0	57.3	13.8	57.3	16.2	57.2	16.5	58.5
Dyna-Gro 9151	Red	17.5	58.9	23.1	58.7	19.2	57.3	14.0	60.8	21.4	58.8	14.7	59.9	16.9	58.6	13.5	58.0
Dyna-Gro 9172	Red	18.3	57.2	21.9	57.3	20.9	56.2	14.4	60.1	21.0	56.7	14.1	58.1	19.6	54.9	16.5	56.7
Dyna-Gro 9182	Red	18.0	57.3	21.3	57.5	19.0	55.3	14.3	59.8	22.2	57.6	14.3	57.6	19.8	56.8	14.8	56.7
Dyna-Gro 9422	Red	17.5	57.0	21.4	57.3	17.7	54.4	14.0	59.2	21.2	56.6	14.0	57.8	18.2	55.3	15.7	58.4
Dyna-Gro 9533	Red	16.8	56.4	17.7	57.8	20.1	54.6	13.4	57.8	20.1	56.0	13.3	56.5	17.8	54.9	14.8	57.1
Dyna-Gro 9542	Red	18.3	55.7	24.9	54.2	21.0	54.5	13.7	59.2	21.6	56.4	14.1	57.5	19.6	55.7	13.3	52.7
Dyna-Gro 9553	Red	18.8	56.4	24.5	52.4	20.2	55.6	14.0	59.7	21.9	57.1	14.0	57.7	21.3	54.7	15.4	57.6
Dyna-Gro 9570	Red	16.3	56.9	18.1	59.2	16.0	54.2	14.0	59.0	20.2	56.3	13.5	56.8	17.6	56.1	14.6	56.3
Dyna-Gro 9593	Red	17.6	56.1	23.5	56.2	15.8	51.2	14.5	59.8	21.4	57.0	14.0	57.6	20.4	54.8	13.3	55.9
Dyna-Gro 9242W	White	17.2	56.5	22.5	56.2	15.8	52.7	14.0	59.8	21.4	57.1	14.0	57.6	18.0	56.0	14.7	56.1
Dyna-Gro 9313W	White	18.2	54.8	29.0	52.8	15.9	53.3	13.7	58.3	21.6	55.9	13.4	56.7	21.7	51.9	12.5	55.0
Enterprise	Red	15.9	57.8	15.3	59.9	17.2	55.5	14.0	59.0	19.6	57.8	13.6	57.2	16.4	57.4	14.8	57.5
OH18-65-54	Red	18.4	58.2	21.6	58.8	21.5	55.9	14.4	61.3	22.9	57.8	14.5	58.3	19.8	57.5	14.2	57.6
Frantz	Red	17.7	56.7	21.7	56.6	19.7	54.1	13.7	58.7	20.9	56.9	14.0	57.8	18.8	54.9	14.8	58.0
Nova	Red	17.9	56.1	21.5	55.4	20.0	55.2	13.3	58.3	20.1	57.1	14.4	56.6	22.3	55.2	13.8	55.0
XP2401	Red	18.7	56.0	26.4	52.7	20.7	54.5	14.3	59.5	21.2	56.3	14.0	57.2	17.9	54.9	16.5	57.1
XP2439	Red	15.7	56.6	17.7	58.2	16.2	54.7	13.3	58.3	18.6	56.7	13.4	56.8	16.1	55.1	14.2	56.2
16VDH-SRW03-023	Red	17.1	57.1	22.2	55.7	19.5	55.6	13.3	58.6	19.5	57.9	13.8	57.6	17.8	56.3	14.0	57.7
VA19FHB-36	Red	18.7	58.1	22.8	58.1	21.6	56.0	14.1	60.7	21.8	58.6	13.8	58.1	22.3	56.3	14.7	58.6
VA19MAS7-519-1WS-R110	White	19.9	57.4	28.1	53.3	21.3	55.9	14.8	60.2	22.1	58.4	14.9	59.8	23.2	55.5	15.1	58.4
	Mean	17.5	56.7	21.9	56.3	19.1	54.9	13.9	59.1	20.6	56.8	13.8	57.2	18.6	55.6	14.5	56.7
	CV	5.2	1.1	9.7	2.9	11.9	2.3	3.6	1.2	3.9	0.9	4.2	1.2	8.7	1.1	13.7	2.4
	LSD	0.9	0.6	3.4	2.6	3.7	2.0	0.8	1.1	1.3	0.9	0.9	1.1	2.6	0.9	3.2	2.2

