A3868

Wisconsin winter wheat performance tests—2010

Shawn Conley, Paul Esker, Mark Martinka, John Gaska, and Karen Lackermann

The Wisconsin Winter Wheat Performance Tests are conducted each year to give growers information to select the best-performing varieties that will satisfy their specific goals. The performance tests are conducted each year at four locations in Wisconsin: Janesville, Lancaster, Chilton, and Arlington. Trials include released varieties, experimental lines from neighboring states, and lines from private seed companies. The primary objective of these trials is to quantify how varieties perform at different locations and across years. Growers can use this data to help select which varieties to plant; breeders use performance data to determine whether to release a new variety.

Year in review

Growing conditions

Wisconsin saw a 25% decline in winter wheat acres planted (250,000) in the 2009–2010 growing season.* The decline in winter wheat acres planted was primarily caused by a late corn and soybean harvest due to delayed crop maturity. The wheat crop that was established in a timely manner looked very good to excellent going into winter dormancy. Late-planted wheat suffered from poor tiller development that led to thin stands and weed control problems. Spring growing conditions were mostly favorable across the state; however, excessive rainfall did impact wheat in low-lying areas. Warmer-than-normal temperatures from March through July accelerated crop maturity, but yields were largely unaffected by the heat.

The estimated yield for the 2010 crop is 68 bu/a, the same as last year. Winter wheat yields were variable across our testing locations due to variable rainfall, planting dates, and disease pressure. Wheat yields at the Lancaster and Janesville locations averaged 86 and 69 bu/a, respectively. Wheat yield at Janesville was reduced due to delayed planting. Wheat yields at Arlington and Chilton averaged 89 and 69 bu/a, respectively. Wheat yield and test weight at Chilton was reduced due to delayed harvest caused by prolonged rainfall events. Overall winter wheat test weights were lower in 2010 and dockage was prevalent. No winterkill was noted at any locations in 2010.

***Source:** *USDA National Agricultural Statistics Service (www.nass.usda.gov)*

Diseases

In the winter wheat variety trial plots, powdery mildew incidence and severity was greater in 2009–2010 than 2008–2009, especially in the northeast portion of the state. Septoria leaf blotch was the other predominant disease observed in 2010 (tables 5–8). Rust diseases such as leaf and stripe rust were observed less frequently than in previous years. Fusarium head blight was noted, but there were fewer reports of problem fields than in the previous two years.

Table 1. Location and agronomics of winter wheat performance tests in Wisconsin

Location	Cooperators	Soil type	Row spacing (inches)	Nitrogen applied (lb/a)	Date planted (2009)	Date harvested (2010)
Arlington	J. Gaska, M. Repking	silt loam	7.5	40[a]	Sept. 30	July 13
Chilton	Kolbe Seeds, B. Larson	red clay	7.5	75	Oct. 1	July 27
Janesville	Rock Co. Farm, J. Stute	silt loam	7.5	85	Nov. 13	July 20
Lancaster	T. Wood	silt loam	7.5	40[a]	Sept. 29	July 16

[a] Nitrogen credited from previous soybean or alfalfa.

Table 2. Companies included in the 2010 performance tests

Brand	Company name	Phone	Website
AgriPro/Syngenta	AgriPro/Syngenta Seeds	(765) 563-3111	www.agriprowheat.com
Diener	BioTown Seeds	(219) 984-6038	www.biotownseeds.com
Dyna-Gro	Dyna-Gro Seed	(614) 761-4110, ext. 3	www.dyna-groseed.com
Excel Brand	Excel Brand Seed	1-800-969-6717	
Excel/Welter	Welter Seed	1-800-728-8450	www.welterseed.com
FS Seed	Growmark, Inc.	(309) 557-6399	www.fsseed.com
Jung	Jung Seed Genetics	(920) 326-5891	www.jungseedgenetics.com
Legacy	Legacy Seeds, Inc.	(715) 256-9313	www.legacyseeds.com
Pioneer	Pioneer Hi-Bred International	(507) 625-3045	www.pioneer.com
PIP	Partners in Production	1-877-GRO-SEED	
Pro Seed Genetics	Pro Seed Genetics Cooperative	(920) 388-2824	
Public	WI Foundation Seeds	(608) 846-9761	www.wisconsinfoundationseeds.wisc.edu/
	WI Crop Improvement	(608) 262-0167	www.wcia.wisc.edu/

Experimental procedures

At planting

Site details: Summarized in table 1.

Seedbed preparation: Conventional and conservation tillage methods.

Seeding rate: Seeded at a rate of 1.5 million viable seeds per acre.

Seed treatments: Identified in table 3. Fertilizer was applied as indicated by soil tests and herbicides were applied for weed control when necessary.

Planting: A grain drill with cone units was used to plant 9-row plots, 25 feet in length. Each variety was grown in at least four separate plots (replicates) in a randomized complete block design at each location to account for field variability.

Midseason

Diseases: Foliar disease assessments were made at all trial locations during June at Feekes 10.5.1. Assessments were made in the field on six stems from non-harvested rows for foliar diseases. Disease incidence and severity were estimated for all foliar diseases noted. Incidence was defined as the number of stems out of six with a specific disease. Disease severity = (4 x severity on flag leaf) + (3 x severity on flag-1 leaf) + (2 x severity on flag-2 leaf) + (severity on flag-3 leaf). This calculation was used as it emphasizes that disease on the upper leaves has the greatest effect on yield (because disease on the upper leaves reduces the amount of healthy green tissue).

