



North Dakota

Hard Red Winter Wheat

Variety Trial Results for 2006 and Selection Guide

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The relatively mild winter (2005-06) was favorable for winter wheat survival in most regions of the state, although the lack of snow cover resulted in the loss of stands at a few locations. Very dry conditions impacted yields in western North Dakota. Disease pressure was minimal during the 2006 growing season, especially compared with 2005, which partially explains the high yield obtained in eastern North Dakota.

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 evaluate in 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 unnecessarily deplete soil moisture reserves. 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 and Jerry possess the best combination of winter hardiness and yield. If wheat streak mosaic virus is a concern, consider Crimson, Harding or Radiant, as they have the best tolerance to this virus and are adapted to North Dakota.

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."

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 is incorrect. You should select varieties that, on average, perform the best at multiple locations near your farm across several years.

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OCTOBER 2006

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The following contributed data reported in this publication:

- Carrington – Blaine Schatz and Steve Zwinger
- Hettinger and Mandan – Eric Eriksmoen
- Langdon – Bryan Hanson
- Minot – Mark Halvorson
- Prosper – Scott Meyer
- Williston – Neil Riveland

Table 1. Origin, year of release and agronomic traits of hard red winter wheat varieties, 2006.

Variety	Agent or Origin	Year	Quality ¹	Leaf Rust	Stem Rust ²	Scab ³	Maturity	Straw Strength	Height	Winter ⁴ Hardiness
Agassiz	ND	1983	Average	S	R	NA	Med.	Med.	Med.	Good
Alice	SD	2006	Good	S	MR	S	Early	M. strong	Short	Fair
Alliance	NE	1997	Poor	S	NA	NA	Early	Strong	Short	Good
Arapahoe	NE	1989	Poor	MS	MR	MS	Med.	Med	Med.	Fair
CDC Buteo	Can/WB	2004	NA	MS	NA	S	Med	Med	Med	Good
CDC Falcon	Can/WB	2000	NA	MS	NA	S	Med.	M. strong	Short	Good
CDC Kestrel	Can.	1994	Poor	S	S	NA	Med.	M. strong	Med.	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
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
Jagalene	Agripro	2002	NA	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	MS	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
Nuplains ⁵	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
Paul	MT	2003	Average	S	NA	NA	Med.	Med.	Med.	Fair
Radiant ⁷	Can	2005	Average	S	S	S	Late	V. strong	Tall	Good
Rampart ⁶	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 ⁵	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

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 White wheat

⁶ Saw fly resistant

⁷ Curl mite resistant

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

Variety	Williston		Hettinger		Minot		Mandan		Average	
	2006	3-Yr. Avg.	2006	3-Yr. Avg.	2006	3-Yr. Avg.	2006	3-Yr. Avg.	2006	3-Yr. Avg.
	Bu/A									
Alice	18.9	—	14.7	—	51.8	—	43.5	—	32.2	—
CDC Buteo	31.7	—	36.9	—	78.7	—	38.3	—	46.4	—
CDC Falcon	28.3	51.1	8.7	39.0	69.3	68.3	37.4	34.1	35.9	48.1
Expedition	28.6	47.8	19.4	39.4	55.1	60.7	36.9	38.1	35.0	46.5
Goodstreak	24.3	—	17.8	—	70.0	—	34.5	—	36.6	—
Harding	27.9	50.3	27.0	52.9	70.0	73.4	36.5	47.3	40.3	56.0
Jagalene	30.0	49.2	20.9	41.5	68.3	64.2	42.0	—	40.3	—
Jerry	31.6	53.3	24.8	53.4	79.1	77.0	39.1	46.5	43.7	57.6
McClintock	31.4	52.1	8.9	42.0	72.0	68.3	35.7	—	37.0	—
Millennium	33.3	51.3	8.7	43.7	68.4	73.4	36.9	44.0	36.8	53.1
Paul	29.5	50.8	22.4	—	76.6	—	41.5	—	42.5	—
Radiant	27.6	—	41.7	—	70.7	—	36.5	—	44.1	—
Ransom	27.7	50.3	30.4	47.2	66.7	67.9	30.9	38.1	38.9	50.9
Roughrider	31.2	47.3	28.3	46.4	65.3	65.1	37.2	39.2	40.5	49.5
Wendy	32.1	52.8	18.9	—	51.4	58.9	39.5	—	35.5	—
Wesley	30.4	48.3	19.1	44.0	55.0	58.7	41.1	34.5	36.4	46.4
Yellowstone	35.4	—	20.4	48.5	94.2	—	34.5	—	46.1	—
Mean	29.4	50.4	21.7	45.3	68.4	66.9	37.7	40.2	39.3	51.0