2024 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			Falling Number	Plant Height	Flowering Date	Physiological Maturity	Grain Fill Period
				Severity 2024	Incidence 2024	Index 2024	2024	(inches)	Days past Jan. 1	Days past Jan. 1	# of days
AgriMAXX 498	Red	Awnless	White	25.0	13.0	3.3	189.0	34.6	143	173	30
AgriMAXX 505	Red	Awned	White	15.0	5.0	0.8	217.5	32.9	145	172	27
AgriMAXX 513	Red	Awned	White	16.7	10.0	1.7	104.8	34.3	144	173.5	29.5
AgriMAXX 516	Red	Awned	White	15.0	7.0	1.1	132.0	32.6	143	173	30
AgriMAXX 545	Red	Awned	White	10.0	8.0	0.8	64.8	31.9	144	174.5	30.5
AgriMAXX EXP 2314	Red	Awned	White	5.0	5.0	0.3	--	34.1	144	--	--
AgriMAXX EXP 2405	Red	Awned	White	20.0	10.0	2.0	--	33.6	144	--	--
AgriMAXX Mackinaw	White	Awnless	White	28.3	10.0	2.8	62.0	30.9	143	173	30
801	Red	Awned	White	8.3	12.0	1.0	134.5	32.6	144	173	29
Ambassador	White	Awnless	White	61.7	28.0	17.3	99.5	33.8	143	170.5	27.5
DF 112 R	Red	Awned	White	16.7	17.0	2.8	222.0	32.9	142	170.5	28.5
DF 119 R	Red	Awnless	White	16.7	8.0	1.3	265.3	34.8	144	170	26
DF 121 R	Red	Awned	White	33.3	20.0	6.7	206.0	32.9	143	171.5	28.5
DF 131 R	Red	Awned	White	5.0	5.0	0.3	169.0	32.9	143	173.5	30.5
DF 144 R	Red	Awned	White	11.7	10.0	1.2	62.0	31.8	143	174	31
DF 2401 R	Red	Awnless	White	31.7	10.0	3.2	--	35.7	142	--	--
DF 2402 R	Red	Awnless	White	13.3	5.0	0.7	--	31.3	142	--	--
DF 2403 R	Red	Awned	White	10.0	8.0	0.8	--	31.8	143	--	--
DF 2407 R	Red	Awnless	White	20.0	5.0	1.0	--	34.4	143	--	--
DF 271 W	White	Awnless	White	23.3	7.0	1.6	62.5	32.3	143	173.5	30.5
DF 284 W	White	Awnless	White	5.0	5.0	0.3	62.0	30.7	142	174	32
FS 600	Red	Awned	White	6.7	7.0	0.5	208.8	32.8	143	171	28
FS 606	Red	Awnless	White	6.7	5.0	0.3	281.3	34.9	142	171	29
FS 623	Red	Awnless	White	5.0	7.0	0.4	230.5	34	142	172.5	30.5
FS 743	Red	Awnless	White	--	--	--	--	--	--	--	--
FS 745	Red	Awned	White	10.0	7.0	0.7	89.8	32.1	143	172.5	29.5
FS WX24A	Red	Awned	White	--	--	--	--	--	--	--	--
FS WX24B	Red	Awnless	White	5.0	5.0	0.3	98.5	33.8	142	172.5	30.5
GP 015	Red	Awnless	White	5.0	5.0	0.3	89.8	32.9	141	172.5	31.5
GP 543	Red	Awnless	White	18.3	20.0	3.7	237.5	36.5	142	171.5	29.5
GP 893	Red	Awnless	White	28.3	12.0	3.4	223.8	35.7	143	169.5	26.5

