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Issued August 1986

8 pages

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Wheat Variety Performance in Michigan

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WHEAT VARIETY PERFORMANCE trials are conducted each year at eight locations throughout Michigan's winter wheat production area. Entries to the trials include Michigan State University experimental lines as well as promising lines from neighboring state experiment stations. Commercial varieties from private seed companies are also included. The primary objective of this program is to provide agronomic data needed for release of new varieties to the public. A second objective is to provide comparative performance data on wheat varieties for Michigan growers.

Recommended and Certified Varieties

Historically, new varieties released from Michigan State University and recommended in Michigan are automatically eligible for certification. Such varieties must demonstrate superior production qualities. Similarly, superior varieties from other states may become eligible for certification. As new varieties are released to the public, old ones with inferior qualities are eventually removed from recommended and certifiable lists.

Some varieties may become eligible for certification without being recommended to Michigan producers. Most varieties in this category are those for which there is a substantial out-of-state market (or sometimes in-state) for Michigan produced seed. Such varieties are designated as "acceptable for certification." This designation also includes outstanding varieties with less than three years of performance data in Michigan or those whose performance is competitive, though not necessarily superior.

Varieties Available to Michigan

Table 1 (outside back cover) shows comparative information on most varieties of wheat available to Michigan growers regardless of their recommendation or certification. This information with the yield data reported in Tables 2 through 10, provides wheat growers with the essential information needed to select the best varieties.

Performance of Varieties

Table 2 shows comparative performance potential of different wheat varieties based on overstate yield trials conducted over several years. These comparisons are based on regression data from a large number of tests and provide a unique way of showing the yield potential of a variety in comparison with the average yield of all varieties at a given location. This system predicts how one variety will yield in comparison with other varieties at different expected yield levels. If the average expected yield at your farm is 75 bushels per acre, Augusta, Frankenthum, and Hillsdale should produce 82 bushels/acre, whereas Tecumseh, Ionia, Abe, Arthur, and S76, should produce 70, 72, 67, 67, and 63 bushels per acre, respectively.

Tables 3 through 10 show the actual performance data of different varieties at eight locations from 1980 to 1985. Study the data from the test sites nearest your farm.

Production Tips

1. Prepare a smooth, weed-free seedbed free of quackgrass.
2. Have your soil tested by a research-oriented laboratory and apply the recommended amounts of both lime and fertilizer.
3. Select one or more high-performing wheat varieties on the basis of performance trials shown in this bulletin. Consider new varieties; however do not

change varieties abruptly. Select one or two new high-performing varieties and plant up to 25 percent of your acreage to each new variety until you determine how it fits your management scheme.

4. Seed treatment is very important in wheat to protect the germinating seed against soilborne organisms (seed rot and seedling blight fungi). Chemical treatment is even more critical to protect against loose smut and bunt (stinking smut). Complete information about seed treatment is found in Extension Bulletin E-1199, "Seed Treatment for Field Crops" (free).

5. Plant seed approximately 10 days after the fly free date. Generally, planting late will produce higher yields. If you plant early, diseases can build up in the crop and cause yield reductions.

6. Topdress with 60 to 80 pounds of actual nitrogen in the spring when ground is still frozen or within three weeks after growth begins. If wheat is planted immediately after plowing down a medium stand of legume, nitrogen rates can be reduced to 40 to 60 pounds per acre. Soils with lower yield potential should receive less nitrogen than more productive soils.

7. Spray for broadleaf weeds when crop is fully tillered.

8. Harvest wheat when moisture reaches or drops below 14%. If the moisture forecast is for a wet harvest period, harvest wheat at 14-20% moisture and dry to prevent sprouting.



Table 2. Expected yield of a variety when the average yield level of all varieties in the test was 45, 55, 65, 75, 85, 95, or 105 bu/A.

Variety	Number of Tests	Environmental Productive Index (Bu/Acre) (Average Expected Yield at Your Location)						
		45	55	65	75	85	95	105
Frankenmuth	50	48	58	69	82	90	101	111
Augusta	50	48	58	69	82	90	101	111
Yorkstar	50	45	55	65	75	85	95	106
Tecumseh	50	42	51	60	70	79	88	97
Ionia	50	43	53	63	72	82	91	101
Genesee	50	42	51	60	70	79	88	97
Hillsdale	30	48	58	69	82	90	101	111
Abe	50	40	49	58	67	76	85	94
Arthur	50	40	49	58	67	76	85	93
Pioneer S-76	10	38	46	55	63	71	80	88
Houser	10	47	57	68	78	88	99	109

Table 3. Ingham County soft winter wheat variety comparison (yield-bu/A) trial, 1980-1985.

