A-1196 (Revised)

North Dakota Hard Winter Wheat

Variety Trial Results for 2008 and Selection Guide

Compiled by **Joel Ransom**, Agronomist, NDSU Extension Service

The area planted to winter wheat during the 2007-08 growing season, 650,000 acres, was the largest since 1985. Except for the eastern part of the state, little protective snow fell during the abnormally cold winter. Nevertheless, winter survival was generally adequate, except where drought in the fall resulted in poor germination. Drought persisted during the spring and summer in the western third of the state, dramatically reducing yield. The cool spring and cooler than normal summer were favorable for high yield potential in regions where moisture was not limiting. Disease pressure was generally low. Leaf rust appeared later in the season and caused less damage this year, compared with 2007. Generally scab was not problematic on winter wheat.

Jerry was the most popular variety in 2007-08, occupying 50.5 percent of the acres planted. CDC Falcon, Jagalene and Wesley followed Jerry in popularity with 13.9, 10.4 and 6.2 percent of the acreage, respectively.

Characteristics of hard red winter wheat varieties adapted for production in North Dakota are described in Table 1. Information on the agronomic performance of selected varieties is summarized in subsequent tables. Successful winter wheat production depends on numerous production practices, including selecting the right variety for a particular area. The information included in this publication is meant to help growers choose that variety or group of varieties. Characteristics to consider when selecting a variety are winter hardiness, yield potential in your area, test weight, protein content when grown with proper fertility, straw strength, plant height, reaction to important diseases and maturity.

The recommended seeding dates for winter wheat are Sept. 10-30 south of North Dakota Highway 200 and Sept. 1-15 in northern regions. Planting after the recommended dates reduces winter survival and grain yield. Planting prior to the recommended date may deplete soil moisture reserves unnecessarily. It also increases risk of wheat streak mosaic virus and may reduce winter survival. Winter wheat should be seeded at a rate of 1 million viable seeds per acre, or about 80 pounds per acre. Use higher seeding rates for late seeding or poor seedbed conditions. Producers should consider only the most winter-hardy varieties available when growing winter wheat in North Dakota. Among the current varieties, Ransom, CDC Buteo, CDC Falcon, Peregrine, Accipiter and Jerry possess the best combination of winter hardiness and yield. Winter survival data for winter wheat varieties during the 2003-04 season can be viewed at *www.ag.ndsu.edu/smgrains/WWsurvial.htm.*

Phosphorus aids overwinter survival by stimulating root growth and fall tillering. The secondary root system that develops during tillering is essential for a healthy, deep-rooted plant capable of withstanding stress. If winter wheat is planted on bare soil, an application of phosphorus is essential. While important, the contribution of phosphorus to overwinter survival is secondary to varietal hardiness. For more production information, see NDSU Extension Service publication EB-33, "Winter Wheat Production in North Dakota" *(www.ag.ndsu.edu/pubs/plantsci/smgrains/eb33w.htm).*

Use data from several years and locations when selecting varieties. The notion that the single data set nearest your farm will indicate which variety will perform the best for you next year is incorrect. You should select varieties that, on average, perform the best at multiple locations near your farm across several years.

NDSU
N.D. Agricultural Experiment Station
NDSU Extension Service
North Dakota State University, Fargo, ND 58108
OCTOBER 2008

List of Tables

Table 1. 2008 North Dakota hard winter wheat variety description table, agronomic traits.
Table 2. Yield of winter wheat varieties grown at four locations in western North Dakota in 2008.
Table 3. Yield of winter wheat varieties grown at four locations in eastern North Dakota in 2008.
Table 4. Test weight of winter wheat varieties grown at eight locations in North Dakota in 2008.
Table 5. Grain protein content of winter wheat varieties grown at eight locations in North Dakota in 2008.

