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1996 Wheat Variety and Seed Selection

Michigan State University Extension Service

Wheat Facts

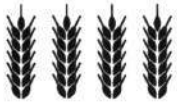
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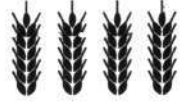
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WHEAT



FACTS



1996 WHEAT VARIETY AND SEED SELECTION

Rick Ward, Samuel Hazen, and Erica Jenkins
Department of Crop and Soil Sciences
Michigan State University

Wheat variety performance trials are conducted by Michigan State University (MSU) each year at several locations throughout Michigan's winter wheat production area. Entries to the trials include MSU experimental lines, promising lines from neighboring states and commercial varieties from other universities and private seed companies. The primary objective of this testing program is to provide the agronomic data needed to determine which lines to release as commercial varieties. A second objective is to show Michigan wheat growers which varieties perform best in Michigan. This year's results are summarized in the accompanying table.

Although wheat producers are always interested in how varieties perform in a given year and location, performance in a single year and location should never be used in selecting a variety to plant. It is best to select a variety on the basis of data from at least three years of testing. Varieties selected with such comparisons are more likely to perform well under a wide range of conditions.

Multi-Year Performance Summary

Each line in the table has data for a single variety. The column bordered by double lines has this year's average yield. The table is arranged so that the varieties appear in order of '96 average yield with the highest yielding variety first and the lowest yielding variety last. To the left of the '96 data are yield averages for individual years ('91-'95). Not all varieties have been tested in all years so the table has several blank cells. To the right of the '96 yield column are multi-year yield averages. Only data for varieties included in the relevant year's tests are included here. See the section titled "Experimental" for details on how the trials were conducted and more detail on what the data in each column's data represent.

At the bottom of the table is information on how

many county sites were used in the averages for a column. Means, L.S.D.'s, and C.V.'s are included for several data columns. The LSD (least significant difference) is the statistical measure of how big a difference needs to be to be considered real. The C.V. (coefficient of variation) is indicative of how precise a trial is. Lower C.V. values indicate more precise trials.

In any given year or at any given site, several varieties will usually fall into the group of 'highest yielding' varieties. The composition of that group, and the identity of the absolute "winner," can and does change from location to location and year to year. This means that the single best variety cannot be determined in advance for a specific site. What you can do is identify a group of varieties whose past performance and agronomic characteristics indicate that they are most likely to be winners in the upcoming season. It is a good idea to plant two or more varieties. That increases the chance of having the best adapted variety for the particular conditions that are likely to prevail during the ensuing season. Selecting two varieties can reduce losses from diseases and insects that occur when a given variety's pest resistance is overcome by a change in the pest population.

Soft White vs. Soft Red Wheat

About 50 percent of the wheat varieties planted in Michigan are in the soft white class. This class is unique to Michigan, Ontario, New York and the Pacific Northwest and its uses include cookies, crackers, cakes, pastries and soup thickeners. Historically, it has been easier for wheat producers in central and northern Michigan to market soft white varieties because many elevators in this area have purchased only white varieties. However, this no longer may be the case. Growers should check with their local elevator before planting to make sure that a ready market exists.

(Continued on back page)

