

Small grain varieties for grain and forage in Wisconsin

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Performance trials for small grain varieties are conducted each year at several locations throughout Wisconsin (table 1). Trials include released varieties, experimental lines from Wisconsin and neighboring states, and lines from private seed companies. The primary objective of these trials is to obtain data on how varieties perform in different locations and years. Growers use these data to help them in their choice of varieties to plant, and breeders use performance data to determine whether or not to release a new variety.

New varieties developed and released in Wisconsin are automatically entered in the Wisconsin Certification Program. These varieties have demonstrated superior production qualities. In addition, superior varieties from other states may be recommended and/or certified in the state. As new varieties are released to the public, older varieties with inferior qualities are removed from the recommended list and

eventually dropped from the certified list as seed production declines.

Occasionally, varieties are certified without being recommended to Wisconsin growers. Varieties in this category may include commercial varieties developed by private seed companies or varieties where there is a substantial market for Wisconsin-produced seed. Thus, in Wisconsin, recommendation and certification do not mean the same thing. Recommended varieties are those with superior in-state production performance records, while certification provides the assurance of seed purity and seed quality.

VARIETY SELECTION

Factors to consider when selecting small grain varieties include grain or forage yield, maturity, straw strength,



Table 1. Location and agronomics of small grain variety trials in Wisconsin

Location	Cooperators	Soil type	Row spacing (inches)	Average nitrogen applied (lb/a)	Planting date	Harvest date
Arlington (wheat)	M. Martinka, J. Gaska	silt loam	7.5	100	Sept. 19	July 24
Arlington (barley, oat)	P. Ehrhardt, J. Albertson	silt loam	6.0	50	April 27	Aug. 6
Ashland	M. Mlynarek	red clay	8.0	60	May 1	Aug. 6
Chilton (wheat)	Kolbe Seeds, M. Glewen	red clay	7.5	100	Sept. 28	July 27
Chilton (barley, oat)	Kolbe Seeds, M. Glewen	red clay	12.0	75	May 17	Aug. 18
Janesville	Rock Co. Farm, D. Nehring	silt loam	7.5	100	Sept. 27	July 19
Lancaster	T. Wood	silt loam	7.5	40	May 9	Aug. 6
Madison	R. Duerst	silt loam	6.0	*	April 18	Aug. 9
Marshfield	D. Wiersma	silt loam	6.0	54	May 1	Aug. 6
Racine	Henderson Seeds	silt loam	7.5	66	Oct. 2	July 16
Spooner	M. Bertram	sandy loam	8.0	66	May 5	Aug. 8
Sturgeon Bay	R. Weidman	silt loam	12.0	48	April 26	Aug. 2

*Nitrogen credited from previous alfalfa or soybean.

and disease resistance. Disease ratings are performed by the Department of Agronomy for oats and barley. Winterhardiness should be taken into account when selecting a winter wheat variety, and barley growers should consider whether or not a variety is acceptable for malting. Several oat and barley varieties are now being evaluated for forage yield (tables 4 and 7).

The following tables describe small grain varieties and give performance data for the past 3 years in Wisconsin. Remember, variety performance is greatly influenced by weather, thus it is important to review previous growing seasons.

2001 Season. Growing conditions were excellent for winter wheat with location average yields ranging from 71 to 101 bushels per acre. For spring small grains excessive moisture during planting and harvest delayed field operations. Drier conditions during July reduced yield at many locations, especially in northeastern Wisconsin. Statewide, barley, oat, and spring wheat production were down 43, 34, and 14 percent from last year, primarily due to reduced acreage. Winter wheat production increased 24 percent due to increased acreage (19%) and yield (3%) from 2000 production levels.

2000 Season. Hail, high winds, and excess moisture characterized growing conditions during 2000. The winter wheat variety trial at Chilton was lost due to hail. Yields at the Janesville site suffered from excess moisture. Drier conditions in early spring and late summer allowed for earlier planting dates and provided good harvesting conditions.

Small-grain growers produced record yields. Wisconsin farmers produced 19.0 million bushels of oats, up 2 percent from 1999. Oat yield increased 6 bushels from 1999 to 68 bushels per acre. Winter wheat production totaled 8.37 million bushels on 135,000 harvested acres. Winter wheat yield was 62 bushels, up 2 bushels from 1999. Spring wheat and barley averaged 45 and 64 bushels/acre.