Variety	1980	1981	1982	1983	1984	1985	2-6 Yr. Mean ⁺	% of Index
Augusta	70.4	89.3	46.4	71.8	52.7	87.1	69.6	108
Frankenmuth	85.8	87.1	51.3	67.6	50.0	81.2	70.5	109
Houser	56.2	83.4	41.4	69.2	-	-	62.6	97
Fredrick	72.3	74.9	46.4	67.7	-	-	65.3	101
Yorkstar	58.8	78.3	40.4	73.3	-	-	62.7	97
Genesee	62.9	71.5	39.1	59.9	-	72.2	61.1	95
Ionia	72.4	64.9	39.8	59.8	56.8	71.3	60.8	94
Tecumseh	60.3	64.8	27.9	60.4	54.2	68.3	56.0	87
Hillsdale	82.3	93.1	42.6	71.4	51.3	79.3	70.0	109
Titan	65.3	75.0	31.8	74.5	-	-	61.7	96
S76	62.5	77.7	32.0	-	-	-	57.4	91
Arthur	63.3	68.8	34.7	59.6	46.7	65.2	56.4	87
Abe	51.2	58.4	34.6	49.6	-	-	48.5	75
Auburn	-	75.8	42.0	59.6	48.1	73.1	49.8	77
Caldwell	-	-	-	-	46.3	78.7	62.5	96
Compton	-	-	-	-	51.1	86.0	68.6	105
Fillmore	-	-	-	-	46.6	84.8	65.7	101
Environ. Index (Ave. yield of 30 varieties)	67.8	80.9	41.0	66.8	51.4	79.0	64.5	
LSD .05			5.7	6.5	7.7	9.7		

⁺Use caution when comparing means for varieties not tested during the same years.

Table 4. Ionia County soft winter wheat variety comparison (yield-bu/A) trial, 1980-1985.

Variety	1980	1981	1982	1983	1984	1985	2-6 Yr. Mean ⁺	% of Index
Augusta	78.8	64.7	61.4	58.0	73.2	72.6	68.1	108
Frankenmuth	84.2	62.5	54.6	53.0	70.0	70.8	65.9	104
Houser	74.3	64.4	47.1	49.6	-	-	58.9	97
Fredrick	73.3	68.0	56.1	53.6	-	-	62.8	103
Yorkstar	70.0	65.3	51.4	56.9	-	-	60.9	100
Genesee	70.0	56.9	52.8	52.6	-	60.6	58.6	96
Ionia	78.2	57.2	42.0	51.8	56.8	56.6	57.1	90
Tecumseh	60.7	48.0	33.3	39.9	62.1	53.3	49.6	78
Hillsdale	80.6	70.9	57.8	49.7	75.8	64.8	66.6	105
Titan	75.6	69.6	48.9	48.9	68.4	-	47.2	76
S76	73.2	54.5	45.6	-	-	-	57.8	91
Arthur	67.1	55.0	42.6	34.5	56.3	51.5	51.2	81
Abe	66.3	52.8	39.6	29.3	-	-	47.0	74
Auburn	-	57.0	-	33.8	66.0	58.0	53.7	85
Caldwell	-	-	-	-	62.7	57.1	59.9	88
Compton	-	-	-	-	69.9	67.3	68.6	100
Fillmore	-	-	-	-	71.9	61.4	66.7	98
Environ. Index (Ave. yield of 30 varieties)	76.0	63.0	52.0	51.4	70.1	66.7	63.2	
LSD .05			7.5	8.9	8.1	7.1		

⁺Use caution when comparing means for varieties not tested during the same years.

Table 5. Tuscola County soft winter wheat variety comparison (yield-bu/A) trial, 1980-1985.