The following contributed data reported in this publication:

- Blaine Schatz and Steve Zwinger - Carrington
- Eric Eriksmoen – Hettinger and Mandan
- Bryan Hanson - Langdon
- Joel Ransom and Chad Deplazes - Lisbon
- Joel Ransom and Chad Deplazes - Prosper
- Neil Riveland - Williston
- Glenn Martin - Dickinson

Table 1. 2008 North Dakota hard winter wheat variety description table, agronomic traits.

				Reaction to Disease[2]						
Variety	Agent or Origin	Year	Quality[1]	Leaf Rust	Stem Rust	Scab[3]	Maturity	Straw Strength	Height	Winter[4] Hardiness
Accipiter	Can	2008	Good	MS	R	NA	Med.	Strong	Short	Good
Agassiz	ND	1983	Average	S	R	NA	Med.	Med.	Med.	Good
Alice[5]	SD	2006	Good	S	MR	S	Early	M. strong	Short	Fair
Arapahoe	NE	1989	Poor	MS	MR	MS	Med.	Med.	Med.	Fair
CDC Buteo	Can/WB[5]	2004	Average	MS	NA	S	Med.	Med.	Med.	Good
CDC Falcon	Can/WB	2000	Average	MS	NA	S	Med.	M. strong	Short	Good
CDC Raptor	Can.	2002	NA	MS	NA	NA	Med.	M. strong	M. short	Good
Crimson	SD	1997	Good	S	MS	NA	Med.	M. strong	Med.	Fair-Good
Culver	NE	1998	Poor	MS	MR	NA	M. early	M. strong	Med.	Good
Darrell	SD	2006	Average	MS	R	MS	Med.	Strong	Med.	Good
Elkhorn	ND	1995	Average	MR	R	NA	Med.	Med.	Med.	Good
Erhardt	MT	1996	NA	S	R	NA	Med.	Strong	Med.	Good
Expedition	SD	2002	Average	MS	R	S	Med.	Strong	Med.	Good
Goodstreak	NE	2002	Average	S	MR	S	M. early	Med.	Tall	Fair
Harding	SD	1999	Average	MS	NA	S	Med.	M. strong	Med.	Good
Harry	NE	2002	Poor	MR	MR	NA	Med.	Strong	Med.	Poor
Hawken	Agripro	2007	Good	MR	MR	NA	Early	Strong	V. short	Fair-Poor
Jagalene	Agripro	2002	Average	S	MR	VS	Early	Strong	Short	Fair
Jerry	ND	2001	Good	MR	R	MS	Med.	Strong	Med.	Good
McClintock	Can	2003	Average	S	NA	S	Med.	Strong	Med.	Fair
Millennium	NE/SD	1999	Average	MR	MR	S	Med.	Strong	M. short	Fair
Morgan	WB†	1996	NA	S	NA	NA	Med.	M. strong	Med.	Good
Nekota	SD/NE	1997	Good	MS	MR	NA	Early	V. strong	V. short	Good
Norstar	Can.	1977	Average	S	S	NA	Late	Med.	Tall	Good
NuDakota[6]	Agripro	2006	Average	MR	MR	NA	M. early	Strong	Short	Poor
Nuplains[6]	NE	2000	Average	S	MS	VS	Med.	M. strong	Short	Fair-Poor
NuSky[5]	MT	2001	Avg-Good	S	NA	S	Med.	M. strong	Med.	Fair
Overland	NE	2006	Avg-Fair	MR/R	MR	NA	Med.	Strong	Short	Fair
Paul	MT	2003	Average	S	NA	NA	Med.	Med.	Med.	Fair
Peregrine	Can.	2008	Average	MR	R	NA	Med.	Strong	Med.	Good
Radiant[7]	Can.	2005	Average	S	S	S	Late	V. strong	Tall	Good
Rampart[8]	MT	1996	NA	S	R	NA	Med.	Strong	Med.	Poor
Ransom	ND	1998	Good	MR	NA	S	M. early	Med.	Med.	Good
Rose	SD	1981	Poor	S	MS	NA	Early	V. strong	Short	Fair
Roughrider	ND	1975	Good	S	R	MS	Med.	M. strong	Med.	Good
Seward	ND	1987	Poor	S	R	NA	Med.	M. strong	Med.	Good
Tandem	SD	1997	Good	S	NA	NA	Early	Med.	Med.	Fair
Wahoo	NE/WY	2001	Poor	S	R	S	Med.	M. strong	Med.	Fair
Wendy[6]	SD	2004	NA	MS	MR	S	M. early	M. strong	Short	Fair-Good
Wesley	NE/SD/WY	2000	Average	MS	R	VS	M. early	M. strong	Short	Fair
Windstar	NE	1997	Average	MS	NA	NA	Early	Med.	Med.	Fair-Good
Yellowstone	MT	2005	NA	NA	S	VS	Med.	Med.	Med.	Good