Fusarium head blight assessments were made at all trial locations at Feekes 11.2. One hundred wheat heads were assessed for Fusarium head blight incidence and severity and were used to calculate the Fusarium head blight index.

Harvest

Yield: The center seven rows were harvested with a self-propelled combine. Plots were weighed and moisture was determined in the field using electronic equipment on the plot harvester. Yield is reported as bu/a (assuming 60 lb/bu) at 13% moisture content.

Lodging: Scores are based on the Belgian Lodging System. Values are rounded to whole numbers (0 = none, 9 = severe).

Test weight: Measured using a Dickey-john GAC2100 AGRI.

Data presentation

Yield: Listed in tables 4–8. Data for both 2009 and 2010 are provided if the variety was entered in the 2009 trials. The 2-year mean yield is calculated using location means as replications.

Due to severe winterkill that affected numerous trial plots at Arlington and Chilton in 2009, yields at those sites were adjusted based on an analysis of covariance, where percent survival (for each plot) was used as a covariate. This approach was used since winter wheat yields and the variation in those yields would be affected by the amount of winterkill observed in a given plot. The use of percent survival removes some of the variation in the observed winter wheat yields and improves the sensitivity of the test to differences in yields.

Least significant difference (LSD): Variations in yield and other characteristics occur because of variability in soil and other growing conditions that lower the precision of the results. Statistical analysis makes it possible to determine, with known probabilities of error, whether a difference is real or whether it may have occurred by chance.

Growers can use the appropriate least significant difference value at the bottom of the tables to determine true statistical differences. Where the difference between two selected varieties within a column is equal to or greater than the LSD value at the bottom of the column, there is a real difference between the two varieties in nine out of ten instances. If the difference is less than the LSD value, there may still be a real difference, but the experiment has produced no evidence of it.

Using this data to select top-yielding varieties

As with any crop, variety selection is the most important factor to consider in maximizing winter wheat yield and profitability. When choosing a winter wheat variety, several factors must be considered. These include winter survival, insect and disease resistance, heading date, lodging, test weight, and most importantly, yield. Since no variety is ideal for every location, it is important to understand the crop environment and pest complex that affects your specific region to maximize yield.

Yield is based on the genetic potential and environmental conditions in which the crop is grown. Therefore, by diversifying the genetic pool that is planted, a grower can hedge against crop failure. Select those varieties that perform well not only in your area but across experimental sites and years. This will increase the likelihood that, given next year's environment (which you cannot control), the variety you selected will perform well. (Table 4 gives an overview of yields across all locations.)

Test weight is also an important factor to consider when selecting a variety. The minimum test weight to be considered a U.S. #2 soft red winter wheat is 58 lb/bu. Wheat at lower test weights will be discounted. Both environment and pests may greatly affect test weight; therefore, selecting a variety that has a high test weight potential in your region is critical to maximizing economic gain.

Select a variety that has the specific **insect and disease resistance** characteristics that fit your needs. By selecting varieties with the appropriate level of resistance, crop yield loss may be either reduced or avoided without the need of pesticides. Careful management of resistant cultivars through crop and variety rotation is required to ensure that these characteristics are not lost.

Crop height and **lodging potential** are also important varietal characteristics that may be affected by your cropping system. If the wheat crop is intended for grain only, it may be important to select a variety that is short in stature and has a low potential for lodging. This may decrease yield loss due to crop spoilage and harvest loss as well as increase harvesting rate. However, if the wheat crop is to be used as silage or is to be harvested as both grain and straw, then selecting a taller variety may be warranted.

Table 3. Wheat seed treatment(s) applied to entered varieties

Brand	Variety	Seed treatment(s)
Public	Hopewell	Raxil XT, Gaucho
	Kaskaskia	Raxil XT, Gaucho
	Merl	Raxil/Thiram, Storicide
	Milton	Raxil/Thiram, Nitro-Shield
	Probe	Raxil/Thiram, Cruiser
	Red Ruby	Dividend Extreme, Cruiser
	Sisson	Raxil/Thiram, Cruiser
	Sunburst	Raxil XT, Gaucho
	Truman	Raxil XT, Gaucho
	IL 01-11934	Dividend Extreme, Gaucho
	IL 04-24668	Dividend Extreme, Gaucho
	P 02444A1-23-9	Raxil XT, Gaucho
	P 99751RA1-4-3-94	Raxil XT, Gaucho
	OH 02-13567	Raxil XT, Gaucho
AgriPro/Syngenta	Branson	Dividend Extreme, Cruiser
	W 1104	Dividend Extreme, Cruiser
	W 1377	Dividend Extreme, Cruiser
	W 1566	Dividend Extreme, Cruiser
Diener	D 487	Dividend Extreme, Cruiser
	D 502	Dividend Extreme, Cruiser
	XW 91	Dividend Extreme, Cruiser
	XW 92	Dividend Extreme, Cruiser
Dyna-Gro	9911	Dividend Extreme, Cruiser
	V 9723	Dividend Extreme, Cruiser
	9042	Dividend Extreme, Cruiser
Excel Brand	163	Dividend Extreme, Gaucho
	242	Dividend Extreme, Gaucho
	302	Dividend Extreme, Gaucho
Excel/Welter	442	none
FS Seed	FS 610	Dividend Extreme, Gaucho
	FS 620	Dividend Extreme, Gaucho
	FS 628	Dividend Extreme, Gaucho
	FS 630	Dividend Extreme, Gaucho

