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WHEAT VARIETY PERFORMANCE trials are conducted each year at nine 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 instate) 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.

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Varieties Available to Michigan

Table 1 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 and Frankenmuth should produce 82 bushels/acre, whereas Yorkstar, Tecumseh, Ionia, Genesee, Abe, Arthur, S76 and S78 should produce 75, 70, 72, 70, 67, 67, 63 and 67 bushels per acre respectively.

Tables 3 through 10 show the actual performance data of different varieties at eight locations from 1973 to 1979. Study the data from the test sites nearest to your farm.

Although Michigan's research emphasis has been on soft winter wheat, some information is available on spring wheat varieties. Results of such tests appear in Tables 11 and 12. Such information is included because in the Upper Peninsula nearby markets exist in Wisconsin and Minnesota. High protein and gluten content are very important in the use of spring wheat, and premiums are often paid on the basis of these factors. No dependable seed supplies for spring varieties exist throughout Michigan. Growers interested in spring wheat seed should contact their regular seed dealer.

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. Plant seed approximately 10 days after the fly-free date.
5. With the varieties Augusta, Frankenmuth and Tecumseh, topdress with 60 to 80 pounds of actual N in the spring while ground is still frozen or within three weeks after growth begins. Topdress other varieties with 40 to 60 pounds. 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.
6. Spray for broadleaf weeds when crop is fully tillered.
7. 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.

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Table 1 — Wheat variety comparisons.

	Variety	Origin	Chaff Color	Straw Height (in)	Test Weight (lbs)	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
	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	Race A	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
	Beau	Indiana	white	35	60.4	all known races	very good	very good	susceptible	resistant
	Downy	Indiana	white	32	59.0	all known races	good	good	susceptible	resistant
	Oasis	Indiana	white	36	60.5	all known races	very good	very good	resistant	susceptible
	Pioneer S-76	Pioneer	white	33	58.8	none	good	very good	susceptible	susceptible
	Pioneer S-78	Pioneer	white	31	58.6	none	good	very good	susceptible	susceptible
	Roland	Illinois	white	34	58.2	reaction unknown	very good	very good	resistant	resistant
	Ruler	Ohio	white	36	60.5	Races A, C & F	very good	very good	susceptible	susceptible
	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

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/Acre.

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
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
Pioneer S-78	10	40	49	58	67	76	85	93
Houser	10	47	57	68	78	88	99	109
Arrow	10	40	49	58	67	76	85	93

Table 3 — Ingham County soft winter wheat variety comparison (yield—Bu/Acre) trial, 1973-1979.

Variety	1973	1975	1976	1977	1978	1979	6-Year Average	Percent Of Index
Frankenmuth	48.9	56.2	70.3	79.3	65.7	87.9	68.1	107
Augusta	46.4	54.6	66.0	81.3	70.3	86.1	67.5	106
Houser	--	--	--	82.2	59.0	84.8	--	104
Fredrick	53.3	54.7	57.7	80.7	69.5	77.3	65.5	103
Yorkstar	42.5	48.7	60.7	74.5	59.1	83.7	61.5	97
Ionia	49.9	58.0	57.3	65.1	62.9	72.2	60.9	96
Tecumseh	48.3	48.4	65.8	69.8	59.4	68.3	60.0	94
Genesee	45.4	53.9	57.6	70.1	56.7	73.7	59.6	94
Titan	--	--	--	--	--	83.1	--	105
Downy	--	--	--	74.4	46.4	--	--	97
Ruler	49.2	53.7	54.2	--	--	68.2	--	93
Arthur	43.9	58.7	54.5	73.7	56.8	60.8	58.1	91
Abe	49.8	60.2	56.6	68.3	57.1	54.9	57.8	91
Beau	--	54.2	59.5	63.8	54.9	62.8	--	88
Sullivan	--	--	59.4	--	57.2	59.1	--	86
Pioneer S76	--	--	--	--	48.7	58.1	--	--
Pioneer S78	--	--	--	--	50.5	56.4	--	--
Environmental Index (Average yield of 30 varieties)	46.0	53.7	64.6	76.8	62.2	78.8	63.7	100

Table 4 — Ionia County soft winter wheat comparison (yield—Bu/Acre) trial, 1973-1979.