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

Line	Seed Color	Awn	Chaff Color	Fusarium Head Blight			Falling Number	Plant Height	Flowering Date	Physiological Maturity	Grain Fill Period
				Severity 2024	Incidence 2024	Index 2024	2024	(inches)	Days past Jan. 1	Days past Jan. 1	# of days
ISF 1115	White	Awnless	White	16.7	7.0	1.2	--	30.4	142	173.5	31.5
ISF 780	Red	Awned	White	5.0	8.0	0.4	--	31.4	142	172	30
ISF 790	Red	Awnless	White	16.7	13.0	2.2	--	32	141	171	30
ISF 2411	Red	Awnless	White	36.7	15.0	5.5	--	32	141	171.5	30.5
KWS490	Red	Awned	White	5.0	8.0	0.4	--	31.5	145	--	--
KWS500	Red	Awned	White	6.7	15.0	1.0	--	32.8	143	--	--
KWS501	Red	Awned	White	15.0	10.0	1.5	--	32.8	144	--	--
KWS508	Red	Awned	White	23.3	13.0	3.0	--	32.7	144	--	--
KWS525	Red	Awned	White	10.0	7.0	0.7	--	31	145	--	--
KWS527	Red	Awned	White	18.3	10.0	1.8	--	34.8	142	--	--
KWS529	Red	Awnletted	White	5.0	9.0	0.5	--	32.2	145	--	--
KWS562	White	Awned	White	10.0	7.0	0.7	--	32	144	--	--
KWS565	White	Awned	White	8.3	10.0	0.8	--	33.1	143	--	--
KWS566	White	Awnless	White	6.7	5.0	0.3	--	34.7	141	--	--
KWS567	White	Awnless	White	23.3	8.0	1.9	--	31.4	143	--	--
Jupiter	White	Awnless	Bronze	55.0	28.0	15.4	62.0	31.3	142	175	33
MCIA .357	Red	Awnless	White	15.0	9.0	1.4	186.0	29.2	141	170.5	29.5
MCIA 2004	Red	Awned	White	18.3	7.0	1.3	166.0	32.6	143	172.5	29.5
MCIA 23004	Red	Awned	White	6.7	13.0	0.9	--	32.6	144	--	--
MCIA White Lightning	White	Awnless	White	11.7	5.0	0.6	--	30.5	142	174.5	32.5
MCIA MARLIN	Red	Awnless	White	21.7	20.0	4.3	146.5	32.1	142	171.5	29.5
MCIA Barracuda	Red	Awned	White	11.7	7.0	0.8	282.8	33.1	142	170.5	28.5
MCIA Flipper	Red	Awnless	White	40.0	20.0	8.0	125.8	32.2	143	171	28
MCIA Jonah	Red	Awnless	White	33.3	12.0	4.0	237.3	34.4	142	172	30
MCIA Wharf	Red	Awnletted	White	16.7	5.0	0.8	244.8	29.2	142	171	29
Moonlight	White	Awnless	White	35.7	11.0	3.9	127.8	33.6	143	169.5	26.5
Sunburst	Red	Awnless	White	35.0	10.0	3.5	154.0	30.1	143	173	30
Whitetail	White	Awnletted	White	50.0	25.0	12.5	64.3	34	143	172	29
MI20R0096	Red	Awnless	White	5.0	6.0	0.3	--	31.7	142	--	--
MI20R0210	Red	Awned	White	21.7	27.0	5.9	--	29.1	143	--	--
MI20W0120	White	Awned	White	15.0	7.0	1.1	--	32.7	144	--	--