Brand	Variety	Seed treatment(s)
Jung	5830	Raxil XT
	5844	Dividend Extreme
	5988	Raxil XT
	X 5196	Dividend Extreme
Legacy	LW 1050	Dividend Extreme, Cruiser
	LW 860	Raxil XT
	LW 862	Raxil XT
	LW 863	Dividend Extreme
	LW 870	Raxil XT
	LW 1072	Encase
Pioneer	25R39	Dividend Extreme, Cruiser
	25R47	Dividend Extreme, Cruiser
	25R51	Dividend Extreme, Cruiser
	25R62	Dividend Extreme, Cruiser
PIP	701	Charter
	701-Cruiser	Charter, Cruiser
	717	Charter
	720	Charter
	729	Charter
	730	Charter
	752	Charter
	760	Charter
	760-Cruiser	Charter, Cruiser
	761	Charter
Pro Seed Genetics	PRO 200	Raxil XT, Gaucho
	PRO 220	Raxil XT, Gaucho
	PRO 240	Raxil XT, Gaucho
	PRO Ex320A	Raxil XT, Gaucho
	PRO Ex340	Dividend Extreme, Gaucho
	PRO Ex360A	Dividend Extreme, Cruiser
	PRO Ex380A	Dividend Extreme, Cruiser

Table 4. Combined 2010 winter wheat performance test results

Brand	Entry	2010 means		Janesville		Lancaster		Chilton		Arlington		2009–2010 mean yield (bu/a)
		Yield (bu/a)	Test wt. (lb/bu)	Yield (bu/a)	Test wt. (lb/bu)	Yield (bu/a)	Test wt. (lb/bu)	Yield (bu/a)	Test wt. (lb/bu)	Yield (bu/a)	Test wt. (lb/bu)	
Public	Hopewell	76	51.6	69	49.5	*91	53.3	56	49.7	86	53.8	74
	Kaskaskia	75	53.8	57	48.6	80	56.3	77	52.6	86	57.6	75
	Merl	73	54.5	63	52.1	78	56.7	59	52.0	90	57.5	69
	Milton	79	53.8	68	52.0	84	55.6	68	48.7	*96	58.8	76
	Probe	74	51.6	66	46.2	84	54.4	63	50.3	83	55.5	
	Red Ruby	78	52.2	64	49.5	90	56.0	67	46.2	89	57.1	
	Sisson	71	52.4	61	49.9	78	52.4	60	49.6	83	57.6	70
	Sunburst	79	53.1	66	47.8	87	53.6	68	50.7	*94	60.2	76
	Truman	72	52.5	63	50.8	85	54.1	61	48.7	78	56.6	70
	IL 01-11934	78	54.4	59	48.0	84	56.2	*79	54.3	88	58.9	78
	IL 04-24668	78	54.8	71	51.2	86	56.3	71	53.4	85	58.6	77
	P 02444A1-23-9	64	50.5	55	43.6	70	52.4	51	50.3	79	55.8	64
	P 99751RA1-4-3-94	69	55.1	66	53.0	74	55.1	55	53.2	82	59.4	
	OH 02-13567	72	54.8	67	54.2	80	55.5	53	52.8	87	56.9	
AgriPro/ Syngenta	Branson	*87	52.5	*79	51.4	*96	53.8	73	48.6	*100	56.5	*81
	W 1104	76	50.7	69	47.5	84	51.6	60	48.8	92	55.0	
	W 1377	74	55.2	67	53.8	87	57.3	59	50.8	82	58.8	74
	W 1566	76	51.3	67	48.3	87	51.9	68	50.1	82	54.9	
Diener	D 487	*80	55.8	75	55.2	84	56.2	77	54.8	84	57.1	77
	D 502	77	51.9	69	50.6	83	53.1	66	48.0	91	55.9	77
	XW 91	*82	50.8	68	48.7	*93	52.1	71	47.5	*97	54.9	
	XW 92	*82	53.0	71	53.1	87	54.3	77	48.4	91	56.3	
Dyna-Gro	9911	*81	55.8	74	54.8	81	55.7	*79	54.4	88	58.3	*79
	V 9723	79	52.3	73	49.9	88	54.4	68	49.4	86	55.4	
	9042	77	53.5	71	51.5	87	53.9	62	52.0	88	56.8	
Excel Brand	163	76	55.2	60	53.2	87	55.7	66	53.8	90	58.1	
	242	75	51.6	64	48.5	*91	53.5	60	48.1	83	56.4	
	302	*80	50.8	67	47.0	89	52.3	73	48.0	92	56.0	
Excel/Welter	442	*81	52.5	74	52.4	90	51.2	72	49.9	88	56.6	*82
FS Seed	FS 610	75	54.5	67	50.8	82	56.7	67	51.8	84	58.9	
	FS 620	75	54.3	58	50.9	77	53.8	*84	54.5	79	58.2	
	FS 628	78	52.3	68	49.6	89	54.7	65	48.9	88	55.9	78
	FS 630	72	51.6	62	47.6	79	53.7	60	48.8	86	56.5	
Jung	5830	*82	54.3	75	51.3	87	56.3	*79	51.4	88	58.3	*82
	5844	78	52.0	74	49.8	85	53.2	62	49.0	91	56.1	
	5988	*81	54.1	71	52.8	88	54.5	*79	52.0	85	57.4	*81
	X 5196	*83	51.4	74	50.3	*91	54.2	73	46.8	*94	54.2	
Legacy	LW 1050	*86	55.1	*78	51.9	88	55.8	*85	54.9	*93	57.7	
	LW 860	*83	54.3	*78	51.5	86	55.1	75	53.3	92	57.3	
	LW 862	76	52.0	69	49.5	79	54.2	66	49.4	89	55.1	
	LW 863	74	50.5	66	45.5	87	54.4	52	47.9	92	54.3	
	LW 870	*80	54.0	*78	52.3	88	55.4	65	50.9	88	57.4	
	LW 1072	73	53.5	54	47.1	78	55.1	*84	54.0	75	57.6	