Variety	1973	1975	1976	1977	1978	1979	6-Year Average	Percent Of Index
Augusta	50.6	44.1	70.7	81.3	46.0	78.9	61.9	109
Frankenmuth	44.5	50.7	65.6	79.3	42.7	77.7	60.1	105
Fredrick	42.0	45.1	65.5	78.7	52.2	75.2	59.8	105
Houser	--	--	--	--	--	75.2	--	102
Yorkstar	50.6	48.7	70.7	74.5	32.4	70.0	57.8	101
Ionia	39.1	44.8	55.7	65.0	47.4	69.8	53.6	94
Tecumseh	38.7	43.8	59.1	69.8	42.1	62.3	52.6	92
Genesee	38.6	44.8	55.7	70.1	40.1	61.7	51.8	91
Titan	--	--	64.5	64.2	51.1	81.4	--	101
Sullivan	--	--	--	--	51.6	52.2	--	96
Ruler	34.2	45.6	65.1	--	--	58.2	--	91
Downy	--	--	--	74.4	34.2	--	--	91
Abe	39.2	40.4	56.1	68.3	44.2	57.2	50.9	89
Arthur	32.9	39.5	57.9	73.7	41.3	48.9	49.0	86
Beau	--	--	--	63.8	44.0	58.6	--	86
Pioneer S76	--	--	--	--	34.8	50.6	--	--
Pioneer S78	--	--	--	--	35.9	55.2	--	--
Environmental Index (Average yield of 30 varieties)	39.2	43.5	65.9	76.8	42.6	73.7	57.0	100

Table 5 — Tuscola County soft winter wheat comparison (yield—Bu/Acre) trial, 1974-1979.

Variety	1974	1975	1976	1977	1978	1979	6-Year Average	Percent Of Index
Augusta	58.2	64.4	56.8	78.0	71.5	69.8	66.5	108
Frankenmuth	59.6	62.6	55.4	77.8	66.2	68.1	65.0	106
Yorkstar	57.8	61.7	60.1	77.0	57.8	62.5	62.8	102
Fredrick	51.2	63.6	56.0	75.3	66.1	62.7	62.5	101
Houser	--	--	--	77.6	54.7	66.2	--	100
Tecumseh	53.8	58.6	51.3	73.2	60.0	56.3	58.9	96
Ionia	53.9	58.5	57.4	59.8	59.6	60.6	58.3	95
Genesee	53.5	58.2	42.2	61.0	54.6	57.4	54.5	88
Titan	--	--	--	--	--	62.4	--	97
Beau	--	--	--	56.8	61.2	57.8	--	91
Ruler	50.9	53.8	52.0	--	--	54.9	--	90
Arthur	54.5	60.6	54.4	54.3	61.0	47.6	55.4	90
Abe	53.4	59.8	51.7	49.7	56.9	55.6	54.5	89
Sullivan	--	--	--	--	55.6	54.4	--	88
Downy	--	--	--	59.9	48.8	--	--	88
Pioneer S76	--	--	--	--	48.2	55.3	--	--
Pioneer S78	--	--	--	--	52.0	54.9	--	--
Environmental Index (Average yield of 30 varieties)	54.3	59.2	56.2	72.7	60.8	64.6	61.6	100

Table 6—Huron County soft winter wheat comparison (yield—Bu/Acre) trial, 1974-1979.