Variety	1980	1981	1982	1983	1984	1985	2-6 Yr. Mean ⁺	% of Index
Augusta	89.1	64.7	66.4	85.2	91.4	81.4	79.7	104
Frankenmuth	90.4	62.5	67.1	79.5	87.5	76.1	77.2	101
Houser	83.7	62.8	54.1	78.7	-	-	69.8	95
Fredrick	91.1	66.1	69.8	73.0	-	-	75.0	102
Yorkstar	83.1	54.2	53.6	79.5	-	-	67.6	92
Genesee	77.5	67.1	56.4	60.7	-	69.5	66.2	91
Ionia	85.3	62.1	53.9	71.8	70.2	76.3	69.9	92
Tecumseh	80.5	66.7	49.7	72.0	83.0	66.2	69.7	91
Hillsdale	86.9	83.6	60.0	84.6	71.2	71.8	76.4	100
Titan	84.9	52.1	63.1	80.8	-	-	70.2	97
S76	79.7	57.7	65.2	-	-	-	67.5	94
Arthur	86.7	61.9	56.0	70.4	86.8	69.4	71.9	94
Abe	88.9	60.2	55.0	63.1	-	-	66.8	91
Auburn	-	66.7	-	60.1	87.2	75.6	72.4	93
Caldwell	-	-	-	-	94.2	82.0	84.9	104
Compton	-	-	-	-	84.8	72.8	78.8	96
Fillmore	-	-	-	-	83.1	80.7	81.9	100
Environ. Index (Ave. yield of 30 varieties)	87.6	67.7	60.0	78.4	86.6	77.3	76.3	
LSD .05			10.0	11.0	15.8	7.1		

⁺Use caution when comparing means for varieties not tested during the same years.

Table 6. Huron County soft winter wheat variety comparison (yield-bu/A) trial, 1980-1985.*

Variety	1980	1981	1983	1984	1985	2-5 Yr. Mean ⁺	% of Index
Augusta	91.9	98.9	90.5	86.0	74.9	88.4	109
Frankenmuth	91.2	96.8	88.7	77.2	72.5	85.3	105
Houser	76.3	94.1	79.4	-	-	83.3	100
Fredrick	76.4	98.2	82.6	-	-	85.7	103
Yorkstar	71.2	88.3	89.5	-	-	83.0	100
Genesee	73.8	77.3	75.7	63.4	63.4	70.7	87
Ionia	77.7	71.4	84.9	66.4	66.4	73.4	91
Tecumseh	78.1	78.7	75.7	62.2	61.2	71.2	88
Hillsdale	94.1	99.7	88.3	79.4	73.5	87.0	107
Titan	86.7	94.2	84.1	-	-	88.3	106
S76	83.6	85.3	-	-	-	84.5	101
Arthur	70.5	81.9	71.8	74.8	59.4	71.7	89
Abe	67.9	81.1	72.0	-	-	73.7	88
Auburn	-	83.9	79.3	83.3	64.4	77.7	96
Caldwell	-	-	-	80.0	73.4	76.7	103
Compton	-	-	-	76.1	76.0	76.1	102
Fillmore	-	-	-	79.5	75.5	77.5	104
Environ. Index (Ave. yield of 30 varieties)	80.1	90.6	84.9	77.5	71.9	81.0	
LSD .05			13.4	7.9	6.6		

*Nursery was winterkilled in 1982.

⁺Use caution when comparing means for varieties not tested during the same years.

Table 7. Monroe County soft winter wheat variety comparison (yield-bu/A) trial, 1980-1985.

Variety	1980	1981	1982	1984	1985	2-5 Yr. Mean ⁺	% of Index
Augusta	84.3	63.4	75.9	79.2	84.8	77.5	113
Frankenmuth	83.3	61.3	58.3	68.9	79.7	70.3	102
Houser	72.8	58.9	46.3	-	-	59.3	90
Fredrick	87.1	52.9	60.6	-	-	66.9	101
Ionia	88.7	57.1	66.7	70.5	73.5	71.3	104
Tecumseh	75.9	49.1	34.2	72.2	62.1	58.7	85
Hillsdale	94.6	55.3	63.2	75.9	76.2	73.0	106
Titan	90.1	56.3	43.4	68.4	-	64.6	96
S76	84.2	62.9	57.1	-	-	68.1	99
Arthur	86.0	67.2	55.8	70.1	57.1	67.2	98
Abe	82.6	53.4	53.9	-	-	63.3	96
Auburn	-	69.1	-	67.0	66.2	67.4	93
Caldwell	-	-	-	63.6	67.9	65.8	91
Compton	-	-	-	74.1	58.8	66.5	92
Fillmore	-	-	-	70.5	72.8	71.7	99
Environ. Index (Ave. yield of 30 varieties)	82.9	60.8	54.7	72.1	73.2	68.7	
LSD .05			25.0	9.8	10.1		

⁺Use caution when comparing means for varieties not tested during the same years.

