

North Dakota Hard Red Winter Wheat

Variety Trial Results for 2007 and Selection Guide

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For most of the state, the relatively mild winter (2006-07) was favorable for winter wheat survival, although the lack of snow cover resulted in the loss of stands at a few locations. Rainfall was favorable during most of the season, though excessive in early spring in southeastern North Dakota. Disease pressure was quite high due to the favorable moisture conditions. Leaf rust was particularly problematic if fungicides were not applied. The top performing varieties in the trial results reported here tended to be those with the best leaf rust resistance. Bacterial blight was also a problem in many fields. This disease is not controlled by fungicide. Generally scab was not problematic due to the high temperatures during flowering this year.

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 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 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/WWsurvival.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.

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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
- Lisbon - Scott Meyer
- Prosper – Scott Meyer
- Williston – Neil Riveland
- Dickinson - Glenn Martin

Table 1. Origin, year of release and agronomic traits of hard red winter wheat varieties, 2007.

Variety	Agent or Origin	Year	Quality ¹	Leaf Rust ²	Stem Rust	Scab ³	Maturity	Straw Strength	Height	Winter ⁴ Hardiness
Agassiz	ND	1983	Average	S	R	NA	Med.	Med.	Med.	Good
Alice ⁵	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	Average	MS	NA	S	Med.	Med.	Med.	Good
CDC Falcon	Can/WB	2000	Average	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
Darrell	SD	2006	Average	MS	R	MS	Med.	Strong	Med.	NA
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	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 ⁵	Agripro	2006	Average	MR	MR	NA	M. early	Strong	Short	Fair
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 ⁶	Can	2005	Average	S	S	S	Late	V. strong	Tall	Good
Rampart ⁷	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

¹NA = data not available, or data insufficient to give rating

²R = resistant; MR = moderately resistant; MS = moderately susceptible; S = susceptible; VS = very susceptible

³Primarily based on data collected in 2005 from several locations

⁴Varieties with less than good winter hardiness should be seeded only in tall stubble

⁵White wheat

⁶Curl mite resistant

⁷Saw fly resistant

†WB = Westbred

Table 2. Yield of winter wheat varieties grown at four locations in western North Dakota in 2007, with three-year averages. (2005-2007)

Variety	Williston		Dickinson ¹		Hettinger		Mandan		Average	
	2007	3-Yr. Avg.	2007	3-Yr. Avg.	2007	3-Yr. Avg.	2007	3-Yr. Avg.	2007	3-Yr. Avg.
----- Bu/A -----										
Alice	72.5	-- [†]	79.0	--	54.3	--	61.6	--	66.9	--
CDC Buteo	74.1	48.9	82.7	--	60.1	54.3	70.7	47.3	71.9	--
CDC Falcon	73.1	48.3	79.8	74.9	65.9	47.1	54.1	36.1	68.2	51.6
Darrell	77.8	--	79.9	--	57.0	--	73.5	--	72.1	--
Expedition	65.5	43.1	71.0	64.7	60.5	45.2	55.7	40.0	63.2	48.3
Goodstreak	72.8	--	77.6	--	55.8	--	65.2	--	67.9	--
Harding	70.2	46.6	74.0	70.0	59.5	52.5	69.1	52.8	68.2	55.5
Jagalene	67.8	44.6	64.5	59.9	60.5	47.6	60.1	--	63.2	--
Jerry	79.6	50.7	82.9	75.2	59.3	51.6	60.5	48.6	70.6	56.5
McClintock	70.8	48.0	66.7	66.9	50.8	41.0	54.1	37.2	60.6	48.3
Millennium	72.3	48.4	86.7	78.3	63.0	46.2	84.2	53.7	76.6	56.7
NuDakota	72.8	--	80.2	--	55.5	--	67.2	--	68.9	--
Paul	77.0	48.7	83.3	--	57.6	--	59.3	--	69.3	--
Radiant	69.7	--	70.7	--	59.5	--	55.7	--	63.9	--
Ransom	71.5	46.5	73.2	71.4	56.4	50.4	63.6	42.2	66.2	52.6
Roughrider	71.4	47.5	63.3	58.9	49.5	46.2	66.0	46.4	62.6	49.8
Wendy	75.4	48.2	77.5	--	62.8	47.8	66.8	41.4	70.6	--
Wesley	73.6	47.0	78.9	64.5	57.8	48.5	73.1	42.3	70.9	50.6
Yellowstone	72.7	50.2	75.4	--	59.3	49.3	50.6	32.5	64.5	--
Mean	72.7	47.6	76.2	68.5	58.2	48.3	63.7	43.4	67.7	52.2

