

Michigan State Wheat Variety Trial: 2001

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Comments on the 2001 Wheat Crop

The 2000/2001 Michigan wheat crop appears to have generated a range from average to good yields and generally good test weight. Planting generally occurred in a timely fashion. Little winterkill occurred. Powdery mildew did not reach severe levels in most fields. Septoria leaf blotch was severe in some fields, particularly in the southern tier of counties. Glume blotch was also present in some fields. Fusarium head blight (scab) was wide spread with damage ranging from slight to extreme. Scab infections led to the presence of DON (a.k.a. "vomitoxin") although many loads of grain appear to have had levels below 2 ppm. Leaf and stem rust appeared soon after flowering and may have caused yield losses in some fields. Stripe rust was seen again this year in Michigan. Flowering occurred around the same time as last year. Severe infestation of wheat by armyworms occurred throughout Michigan, with feeding damage ranging from nearly complete defoliation to only slight damage.

Multi-Year Performance Summary (Tables 1 and 2)

Each line in these tables has data for a single variety. The columns contain averages for a given trait and time period. Data for several 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 are only valid within a column.** To the right of the 2001 yield column are multi-year yield averages. Only data for varieties included in the relevant years' tests are found here. Not all varieties have been tested in all years so the table has several blank cells. 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 each table are the averages, L.S.D.s (least significant difference), and C.V.s (coefficient of variation) for each data column. L.S.D.s vary among traits and data sets (combinations of sites and years). Differences between means that are greater than the L.S.D. are very likely to reflect a genuine difference between the two varieties. If the difference between two means is smaller than the L.S.D. for that column, you should conclude that there is **no evidence that those varieties are different for that trait** in the years and sites considered. The C.V. is indicative of a trial's precision. Trials with low levels of error variation have lower C.V. values.

Single Site Yield Performance Summary (Table 3)

The first five columns in this table each contain yield (bushels/acre) data from one of the six sites harvested for yield this year. The Huron county site was not included in this table because of the severity of damage caused by armyworms. The last column contains the same across-site yield average found in Table 1. Each row in the table represents a single variety in the test.

Choosing Varieties

MSU makes no endorsement of any wheat variety or brand. 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. 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. However, you can identify a group of varieties that is likely to contain the winners in the upcoming season. We recommend that you plant two or more varieties.

Experimental

The 2001 State Wheat Variety Trial was planted at seven county sites: Lenawee, Saginaw, Tuscola, Huron, Ionia, Sanilac, and Eaton. Appendix A (below) presents information on each of the county sites. Plots were 11 feet long and had 7 rows at 6" row spacing. The trial was designed and executed as four replication alpha-lattice (8 blocks of 5 plots each). All seed was treated but the chemicals and rates used varied. Seeding rates per linear foot of row were standardized to the rate that would achieve 1.8 million seeds per acre in a solid stand planted in 6" rows. Fall fertilizer application varied with cooperators practice. Spring nitrogen was applied as urea (90 lbs/acre actual N) at green-up. No foliar fungicides were applied. All plots were sprayed with an insecticide to control armyworms. Weeds were controlled chemically as needed. All plots at a site were harvested on a single day. Yield was calculated using the entire area of the plot including the wheel tracks between plots. That approach tends to underestimate yield.