Table 4. continued

Brand	Entry	2010 means		Janesville		Lancaster		Chilton		Arlington		2009–2010 mean yield (bu/a)
		Yield (bu/a)	Test wt. (lb/bu)	Yield (bu/a)	Test wt. (lb/bu)	Yield (bu/a)	Test wt. (lb/bu)	Yield (bu/a)	Test wt. (lb/bu)	Yield (bu/a)	Test wt. (lb/bu)	
Pioneer	25R39	78	50.7	75	45.0	79	52.1	64	49.5	*95	56.0	78
	25R47	78	52.1	73	49.6	85	52.7	61	49.3	*93	56.8	*79
	25R51	75	50.8	58	46.2	83	53.3	68	47.5	90	56.4	75
	25R62	73	50.7	53	50.1	90	51.6	59	46.7	91	54.5	72
PIP	701	76	52.7	66	50.0	85	54.9	67	50.2	87	55.6	75
	701-Cruiser	78	52.1	68	48.6	86	54.7	73	49.5	85	55.5	
	717	77	53.9	59	50.4	78	52.7	*86	53.6	86	58.6	78
	720	*80	49.9	72	45.2	*91	53.8	65	46.3	90	54.1	74
	729	*87	54.5	77	52.0	*98	55.1	*81	52.2	*93	58.8	*84
	730	*82	51.5	69	48.7	*93	52.3	72	49.4	92	55.5	
	752	*80	52.6	69	50.6	89	54.4	64	49.0	*98	56.5	
	760	*82	53.8	74	52.9	87	53.9	*78	51.0	87	57.4	*83
	760-Cruiser	*85	55.0	*86	54.5	*91	54.5	70	53.5	92	57.3	
	761	*87	54.4	74	53.6	*96	54.1	*86	52.4	92	57.4	
Pro Seed Genetics	PRO 200	77	54.1	67	50.7	80	54.9	72	52.0	90	58.6	76
	PRO 220	76	56.8	71	56.4	77	56.6	68	54.7	86	59.7	75
	PRO 240	77	52.1	66	49.9	85	53.2	64	49.1	92	56.0	77
	PRO Ex320A	*83	53.3	77	53.0	*91	55.1	73	48.0	91	57.0	
	PRO Ex340	72	52.3	67	49.7	80	55.7	58	46.7	83	57.3	
	PRO Ex360A	*84	53.6	71	51.5	*92	55.2	74	51.7	*99	56.2	
	PRO Ex380A	*81	51.2	70	47.3	88	52.6	72	49.3	*93	55.6	
Mean		78	53.0	68	50.3	86	54.3	69	50.6	89	56.9	76
LSD(.10)		7	1.0	8	2.7	7	1.8	8	2.3	7	1.1	5

* Yield is not significantly different (0.10 level) from the highest yielding cultivar.

Table 5. Janesville site—2010 winter wheat performance test results

Brand	Entry	2010 means						2009 yield (bu/a)	2-yr mean yield (bu/a)
		Yield (bu/a)	Test wt. (lb/bu)	Height (in.)	Lodging (0–9)	Septoria[a] (0–6.9)	Powdery mildew[a] (0–6.9)		
Public	Hopewell	69	49.5	35	0	0.7	0.0	63	66
	Kaskaskia	57	48.6	36	3	1.4	0.0	58	58
	Merl	63	52.1	30	1	0.7	0.1	60	62
	Milton	68	52.0	32	2	0.7	0.2	61	65
	Probe	66	46.2	30	2	1.9	0.0		
	Red Ruby	64	49.5	33	2	1.1	0.0		
	Sisson	61	49.9	32	5	0.9	0.0	58	60
	Sunburst	66	47.8	29	0	1.3	0.1	64	65
	Truman	63	50.8	36	0	0.9	0.0	56	60
	IL 01-11934	59	48.0	33	3	1.3	0.0	61	60
	IL 04-24668	71	51.2	33	1	1.4	0.0	62	*67
	P 02444A1-23-9	55	43.6	33	1	0.1	0.1	48	52
	P 99751RA1-4-3-94	66	53.0	33	0	0.8	0.0		
	OH 02-13567	67	54.2	38	1	0.6	0.0		
AgriPro/Syngenta	Branson	*79	51.4	31	2	1.0	0.0	63	*71
	W 1104	69	47.5	33	2	0.5	0.0		
	W 1377	67	53.8	35	4	0.7	0.0	57	62
	W 1566	67	48.3	36	1	1.3	0.0		
Diener	D 487	75	55.2	34	3	0.4	0.0	63	*69
	D 502	69	50.6	37	2	1.7	0.0	56	63
	XW 91	68	48.7	31	1	0.5	0.0		
	XW 92	71	53.1	37	3	1.8	1.1		
Dyna-Gro	9911	74	54.8	34	4	1.4	0.0	62	*68
	V 9723	73	49.9	38	1	1.1	0.0		
	9042	71	51.5	33	0	0.2	0.0		
Excel Brand	163	60	53.2	34	4	1.0	0.0		
	242	64	48.5	34	1	1.0	0.0		
	302	67	47.0	33	1	0.7	0.0		
Excel/Welter	442	74	52.4	37	2	1.4	0.2	*66	*70
FS Seed	FS 610	67	50.8	32	4	1.4	0.0		
	FS 620	58	50.9	31	2	1.0	0.0		
	FS 628	68	49.6	35	2	0.8	0.4	63	66
	FS 630	62	47.6	37	2	0.5	0.7		
Jung	5830	75	51.3	35	2	0.9	0.0	62	*69
	5844	74	49.8	37	2	1.6	0.2		
	5988	71	52.8	39	1	1.4	0.0	65	*68
	X 5196	74	50.3	39	3	1.6	0.0		