¹Average yields 2003, 2005 and 2007; winter wheat not grown in 2004 and 2006.[†] -- Data not available.**Table 3. Yield of winter wheat varieties grown at four locations in eastern North Dakota in 2007, with three-year averages. (2005-2007)**

Variety	Carrington		Langdon		Prosper		Lisbon		Average	
	2007	3-Yr. Avg.	2007	3-Yr. Avg.	2007	3-Yr. Avg.	2007	3-Yr. Avg.	2007	3-Yr. Avg.
----- Bu/A -----										
Alice	34.6	-- [†]	39.7	--	45.7	--	55.2	--	43.8	--
CDC Buteo	37.6	48.6	50.4	51.4	55.0	74.1	55.8	66.3	49.7	60.1
CDC Falcon	42.5	51.5	52.6	51.3	53.9	72.2	61.7	58.3	52.7	58.3
Darrell	43.6	--	45.4	--	49.4	--	60.3	--	49.7	--
Expedition	31.2	44.8	41.5	54.2	46.8	58.6	65.7	61.9	46.3	54.9
Goodstreak	40.2	47.5	48.1	--	57.2	--	58.3	--	51.0	--
Harding	47.0	53.2	57.6	51.5	72.1	87.2	70.7	68.7	61.9	65.2
Jagalene	31.2	39.8	23.4	35.9	31.3	59.7	39.5	51.9	31.4	46.8
Jerry	49.9	60.3	66.3	57.1	67.7	83.9	73.1	70.1	64.3	67.9
McClintock	36.2	44.8	33.1	46.3	48.2	64.8	--	42.5	--	--
Millennium	51.2	59.1	66.7	57.3	76.3	86.9	65.3	68.6	64.9	68.0
NuDakota	45.4	--	41.5	--	54.1	--	66.3	--	51.8	--
Paul	30.1	--	31.0	--	31.0	--	40.6	--	33.2	--
Radiant	36.1	--	38.5	--	38.8	--	54.8	--	42.1	--
Ransom	41.5	51.5	60.0	58.7	65.0	77.5	57.3	60.9	56.0	62.2
Roughrider	39.9	49.3	39.7	38.9	47.9	62.6	44.4	51.3	43.0	50.5
Wendy	31.4	44.7	40.0	47.4	41.9	68.4	58.4	52.8	42.9	53.3
Wesley	35.7	45.3	43.9	52.3	45.6	67.3	62.6	64.1	47.0	57.3
Yellowstone	39.2	42.9	33.8	33.7	35.3	63.7	52.4	55.7	40.2	49.0
Mean	39.2	48.8	44.9	48.9	50.7	71.3	57.9	59.5	47.4	57.8

[†] -- Data not available.

Table 4. Test weight of winter wheat varieties grown at eight locations in North Dakota, 2007.