Yield, test weight, and grain moisture data were acquired electronically on the plot combine at the time of harvest. Data from the Huron county site are not included in any of the averages reported here. All scores are based on a 0-9 scale, where 0 is the best possible score. Plant height is reported as the distance from the ground to the tip of average heads in a plot in inches and was taken in Lenawee and Tuscola counties. Lodging data was taken at the Lenawee and Tuscola locations and was given a score of 0-9 where 0 equals all plants are erect. Flowering date data was taken at the Saginaw County plot. The flowering date indicates the average number of days past January 1st before that variety reached the point where ½ of its heads were flowering at the Saginaw county site. Powdery mildew is reported as the average percent of the flag leaf infected. Leaf rust is reported as the average percent of the flag leaf area infected. Fusarium Head Blight (scab) reactions were evaluated in a nursery at MSU's Clarksville research station. Plots were inoculated with scab spores, and plots were kept wet throughout the flowering period with overhead irrigation. The extent of scab infection is a function of both the number of heads with any symptoms, and how severe the infection is on the infected heads. It is believed that independent genetic mechanisms control these two aspects of response to scab pressure. Each wheat head is comprised of roughly 14-22 "spikelets", which bear the developing seed and are the site of visible scab infection. Here, we report scab incidence as the average percent of heads infected per plot, and scab severity as the average percent of spikelets infected when considering infected heads only. The product of severity and incidence (% severity x % incidence) would represent an estimate of the percent of all spikelets showing scab symptoms for a given variety. The milling and baking quality data are based on grain from the 2000 State Variety trial. Flour yield is the ratio of the weight of extractable flour to the weight of milled grain, expressed as a percentage. "Softness Equivalent" is an indirect measure of the sample's grain hardness. Soft wheat varieties generally have softness equivalent values greater than 50. Sprouting data are based on greenhouse evaluation of 5 heads from four replications at the Saginaw and Tuscola county sites. Heads were collected within 24 hours of harvest and dried for four to six days. Scores were taken after the heads were subjected to near-continuous misting for five days.

Six 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.

Appendix A. Trial Site Descriptions for 2001 MSU Wheat Variety Trials.

	Eaton County	Huron County	Ionia County	Lenawee County	Saginaw County	Sanilac County	Tuscola County
Cooperator	Dennis Orr	Wayne Sturm	MSU	Jason Woods	Fred Siler	Stoughtenburg Farms	Stuart Bierlein
Nearest City	Brookfield	Pigeon	Clarksville	Britton	Merrill	Sandusky	Richville
Date planted	10/12/00	10/02/00	10/20/00	10/03/00	10/11/00	10/01/00	9/29/00
Date harvested	7/16/01	7/14/01	7/18/01	7/12/01	7/11/01	7/20/01	7/10/01
Pre-Plant Fertilizer	300# 6-26-26	240# 10-12-37	200# 10-26-27	20# N, 51# P, 62# K, 11.2# S, & 4# Mn	200# 8-9-40 + 1% Mn	200# 9-23-24	300# 5-26-33 + 0.2 Mg + 0.5 MN + 0.4 Cu
Comments		Severe Armyworm Infestation	Irrigated, Inoculated Scab Nursery	Moderate Lodging		Moderate Armyworm Infestation & Moderate Lodging	Moderate Armyworm Infestation
Avg. yield (bu/acre)	56.4	N / A	N / A	76.3	87.8	78.3	73.0
Avg. test weight (lbs/bu)	59.5	N / A	N / A	57.8	58.4	60.7	59.6
Avg. grain moisture (%)	11.6	N / A	N / A	12.7	13.3	13.1	11.7
Other data (# of reps)*	Sept. Trit. (3)		Scab Sev. (3), Scab Inc. (3)	Lod(4), PltHt(4), Sept. Trit. (1)	FD(4), PM%F(3), LR%F(3), SPROUT(4)	Lod (4)	LR%F(4), PltHt(4), SPROUT(4)

* **FD** – Flowering Date, **Lod** – Lodging Score, **LR%F** - Percentage of Flag Leaf Covered with Leaf Rust, **PltHt** - Plant Height in Inches, **PM%F** – Percentage of Flag Leaf Covered with Powdery Mildew, **Scab Inc.** – Fusarium Head Blight Incidence, **Scab Sev.** - Fusarium Head Blight Severity, **SPROUT** – In-Head Pre-Harvest Sprouting Score, **Sept. Trit.** – Septoria Tritici Score

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Table 1. Multi-year Summary (Part 1)

Multi-year data are the most informative. MSU makes no endorsement of any variety or brand.