Table 5. continued

Brand	Entry	2010 means						2009 yield (bu/a)	2-yr mean yield (bu/a)
		Yield (bu/a)	Test wt. (lb/bu)	Height (in.)	Lodging (0–9)	Septoria[a] (0–6.9)	Powdery mildew[a] (0–6.9)		
Legacy	LW 1050	*78	51.9	34	2	0.8	0.0		
	LW 860	*78	51.5	40	2	1.2	0.3		
	LW 862	69	49.5	38	3	1.6	0.0		
	LW 863	66	45.5	31	1	1.3	0.0		
	LW 870	*78	52.3	36	1	1.9	0.0		
	LW 1072	54	47.1	34	3	2.0	0.0		
Pioneer	25R39	75	45.0	34	0	0.4	0.0	*69	*72
	25R47	73	49.6	32	1	0.4	0.0	*74	*74
	25R51	58	46.2	32	1	0.5	0.2	63	61
	25R62	53	50.1	29	0	1.4	0.0	62	58
PIP	701	66	50.0	37	2	1.1	0.0	*70	*68
	701-Cruiser	68	48.6	37	2	0.8	0.0		
	717	59	50.4	35	3	1.0	0.1	58	59
	720	72	45.2	37	1	2.3	0.0	*66	*69
	729	77	52.0	34	0	0.3	0.0	*73	*75
	730	69	48.7	33	1	0.7	0.0		
	752	69	50.6	33	1	1.4	0.0		
	760	74	52.9	38	2	1.7	0.0	*66	*70
	760-Cruiser	*86	54.5	38	1	1.3	0.0		
	761	74	53.6	37	3	1.4	0.2		
Pro Seed Genetics	PRO 200	67	50.7	35	2	2.4	0.0	64	66
	PRO 220	71	56.4	38	1	0.9	0.8	60	66
	PRO 240	66	49.9	39	2	1.7	0.0	65	66
	PRO Ex320A	77	53.0	37	2	1.5	0.5		
	PRO Ex340	67	49.7	38	1	0.6	0.8		
	PRO Ex360A	71	51.5	33	1	0.5	0.3		
	PRO Ex380A	70	47.3	32	1	0.2	0.1		
Mean		68	50.3	35	2	1.1	0.1	62	65
LSD(.10)		8	2.7	3	2	0.9	0.4	8	8

[a] Both Septoria and powdery mildew are based on a weighted disease severity score as: Severity = (4 x flag leaf severity) + (3 x flag-1 leaf severity) + (2 x flag-2 leaf severity) + (flag-3 leaf severity); and used a natural log transformation.

* Yield is not significantly different (0.10 level) from the highest yielding cultivar.

Table 6. Lancaster site—2010 winter wheat performance test results

Brand	Entry	2010 means						2009 yield (bu/a)	2-yr mean yield (bu/a)
		Yield (bu/a)	Test wt. (lb/bu)	Height (in.)	Lodging (0–9)	Septoria[a] (0–6.9)	Powdery mildew[a] (0–6.9)		
Public	Hopewell	*91	53.3	39	3	0.8	0.8	71	81
	Kaskaskia	80	56.3	44	4	1.4	2.0	78	79
	Merl	78	56.7	39	2	0.5	0.7	59	69
	Milton	84	55.6	40	3	0.8	0.6	68	76
	Probe	84	54.4	39	4	2.0	1.4		
	Red Ruby	90	56.0	39	1	0.1	0.6		
	Sisson	78	52.4	37	3	0.7	0.8	74	76
	Sunburst	87	53.6	38	2	1.2	0.6	*90	89
	Truman	85	54.1	39	4	1.6	1.8	76	81
	IL 01-11934	84	56.2	39	3	0.2	0.2	*88	86
	IL 04-24668	86	56.3	39	4	1.4	2.1	84	85
	P 02444A1-23-9	70	52.4	42	3	0.4	1.7	54	62
	P 99751RA1-4-3-94	74	55.1	38	2	0.4	0.6		
	OH 02-13567	80	55.5	41	2	1.2	1.1		
AgriPro/Syngenta	Branson	*96	53.8	38	3	0.3	0.6	76	86
	W 1104	84	51.6	37	3	1.2	0.6		
	W 1377	87	57.3	42	4	0.7	1.7	83	85
	W 1566	87	51.9	45	4	0.2	0.6		
Diener	D 487	84	56.2	43	4	1.3	1.8	70	77
	D 502	83	53.1	44	3	0.7	0.6	74	79
	XW 91	*93	52.1	37	0	0.5	1.1		
	XW 92	87	54.3	44	4	1.6	2.5		
Dyna-Gro	9911	81	55.7	40	4	0.6	0.8	*89	85
	V 9723	88	54.4	43	3	1.5	1.7		
	9042	87	53.9	39	2	0.7	0.7		
Excel Brand	163	87	55.7	40	4	0.3	2.0		
	242	*91	53.5	40	4	1.1	2.1		
	302	89	52.3	40	4	0.7	0.9		
Excel/Welter	442	90	51.2	44	5	1.7	1.4	*95	93
FS Seed	FS 610	82	56.7	41	4	1.6	1.3		
	FS 620	77	53.8	39	4	0.8	1.1		
	FS 628	89	54.7	44	3	1.5	1.2	82	86
	FS 630	79	53.7	43	3	2.0	2.1		
Jung	5830	87	56.3	42	4	0.6	0.5	*93	90
	5844	85	53.2	46	3	1.2	1.6		
	5988	88	54.5	43	4	1.2	1.9	83	86
	X 5196	*91	54.2	44	3	2.1	1.4		
Legacy	LW 1050	88	55.8	40	3	0.2	0.8		
	LW 860	86	55.1	42	4	0.5	1.0		
	LW 862	79	54.2	44	3	1.6	1.0		
	LW 863	87	54.4	40	3	2.0	0.9		
	LW 870	88	55.4	38	2	0.6	0.7		
	LW 1072	78	55.1	40	4	1.0	1.0		