1996 State Wheat Variety Trial Multi-Year Performance Summary

All County Sites Included

Variety Name or Line Designation	Single Year Multi-site Average Yields (approx. 12% moist.) (Bushels/Acre)						Across Year Averages (bu./acre)					Test Wt. (Lbs/bu.)		96 Disease Scores (0-9, 0=none)			96 Miscellaneous Data				S O U T H	Origin	
	1991	1992	1993	1994	1995	1996	2 YR 95-96	3 YR 94-96	4 YR 93-96	5 YR 92-96	6 YR 91-96	96 Avg 95-96	PN	MSSMV	SEPT	Lodge Score (0-9)	50% Pollen Mt (DOY)	Winter Kill Score (0-9)	Grain Color	T			
Q706 (Hybrid)	62.6	.	.	.	.	.	58.3	3.0	2.6	3.2	1.7	165	36	4.6	R	2.9	HybriTech	
Q708 (Hybrid)	76.0	60.5	68.3	.	.	.	.	57.6	58.1	4.9	1.0	4.8	2.0	166	37	4.4	R	1.9	HybriTech
EH9410 (Hybrid)	59.3	.	.	.	.	.	59.2	.	5.9	1.4	3.4	1.7	166	36	5.0	R	3.5	HybriTech
Hopewell	52.1	.	.	.	.	.	57.2	.	2.3	1.7	3.3	0.6	167	31	6.0	R	1.4	Ohio Foundation
Pioneer(R) variety 2540	50.3	.	.	.	.	.	57.6	.	3.9	1.4	2.3	1.0	167	30	7.0	R	3.2	Pioneer
Foster	50.0	.	.	.	.	.	56.8	.	3.9	1.8	2.8	1.7	166	30	6.3	R	1.8	Agripro
Stine 480	49.5	.	.	.	.	.	56.8	.	5.1	1.3	4.1	1.3	166	34	5.3	R	3.7	Stine Seed Co.
MSU Line D3234	49.2	.	.	.	.	.	58.1	.	1.4	1.3	4.3	3.3	168	37	6.4	R	4.1	MSU
MSU Line D2150	73.2	49.0	61.1	.	.	.	.	57.7	57.7	3.5	1.4	4.0	1.3	168	38	5.9	W	5.7	MSU
Pioneer(R) variety 2568	48.9	.	.	.	.	.	57.0	.	5.5	1.7	4.0	1.3	166	30	6.9	R	1.9	Pioneer
Cardinal	70.2	98.6	65.5	68.0	70.7	48.8	59.8	62.5	63.3	70.3	70.3	56.4	57.5	4.6	2.6	4.5	1.7	167	34	5.9	R	5.5	MFSa
Remrod	.	.	.	68.8	72.3	48.8	60.6	63.3	.	.	.	54.7	55.6	3.7	1.0	4.0	2.7	168	36	6.5	W	6.0	GHG Seeds
L25	71.5	48.5	60.0	.	.	.	.	58.1	59.3	6.0	0.9	4.8	4.0	167	38	5.4	R	4.7	Stewart Seeds,
AC Ron	47.7	.	.	.	.	.	55.2	.	3.3	3.0	3.9	1.7	168	39	5.6	W	5.7	MFSa
Elkhart	47.6	.	.	.	.	.	59.7	.	4.1	4.9	3.4	1.4	165	32	6.2	R	1.8	Agripro
RS 927	.	88.3	60.7	67.5	69.1	47.5	58.3	61.4	61.2	66.6	.	59.4	57.0	4.1	3.4	4.9	1.7	166	33	6.1	R	3.0	Rupp Seeds, Inc
Freedom	.	.	69.3	70.0	77.3	47.3	62.3	64.9	66.0	.	.	56.3	56.9	3.0	3.0	2.9	2.0	167	33	6.7	R	1.3	MFSa