2024 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 Severity 2024	Fusarium Head Blight Incidence 2024	Fusarium Head Blight Index 2024	Falling Number 2024	Plant Height (inches)	Flowering Date Days past Jan. 1	Physiological Maturity Days past Jan. 1	Grain Fill Period # of days
MI21R0058	Red	Awnless	White	18.3	10.0	1.8	--	35.1	144	--	--
MI21R0089	Red	Awnless	White	43.3	10.0	4.3	--	35.9	141	--	--
MI21W0040	White	Awnless	Bronze	58.2	19.0	11.1	--	35.2	142	--	--
Dyna-Gro 9151	Red	Awned	White	11.7	7.0	0.8	215.5	33.7	144	171	27
Dyna-Gro 9172	Red	Awned	White	15.0	7.0	1.1	168.3	32.4	144	173	29
Dyna-Gro 9182	Red	Awnless	White	11.7	7.0	0.8	288.3	34.1	142	170	28
Dyna-Gro 9422	Red	Awned	White	10.0	7.0	0.7	153.5	33.3	144	173	29
Dyna-Gro 9533	Red	Awnless	White	5.0	5.0	0.3	--	31.1	142	--	--
Dyna-Gro 9542	Red	Awned	White	5.0	7.0	0.4	--	31	144	--	--
Dyna-Gro 9553	Red	Awned	White	6.7	5.0	0.3	--	30.7	144	--	--
Dyna-Gro 9570	Red	Awned	White	6.7	8.0	0.5	--	34.1	144	--	--
Dyna-Gro 9593	Red	Awned	White	6.7	5.0	0.3	--	32.7	144	--	--
Dyna-Gro 9242W	White	Awnless	White	18.3	7.0	1.3	64.8	35.7	144	173	29
Dyna-Gro 9313W	White	Awned	White	18.3	7.0	1.3	101.3	34	143	173	30
Enterprise	Red	Awnless	White	15.0	5.0	0.8	180.0	35.9	141	171.5	30.5
OH18-65-54	Red	Awnless	White	6.7	5.0	0.3	291.5	32.5	142	169.5	27.5
Frantz	Red	Awned	White	8.3	8.0	0.7	173.0	33.8	145	173	28
Nova	Red	Awnless	White	35.0	10.0	3.5	288.8	34.4	143	174	31
XP2401	Red	Awned	White	6.7	10.0	0.7	231.3	31.9	143	174	31
XP2439	Red	Awnless	White	6.7	7.0	0.5	196.5	30.2	142	173	31
16VDH-SRW03-023	Red	Awnless	White	31.0	17.0	5.3	--	32.8	143	--	--
VA19FHB-36	Red	Awned	White	10.0	7.0	0.7	--	34.1	142	--	--
VA19MAS7-519-1WS-R110	White	Awned	White	33.3	8.0	2.7	--	32.3	143	--	--
			Mean	19.3	10.0		160.2	32.8	143.0		
			CV	40.9	57.5		33.6	3.7	0.6		
			LSD	12.7	9.0		108.0	1.9	2.0		