Name	grain color	Yield: Bushels/acre				Test Weight: lbs/bu				Plant Height (inches)		Lodging Score (0-9)		Flowering Date (days past Jan.1)		% Grain Moisture @ Harvest		S. tritici (leaf blotch) Score (0-9)		Powdery Mildew Flag Leaf Infection (%)		Leaf Rust Flag Leaf Infection (%)	
		multi-year averages				multi-year averages				2-yr avg		2-yr avg		2-yr avg		2-yr avg		2-yr avg		2-yr avg			
		2001	00-01	99-01	98-01	2001	00-01	99-01	98-01	2001	00-01	2001	00-01	2001	00-01	2001	00-01	2001	00-01	2001	00-01	2001	00-01
Mitchell	R	72.2	--	--	--	60.5	--	--	--	40.1	--	4.2	--	147.5	--	12.0	--	4.5	--	0.7	--	0.9	--
Patton	R	74.5	80.8	80.6	--	60.4	59.5	59.8	--	38.1	39.3	4.3	4.2	147.5	147.7	11.9	13.0	4.1	3.4	0.7	0.6	0.8	0.4
Superior	W	75.4	81.0	80.4	75.0	57.4	56.9	57.8	57.0	43.3	44.1	4.2	2.8	152.2	152.8	14.2	14.8	1.4	1.8	0.0	0.0	0.6	2.4
Genesis 9939	R	72.3	78.4	78.6	--	60.3	59.7	59.8	--	40.5	40.8	6.4	5.1	147.5	147.2	11.7	12.7	6.5	5.6	0.1	0.2	0.4	0.2
Genesis 9953	R	73.3	80.6	--	--	59.4	58.3	--	--	39.9	40.8	5.7	5.1	149.0	148.8	11.9	12.5	3.7	3.8	0.0	0.0	0.4	0.7
NY8802417	W	72.6	78.7	--	--	59.5	59.2	--	--	40.4	41.7	1.4	1.4	151.5	152.0	12.8	13.6	6.2	4.8	0.1	0.1	2.5	2.4
TW97613	R	74.3	--	--	--	59.4	--	--	--	39.6	--	3.7	--	148.0	--	11.4	--	3.7	--	0.0	--	0.7	--
Caledonia	W	74.1	82.5	84.0	80.3	57.3	57.3	57.7	57.3	37.4	38.8	1.2	1.3	150.7	150.8	12.4	13.0	3.7	3.8	0.4	0.7	1.2	1.4
Navigator	R	78.1	81.6	83.1	80.9	57.2	56.6	56.7	56.6	36.7	36.3	1.5	1.3	148.5	148.4	12.3	12.7	4.0	4.1	0.0	0.4	1.4	1.8
AC Mountain	W	72.5	78.8	79.7	--	58.1	57.8	58.2	--	43.9	44.9	4.5	3.7	151.7	152.2	11.9	12.7	2.4	3.1	0.0	0.1	5.5	7.1
AC Ron	W	73.2	80.0	79.2	76.1	57.8	57.6	58.0	57.6	45.3	46.1	5.1	3.3	151.5	152.2	12.7	13.2	2.2	2.5	0.0	0.0	1.6	3.2
Autumn	R	80.3	--	--	--	59.2	--	--	--	38.1	--	6.2	--	148.8	--	11.5	--	4.0	--	0.0	--	3.4	--
Bravo	R	75.1	78.5	--	--	61.0	59.6	--	--	38.4	40.3	1.5	2.7	147.0	147.4	12.0	13.0	4.8	5.5	0.0	0.8	2.2	2.3
Freedom	R	70.4	77.7	78.0	74.4	56.7	56.4	56.8	56.4	40.4	41.4	3.1	3.8	150.2	150.8	13.0	13.8	2.5	3.1	0.0	0.0	0.4	0.3
Glory	R	70.5	76.9	77.7	76.5	59.9	59.1	59.6	59.0	37.5	38.8	2.4	2.2	148.0	148.4	12.3	13.1	2.6	2.5	0.1	1.0	1.1	1.9
Harus	W	72.3	78.0	78.3	75.4	58.7	58.4	58.7	58.2	44.5	45.2	2.6	2.2	150.8	151.8	11.8	12.8	3.0	3.3	0.1	0.1	1.3	3.1
Hopewell	R	74.4	82.7	83.5	78.5	60.2	59.6	59.8	59.2	38.2	39.5	1.3	1.1	149.5	150.3	11.8	12.9	4.4	4.0	0.0	0.7	0.6	0.7