Wakefield	77.0	91.3	68.7	76.7	79.5	47.2	63.4	67.8	68.0	72.7	73.4	57.3	57.9	0.8	1.7	2.2	1.0	168	33	7.0	R	2.9	MFSa
Brandy	47.1	.	.	.	.	.	59.4	.	3.7	3.5	5.1	1.7	166	33	5.7	R	3.2	Lakeside States
L15	46.9	.	.	.	.	.	59.1	.	3.7	2.3	5.7	2.0	165	36	5.6	R	4.9	Stewart Seeds,
Lowell	76.6	103.9	66.5	71.1	72.6	46.0	59.3	63.2	64.1	72.0	72.8	54.7	55.0	3.4	1.3	5.2	1.7	165	37	4.4	W	7.3	MFSa
MSU Line D2295	71.3	45.9	58.6	.	.	.	.	57.8	58.3	2.6	5.0	4.0	3.0	169	35	6.7	W	6.4	MSU
MSU Line D2103	73.5	45.4	59.5	.	.	.	.	54.7	55.3	3.4	1.7	3.9	2.3	169	38	6.2	W	5.2	MSU
Pioneer(R) variety 2737w	.	105.7	60.0	64.0	74.5	45.3	59.9	61.3	61.0	69.9	.	55.3	56.2	4.2	1.0	4.6	1.3	167	32	5.9	W	6.3	Pioneer
RS 987	45.3	.	.	.	.	.	53.7	.	5.8	3.2	3.2	1.3	168	32	7.0	R	1.6	Rupp Seeds, Inc
Diana	45.0	.	.	.	.	.	53.8	.	3.4	6.3	3.6	1.0	168	38	4.9	W	5.1	Harrington Seed
Clemens	67.3	44.9	56.1	.	.	.	.	57.3	58.0	5.8	5.3	3.7	1.7	168	33	6.7	R	3.3	Agripro
Casey	44.8	.	.	.	.	.	55.6	.	3.8	2.0	4.0	1.3	168	36	6.1	R	4.5	Lakeside States
MSU Line D3913	44.7	.	.	.	.	.	54.9	.	3.8	5.4	4.7	2.0	169	38	5.7	W	6.9	MSU
Nendon	76.3	105.0	67.8	75.7	75.3	44.6	60.0	65.2	65.9	73.7	74.1	55.1	55.6	4.6	0.7	4.7	2.7	166	37	4.9	R	4.6	Lakeside States
Terra-SR204	44.2	.	.	.	.	.	59.2	.	3.6	1.8	4.9	1.4	166	34	5.9	R	4.8	Terra
Pioneer(R) variety 2552	.	.	.	71.9	83.7	44.2	64.0	66.6	.	.	.	57.8	59.0	1.0	2.0	2.3	1.0	167	28	7.4	R	1.1	Pioneer
Frankenmuth	61.9	98.1	58.0	64.4	64.7	44.2	54.5	57.8	57.8	65.9	65.2	57.1	57.6	2.8	6.3	3.8	2.0	170	43	6.1	W	4.9	MFSa
MSU Line D3176	44.1	.	.	.	.	.	54.8	.	3.7	1.4	3.0	2.6	170	35	6.9	R	4.9	MSU
MSU Line D3637	44.1	.	.	.	.	.	56.7	.	3.4	2.0	3.9	2.0	168	37	6.3	R	5.3	MSU
Narus	71.1	101.7	65.6	68.1	68.1	44.0	56.1	60.1	61.5	69.5	69.8	57.5	57.5	3.0	2.3	4.3	1.3	168	37	5.7	W	5.0	MFSa
MSU Line D2025	72.4	43.7	58.1	.	.	.	.	55.3	56.4	3.9	4.0	4.5	1.7	168	38	5.2	W	6.1	MSU
MSU Line D3063	43.6	.	.	.	.	.	55.4	.	4.0	1.0	4.1	1.0	169	40	5.5	W	5.3	MSU
Chelsea	66.9	103.9	66.4	66.6	73.1	43.5	58.3	61.1	62.4	70.7	70.1	55.6	56.5	3.8	1.0	3.6	2.0	173	37	6.6	W	5.5	MFSa
MSU Line DC040	43.5	.	.	.	.	.	56.1	.	3.7	2.3	3.5	2.0	166	40	5.9	R	3.9	MSU