[1]NA = data not available or data insufficient to give rating.
[2]R = resistant; MR = moderately resistant; MS = moderately susceptible; S = susceptible; VS = very susceptible; NA = not available.
[3]Primarily based on data collected in 2005 from several locations.
[4]Varieties with less than good winter hardiness should be seeded only in tall stubble.
[5]WB = Westbred
[6]White wheat.
[7]Curl mite resistant.
[8]Saw fly resistant.

Table 2. Yield of winter wheat varieties grown at four locations in western North Dakota in 2008, with three-year averages (2006-08).

	Williston		Dickinson		Hettinger		Mandan		Average	
Variety	2008	3-Yr. Avg.	2008	3-Yr. Avg.	2008	3-Yr. Avg.	2008	3-Yr. Avg.	2008	3-Yr. Avg.
	(bu/a)									
Accipiter	30.9	--	18.6	--	49.8	--	55.0	--	38.6	--
Alice	5.9	32.4	15.4	--	49.7	39.6	42.1	49.1	28.3	--
CDC Buteo	19.7	41.8	17.6	--	43.8	46.9	49.2	52.7	32.6	--
CDC Falcon	19.9	40.4	17.9	53.0	53.2	42.6	52.6	48.0	35.9	46.0
Darrell	11.3	--	19.4	51.1	50.3	--	60.1	--	35.3	--
Expedition	4.2	32.8	15.0	46.1	47.2	42.4	47.9	46.8	28.6	42.0
Harding	13.0	37.0	14.5	51.4	50.6	45.7	52.3	52.6	32.6	46.7
Hawken	2.9	--	13.9	--	48.4	--	39.1	--	26.1	--
Jagalene	11.6	36.5	16.4	39.9	46.1	42.5	56.7	52.9	32.7	43.0
Jerry	20.0	43.7	18.3	55.7	49.0	44.4	57.7	52.4	36.3	49.1
Millennium	11.2	38.9	17.6	57.7	49.4	40.4	55.5	58.9	33.4	49.0
NuDakota	--	--	10.1	--	52.6	--	45.4	--	--	--
Overland	9.4	--	21.4	--	50.0	--	58.9	--	34.9	--
Peregrine	23.1	--	17.5	--	45.1	--	52.3	--	34.5	--
Radiant	18.8	38.7	19.5	--	48.1	49.8	57.3	49.8	35.9	--
Roughrider	35.7	46.1	12.4	40.8	35.6	37.8	38.6	47.3	30.6	43.0
Wesley	9.9	38.0	14.1	47.2	50.5	42.5	38.0	50.7	28.1	44.6
Yellowstone	10.9	39.7	18.8	45.1	51.5	43.7	53.6	46.2	33.7	43.7
Mean	15.2	38.8	16.6	48.8	48.4	43.2	50.7	50.6		
CV (%)	46.7		12.8		6.8		14.0			
LSD 0.05	9.8		3.1		4.6		9.7			

Table 3. Yield of winter wheat varieties grown at four locations in eastern North Dakota in 2008, with three-year averages (2006-08).