Lowell	W	66.1	74.4	74.4	72.0	57.9	57.7	57.7	57.1	42.4	44.0	8.0	6.9	148.8	149.5	11.1	12.2	3.6	4.0	0.1	0.3	1.9	1.5
Roane	R	78.2	84.7	84.2	81.9	62.4	61.4	61.6	61.0	36.7	37.6	5.6	4.5	147.8	148.3	13.4	14.3	2.4	1.8	0.0	0.0	0.5	0.4
Valor	R	81.8	--	--	--	58.9	--	--	--	41.4	--	7.6	--	150.2	--	13.1	--	1.8	--	0.0	--	0.8	--
MSU Exp. Line D6234	W	73.9	79.9	80.7	--	59.6	59.3	--	--	40.7	42.0	4.3	3.1	151.0	151.2	13.4	13.9	2.3	3.1	0.1	0.2	1.4	4.1
MSU Exp. Line D8006	W	79.5	--	--	--	58.2	--	--	--	38.8	--	3.8	--	148.8	--	12.0	--	4.8	--	0.4	--	3.9	--
Frankenmuth	W	65.0	69.4	69.6	64.7	58.3	58.2	58.7	58.0	48.5	50.1	7.5	6.2	155.5	155.0	14.1	14.5	2.0	3.2	0.3	0.2	2.1	4.0
Pioneer Brand 25R37	R	81.0	--	--	--	61.3	--	--	--	37.3	--	1.0	--	149.2	--	13.4	--	1.4	--	0.0	--	0.4	--
Pioneer Brand 25R44	R	73.5	--	--	--	61.3	--	--	--	37.1	--	1.8	--	148.5	--	13.2	--	2.6	--	0.3	--	0.5	--
Pioneer Brand 25R49	R	72.6	--	--	--	60.9	--	--	--	36.9	--	2.2	--	148.0	--	11.9	--	2.5	--	0.7	--	0.8	--
Pioneer Brand 25W60	W	81.3	87.3	--	--	60.3	59.5	--	--	39.2	40.6	2.6	2.1	149.8	149.6	12.0	12.8	2.8	3.3	0.3	0.3	0.5	0.9
RS 909	R	75.3	--	--	--	60.7	--	--	--	40.8	--	3.1	--	149.3	--	12.5	--	3.6	--	0.1	--	1.4	--
Bernard	R	75.4	81.6	--	--	60.3	59.6	--	--	41.5	42.2	3.0	2.8	148.5	149.1	12.6	13.4	3.3	3.8	0.0	0.1	0.8	1.0
Stine Brand 455	R	73.9	81.1	81.2	78.5	59.4	58.6	58.7	58.2	39.4	40.1	4.7	4.2	149.0	148.8	12.1	12.6	1.8	3.4	0.0	0.1	0.4	0.7
Stine Brand 482	R	74.5	--	--	--	58.5	--	--	--	43.5	--	4.6	--	148.7	--	11.4	--	3.0	--	0.1	--	1.3	--
H 101	R	81.3	--	--	--	59.5	--	--	--	38.5	--	6.2	--	149.0	--	11.6	--	3.6	--	0.0	--	5.1	--
Trelay Excel Brand 400-1	R	75.1	78.5	--	--	61.0	59.6	--	--	38.4	40.3	1.5	2.7	147.0	147.4	12.0	13.0	4.8	5.5	0.0	0.8	2.2	2.3
Croplan 547W	R	76.6	85.5	--	--	59.2	58.5	--	--	35.4	36.2	3.0	3.7	147.7	147.4	12.2	13.2	3.0	3.5	0.0	0.0	1.0	1.2
Sisson	R	77.5	86.2	--	--	59.5	59.2	--	--	34.0	34.9	3.5	4.0	147.0	146.1	12.0	13.0	3.7	3.9	0.0	0.0	1.1	2.0
VA96W-403WS	W	77.3	81.8	--	--	59.6	59.0	--	--	39.4	40.3	6.4	5.4	149.0	149.7	12.2	13.2	3.1	3.7	0.0	0.2	0.3	0.3
lsd=least significant difference, i.e., differences smaller than the lsd are probably due to chance. cv - low values mean higher precision.	average	74.4	79.9	79.6	76.8	59.2	58.6	58.7	58.1	39.9	41.0	3.8	3.3	149.4	150.0	12.5	13.3	3.3	3.5	0.2	0.2	1.5	2.0
	lsd	4.4	4.6	3.2	4.2	1.2	1.6	1.4	0.8	0.9	1.5	1.5	2.0	2.6	1.3	0.8	1.4	1.8	1.9	0.5	0.8	4.0	2.3
	cv	4.8	2.8	2.5	3.9	1.7	1.4	1.4	1.0	1.2	1.9	20.0	29.7		0.4	5.5	5.1	26.7	26.7				