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

Variety	Carrington		Langdon		Prosper*		Lisbon		Average	
	2006	3-Yr. Avg.	2006	3-Yr. Avg.	2006	3-Yr. Avg.	2006	3-Yr. Avg.	2006	3-Yr. Avg.
	Bu/A									
Alice	48.6	—	75.5	—	110.3	—	68.5	—	75.7	—
CDC Buteo	46.5	—	76.2	—	112.4	—	89.0	—	81.0	—
CDC Falcon	47.2	66.8	75.3	61.1	101.2	97.3	76.2	77.7	75.0	75.7
Expedition	48.0	64.7	81.4	70.7	116.6	87.6	82.2	66.3	82.1	72.3
Goodstreak	44.1	67.7	65.4	—	110.1	—	82.4	—	75.5	—
Harding	47.5	69.0	64.1	61.2	113.1	100.9	84.1	78.9	77.2	77.5
Jagalene	53.9	61.8	67.0	54.4	102.4	76.7	75.4	69.9	74.7	65.7
Jerry	55.6	73.2	71.0	65.1	105.9	99.9	85.2	74.8	79.4	78.3
McClintock	48.1	60.1	78.4	58.0	97.1	77.3	81.7	71.5	76.3	66.7
Millennium	49.7	74.2	74.2	65.5	112.6	89.3	85.8	73.7	80.6	75.7
Paul	55.4	—	50.2	—	89.3	—	86.4	—	70.3	—
Radiant	41.1	—	64.9	—	94.7	—	85.5	—	71.6	—
Ransom	46.9	69.4	81.7	63.8	100.9	95.2	79.4	73.1	77.2	75.4
Roughrider	49.1	60.8	51.1	47.0	87.8	80.5	72.2	66.1	65.1	63.6
Wendy	44.6	62.7	73.0	60.3	112.4	89.7	70.5	59.8	75.1	68.1
Wesley	43.7	62.8	75.0	64.3	112.0	78.0	89.8	71.5	80.1	69.2
Yellowstone	45.1	55.5	50.7	41.1	111.9	—	74.1	—	70.5	—
Mean	48.0	65.3	69.1	59.4	105.3	88.4	80.5	71.2	75.7	71.7

* 3-Yr Avg. for Prosper includes 2004 data from Casselton.

Table 4. Test weight of winter wheat varieties grown at eight locations in North Dakota, 2006.

Variety	Williston	Hettinger	Minot	Mandan	Carrington	Langdon	Prosper	Lisbon	Average
	(lb/bu)								
Alice	62.1	59.6	60.3	57.6	62.1	59.2	57.0	59.8	59.7
CDC Buteo	62.9	60.0	62.5	58.3	62.1	61.0	59.4	60.3	60.8
CDC Falcon	60.4	56.8	61.2	55.0	60.8	59.2	56.2	56.4	58.3
Expedition	62.3	59.4	58.4	58.8	62.3	61.3	58.3	59.8	60.1
Goodstreak	60.4	57.6	59.4	55.2	60.0	53.8	55.1	56.0	57.2
Harding	60.2	56.8	60.9	56.6	59.3	58.9	58.3	58.5	58.7
Jagalene	63.8	60.2	61.9	58.6	63.3	58.9	55.4	59.2	60.2
Jerry	60.1	58.4	61.3	55.4	60.6	59.3	57.1	58.9	58.9
McClintock	61.9	56.7	62.1	57.4	60.4	62.0	58.0	59.8	59.8
Millennium	62.6	56.8	61.6	57.3	61.8	60.3	58.0	59.4	59.7
Paul	59.7	55.8	60.5	54.1	60.4	55.7	55.6	55.4	57.2
Radiant	59.2	57.3	61.0	55.8	59.7	56.6	56.3	56.4	57.8
Ransom	59.3	56.2	59.9	54.4	58.7	60.5	57.4	57.9	58.0
Roughrider	61.2	58.8	61.0	58.1	61.6	59.9	59.2	58.9	59.8
Wendy	62.8	58.8	60.0	58.5	62.5	60.3	57.2	60.0	60.0
Wesley	61.6	58.7	60.1	56.7	61.0	59.4	56.7	59.2	59.2
Yellowstone	60.8	56.4	61.0	55.6	56.2	53.7	56.2	55.7	57.0
Mean	61.3	57.9	60.8	56.7	60.8	58.8	57.1	58.3	59.0

Table 5. Grain protein content of winter wheat varieties grown at eight locations in North Dakota, 2006.

Variety	Williston	Hettinger	Minot	Mandan	Carrington	Langdon	Prosper	Lisbon	Average
	(%)								
Alice	13.9	14.0	15.5	12.2	13.2	11.5	11.8	13.5	13.2
CDC Buteo	13.6	13.9	15.2	13.1	13.3	10.7	10.9	13.5	13.0
CDC Falcon	13.0	13.8	15.0	14.1	12.8	10.8	11.6	13.5	13.1
Expedition	13.5	13.6	14.1	12.6	13.3	11.2	11.5	13.4	12.9
Goodstreak	12.9	13.3	15.2	12.1	12.9	9.5	10.0	12.3	12.3
Harding	14.1	14.5	15.2	13.3	13.7	11.5	11.8	14.5	13.6
Jagalene	14.0	14.2	14.0	12.6	13.4	11.0	10.9	13.5	13.0
Jerry	13.9	13.9	14.8	14.5	13.9	11.1	11.8	14.4	13.5
McClintock	13.6	14.4	14.6	14.3	13.4	11.8	11.6	13.6	13.4
Millennium	13.9	14.4	14.4	12.5	13.8	10.4	11.3	13.9	13.1
Paul	14.2	14.9	13.9	13.4	14.2	11.5	11.3	13.3	13.3
Radiant	14.0	14.1	13.5	14.4	13.6	11.1	11.7	13.3	13.2
Ransom	13.5	13.9	14.0	13.2	12.9	11.9	11.5	13.4	13.0
Roughrider	14.5	14.7	15.8	13.9	14.0	12.4	12.7	14.7	14.1
Wendy	14.0	14.2	15.4	12.7	13.6	11.5	12.1	13.4	13.4
Wesley	14.4	15.1	16.1	13.8	13.7	12.3	11.8	13.7	13.9
Yellowstone	13.3	14.0	13.5	14.0	13.0	11.4	11.1	13.3	13.0
Mean	13.8	14.2	14.7	13.3	13.5	11.3	11.5	13.6	13.2

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