Table 6. continued

Brand	Entry	2010 means						2009 yield (bu/a)	2-yr mean yield (bu/a)
		Yield (bu/a)	Test wt. (lb/bu)	Height (in.)	Lodging (0–9)	Septoria[a] (0–6.9)	Powdery mildew[a] (0–6.9)		
Pioneer	25R39	79	52.1	38	2	0.7	1.9	79	79
	25R47	85	52.7	39	1	0.6	1.2	81	83
	25R51	83	53.3	39	2	1.1	1.1	*87	85
	25R62	90	51.6	37	2	0.5	1.0	74	82
PIP	701	85	54.9	43	3	0.6	1.4	78	82
	701-Cruiser	86	54.7	43	3	1.0	1.2		
	717	78	52.7	41	4	1.1	0.7	80	79
	720	*91	53.8	41	3	0.9	1.0	79	85
	729	*98	55.1	42	2	0.3	0.4	81	90
	730	*93	52.3	37	1	0.7	1.1		
	752	89	54.4	39	3	0.5	1.2		
	760	87	53.9	42	4	1.2	2.1	*95	91
	760-Cruiser	*91	54.5	41	4	1.1	0.9		
	761	*96	54.1	41	4	1.3	1.1		
Pro Seed Genetics	PRO 200	80	54.9	44	5	1.3	1.7	73	77
	PRO 220	77	56.6	43	3	1.0	1.5	81	79
	PRO 240	85	53.2	44	4	1.1	1.5	77	81
	PRO Ex320A	*91	55.1	42	4	1.5	2.6		
	PRO Ex340	80	55.7	42	3	1.1	2.7		
	PRO Ex360A	*92	55.2	39	0	0.6	1.1		
	PRO Ex380A	88	52.6	35	1	0.2	0.2		
Mean		86	54.3	41	3	1.0	1.2	77	82
LSD(.10)		7	1.8	2	1	0.7	1.0	8	ns

[a] Both Septoria and powdery mildew are based on a weighted disease severity score as: Severity = (4 x flag leaf severity) + (3 x flag-1 leaf severity) + (2 x flag-2 leaf severity) + (flag-3 leaf severity); and used a natural log transformation.

* Yield is not significantly different (0.10 level) from the highest yielding cultivar.

Table 7. Chilton site—2010 winter wheat performance test results

Brand	Entry	2010 means						2009		2-yr mean yield (bu/a)
		Yield (bu/a)	Test wt. (lb/bu)	Height (in.)	Lodging (0–9)	Septoria[a] (0–6.9)	Powdery mildew[a] (0–6.9)	Adjusted yield[b] (bu/a)	Winter survival (%)	
Public	Hopewell	56	49.7	39	7	2.5	0.9	*81	44	69
	Kaskaskia	77	52.6	41	7	2.2	3.3	*85	16	*81
	Merl	59	52.0	36	8	0.9	3.1	70	36	65
	Milton	68	48.7	36	6	0.9	2.4	*83	50	*76
	Probe	63	50.3	34	8	1.6	0.7			
	Red Ruby	67	46.2	36	7	1.2	2.0			
	Sisson	60	49.6	38	8	1.4	1.5	71	30	66
	Sunburst	68	50.7	30	3	1.6	0.0	75	54	72
	Truman	61	48.7	39	6	2.0	2.7	66	11	64
	IL 01-11934	*79	54.3	37	6	1.2	0.8	*82	46	*81
	IL 04-24668	71	53.4	36	7	0.9	3.4	76	58	74
	P 02444A1-23-9	51	50.3	40	7	1.4	3.3	74	44	63
	P 99751RA1-4-3-94	55	53.2	36	7	0.7	3.4			
	OH 02-13567	53	52.8	40	8	2.0	1.0			
AgriPro/Syngenta	Branson	73	48.6	39	7	1.4	1.1	77	26	75
	W 1104	60	48.8	34	7	0.7	4.3			
	W 1377	59	50.8	37	7	1.7	4.2	*78	54	69
	W 1566	68	50.1	39	6	1.0	1.5			
Diener	D 487	77	54.8	38	5	1.1	1.8	*88	59	*83
	D 502	66	48.0	40	6	1.2	3.8	*91	35	*79
	XW 91	71	47.5	36	6	2.3	2.8			
	XW 92	77	48.4	39	6	0.9	3.5			
Dyna-Gro	9911	*79	54.4	38	6	1.6	1.5	*80	43	*80
	V 9723	68	49.4	39	6	1.1	3.2			
	9042	62	52.0	37	6	1.1	1.4			
Excel Brand	163	66	53.8	42	7	2.6	3.5			
	242	60	48.1	37	6	2.0	3.5			
	302	73	48.0	35	7	1.4	1.1			
Excel/Welter	442	72	49.9	38	6	1.7	4.3	*82	46	*77
FS Seed	FS 610	67	51.8	40	6	2.4	3.4			
	FS 620	*84	54.5	37	7	1.4	1.5			
	FS 628	65	48.9	39	6	1.7	3.4	*82	28	74
	FS 630	60	48.8	38	6	1.9	4.1			
Jung	5830	*79	51.4	39	6	0.6	1.7	*83	59	*81
	5844	62	49.0	38	6	1.0	4.0			
	5988	*79	52.0	38	5	1.0	2.1	*86	64	*83
	X 5196	73	46.8	41	6	1.1	2.4			
Legacy	LW 1050	*85	54.9	38	5	1.0	1.3			
	LW 860	75	53.3	38	6	1.9	1.6			
	LW 862	66	49.4	37	6	1.8	3.4			
	LW 863	52	47.9	34	6	1.9	2.2			
	LW 870	65	50.9	36	5	1.1	2.3			
	LW 1072	*84	54.0	37	7	1.5	2.4			