Variety Name or Line Designation	Single Year Multi-site Average Yields (approx. 14% moist.) (Bushels/acre)						Across Year Averages (bu./acre)					Test Wt. (lbs/bu.)		96 Disease Scores (0-9, 0=none)			96 Miscellaneous Data					SPROUT Origin	
	1991	1992	1993	1994	1995	1996	2 YR 95-96	3 YR 94-96	4 YR 93-96	5 YR 92-96	6 YR 91-96	96	Avg 95-96	PM	WSSMV	SEPT	Lodge Score (0-9)	50% Pollen (DOY)	Plant Ht (in)	Winter Kill Score (0-9)	Grain Color		
Pioneer(R) variety XW741						43.4					54.5		3.0	1.1	3.0	1.0	168	29	7.4	W	5.7	Pioneer	
Stine 484						43.3					58.5		6.3	2.7	3.8	1.7	165	33	7.0	R	3.4	Stine Seed Co.	
Pontiac					62.6	42.9	52.8				58.9	58.9	6.2	5.6	5.4	1.6	163	31	5.4	R	1.7	Agripro	
Terra-SR205					74.9	42.6	58.8				54.5	55.8	5.7	2.0	4.9	1.6	166	32	4.9	R	4.2	Terra	
MSU Line D2088						42.6					54.6		2.8	5.0	4.9	2.7	169	39	6.2	W	7.0	MSU	
MSU Line DC060						42.5					55.8		2.5	2.0	4.1	1.7	168	39	5.0	R	3.0	MSU	
Bavaria				74.2	75.5	42.4	59.0	64.0			56.5	57.2	4.2	1.0	4.4	1.7	168	38	3.7	W	5.9	Greater MI Seed	
TW 91135						42.2					54.5		2.2	2.3	3.3	2.0	170	39	6.4	W	5.9	Harrington Seed	
MSU Line D3203						42.1					54.8		2.8	2.0	3.2	2.4	170	36	7.4	R	4.7	MSU	
MSU Line D1176						42.1					56.3		1.7	1.3	4.3	2.3	170	37	6.2	W	3.2	MSU	
Glory						42.0					56.0		4.0	2.0	2.5	1.0	167	31	6.6	R	2.2	Ohio Foundation	
Pioneer(R) variety 2510		114.8	68.2	72.7	71.6	41.7	56.7	62.0	63.6	73.8	56.8	58.1	7.0	0.9	2.9	1.4	168	30	7.8	R	1.2	Pioneer	
Packard Brand						41.6					53.2		4.5	4.9	3.0	1.7	168	32	7.3	R	1.4	Coomer Seeds	
SW350					74.3	41.4	57.9				56.3	57.0	0.9	1.0	2.0	1.7	167	32	7.5	R	6.1	Stewart Seeds,	
Reo Brand						41.3					54.9		4.3	2.6	4.9	1.4	166	32	5.7	R	2.1	Coomer Seeds	
Genesis 95-11						41.2					55.0		4.2	1.0	3.7	1.3	167	33	6.9	W	2.0	Lakeside States	
Gibson Brand						41.2					55.2		2.0	5.3	3.9	1.3	167	29	6.6	R	1.7	Woods Seed Farm	
Arone PS Brave						40.5					54.9		4.7	2.2	4.7	1.0	167	34	6.4	R	2.6	Pro-Seed Inc.	
TW 92197						40.2					55.9		2.5	2.7	3.8	1.6	168	40	5.5	W	4.7	Harrington Seed	
Madison	75.0	91.5	66.7	71.1	76.8	39.4	58.1	62.4	63.5	69.1	70.1	55.4	56.6	1.5	1.5	2.0	1.7	167	34	7.2	R	1.8	MFSA
LSI-95-P						39.0					54.1		4.1	2.6	4.2	1.3	167	33	6.8	R	1.6	Lakeside States	
Pioneer(R) variety 2545		98.2	67.4	72.3	75.4	38.9	57.2	62.2	63.5	70.4	54.6	56.3	3.3	1.3	3.3	1.0	167	30	6.3	R	1.9	Pioneer	
Genesis 95-8						38.8					53.7		5.4	1.3	3.9	1.4	166	33	6.6	R	2.5	Lakeside States	
SW873					79.6	38.5	59.1				54.3	56.1	3.0	4.4	3.7	1.0	168	27	7.3	R	2.4	Stewart Seeds,	
Cyrus Brand						37.4					53.8		3.0	4.7	3.5	1.0	168	29	7.5	R	2.6	Coomer Seeds	
Arone PS Warrior						37.3					54.1		2.5	4.3	2.4	1.4	168	28	7.5	R	1.6	Pro-Seed Inc.	
SW403					71.4	36.8	54.1				56.3	57.2	4.5	1.4	4.0	1.0	165	32	6.4	R	1.6	Stewart Seeds,	
Terra-Exp. 211						34.9					56.4		2.9	3.0	3.5	1.0	165	29	7.2	R	1.5	Terra	
Navigator					78.2	34.6	56.4				54.5	56.4	1.8	4.7	3.4	1.0	168	28	7.6	R	1.0	WTSS	
Sawyer	67.5	91.4	64.7	61.4	73.0	34.2	53.6	56.2	58.3	64.9	65.4	54.8	56.5	4.7	1.6	5.2	1.0	166	29	7.7	R	0.8	Agripro
GR 962						32.4					54.1		3.6	1.8	4.9	1.5	166	29	7.6	R	1.7	AGRA	
GR 942					79.2	30.5	54.9				53.2	55.6	3.2	5.0	3.9	1.0	168	26	8.1	R	1.7	AGRA	
GR 933				64.6	72.0	27.8	49.9	54.8			51.7	54.5	7.4	1.6	3.4	1.0	168	30	7.9	R	2.6	AGRA	
Mean	71.3	99.4	65.3	69.3	73.4	43.8	58.3	62.0	62.8	69.9	70.1	56.0	56.9	3.7	2.5	3.9	1.6	168	34.4	6.3		3.6	
# of sites	7	7	5	7	5	6	12	19	24	31	38	6		2	1	4	1	1	2	2	6	1	
L.S.D.		8.2	5.3	7.7	5.2	6.8						1.5		2.6	1.7	1.3	1.0	1.2	2.2	0.8		1.7	
C.V.		8.9	8.9	11.1	8.4	13.8						2.3		35.5	40.6	24.5	33.8	1.0	4.6	10.7		26.3	