Table 8. Lenawee County soft winter wheat variety comparison (yield-bu/A) trial, 1980-1985.

Variety	1980	1981	1982	1983	1984	1985	2-6 Yr. Mean [†]	% of Index
Augusta	76.6	49.9	77.8	64.2	69.5	96.9	72.5	112
Frankenmuth	73.5	56.0	63.7	56.0	73.8	85.1	68.0	105
Houser	73.1	56.9	58.3	60.0	-	-	62.1	104
Fredrick	68.4	50.4	60.3	59.6	-	-	59.7	101
Ionia	62.7	47.6	59.4	53.4	-	82.5	61.1	95
Tecumseh	68.3	40.3	41.1	52.0	-	69.3	54.2	85
Hillsdale	81.8	61.3	55.6	41.4	57.9	84.3	63.7	98
Titan	75.2	49.5	59.2	61.1	63.6	-	61.7	102
S76	69.1	50.8	52.0	-	-	-	57.3	94
Arthur	64.0	46.0	53.8	51.4	64.2	67.5	57.8	89
Abe	66.0	48.2	58.8	38.4	-	-	52.9	89
Auburn	-	55.8	-	52.4	69.8	76.5	63.6	98
Caldwell	-	-	-	-	68.8	76.3	72.6	96 ⁺
Compton	-	-	-	-	62.8	66.0	64.4	87
Fillmore	-	-	-	-	73.7	82.5	78.1	103
Environ. Index (Ave. yield of 30 varieties)	71.7	52.9	57.6	55.5	69.0	82.0	64.8	
LSD .05			15.8	12.8	10.5	11.1		

⁺Use caution when comparing means for varieties not tested during the same years.

Table 9. Kalamazoo County soft winter wheat variety comparison (yield-bu/A) trial, 1980-1984.*

Variety	1980	1981	1982	1983	1984	3-5 Yr. Mean [†]	% of Index
Augusta	48.4	66.1	32.3	49.6	51.1	49.5	103
Frankenmuth	54.6	64.0	24.6	53.0	52.5	49.7	103
Houser	56.4	56.5	22.4	48.6	-	46.0	99
Fredrick	56.4	63.3	25.8	49.4	-	48.7	104
Ionia	59.7	56.0	25.9	51.2	48.0	48.2	100
Tecumseh	42.9	51.4	22.4	39.7	50.6	41.4	86
Hillsdale	61.4	63.4	29.2	52.3	57.7	52.8	110
Titan	58.6	64.9	23.8	50.5	-	49.5	106
S76	55.2	62.1	27.7	-	-	48.3	105
Arthur	44.9	54.8	25.0	41.2	44.0	42.0	87
Abe	53.1	50.0	21.3	38.9	-	40.8	88
Auburn	-	60.1	-	43.0	54.9	52.7	97 ⁺
Caldwell	-	-	-	-	51.2	-	93
Compton	-	-	-	-	57.9	-	106
Fillmore	-	-	-	-	53.2	-	97
Environ. Index (Ave. yield of 30 varieties)	52.7	59.6	25.0	48.8	54.8	48.2	
LSD .05			6.6	7.5	8.8		

* Site discontinued following 1984.

⁺Use caution when comparing means for varieties not tested during the same years.

**Table
10.**

St. Joseph County soft winter wheat variety comparison (yield-bu/A) trial, 1980-1985.