Variety	1974	1975	1976	1977	1978	1979	6-Year Average	Percent Of Index
Frankenmuth	80.6	67.9	74.8	100.4	84.3	89.1	82.9	108
Augusta	73.6	66.8	76.9	95.6	90.2	83.0	81.0	105
Houser	--	--	--	--	--	87.0	--	105
Yorkstar	76.8	68.1	70.2	87.0	76.8	83.4	77.1	100
Fredrick	82.2	70.5	69.9	89.5	73.5	76.9	77.1	100
Tecumseh	73.8	63.9	74.4	77.6	74.4	80.5	74.1	97
Ionia	75.5	64.0	66.5	84.9	75.4	79.2	74.3	97
Genesee	70.9	59.3	64.8	80.6	75.6	75.6	71.1	93
Titan	--	--	--	--	--	84.9	--	103
Downy	--	--	--	87.9	75.7	--	--	97
Beau	--	--	--	85.1	79.5	77.1	--	96
Abe	70.8	63.4	65.4	83.5	80.4	65.7	71.5	93
Arthur	75.6	65.6	57.7	82.8	72.7	68.7	70.5	92
Ruler	--	--	--	--	--	68.6	--	83
Sullivan	--	--	--	--	75.6	67.5	--	82
Pioneer S76	--	--	--	--	69.5	--	--	--
Pioneer S78	--	--	--	--	76.2	--	--	--
Environmental Index (Average yield of 30 varieties)	73.2	63.4	72.2	88.8	80.3	82.6	76.8	100

Table 7 — Monroe County soft winter wheat comparison (yield—Bu/Acre) trial, 1974-1979.

Variety	1974	1975	1976	1977	1978	1979	-Year Average	Percent Of Index
Frankenmuth	58.6	67.2	64.9	71.7	--	85.0	69.5	112
Augusta	54.1	51.0	60.5	75.8	--	86.4	65.6	106
Houser	--	--	--	--	--	78.8	--	105
Fredrick	56.7	49.1	66.5	69.5	--	80.5	64.5	104
Yorkstar	62.1	49.3	64.2	65.6	--	68.9	62.0	100
Genesee	53.1	49.0	59.9	60.1	--	70.2	58.5	94
Ionia	44.7	52.2	57.8	64.2	--	68.8	57.5	93
Tecumseh	45.1	42.7	56.7	68.0	--	71.0	56.7	91
Ruler	--	--	--	--	--	73.2	--	97
Arthur	43.7	45.3	56.4	71.7	--	72.6	57.9	93
Abe	48.7	44.1	45.2	70.8	--	65.7	54.9	88
Titan	--	--	--	--	--	65.5	--	87
Beau	--	--	--	--	--	64.0	--	85
Sullivan	--	--	--	--	--	63.7	--	84
Environmental Index (Average yield of 30 varieties)	52.9	47.8	64.3	70.1	--	75.4	62.1	100

Table 8 — Lenawee County soft winter wheat variety comparison (yield—Bu/Acre) trial, 1974-1979.

Variety	1974	1975	1976	1977	1978	1979	6-Year Average	Percent Of Index
Augusta	68.9	48.0	56.5	62.1	58.7	67.9	60.4	107
Frankenmuth	69.5	50.6	51.5	65.7	61.1	63.9	60.4	107
Yorkstar	71.2	45.6	55.7	63.8	57.8	57.0	58.5	103
Houser	--	--	--	--	--	57.3	--	102
Fredrick	67.8	49.3	52.8	63.2	53.5	53.6	56.7	100
Ionia	65.1	52.9	47.3	61.5	52.5	54.4	55.6	99
Genesee	61.7	53.5	46.1	53.1	52.9	58.2	54.3	96
Tecumseh	57.6	48.7	48.6	55.7	49.6	47.1	51.2	90
Titan	--	--	--	--	--	55.1	--	98
Abe	66.1	57.1	38.3	60.1	49.8	37.2	51.4	91
Arthur	54.7	47.4	39.4	56.2	47.8	44.5	48.3	85
Beau	--	--	--	54.1	51.6	40.6	--	82
Downy	--	--	--	52.7	47.2	--	--	82
Sullivan	--	--	--	--	47.8	43.6	--	80
Ruler	--	--	--	--	--	43.5	--	77
Pioneer S76	--	--	--	--	41.9	--	--	--
Pioneer S78	--	--	--	--	47.1	--	--	--
Environmental Index (Average yield of 30 varieties)	61.6	48.4	51.2	64.3	57.9	56.3	56.6	100

Table 9 — Kalamazoo County soft winter wheat variety comparison (yield—Bu/Acre) trial, 1975-1979.