Yield was calculated using the entire area of the plot including the wheel tracks between plots. Test weights are estimated using 1 pint samples for each harvested plot. Yield comparisons are only valid within a column. Abbreviations are: SEPT=septoria leaf blotch, PM=powdery mildew, WSSV=wheat spindle streak mosaic virus, sprout=sprouting score, Ht=plant height. All scores are based on a 0-9 scale, where 0 is the best possible score. Data for 50% pollen shed indicate the number of days past January 1st before that variety reached the point where one-half of its heads were flowering. Plant height was measured at the tip of average heads in a plot. Trials planned and executed by MSU's Wheat breeding program. Contact Dr. Rick Ward (517-285-9725 for further information.

Each line in the table has data for a single variety. The column bordered by double lines has this year's average yield. The table is arranged so that the varieties appear in order of '96 average yield with the

highest yielding variety first and the lowest yielding variety last. To the left of the '96 data are yield averages for individual years ('91-'95). Not all varieties have been tested in all years, so the table has several blank cells. To the right of the '95 yield column are multi-year yield averages. Only data for varieties included in the relevant year's tests are included.

At the bottom of the table is information on how many county sites were used in the averages for a column. Means, L.S.D.'s, and C.V.s are included for several data columns. The LSD (least significant difference) is the statistical measure of how big a difference needs to be to be considered real. The C.V. (coefficient of variation) is indicative of how precise a trial is. Lower C.V. values indicate more precise trials.

Michigan State University makes no endorsement of any wheat variety or brand.

Spring vs. Winter Wheat

Spring wheats are preferred only in areas of the country where winter wheat cannot survive local winter conditions. In lower Michigan and other areas where winter wheat can survive the winter, its jump on spring growth gives it an unbeatable yield advantage over spring wheat. Spring wheat's comparatively delayed development also prolongs and accentuates its exposure to performance-threatening diseases and pests such as leaf rust, barley yellow dwarf virus and aphids. For these reasons, wheat breeders at MSU and adjoining states have not developed spring wheat varieties. Consequently, most spring wheat varieties are poorly adapted to lower Michigan conditions. Furthermore, marketing and storage facilities are generally not available in Michigan.

Source and Quality of Seed

Both certified and uncertified seed are available from local elevators, individual certified seed producers and seed companies throughout Michigan. Certified seed has the benefit of a third-party affirmation of the varietal purity and seed quality. However, uncertified seed may also represent high quality and varietal purity, depending on the seed suppliers and their credibility.

Seed lots should be selected on the basis of germination, purity and freedom from inert matter. High quality wheat seed should normally germinate

between 95 and 100 percent in most years. Seed lots which *show any evidence of sprouting* should be avoided. Otherwise, storability and emergence potential may be affected, even though immediate germination is strong.

Pure seed content of high quality wheat will appear on the label and should be near 100 percent. Lots containing restricted noxious weed seed and more than two seeds per pound of common weeds should be avoided.

Seed Treatment

Seed treatment is one of the most important and least expensive measures you can take to avoid problems from seed-borne diseases. Wheat seed should be uniformly treated with an effective systemic fungicide and a broad-spectrum fungicide to control seed rot, seedling blight, loose smut, common bunt (stinking smut) and other seed-borne fungal diseases. Seed purchased from a certified seed grower or from other reputable seed sources will normally be treated as part of the conditioning process. If not, it should be taken to a local elevator or to a seed conditioning plant for treatment. You may use drill box treatment as a last resort, but be careful to obtain complete and uniform seed coverage. For additional information on seed treatment and specific recommendations, see Extension bulletin E-1199, "Seed Treatment for Field Crops" (70¢).

This bulletin is part of a series that is being prepared for Michigan wheat producers. Check with your local MSU Extension Office for availability.

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