	Carrington		Langdon		Prosper		Lisbon		Average	
Variety	2008	3-Yr. Avg.	2008	3-Yr. Avg.	2008	3-Yr. Avg.	2008	3-Yr. Avg.	2008	3-Yr. Avg.
	(bu/a)									
Accipiter	73.1	--	92.4	--	79.1	--	73.6	--	79.6	--
Alice	77.5	--	82.1	65.8	81.6	79.2	42.2	55.3	70.9	--
CDC Buteo	59.6	47.9	87.7	71.4	75.4	80.9	68.2	71.0	72.7	67.8
CDC Falcon	73.2	54.3	90.4	72.8	77.8	77.6	49.9	62.6	72.8	66.8
Darrell	73.5	--	91.9	--	75.7	--	51.8	--	73.2	--
Expedition	63.4	47.5	84.6	69.2	77.8	80.4	50.7	66.2	69.1	65.8
Harding	--	--	--	--	77.7	87.6	--	--	--	--
Hawken	72.4	--	88.0	--	72.9	--	67.7	--	75.3	--
Jagalene	74.7	53.3	80.3	56.9	69.8	67.8	53.7	56.2	69.6	58.6
Jerry	66.2	57.2	84.9	74.1	72.3	82.0	62.3	73.5	71.4	71.7
Millennium	78.3	59.7	91.0	77.3	83.9	90.9	46.6	65.9	75.0	73.5
NuDakota	72.2	--	80.0	--	77.9	--	60.9	--	72.8	--
Overland	63.7	--	95.3	--	84.7	--	67.0	--	77.7	--
Peregrine	71.9	--	91.0	--	88.5	--	67.9	--	79.8	--
Radiant	72.5	49.9	83.3	62.2	63.9	65.8	44.8	61.7	66.1	59.9
Roughrider	65.4	51.5	70.6	53.8	66.2	67.3	48.4	55.0	62.7	56.9
Wesley	67.5	49.0	80.3	66.4	69.6	75.7	55.0	69.1	68.1	65.1
Yellowstone	78.2	54.2	84.6	56.4	53.6	66.9	47.8	58.1	66.1	58.9
Mean	70.8	52.5	85.8	66.0	74.9	76.9	56.4	63.2		
CV (%)	16.4		6.6		9.2		15.0			
LSD 0.05	NS		7.9		3.2		11.6			

Table 4. Test weight of winter wheat varieties grown at eight locations in North Dakota in 2008.

Variety	Williston	Dickinson	Hettinger	Mandan	Carrington	Langdon	Prosper	Lisbon	Average
	(lb/bu)								
Accipiter	55.8	55.4	54.9	54.1	58.6	60.1	58.6	60.6	57.3
Alice	58.8	56.4	59.1	52.1	58.8	59.1	59.6	60.5	58.1
CDC Buteo	58.0	58.5	58.8	56.2	58.0	61.3	60.5	62.6	59.2
CDC Falcon	55.0	55.0	58.2	53.3	57.5	59.9	58.1	60.8	57.2
Darrell	56.7	56.9	57.6	53.8	59.3	60.2	58.2	60.6	59.7
Expedition	57.1	56.6	56.1	53.5	59.5	60.0	58.7	59.8	57.7
Harding	--	55.8	56.4	52.5	--	--	57.4	--	--
Hawken	58.0	54.0	57.8	54.0	58.2	60.4	58.6	62.6	58.0
Jagalene	58.9	57.0	57.8	55.4	54.9	59.0	57.5	60.9	60.2
Jerry	57.0	56.5	55.2	53.0	57.7	59.0	58.7	60.1	57.2
Millennium	54.4	57.4	58.6	53.9	58.2	60.7	58.9	61.3	57.9
NuDakota	--	51.9	56.1	51.7	58.4	56.6	56.6	58.4	--
Overland	59.0	58.3	58.3	54.3	58.4	60.4	59.5	62.0	58.8
Peregrine	55.9	56.1	56.2	53.4	58.3	60.3	59.2	61.8	59.4
Radiant	55.6	57.0	53.9	53.8	56.9	59.4	56.6	57.1	56.3
Roughrider	58.3	56.4	55.3	52.1	58.9	60.8	60.3	59.5	57.7
Wesley	57.5	56.1	56.8	51.3	59.7	57.8	56.2	60.0	56.9
Yellowstone	56.0	56.6	53.3	52.9	59.5	57.6	53.6	57.3	55.9
Mean	57.0	56.2	56.7	53.4	58.3	59.6	58.2	60.3	57.8
CV (%)	1.2	1.1	2.5	3.3	3.7	1.4	1.7	1.7	
LSD 0.05	1.3	0.9	2.0	2.5	NS	1.2	3.7	1.2	