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Table 4. 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	8.0	4.6	71.1	62.9	6.8	110.9	68.8	20.6
AgriMAXX 505	Red	8.3	13.9	66.1	58.9	7.2	134.1	79.0	18.9
AgriMAXX 513	Red	8.1	53.4	66.8	49.4	7.7	125.6	93.1	17.5
AgriMAXX 516	Red	7.8	8.1	69.6	63.4	6.5	111.6	69.6	20.2
AgriMAXX 545	Red	--	--	--	--	--	--	--	--
AgriMAXX EXP 2314	Red	--	--	--	--	--	--	--	--
AgriMAXX EXP 2405	Red	--	--	--	--	--	--	--	--
AgriMAXX Mackinaw	White	7.4	-3.4	71.2	63.9	6.5	111.8	70.3	20.1
801	Red	8.1	13.8	68.2	61.6	6.9	119.2	74.0	19.4
Ambassador	White	8.0	-0.7	70.9	61.8	6.6	99.2	68.6	20.5
DF 112 R	Red	7.6	3.5	71.5	62.5	6.4	113.5	73.4	20.2
DF 119 R	Red	8.0	5.0	69.5	60.4	6.8	108.0	72.1	19.9
DF 121 R	Red	7.7	8.9	69.3	65.5	6.2	103.8	71.5	20.0
DF 131 R	Red	7.7	8.0	69.6	64.0	6.4	110.4	69.6	19.7
DF 144 R	Red	--	--	--	--	--	--	--	--
DF 2401 R	Red	--	--	--	--	--	--	--	--
DF 2402 R	Red	--	--	--	--	--	--	--	--
DF 2403 R	Red	--	--	--	--	--	--	--	--
DF 2407 R	Red	--	--	--	--	--	--	--	--
DF 271 W	White	7.4	-1.6	70.7	63.0	6.2	101.1	69.1	20.2
DF 284 W	White	--	--	--	--	--	--	--	--
FS 600	Red	--	--	--	--	--	--	--	--
FS 606	Red	--	--	--	--	--	--	--	--
FS 623	Red	--	--	--	--	--	--	--	--
FS 743	Red	--	--	--	--	--	--	--	--
FS 745	Red	--	--	--	--	--	--	--	--
FS WX24A	Red	--	--	--	--	--	--	--	--
FS WX24B	Red	--	--	--	--	--	--	--	--
GP 015	Red	--	--	--	--	--	--	--	--
GP 543	Red	--	--	--	--	--	--	--	--
GP 893	Red	--	--	--	--	--	--	--	--
ISF 1115	White	7.4	17.6	69.0	59.5	6.7	72.5	72.1	19.8
ISF 780	Red	8.4	10.2	67.3	64.5	6.9	114.9	73.8	19.5
ISF 790	Red	8.3	20.5	68.0	58.5	7.0	125.3	81.5	19.3
ISF 2411	Red	8.2	6.3	68.3	63.2	6.9	101.1	75.0	19.4
KWS490	Red	7.4	9.4	67.9	61.7	6.0	90.8	72.2	20.2
KWS500	Red	--	--	--	--	--	--	--	--
KWS501	Red	--	--	--	--	--	--	--	--
KWS508	Red	--	--	--	--	--	--	--	--
KWS525	Red	--	--	--	--	--	--	--	--
KWS527	Red	--	--	--	--	--	--	--	--
KWS529	Red	--	--	--	--	--	--	--	--
KWS562	White	--	--	--	--	--	--	--	--
KWS565	White	--	--	--	--	--	--	--	--
KWS566	White	--	--	--	--	--	--	--	--
KWS567	White	--	--	--	--	--	--	--	--
Jupiter	White	7.5	9.8	70.2	58.6	6.6	96.7	70.6	19.5
MCIA .357	Red	8.0	15.1	69.9	58.9	6.5	97.7	67.4	19.8
MCIA 2004	Red	8.2	10.3	70.3	63.2	7.1	110.5	69.9	20.2
MCIA 23004	Red	--	--	--	--	--	--	--	--
MCIA White Lightning	White	--	--	--	--	--	--	--	--
MCIA MARLIN	Red	--	--	--	--	--	--	--	--
MCIA Barracuda	Red	7.3	3.2	70.8	66.4	6.0	96.5	69.6	19.6
MCIA Flipper	Red	7.8	10.8	71.8	61.9	6.2	94.3	71.3	19.2
MCIA Jonah	Red	7.6	3.6	71.3	64.0	6.6	111.8	69.7	20.1
MCIA Wharf	Red	7.8	1.8	68.8	58.6	6.4	94.8	68.5	20.8
Moonlight	White	7.8	5.7	70.1	59.8	6.9	102.5	70.6	19.1
Sunburst	Red	8.2	40.3	64.8	53.2	7.3	108.9	80.8	18.2
Whitetail	White	7.5	2.6	70.6	62.6	6.3	100.3	72.2	19.3
MI20R0096	Red	8.3	16.5	68.5	56.7	7.1	87.9	70.5	19.1
MI20R0210	Red	7.5	0.7	69.7	62.9	6.3	88.6	71.5	19.7