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Table 2. Multi-year Summary (Part 2)

Multi-year data are the most informative. MSU makes no endorsement of any variety or brand.

Name	grain color	Fusarium Head Blight (scab) Severity				Milling and Baking Properties ('00 crop)				In-Head Pre-Harvest Sprout Score (0-9)			Submitted by:
		% Spikelets Infected		% of heads		Flour Yield	% Protein in flour	Alkaline water retention	Softness Equivalent	2001	2-yr avg 00-01	3-yr avg 99-01	
		2001	2-yr avg 00-01	2001	2-yr avg 00-01								
Mitchell	R	19.3	--	34.8	--	--	--	--	--	2.7	--	--	Agripro Wheat
Patton	R	11.7	15.9	55.7	67.9	71.7	8.2	56.2	57.8	4.0	4.4	4.3	Agripro Wheat
Superior	W	31.3	24.2	36.1	33.1	72.5	7.3	53.0	59.6	4.9	5.7	6.6	Genesis Brand Seed
Genesis 9939	R	13.6	16.8	36.1	63.1	72.2	7.9	56.2	64.0	3.5	2.9	2.2	Genesis Brand Seed
Genesis 9953	R	35.6	29.3	59.1	59.6	69.7	7.4	59.1	58.6	3.2	3.9	--	Genesis Brand Seed
NY8802417	W	29.8	24.9	70.2	55.1	71.2	8.1	57.5	57.3	5.6	5.6	--	Genesis Brand Seed
TW97613	R	22.3	--	80.1	--	--	--	--	--	3.7	--	--	Genesis Brand Seed
Caledonia	W	44.5	42.3	79.4	69.7	72.8	7.5	55.0	58.7	4.6	5.2	6.3	Genesis Brand Seed/Harrington Seeds, Inc.
Navigator	R	27.9	30.5	79.7	84.9	70.1	7.9	58.1	61.0	2.1	2.4	2.2	Irrer Seed Farm
AC Mountain	W	30.9	24.0	49.0	49.5	73.0	7.0	53.7	60.0	6.0	5.8	6.9	Michigan Crop Improvement
AC Ron	W	29.7	23.4	49.8	44.9	70.2	7.3	54.6	56.7	5.8	5.5	6.4	Michigan Crop Improvement
Autumn	R	26.5	--	79.6	--	--	--	--	--	3.1	--	--	Michigan Crop Improvement
Bravo	R	21.8	22.4	55.0	62.5	73.3	7.8	54.9	61.4	1.8	3.1	--	Michigan Crop Improvement
Freedom	R	20.4	18.7	84.8	77.4	70.5	7.6	55.4	53.5	1.3	1.5	1.5	Michigan Crop Improvement
Glory	R	40.9	35.5	74.4	77.2	69.7	7.9	57.1	54.2	2.7	2.5	2.4	Michigan Crop Improvement
Harus	W	40.3	30.2	62.8	51.4	70.9	7.6	53.3	56.7	5.3	4.6	5.6	Michigan Crop Improvement
Hopewell	R	67.1	45.1	80.6	70.3	70.2	7.4	57.5	60.1	0.8	0.8	0.8	Michigan Crop Improvement
Lowell	W	37.3	30.2	70.9	60.5	73.0	7.6	54.6	59.9	4.8	5.4	6.3	Michigan Crop Improvement
Roane	R	17.1	20.1	69.5	79.8	69.6	8.4	58.8	56.7	3.3	2.5	2.1	Michigan Crop Improvement