Table 7. continued

Brand	Entry	2010 means						2009		2-yr mean yield (bu/a)
		Yield (bu/a)	Test wt. (lb/bu)	Height (in.)	Lodging (0–9)	Septoria[a] (0–6.9)	Powdery mildew[a] (0–6.9)	Adjusted yield[b] (bu/a)	Winter survival (%)	
Pioneer	25R39	64	49.5	35	6	1.7	3.0	*82	35	73
	25R47	61	49.3	35	6	1.6	2.8	*81	45	71
	25R51	68	47.5	35	6	1.4	3.8	70	39	69
	25R62	59	46.7	36	8	0.5	3.8	77	33	68
PIP	701	67	50.2	41	6	1.4	3.8	70	40	69
	701-Cruiser	73	49.5	39	7	1.3	3.1			
	717	*86	53.6	38	7	1.7	1.1	*85	59	*86
	720	65	46.3	37	4	2.4	2.2	62	39	64
	729	*81	52.2	37	6	0.9	0.4	*87	61	*84
	730	72	49.4	36	5	1.5	2.4			
	752	64	49.0	35	7	1.2	1.5			
	760	*78	51.0	39	5	0.6	2.1	*88	61	*83
	760-Cruiser	70	53.5	40	5	2.2	2.4			
	761	*86	52.4	37	5	2.2	1.9			
Pro Seed Genetics	PRO 200	72	52.0	42	6	2.9	2.4	*79	49	*76
	PRO 220	68	54.7	40	6	1.7	3.5	*78	55	73
	PRO 240	64	49.1	42	6	1.2	3.6	*80	56	72
	PRO Ex320A	73	48.0	41	6	1.7	4.3			
	PRO Ex340	58	46.7	42	6	2.4	4.0			
	PRO Ex360A	74	51.7	37	5	0.9	2.4			
	PRO Ex380A	72	49.3	36	6	1.6	2.7			
Mean		69	50.6	38	6	1.5	2.6	78	43	74
LSD(.10)		8	2.3	3	2	1.1	1.0	14	27	10

[a] Both Septoria and powdery mildew are based on a weighted disease severity score as: Severity = (4 x flag leaf severity) + (3 x flag-1 leaf severity) + (2 x flag-2 leaf severity) + (flag-3 leaf severity); and used a natural log transformation.

[b] Reported wheat yields were adjusted based on a MIXED model statistical analysis that included the percent survival as a covariate to estimate the effect of winterkill on wheat productivity.

* Yield is not significantly different (0.10 level) from the highest yielding cultivar.

Table 8. Arlington site—2010 winter wheat variety trial results

Brand	Entry	2010 means						2009 means		2-yr mean yield (bu/a)
		Yield (bu/a)	Test wt. (lb/bu)	Height (in.)	Lodging (0–9)	Septoria[a] (0–6.9)	Leaf rust[a] (0–6.9)	Adjusted yield[b] (bu/a)	Winter survival (%)	
Public	Hopewell	86	53.8	36	3	2.2	1.4	76	65	81
	Kaskaskia	86	57.6	40	3	2.3	0.4	76	57	81
	Merl	90	57.5	35	1	1.9	0.8	75	40	*83
	Milton	*96	58.8	37	1	1.6	0.5	81	37	*89
	Probe	83	55.5	33	2	2.2	1.0			
	Red Ruby	89	57.1	36	0	2.4	0.3			
	Sisson	83	57.6	32	2	2.1	0.4	74	41	79
	Sunburst	*94	60.2	31	0	2.9	0.5	64	31	79
	Truman	78	56.6	37	2	2.0	0.6	72	46	75
	IL 01-11934	88	58.9	33	5	2.7	0.0	82	39	*85
	IL 04-24668	85	58.6	35	2	1.7	0.2	80	64	*83
	P 02444A1-23-9	79	55.8	33	1	1.0	0.1	77	51	78
	P 99751RA1-4-3-94	82	59.4	32	0	1.3	0.0			
	OH 02-13567	87	56.9	38	2	1.8	0.2			
AgriPro/Syngenta	Branson	*100	56.5	32	1	2.1	0.5	*84	27	*92
	W 1104	92	55.0	32	2	2.1	0.9			
	W 1377	82	58.8	34	1	2.9	0.9	79	40	81
	W 1566	82	54.9	41	1	2.5	1.1			
Diener	D 487	84	57.1	35	1	2.4	0.6	75	47	80
	D 502	91	55.9	38	1	3.1	0.1	*83	47	*87
	XW 91	*97	54.9	35	1	1.1	0.3			
	XW 92	91	56.3	40	2	2.7	0.7			
Dyna-Gro	9911	88	58.3	36	1	2.8	0.9	82	51	*85
	V 9723	86	55.4	36	1	1.5	0.2			
	9042	88	56.8	33	1	2.3	0.0			
Excel Brand	163	90	58.1	36	2	1.7	0.2			
	242	83	56.4	34	2	1.4	0.3			
	302	92	56.0	33	1	1.2	0.5			
Excel/Welter	442	88	56.6	38	1	1.6	0.7	*90	48	*89
FS Seed	FS 610	84	58.9	35	2	2.0	1.4			
	FS 620	79	58.2	33	2	1.4	0.4			
	FS 628	88	55.9	37	1	2.3	1.1	*84	41	*86
	FS 630	86	56.5	40	1	2.1	1.8			
Jung	5830	88	58.3	36	2	2.7	0.3	*91	54	*90
	5844	91	56.1	39	1	2.3	0.1			
	5988	85	57.4	39	2	2.1	0.3	*90	37	*88
	X 5196	*94	54.2	39	2	1.6	0.9			
Legacy	LW 1050	*93	57.7	36	2	1.8	1.0			
	LW 860	92	57.3	39	2	3.0	0.0			
	LW 862	89	55.1	39	2	1.6	0.5			
	LW 863	92	54.3	35	1	1.8	0.1			
	LW 870	88	57.4	35	1	0.8	0.0			
	LW 1072	75	57.6	34	5	2.9	1.6			