Table 5. Grain protein content of winter wheat varieties grown at eight locations in North Dakota in 2008.

Variety	Williston	Dickinson	Hettinger	Mandan	Carrington	Langdon	Prosper	Lisbon	Average
	(%)								
Accipiter	14.7	16.0	11.4	12.0	12.7	11.2	11.0	12.6	12.7
Alice	13.3	15.2	10.8	12.4	12.4	11.4	11.7	12.9	12.5
CDC Buteo	14.7	15.5	12.1	12.6	12.7	11.2	11.2	12.5	12.8
CDC Falcon	14.5	16.1	11.4	11.7	12.6	11.0	11.7	13.1	12.8
Darrell	14.1	15.3	11.6	12.8	12.4	11.1	11.5	12.7	12.7
Expedition	14.0	14.9	11.6	12.2	12.2	11.9	11.4	13.0	12.7
Harding	14.3	16.5	11.1	12.2	--	--	12.4	--	--
Hawken	13.7	15.6	10.9	13.4	12.4	11.8	12.7	14.1	13.1
Jagalene	13.9	15.5	11.4	12.7	11.6	12.0	12.4	13.2	12.8
Jerry	14.2	16.1	11.2	13.2	11.9	11.8	10.9	13.5	12.9
Millennium	14.6	15.0	11.0	12.8	12.5	11.4	10.9	12.7	12.6
NuDakota	--	15.6	10.8	12.8	12.7	12.0	12.0	13.3	--
Overland	13.7	14.9	9.4	12.1	12.8	12.0	10.2	13.0	12.3
Peregrine	14.9	15.2	10.8	12.4	11.9	10.8	10.5	12.3	12.4
Radiant	14.4	15.2	11.7	11.9	12.9	11.7	11.9	12.4	12.8
Roughrider	15.3	16.3	12.3	13.2	12.5	11.9	12.2	14.8	13.6
Wesley	14.4	15.8	12.2	13.7	12.4	12.1	12.4	13.7	13.3
Yellowstone	14.1	15.9	13.1	12.6	12.8	11.3	11.6	12.5	13.0
Mean	14.3	15.6	11.4	12.6	12.4	11.6	15.6	13.1	12.9
CV (%)	3.5	2.2	9.8	3.9	6.0	4.8	5.8	2.9	
LSD 0.05	1.0	0.7	1.5	0.7	NS	0.8	1.2	0.9	

For more information on this and other topics, see: www.ag.ndsu.edu

This publication may be copied for noncommercial, educational purposes in its entirety with no changes. Requests to use any portion of the document (including text, graphics or photos) should be sent to NDSU.permission@ndsu.edu. Include exactly what is requested for use and how it will be used.

North Dakota State University does not discriminate on the basis of race, color, national origin, religion, sex, disability, age, Vietnam Era Veterans status, sexual orientation, marital status, or public assistance status. Direct inquiries to the Executive Director and Chief Diversity Officer, 202 Old Main, (701) 231-7708.

1.5M-10-08