2024 Michigan State University Wheat Performance Trials

Table 4. 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)
MI20W0120	White	--	--	--	--	--	--	--	--
MI21R0058	Red	7.3	3.1	71.2	64.8	6.2	107.6	69.2	20.5
MI21R0089	Red	8.3	20.8	65.8	51.9	7.0	112.4	74.0	19.2
MI21W0040	White	7.2	14.9	70.3	59.4	6.2	99.4	72.3	19.6
Dyna-Gro 9151	Red	7.9	13.4	66.5	59.5	6.9	130.7	79.3	18.7
Dyna-Gro 9172	Red	7.7	6.1	69.4	63.1	6.3	109.1	70.0	20.2
Dyna-Gro 9182	Red	7.9	10.5	68.6	58.5	6.6	100.6	70.1	19.1
Dyna-Gro 9422	Red	7.4	7.1	69.6	64.8	6.3	102.4	74.9	19.9
Dyna-Gro 9533	Red	--	--	--	--	--	--	--	--
Dyna-Gro 9542	Red	--	--	--	--	--	--	--	--
Dyna-Gro 9553	Red	--	--	--	--	--	--	--	--
Dyna-Gro 9570	Red	--	--	--	--	--	--	--	--
Dyna-Gro 9593	Red	--	--	--	--	--	--	--	--
Dyna-Gro 9242W	White	7.8	2.0	69.1	62.8	6.1	96.0	67.5	20.2
Dyna-Gro 9313W	White	8.4	4.1	69.8	59.6	7.0	83.9	69.1	19.6
Enterprise	Red	--	--	--	--	--	--	--	--
OH18-65-54	Red	--	--	--	--	--	--	--	--
Frantz	Red	--	--	--	--	--	--	--	--
Nova	Red	--	--	--	--	--	--	--	--
XP2401	Red	--	--	--	--	--	--	--	--
XP2439	Red	--	--	--	--	--	--	--	--
16VDH-SRW03-023	Red	--	--	--	--	--	--	--	--
VA19FHB-36	Red	--	--	--	--	--	--	--	--
VA19MAS7-519-1WS-R110	White	--	--	--	--	--	--	--	--

Table 5. List of varieties entered from each company and their seed treatments.

Company	Line	Seed Treatment
AgriMAXX Wheat Company	AgriMAXX 498	PRIME ST
AgriMAXX Wheat Company	AgriMAXX 505	PRIME ST
AgriMAXX Wheat Company	AgriMAXX 513	PRIME ST
AgriMAXX Wheat Company	AgriMAXX 516	PRIME ST
AgriMAXX Wheat Company	AgriMAXX 545	PRIME ST
AgriMAXX Wheat Company	AgriMAXX EXP 2314	PRIME ST
AgriMAXX Wheat Company	AgriMAXX EXP 2405	PRIME ST
AgriMAXX Wheat Company	AgriMAXX Mackinaw	PRIME ST
AgriPro	GP 015	Vibrance EX + Crusier
AgriPro	GP 543	Vibrance EX + Crusier
AgriPro	GP 893	Vibrance EX + Crusier
Albert Lea Seed	801	Untreated
DF Seeds	DF 2401 R	DFender
DF Seeds	DF 2402 R	DFender
DF Seeds	DF 2403 R	DFender
DF Seeds	DF 2407 R	DFender
DF Seeds, LLC	Ambassador	DFender
DF Seeds, LLC	DF 112 R	DFender
DF Seeds, LLC	DF 119 R	DFender
DF Seeds, LLC	DF 121 R	DFender
DF Seeds, LLC	DF 131 R	DFender
DF Seeds, LLC	DF 144 R	DFender
DF Seeds, LLC	DF 271 W	DFender
DF Seeds, LLC	DF 284 W	DFender
Dyna-Gro	Dyna-Gro 9151	Foothold Virock with Awaken ST
Dyna-Gro	Dyna-Gro 9172	Foothold Virock with Awaken ST
Dyna-Gro	Dyna-Gro 9182	Foothold Virock with Awaken ST
Dyna-Gro	Dyna-Gro 9242W	Foothold Virock with Awaken ST
Dyna-Gro	Dyna-Gro 9313W	Foothold Virock with Awaken ST
Dyna-Gro	Dyna-Gro 9422	Foothold Virock with Awaken ST
Dyna-Gro	Dyna-Gro 9533	Foothold Virock with Awaken ST
Dyna-Gro	Dyna-Gro 9542	Foothold Virock with Awaken ST
Dyna-Gro	Dyna-Gro 9553	Foothold Virock with Awaken ST
Dyna-Gro	Dyna-Gro 9570	Foothold Virock with Awaken ST
Dyna-Gro	Dyna-Gro 9593	Foothold Virock with Awaken ST
FS InSPIRE	FS 600	Vibrance Extreme & Senator
FS InSPIRE	FS 606	Vibrance Extreme & Senator
FS InSPIRE	FS 623	Vibrance Extreme & Senator
FS InSPIRE	FS 743	Vibrance Extreme & Senator
FS InSPIRE	FS 745	Vibrance Extreme & Senator
FS InSPIRE	FS WX24A	Vibrance Extreme & Senator
FS InSPIRE	FS WX24B	Vibrance Extreme & Senator
Irrer Seed Farm	ISF 1115	Vibrance Extreme
Irrer Seed Farm	ISF 2411	Vibrance Extreme
Irrer Seed Farm	ISF 780	Vibrance Extreme