Table 8. continued

Brand	Entry	2010 means						2009 means		2-yr mean yield (bu/a)
		Yield (bu/a)	Test wt. (lb/bu)	Height (in.)	Lodging (0–9)	Septoria[a] (0–6.9)	Leaf rust[a] (0–6.9)	Adjusted yield[b] (bu/a)	Winter survival (%)	
Pioneer	25R39	*95	56.0	34	0	2.2	0.5	78	30	*87
	25R47	*93	56.8	33	0	1.9	0.9	81	47	*87
	25R51	90	56.4	33	1	2.3	0.1	80	39	*85
	25R62	91	54.5	32	1	2.5	0.8	73	29	82
PIP	701	87	55.6	38	1	1.9	0.2	80	42	*84
	701-Cruiser	85	55.5	37	1	2.6	0.0			
	717	86	58.6	33	3	1.2	0.2	*90	22	*88
	720	90	54.1	36	2	2.2	0.1	69	49	80
	729	*93	58.8	36	1	2.4	0.6	*84	70	*89
	730	92	55.5	33	1	2.2	0.1			
	752	*98	56.5	33	1	1.6	0.0			
	760	87	57.4	37	3	2.2	0.2	*87	68	*87
	760-Cruiser	92	57.3	37	2	1.5	0.5			
	761	92	57.4	38	1	2.5	1.3			
Pro Seed Genetics	PRO 200	90	58.6	41	4	1.8	0.9	*84	80	*87
	PRO 220	86	59.7	40	1	1.4	0.8	75	60	81
	PRO 240	92	56.0	38	2	2.3	0.7	*84	46	*88
	PRO Ex320A	91	57.0	38	1	2.5	0.9			
	PRO Ex340	83	57.3	37	2	1.3	0.0			
	PRO Ex360A	*99	56.2	35	1	1.6	0.5			
	PRO Ex380A	*93	55.6	34	1	2.0	0.5			
Mean		89	56.9	36	2	2.0	0.5	79	44	84
LSD(.10)		7	1.1	2	1	1.0	0.8	13	21	9

[a] Both Septoria and leaf rust are based on a weighted disease severity score as: Severity = (4 x flag leaf severity) + (3 x flag-1 leaf severity) + (2 x flag-2 leaf severity) + (flag-3 leaf severity); and used a natural log transformation.

[b] Reported wheat yields were adjusted based on a MIXED model statistical analysis that included the percent survival as a covariate to estimate the effect of winterkill on wheat productivity.

* Yield is not significantly different (0.10 level) from the highest yielding cultivar.

Testing agencies

The Wisconsin Winter Wheat Performance Tests were conducted by the Departments of Agronomy and Plant Pathology, College of Agricultural and Life Sciences and the University of Wisconsin-Extension, in cooperation and with support from the Wisconsin Crop Improvement Association.

Additional information

- Check the following publications for additional information on small grain production and seed availability. Both are updated annually.

  Pest Management in Wisconsin Field Crops (A3646) at learningstore.uwex.edu

  The Wisconsin Certified Seed Directory at wcia.wisc.edu

- For information on seed availability of public varieties, contact:

  Wisconsin Crop Improvement Association
  554 Moore Hall
  1575 Linden Drive
  Madison, WI 53706
  (608) 262-1341, wcia.wisc.edu

- To access crop performance testing information electronically, visit: www.coolbean.info.

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Cooperative Extension

Authors: Shawn Conley is associate professor in agronomy; Paul Esker is assistant professor in plant pathology; Mark Martinka and John Gaska are program manager and outreach specialist in agronomy, respectively; and Karen Lackermann is graduate research assistant in plant pathology, College of Agricultural and Life Sciences, University of Wisconsin-Madison. Conley and Esker also hold appointments with UW-Extension, Cooperative Extension. Produced by Cooperative Extension Publishing.

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