Variety	1980	1981	1982	1983	1984	1985	2-6 Yr. Mean ⁺	% of Index
Augusta	68.3	65.5	44.2	62.0	58.9	45.5	57.4	104
Frankenmuth	67.3	63.4	39.4	64.6	56.4	47.5	56.4	102
Houser	56.0	62.9	31.6	59.1	-	-	52.4	91
Fredrick	65.9	66.1	47.8	55.5	-	-	58.8	102
Ionia	58.0	60.6	48.2	63.3	57.0	49.5	56.1	102
Tecumseh	54.5	47.1	38.3	51.5	55.0	36.8	47.2	86
Hillsdale	64.7	75.5	46.0	65.5	59.9	44.6	59.4	108
Titan	68.0	65.7	42.0	62.2	55.6	-	58.7	103
S76	61.9	55.5	37.9	-	-	-	51.8	94
Arthur	49.6	53.2	36.6	51.9	50.2	37.5	46.5	84
Abe	56.1	44.7	44.5	54.6	-	-	50.0	87
Auburn	-	54.4	-	51.9	55.9	38.1	50.1	88
Caldwell	-	-	-	-	55.0	46.6	50.8	101
Compton	-	-	-	-	56.7	40.4	48.6	97
Fillmore	-	-	-	-	57.0	53.6	55.3	110
Environ. Index (Ave. yield of 30 varieties)	63.0	67.3	40.0	59.6	56.2	44.2	55.1	
LSD .05			15.2	6.3	6.2	6.4		

⁺ Use caution when comparing means for varieties not tested during the same years.



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Table 1. Wheat variety comparisons.

Variety	Origin	Chaff Color	Straw Height (in)	Test Weight (lb)	Hessian Fly Resistance	Winter Hardiness	Lodging Resistance	Leaf Rust Resistance	Powdery Mildew Resistance
Soft White Wheat Varieties									
Arrow	New York	bronze	36	59.0	none	good	very good	susceptible	susceptible
Augusta	Michigan	white	39	57.7	none	good	very good	resistant	susceptible
Favor	CIBA-GEIGY	bronze	39	57.5	unknown	good	very good	susceptible	resistant
Frankenmuth	Michigan	brown	40	59.4	Races A & C	good	very good	resistant	resistant
Fredrick	Canada	white	39	59.5	Races A & C	good	good	resistant	susceptible
Genesee	New York	bronze	45	59.5	none	good	good	susceptible	susceptible
Houser	New York	white	34	57.7	none	good	very good	resistant	resistant
Ionia	Michigan	brown	42	59.7	Races A & C	good	good	resistant	susceptible
Tecumseh	Michigan	white	37	61.1	Races A & C	very good	very good	resistant	resistant
Yorkstar	New York	bronze	39	57.5	none	good	very good	susceptible	susceptible
Soft Red Wheat Varieties									
Abe	Indiana	white	34	60.4	all known races	very good	very good	resistant	resistant
Argee	Wisconsin	white	35	58.5	reaction unknown	very good	very good	resistant	resistant
Arthur	Indiana	white	36	60.5	all known races	very good	very good	resistant	resistant
Arthur 71	Indiana	white	36	60.5	all known races	very good	very good	resistant	resistant
Auburn	Indiana	white	36	59.8	all known races	very good	very good	resistant	resistant
Caldwell	Indiana	white	35	57.5	all known races	good	very good	resistant	resistant
Fillmore	Indiana	white	37	59.8	Race B	very good	very good	resistant	resistant
Hart	Indiana	white	33	58.8	none	good	very good	susceptible	susceptible
Hillsdale	Michigan	bronze	42	59.2	none	good	good	resistant	resistant
Hybrex 3008	Rohn & Haas Co.	bronze	40	58.0	unknown	very good	very good	resistant	resistant
Pike	Missouri	white	35	59.4	Races A & C	good	good	resistant	susceptible
Pioneer S-76	Pioneer	white	33	58.8	none	good	very good	susceptible	susceptible
Pro-20	Pro Seeds, Inc.	white	39	61.0	unknown	good	good	resistant	resistant
Roland	Illinois	white	34	58.2	reaction unknown	very good	very good	resistant	resistant
Scotty	Illinois	white	35	59.0	Race A	good	good	very good	resistant
Sullivan	Indiana	white	40	58.5	all known races	good	good	resistant	resistant
Titan	Ohio	white	39	59.0	Race A	very good	very good	resistant	resistant
Tyler	Ohio	white	40	58.1	none	good	good	susceptible	resistant