1999 Season. Growing conditions for small grains varied throughout the state in 1999. Winter wheat had a good start with nearly ideal fall growing conditions and a mild winter. Adequate moisture was received during the spring and early summer to give good stands. Drier conditions

in late summer provided good harvesting conditions. Most growers had excellent winter wheat yields with the state averaging 60 bushels/acre. Wisconsin was the top oat producing state with 18.6 million bushels and a state average yield of 62 bushels/acre. Barley averaged 52 bushels/acre, the same as in 1998.

Licensed varieties

The Wisconsin Agricultural Experiment Station has granted sole authority to the Wisconsin Crop Improvement Association to issue formal licenses for the production of certified seed of Chilton and Kewaunee barley; Bay, Belle, Dane, ForagePlus, Gem, Horicon, Prairie, and Vista oats, Spooner rye, and Glacier winter wheat. The Wisconsin Alumni Research Foundation has granted sole authority to the Wisconsin Crop Improvement Association to issue formal licenses for the production of certified seed of Moraine oat. These procedures are intended to reinforce Plant Variety Protection regulations and to generate research and development funds for the Wisconsin small-grain breeding program. These varieties are “protected” and “licensed” and can be marketed only as certified seed. Each bag of seed will have a special red and white Licensed Variety tag attached or preprinted on the bag.

Testing agencies

The small grain variety tests were conducted by the Department of Agronomy, 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. They are available at your county Extension office.

Pest Management in Wisconsin Field Crops (A3646)—updated annually

The Wisconsin Certified Seed Directory

For information on seed availability of public varieties, contact the Wisconsin Crop Improvement Association, 554 Moore Hall, 1575 Linden Drive, Madison, WI 53706, (608) 262-1341, <http://www.wisc.edu/wcia>

Table 2. Oat variety descriptions

Variety	Origin	Year released	Kernel color	Maturity ^a		Ht ^b (in.)	Lodging	Test wt ^d (lb/bu)	Kernel protein	Disease resistance ^e					PVP ^g	Wis. cert.
				(head date)						Leaf rust	Stem rust	Sep-toria	Smut	BYDV ^f		
Recommended varieties																
Belle	Wisconsin	1995	yellow	6-28	39	strong	36	low	R	I	I	R	I	yes	yes	
Dane	Wisconsin	1990	yellow	6-18	36	med	35	med	I	I	S	R	I	yes	yes	
Gem	Wisconsin	1996	yellow	6-24	40	med	36	med	R	R	—	S	R	yes	yes	
Jim	Minnesota	1996	yellow	6-20	39	med	37	med	I	I	—	—	R	yes	yes	
Moraine	Wisconsin	2001	yellow	6-26	40	med	36	med	R	—	—	R	I	yes	yes	
Richard	Minnesota	2000	yellow	6-24	43	strong	35	med	R	R	—	I	I	yes	no	
Vista	Wisconsin	1999	yellow	6-25	42	med	35	low	R	R	—	—	I	yes	yes	
Other varieties																
Bay	Wisconsin	1993	yellow	late	med	med	low	high	S	S	I	I	R	yes	no	
Blaze	Illinois	1997	tan	med	med	strong	high	—	S	S	—	—	R	yes	no	
Hazel	Illinois	1985	tan	med	med	med	med	med	S	S	S	S	R	no	no	
Horicon	Wisconsin	1989	tan	med	med	med	med	med	I	I	S	R	I	yes	no	
Milton	Minnesota	1994	yellow	late	med	strong	med	med	I	I	—	I	I	yes	no	
Ogle	Illinois	1981	yellow	med	med	med	med	low	S	S	S	S	R	no	yes	
Porter	Indiana	1982	tan	late	med	med	med	med	S	I	R	R	I	yes	no	
Prairie	Wisconsin	1992	tan	med	med	med	med	low	S	I	R	I	R	yes	no	
Riser	S. Dakota	1998	yellow	early	short	strong	high	—	R	R	—	R	I	yes	no	
Robert	Canada	—	—	late	tall	weak	low	—	S	S	—	—	—	no	no	
Troy	S. Dakota	1991	white	med	med	med	high	med	I	R	—	R	I	no	no	

^a Maturity (month-day) as indicated by heading date in 19 Wisconsin tests conducted 1999–2001. Varieties with generalized ratings indicate the following: early = before June 20, med = June 20–27, late = after June 27.