Table 5. List of varieties entered from each company and their seed treatments.

Company	Line	Seed Treatment
Irrer Seed Farm	ISF 790	Vibrance Extreme
KWS Cereals USA	KWS490	Cruisermaxx/ Vibrance
KWS Cereals USA	KWS500	Cruisermaxx/ Vibrance
KWS Cereals USA	KWS501	Cruisermaxx/ Vibrance
KWS Cereals USA	KWS508	Cruisermaxx/ Vibrance
KWS Cereals USA	KWS525	Cruisermaxx/ Vibrance
KWS Cereals USA	KWS527	Cruisermaxx/ Vibrance
KWS Cereals USA	KWS529	Cruisermaxx/ Vibrance
KWS Cereals USA	KWS562	Cruisermaxx/ Vibrance
KWS Cereals USA	KWS565	Cruisermaxx/ Vibrance
KWS Cereals USA	KWS566	Cruisermaxx/ Vibrance
KWS Cereals USA	KWS567	Cruisermaxx/ Vibrance
MCIA	Jupiter	VIBRANCE EXTREME
MCIA	MCIA .357	VIBRANCE EXTREME
MCIA	MCIA 2004	VIBRANCE EXTREME
MCIA	MCIA 23004	VIBRANCE EXTREME
MCIA	MCIA Barracuda	VIBRANCE EXTREME
MCIA	MCIA Flipper	VIBRANCE EXTREME
MCIA	MCIA Jonah	VIBRANCE EXTREME
MCIA	MCIA MARLIN	VIBRANCE EXTREME
MCIA	MCIA Wharf	VIBRANCE EXTREME
MCIA	MCIA White Lightning	VIBRANCE EXTREME
MCIA	Moonlight	VIBRANCE EXTREME
MCIA	Sunburst	VIBRANCE EXTREME
MCIA	Whitetail	VIBRANCE EXTREME
MSU	MI20R0096	Cruisermaxx Vibrance Cereals
MSU	MI20R0210	Cruisermaxx Vibrance Cereals
MSU	MI20W0120	Cruisermaxx Vibrance Cereals
MSU	MI21R0058	Cruisermaxx Vibrance Cereals
MSU	MI21R0089	Cruisermaxx Vibrance Cereals
MSU	MI21W0040	Cruisermaxx Vibrance Cereals
Ohio Seed Improvement Assn	Enterprise	CeresUS ST IM G8
Ohio Seed Improvement Assn	OH18-65-54	CeresUS ST IM G8
Synergy Ag	Frantz	Athena-V TBZ IM
Synergy Ag	Nova	Athena-V TBZ IM
Synergy Ag	XP2401	Cruiser Maxx Vibrance Cereals
Synergy Ag	XP2439	Cruiser Maxx Vibrance Cereals
Virginia Tech	16VDH-SRW03-023	Foothold
Virginia Tech	VA19FHB-36	Foothold
Virginia Tech	VA19MAS7-519-1WS-R110	Foothold

Organizations Participating in the 2024 Michigan State University Wheat Performance Trials

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Dyna-Gro Seed
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GROWMARK, Inc
1701 Towanda Ave
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Grow Pro Genetics
375 N Old US Route 66
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Irrer Seed Farm
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KWS Cereals
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