Valor	R	14.9	--	53.9	--	--	--	--	--	1.5	--	--	Michigan Crop Improvement
MSU Exp. Line D6234	W	39.6	26.3	58.6	54.3	70.1	7.6	55.8	57.0	4.1	4.1	5.4	Michigan State University
MSU Exp. Line D8006	W	36.6	--	83.9	--	--	--	--	--	3.0	--	--	Michigan State University
Frankenmuth	W	28.9	21.0	39.8	24.9	71.0	7.8	54.4	55.6	4.6	4.4	5.4	Michigan State University - Long Term Check
Pioneer Brand 25R37	R	20.4	--	74.5	--	--	--	--	--	2.1	--	--	Pioneer Hi-Bred International
Pioneer Brand 25R44	R	25.9	--	90.4	--	--	--	--	--	3.3	--	--	Pioneer Hi-Bred International
Pioneer Brand 25R49	R	54.2	--	73.6	--	--	--	--	--	1.3	--	--	Pioneer Hi-Bred International
Pioneer Brand 25W60	W	35.5	34.3	90.0	80.0	72.0	7.5	57.0	56.7	3.7	3.1	--	Pioneer Hi-Bred International
RS 909	R	55.0	--	69.4	--	--	--	--	--	4.7	--	--	Rupp Seeds, Inc.
Bernard	R	42.7	31.4	77.7	68.9	72.4	7.9	54.7	56.2	4.4	4.3	--	Steyer Seeds
Stine Brand 455	R	42.9	33.0	64.5	67.3	74.2	7.4	58.4	62.1	3.8	3.8	3.4	Stine Seed Company
Stine Brand 482	R	35.3	--	73.8	--	--	--	--	--	2.7	--	--	Stine Seed Company
H 101	R	23.6	--	75.6	--	--	--	--	--	2.9	--	--	The Andersons, Inc.
Trelay Excel Brand 400-1	R	21.8	22.4	55.0	62.5	73.3	7.8	54.9	61.4	1.8	3.1	--	Trelay Farms Inc.
Croplan 547W	R	31.0	40.5	90.0	90.0	71.1	7.7	59.4	56.6	1.3	2.6	--	Land O'Lakes
Sisson	R	26.0	39.5	78.0	84.0	71.7	7.0	58.2	57.7	2.2	2.5	--	Virginia Polytechnic Institute and State Univ.
VA96W-403WS	W	55.2	44.1	64.1	67.1	71.2	7.9	56.5	57.4	5.2	5.1	--	Virginia Polytechnic Institute and State Univ.
lsd=least significant difference, i.e., differences small than the lsd are probably due to chance. cv - low values mean higher precision.	average	31.9	29.0	67.9	64.2					3.4	3.7	4.1	Milling and baking data provided by USDA's Soft Wheat Quality Lab in Wooster Oh. Flour yield=percent of grain weight that can be milled into flour. Softness equivalent - higher values are softer. Alkaline water retention - used by bakers.
	lsd	16.9		19.6						1.2	1.5	2.0	
	cv	29.8		16.8						17.9	20.5	29.7	

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Table 3. Yield Data Only (bu/acre)

Multi-year data are the most infomrative. MSU makes no endoreesment of any variety or brand.