^b Height (inches) at maturity in 21 Wisconsin tests conducted 1999–2001. Varieties with generalized ratings indicate the following: short = <33 inches, med = 33–37 inches, tall = >37 inches.

^c Test weight (pounds/bushel) in 22 Wisconsin tests conducted 1999–2001. Varieties with generalized ratings indicate the following: low = <32 lb/bu, med = 32–34 lb/bu, high = >34 lb/bu.

^d Disease resistance: R = resistant or moderately resistant, I = intermediate or some tolerance, S = moderately susceptible or susceptible.

^e BYDV=Barley yellow dwarf virus or red leaf disease.

^f PVP=Plant Variety Protection. A “yes” indicates that these varieties cannot be reproduced and sold as seed by variety name without certification.

— = information not available.

Variety	Mean	Southern			Northern				Sturgeon Bay
		Arlington	Lancaster	Madison	Chilton	Ashland	Marshfield	Spooner	
2001 YIELDS									
2001 yields (bu/a)									
Early maturing									
Dane	107*	149	96*	104*	69*	94	—	99*	141*
Jim	106*	162*	81	110*	68*	80	—	104*	137*
Moraine	111*	162*	103*	112*	65*	102*	—	99*	134*
Midseason									
Gem	110*	150	92*	110*	75*	96*	—	94*	151*
Ogle	109*	153	96*	106*	64*	102*	—	101*	138*
Richard	103	163*	89	110*	59	103*	—	100*	97
Mid- to late-season									
Vista	106*	149	90	108*	64*	105*	—	92*	133
Late maturing									
Belle	106*	157*	80	110*	73*	107*	—	99*	118
Mean	107	156	91	109	67	99	—	99	131
LSD(0.05) ^a	5	9	11	10	12	12	—	15	17
HISTORIC YIELDS									
		1999–2001	2000–2001	1999–2001		1999–2000		1999–2001	
Early maturing									
Dane	99	133	91	97	76	100*	75*	90*	115
Jim	100	143	86	108*	80	89	61	95*	125*
Moraine	103*	152*	96*	111*	85*	103*	67	90*	107
Midseason									
Gem	105*	145	91*	114*	85*	105*	81*	86	123*
Ogle	99	129	87	96	75	104*	72	95*	122*
Mid- to late-season									
Vista	106*	147*	95*	106	90*	100*	84*	92*	121*
Late maturing									
Belle	100	143	83	105	90*	98*	67	89*	108
Mean	102	142	90	105	83	100	72	91	117
LSD(0.05) ^a	3	5	7	6	6	7	10	8	8

*Varieties not significantly different from the highest yielding variety in the trial.

^aThe LSD (least significant difference) figures listed under the yield columns are a statistical measure of variation within the trial. If the difference in yield of two varieties is equal to or greater than LSD, the yields are significantly different. If the difference is less than the LSD, the yield difference may have been due to environmental factors.

Table 4. Forage dry matter yield of spring oat varieties harvested at heading

OAT

Variety	Yield (t/a)			Harvest date in June	Crude protein (%)	RFV ^a	Yield (t/a)	Harvest date in June
	Madison	Arlington	Mean					
2001			1998–1999			1999–2001		
Bay	2.9	2.4	2.7	26	14	92	2.4	18
Belle	3.0	2.4	2.7	26	14	95	2.4	17
Dane	2.1	1.7	1.9	17	15	97	1.7	11
Ensiler	2.9	2.6	2.8	27	15	96	2.4	21
ForagePlus	4.3	3.2	3.8	32*	12	91	3.5	26
Gem	2.7	2.2	2.5	23	15	94	2.2	16
Jim	2.6	1.8	2.2	18	16	105	1.9	12
Moraine	2.4	1.9	2.2	19	16	107	1.8	13
Ogle	2.5	2.1	2.3	21	15	94	1.9	15
Robert	2.7	2.4	2.5	26	14	97	2.3	21
Vista	3.1	3.0	3.0	25	14	90	2.5	18
LSD (0.05)	0.4	0.3	0.2	1	1	3	0.1	1

^a RFV = Relative feed value. Relative feed values can be used to make comparisons among varieties listed in this table, but should not be used to compare with other crops such as alfalfa.