Variety	1975	1976	1977	1978	1979	6-Year Average	Percent Of Index
Augusta	47.8	42.5	42.0	35.4	76.9	48.9	108
Frankenmuth	47.0	42.2	43.7	35.8	68.9	47.5	105
Yorkstar	46.1	36.0	43.8	36.2	69.2	46.3	103
Houser	--	--	--	--	67.3	--	103
Fredrick	46.5	35.4	36.1	34.6	67.3	44.0	98
Ionia	48.1	39.9	41.6	32.5	55.3	43.5	97
Tecumseh	45.8	45.6	41.1	31.7	52.0	43.2	96
Genesee	42.5	42.4	36.0	35.0	59.8	43.1	96
Titan	--	--	--	--	69.1	--	105
Ruler	--	--	--	--	68.6	--	105
Abe	44.7	34.0	33.9	29.1	47.4	37.8	84
Beau	--	--	37.0	31.7	48.8	--	84
Arthur	40.8	30.5	32.1	28.8	54.2	37.3	83
Sullivan	--	--	--	37.7	45.0	--	82
Downy	--	--	38.2	26.3	--	--	81
Pioneer S76	--	--	--	36.3	--	--	--
Pioneer S78	--	--	--	40.3	--	--	--
Environmental Index (Average yield of 30 varieties)	44.0	40.8	40.0	35.2	65.6	45.1	100

Table 10 — St. Joseph County soft winter wheat variety comparison (yield—Bu/Acre) trial, 1974-1979.

Variety	1974	1975	1976	1977	1978	1979	6-Year Average	Percent Of Index
Frankenmuth	46.8	39.3	57.8	32.0	35.8	54.4	44.4	106
Augusta	51.4	39.8	47.6	34.3	35.4	55.1	43.9	105
Yorkstar	46.3	41.1	53.6	33.3	36.2	47.3	43.0	103
Houser	--	--	--	--	--	52.0	--	103
Genesee	43.0	40.2	53.1	31.1	35.0	46.8	41.5	99
Fredrick	51.3	35.0	50.9	32.6	34.6	43.3	41.3	99
Ionia	42.0	41.4	44.6	31.7	32.5	47.5	40.0	95
Tecumseh	40.2	40.5	37.0	29.7	31.7	39.9	36.5	87
Titan	--	--	--	--	--	49.4	--	98
Ruler	--	--	--	--	--	46.2	--	92
Beau	--	--	--	28.0	31.7	46.3	--	90
Sullivan	--	--	--	--	30.6	40.9	--	84
Arthur	37.9	32.3	37.1	27.8	28.7	45.4	34.9	83
Downy	--	--	--	26.1	26.3	--	--	78
Abe	36.8	32.6	20.4	27.1	29.1	45.6	31.9	76
Pioneer S76	--	--	--	--	30.4	--	--	--
Pioneer S78	--	--	--	--	28.8	--	--	--
Environmental Index (Average yield of 30 varieties)	45.0	37.2	51.0	32.4	35.2	50.4	41.9	100

Table 11 — Summary of Michigan performance trials of spring wheat 1968-1970 in six nurseries in Ingham, Bay and Saginaw Counties.

	1968 3 Nurseries Yield Bu/A	1969 2 Nurseries Yield Bu/A	1970 1 Nursery Yield Bu/A	Mean of 6 Nurseries Bu/Acre
Waldron	45.8	33.8	28.3	38.9
Red River 68	40.8	40.3	21.1	37.3
Chris	34.8	31.0	22.6	31.5
Selkirk	32.6	31.0	17.3	29.5

Table 12 — Spring wheat variety comparison (Menominee County) 1977.

Variety	Yield* Bu/Acre	Test Weight lbs/bu
#-64-27	47.7	56.7
ND 75-165W-237	47.5	56.7
Era	46.7	55.6
Kitt	42.6	54.0
Olaf	42.5	56.2
77-100-28	41.9	54.3
Kitt	41.8	54.9
Ellar	40.6	56.1
ND 75-307	40.1	50.5
77-100-12	39.9	53.5
Butte	39.3	56.7
72-101-A	39.0	56.2
Newesta	36.6	55.2
W 444 Variety PROT	35.6	53.8
Normal Bluyle Y-76	35.2	51.2
ND 75 Era-Newesta	30.9	55.4
77-100-13	29.5	55.7

*Each value represents the average of four replications.

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