Name	grain color	Location (county)					Average all sites
		Lenawee	Eaton	Saginaw	Tuscola	Sanilac	
Mitchell	R	74.1	56.1	85.8	73.9	71.3	72.2
Patton	R	79.2	55.0	86.0	72.2	80.0	74.5
Superior	W	77.6	57.5	92.2	73.8	75.8	75.4
Genesis 9939	R	70.2	54.0	87.9	74.3	75.3	72.3
Genesis 9953	R	79.5	59.6	86.3	68.7	72.6	73.3
NY88024-117	W	75.6	45.5	80.5	78.9	82.5	72.6
TW97613	R	76.4	56.1	88.2	70.1	80.8	74.3
Caledonia	W	76.1	52.6	85.8	78.2	77.9	74.1
Navigator	R	78.9	59.0	92.1	75.0	85.7	78.1
AC Mountain	W	72.1	58.7	81.6	76.0	74.1	72.5
AC Ron	W	77.1	61.3	86.1	70.2	71.2	73.2
Autumn	R	78.3	61.5	94.5	78.9	88.4	80.3
Bravo	R	79.4	53.5	89.6	72.8	80.4	75.1
Freedom	R	66.9	51.7	87.1	69.3	76.8	70.4
Glory	R	74.4	53.7	84.7	65.4	74.1	70.5
Harus	W	74.0	58.8	85.5	70.2	73.2	72.3
Hopewell	R	69.0	55.5	89.8	75.5	82.3	74.4
Lowell	W	72.3	58.0	73.8	57.1	69.2	66.1
Roane	R	80.5	59.2	91.9	73.5	86.0	78.2
Valor	R	81.6	64.4	100.4	76.5	86.1	81.8
MSU Exp. Line D6234	W	80.8	56.8	87.6	67.2	77.0	73.9
MSU Exp. Line D8006	W	79.3	58.7	89.6	84.1	86.0	79.5
Frankenmuth	W	71.2	46.9	82.2	59.0	65.5	65.0
Pioneer Brand 25R37	R	85.3	62.0	92.8	79.2	85.7	81.0
Pioneer Brand 25R44	R	77.5	54.7	87.7	72.0	75.5	73.5
Pioneer Brand 25R49	R	77.5	53.0	84.0	73.3	75.3	72.6
Pioneer Brand 25W60	W	85.3	58.9	94.7	84.2	83.4	81.3
RS 909	R	74.3	57.0	90.3	75.1	79.7	75.3
Bernard	R	73.8	59.6	88.3	73.7	81.4	75.4
Stine Brand 455	R	79.1	57.9	87.0	69.9	75.8	73.9
Stine Brand 482	R	80.3	57.1	87.0	67.8	80.2	74.5
H 101	R	79.9	59.5	99.4	83.1	84.4	81.3
Trelay Excel Brand 400-1	R	71.8	57.9	85.5	67.2	70.6	70.6
Croplan 547W	R	80.9	57.5	86.2	74.8	83.6	76.6
Sisson	R	79.6	59.3	85.7	76.2	86.7	77.5
VA96W-403WS	W	77.0	56.9	91.5	80.5	80.8	77.3
lsd=least significant difference, i.e., differences small than the lsd are probably due to chance. cv - low values mean higher precision.	average	76.3	56.4	87.8	73.0	78.3	74.4
	lsd	6.3	5.9	4.5	8.3	5.6	4.4
	cv	5.8	7.0	3.5	8.1	4.8	4.8

Caution: multi-year data are more informative than single year averages. Single site/single year data should not be used to make variety