*Harvest date = July 2.

Table 5. Barley variety descriptions

BARLEY

Variety	Origin	Year released	Awns	Quality	Maturity ^a (head date)	Ht ^b (in.)	Lodging ^c (%)	Test wt ^d (lb/bu)	Disease resistance ^e						Wis cert.
									Leaf rust	Stem rust	Loose smut	Powd. mildew	Spot blotch	PVP ^f	
Recommended varieties															
Bounty	Canada	1989	smooth	feed	6-18	36	med	44	I	I	S	R	S	yes	yes
Hazen	N. Dakota	1984	smooth	feed	6-18	36	med	45	S	R	S	I	R	no	yes
Kewaunee	Wisconsin	1997	smooth	feed	6-18	35	med	45	R	R	—	R	R	yes	yes
Lacey	Minnesota	2000	smooth	malt	6-19	34	med	47	—	R	S	—	R	yes	no
Robust	Minnesota	1983	smooth	malt	6-19	36	med	46	S	I	S	S	R	yes	yes
Stander	Minnesota	1993	smooth	malt	6-20	34	strong	45	—	R	S	S	R	yes	no
Other varieties															
Chilton	Wisconsin	1990	smooth	feed	early	med	med	high	R	R	—	R	R	yes	yes
Excel	Minnesota	1990	smooth	malt	early	med	med	med	S	R	S	S	R	yes	no
MNBrite	Minnesota	1998	smooth	—	med	med	med	high	R	R	S	S	R	yes	no

^a Maturity (month-day) as indicated by heading date in 21 Wisconsin tests conducted 1999–2001. Varieties with generalized ratings indicate the following: early = before June 22, med = June 22–25, late = after June 25.

^b Height (inches) at maturity in 22 Wisconsin tests conducted 1999–2001. Varieties with generalized ratings were included in other tests and indicate the following: short = <28 inches, med = 28–32 inches, tall = >32 inches.

^c Lodging: strong = <15%, med = 15–35%, weak = >35%.

^d Test weight (pounds/bushel) in 23 Wisconsin tests conducted 1999–2001. Varieties with generalized ratings indicate the following: low = <42 lb/bu, med = 42–46 lb/bu, high = >46 lb/bu.

^e Disease resistance: R = resistant or moderately resistant, I = intermediate or some tolerance, S = moderately susceptible or susceptible.

^f PVP = Plant Variety Protection. A “yes” indicates that these varieties cannot be reproduced and sold as seed by variety name without certification.

— = information not available.

BARLEY

Table 6. Barley variety grain yield comparisons in Wisconsin

Variety	Mean	Southern			Northern				Sturgeon Bay
		Arlington	Lancaster	Madison	Ashland	Chilton	Marshfield	Spooner	
2001 YIELDS									
		2001 yields (bu/a)							
Bounty	82	114	60	97	91*	51	82*	63	94*
Chilton	81	117*	64*	89	88*	55*	72	77*	96*
Hazen	83	112	62*	102	91*	51	82*	66*	99*
Kewaunee	90*	119*	68*	120*	92*	54*	89*	71*	100*
Lacey	84	118*	55	109	90*	57*	79*	65	94*
MNBrite	77	112	43	101	82	41	83*	65	86
Robust	81	111	61	96	87*	50	84*	62*	87
Stander	86	113	62*	115*	91*	49	86*	60	94*
Mean	82	115	59	103	89	51	82	66	94
LSD (0.05) ^a	3	4	6	10	6	4	10	11	9
HISTORIC YIELDS									
		1999–2001	2000–2001	1999–2001 yields (bu/a)					
Bounty	70	99	58	69	66	53	65	62*	82*
Chilton	68	97	56	69	68	54	61	60*	77
Hazen	74	102*	61*	80	76*	60*	69*	59*	81*
Kewaunee	78*	105*	65*	89*	78*	62*	73*	63*	85*
MNBrite	61	89	46	66	64	49	60	47	60
Robust	70	95	62*	70	73	59*	67*	56	71
Stander	68	90	58	67	73	54	73*	47	78
Mean	70	97	58	73	71	56	67	56	76
LSD (0.05) ^a	2	3	4	6	4	3	6	6	6

*Varieties not significantly different from highest yielding variety in the trial.

^aThe LSD (least significant difference) figures listed under the yield columns are a statistical measure of variation within the trial. If the difference in yield of two varieties is equal to or greater than the LSD, then the yields are significantly different. If the difference is less than the LSD, then the yield difference may have been due to environmental factors.

BARLEY

Table 7. Forage dry matter yield of barley varieties harvested at heading

Variety	Yield (t/a)			Harvest date in June	Crude protein %	RFV ^a	Yield (t/a)	Harvest date in June
	Madison	Arlington	Mean					
	2001					1998–99	1999–2001	
Hazen	2.2*	1.7*	2.0*	15	16	95	1.9*	10
Kewaunee	2.3*	1.8*	2.0*	15	16	96	1.8*	10
Lacey	2.3*	1.9*	2.1*	15	—	—	—	—

*Varieties not significantly different from highest yielding variety in the trial.

^aRFV=Relative feed value. Relative feed values can be used to make comparisons among varieties, but should not be used to compare with other crops such as alfalfa.

Table 8. Winter rye variety descriptions

RYE

Variety	Origin	Year released	Seed color	Maturity	Height	Straw strength	Test weight	Leaf rust resistance ^a	PVP ^b	Wis. certified
Hancock	Wisconsin	1979	tan	med	tall	good	high	R	no	yes
Spooner	Wisconsin	1993	tan	med	tall	v. good	high	R	yes	yes
Frederick	S. Dakota	1984	tan	med	tall	poor	high	S	no	no

^aLeaf rust resistance: R = resistant or moderately resistant, I = intermediate or some tolerance, S = moderately susceptible or susceptible.

^bPVP = Plant Variety Protection. A "yes" indicates that these varieties cannot be reproduced and sold as seed by variety name without certification.

Table 9. Spring wheat variety descriptions

WHEAT

Variety	Origin	Year released	Awns	Straw strength	—Disease resistance ^a —		PVP ^b	Wis. certified
					Leaf rust	Stem rust		
HJ98	Minnesota	1998	yes	weak	I	I	yes	no
Ingot	S. Dakota	1998	yes	med	I	R	yes	yes
Ivan	Agripro	1999	no	strong	R	R	yes	no
McVey	Minnesota	1999	no	med	S	R	yes	no
Norpro	Agripro	1995	no	strong	I	R	yes	no
Oxen	S. Dakota	1996	yes	strong	S	I	yes	no
Reeder	N. Dakota	1999	yes	strong	S	R	yes	no
Russ	S. Dakota	1995	yes	med	I	I	no	no
Verde	Minnesota	1995	yes	med	S	R	yes	no

^aDisease resistance: R = resistant or moderately resistant, I = intermediate or some tolerance, S = moderately susceptible.

^bPVP = Plant Variety Protection. A "yes" indicates that these varieties cannot be reproduced and sold as seed by variety name without certification.

Table 10. Winter wheat variety descriptions

WHEAT

Variety	Origin	Year released	Type	Awns	Maturity ^a		Stem strength	Test wt. ^c	—Disease resistance ^e —						Wis. cert.	
					(head date)	Ht. ^b			WH ^d	BYDV ^f	Leaf rust	Stem rust	Powd. mildew	Scab		
Bravo	Ohio	2000	soft red	no	early	med	strong	med	excel	—	I	—	S	S	yes	no
Cardinal	Ohio	1986	soft red	no	med	med	strong	med	excel	—	R	—	I	—	yes	yes
Glacier	Wisconsin	1991	soft red	no	med	tall	strong	med	excel	R	R	I	—	—	yes	yes
Hopewell	Ohio	1995	soft red	no	early	med	strong	med	excel	—	S	—	I	S	yes	yes
Howell	Illinois	1990	soft red	yes	late	med	med	high	good	—	S	I	S	—	yes	yes
Kaskaskia	Illinois	1998	soft red	yes	med	med	strong	med	good	—	I	S	S	R	yes	yes
Roane	Virginia	1998	soft red	yes	—	short	med	high	low	I	R	S	R	I	yes	no

^aMaturity: early = before May 26, med = May 26–June 1, late = after June 1.

^bHeight at maturity: short = <40 inches, med = 40–45 inches, tall = > 45 inches.

^cTest weight: low = <56 lb/bu, med = 56–58 lb/bu, high = >58 lb/bu.

^dWH = winter hardiness.

^eDisease resistance: R = resistant or moderately resistant, I = intermediate or some tolerance, S = moderately susceptible or susceptible.

^fBYDV = barley yellow dwarf virus.

^gPVP = Plant Variety Protection. A "yes" indicates that these varieties cannot be reproduced and sold as seed by variety name without certification.

— = information not available.

WHEAT

Table 11. Performance of winter wheat varieties in Wisconsin (2000–2001)

Brand	Variety	Type ^c	2001 means				2001 yields ^a				2-year ^b mean yield
			Yield	Ht.	Lodging ^d	Test wt.	ARL	JAN	RAC	CHL	
			(bu/a)	(in)		(lb/bu)	(bu/a)				
PUBLIC	KASKASKIA	SR	82	44	2	59	63	86	98	82	77
	HOWELL	SR	84	45	1	59	66	90	98	81	78
	GLACIER	SR	75	48	2	57	55	70	92	84	70
	CARDINAL	SR	85	44	1	58	70	86	101	85	78
	ROANE	SR	92	39	1	60	70	99	110*	92	
	BRAVO	SR	87	41	2	58	69	85	102	93	
	HOPEWELL	SR	96*	41	0	59	69	106	113*	97	
	ROSCO	SR	89	41	2	56	72	85	109	91	
AGRIPRO	ELKHART	SR	86	44	1	59	75*	80	100	88	
	PONTIAC	SR	81	39	1	58	65	85	85	87	76
DIENER	DB 491W	SR	88	44	2	58	76*	87	96	92	
	DB 494W	SR	89	41	1	58	77*	95	98	86	84
	DB 500W	SR	91	45	1	58	73	100	106	87	86*
	DB XW 502	SR	87	43	1	59	60	93	110	85	
GROWMARK	FS 450	SR	89	44	1	58	75*	98	98	83	
	FS 527	SR	82	44	2	58	65	84	92	86	79
	FS 640	SR	95*	40	1	57	80*	99	107	93	
JUNG	5880	SR	95*	42	1	58	77*	102	103	97	
	5950	SR	93	42	2	58	74	100	104	93	87*
KALTENBERG	KW 34	SR	91	44	1	58	80*	97	101	86	86
	KW 39	SR	89	43	2	57	70	95	104	87	86
	KW 40	SR	88	44	1	57	73	92	97	92	85
	KW 41	SR	87	46	1	58	72	93	97	85	
	KW 42	SR	90	46	1	58	74	95	109	82	
	KW 43	SR	94*	37	1	57	76*	98	102	100*	
	KW 44	SR	93	42	1	58	80*	105	104	81	
PIONEER	25R18	SR	87	40	0	59	64	97	104	84	80
	25R26	SR	91	40	1	57	75*	88	109	91	87*
	25R37	SR	101*	40	0	59	77*	117*	114*	94	
	25R49	SR	99*	39	1	58	75*	105	105	111*	
	25R57	SR	98*	43	1	58	79*	104	113*	94	91*
SEED-LINK	MAXIM	HR	87	41	1	60	68	100	93	87	
	PATRIOT	HR	87	41	1	60	70	91	93	92	
STINE	482	SR	87	46	1	58	76*	93	103	76	
TRELAY	EXCEL 307	SR	91	44	1	58	71	94	103	96	
	EXCEL 400-1	SR	87	45	1	58	74	88	99	86	82
UAP-GREAT LAKES	DG 403	SR	93	41	1	58	74*	102	101	94	86*
	DG 415	SR	89	45	1	58	77*	89	100	89	
	DG 419	SR	89	44	1	59	71	89	106	92	81
QTI	ARAPAHOE	HR	74	46	4	59	61	68	89	79	
	NAKOTA	HR	71	42	3	59	56	65	82	79	
Mean			88	42	1	58	71	93	101	89	78
LSD(0.10)			7	1	0.4	1	6	8	6	13	5

^a ARL = Arlington, JAN = Janesville, RAC = Racine, CHL = Chilton.

^b Two-year mean yields are a six-test mean including all four sites in 2001 plus Arlington and Racine in 2000.

^c Type: SR = soft red winter wheat, HR = hard red winter wheat.

^d Belgian Lodging System rounded to whole number (0=none, 9=severe).

*Varieties not significantly different from the highest yielding variety.



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