Variety	Williston	Dickinson	Hettinger	Mandan	Carrington	Langdon	Prosper	Lisbon	Average
----- (Lb/bu) -----									
Alice	60.9	59.2	60.3	59.1	53.1	55.0	56.3	54.4	57.3
CDC Buteo	62.1	60.8	64.2	62.8	58.8	59.0	58.6	57.3	60.5
CDC Falcon	59.7	55.9	61.2	55.6	55.4	56.9	55.2	53.7	56.7
Darrell	60.5	58.5	62.3	60.2	56.6	56.0	55.5	54.8	58.1
Expedition	60.4	57.9	61.9	59.6	55.7	57.0	56.9	55.5	58.1
Goodstreak	58.8	53.9	60.3	55.3	52.4	52.2	52.3	49.3	54.3
Harding	60.3	57.5	61.2	62.6	57.8	58.8	58.4	57.8	59.3
Jagalene	61.0	54.5	63.7	57.1	53.2	54.2	53.0	49.0	55.7
Jerry	59.6	58.9	61.4	58.7	57.2	58.1	57.0	57.4	58.5
McClintock	61.2	58.6	62.2	61.5	57.3	56.7	57.6	-- [†]	--
Millennium	61.0	60.3	62.6	63.6	58.0	59.4	58.6	57.9	60.2
NuDakota	58.6	55.6	62.8	57.8	53.2	52.4	53.0	52.8	55.8
Paul	59.1	54.3	58.8	55.7	52.8	52.9	50.8	49.3	54.2
Radiant	58.9	54.7	59.9	59.1	56.1	54.0	52.1	51.7	55.8
Ransom	58.8	56.7	58.6	59.7	56.9	56.9	56.7	55.7	57.5
Roughrider	61.1	60.0	61.8	61.4	58.9	57.8	58.3	56.9	59.5
Wendy	61.1	59.1	62.6	59.1	55.9	56.2	55.5	54.9	58.1
Wesley	59.9	57.6	59.6	58.6	52.4	55.0	53.6	52.6	56.2
Yellowstone	59.2	54.6	60.4	55.4	52.5	51.0	48.6	49.2	53.9
Mean	60.1	57.3	61.4	59.1	55.5	55.8	55.1	53.9	57.2

[†] -- Data not available.

Table 5. Grain protein content of winter wheat varieties grown at eight locations in North Dakota, 2007.

Variety	Williston	Dickinson	Hettinger	Mandan	Carrington	Langdon	Prosper	Lisbon	Average
----- (%) -----									
Alice	12.2	11.9	13.4	10.5	11.5	11.3	12.9	13.4	12.1
CDC Buteo	12.8	12.3	13.4	10.5	11.4	10.2	12.5	12.3	11.9
CDC Falcon	12.6	12.4	12.8	12.0	11.8	10.4	13.5	13.5	12.4
Darrell	12.7	12.2	13.6	9.9	11.8	11.1	12.9	12.8	12.1
Expedition	12.6	12.1	13.5	10.6	11.3	10.1	11.9	13.0	11.9
Goodstreak	11.1	12.0	12.0	9.8	10.9	10.1	12.5	12.6	11.4
Harding	13.3	13.4	13.6	10.9	11.9	11.3	14.3	14.4	12.9
Jagalene	12.6	12.9	13.0	10.7	13.1	11.3	13.4	13.6	12.6
Jerry	13.3	13.0	14.5	11.4	11.7	11.0	13.4	13.6	12.7
McClintock	13.2	13.3	13.6	10.7	12.1	11.5	14.0	-- [†]	--
Millennium	12.7	12.5	13.8	10.5	10.9	11.3	13.2	13.7	12.3
NuDakota	12.8	12.4	12.4	9.6	12.3	12.2	14.5	13.8	12.5
Paul	13.2	12.7	13.4	11.1	12.6	9.9	13.1	13.5	12.4
Radiant	13.5	12.6	12.2	11.0	11.6	10.4	11.8	12.4	11.9
Ransom	13.1	13.0	14.0	10.5	11.3	10.4	13.4	13.4	12.4
Roughrider	14.0	13.7	14.9	11.4	12.3	11.2	13.8	14.7	13.3
Wendy	12.9	12.4	13.8	11.2	13.0	11.3	12.9	13.4	12.6
Wesley	12.9	13.4	14.4	10.9	12.8	11.3	14.0	14.0	13.0
Yellowstone	13.3	12.8	13.2	11.7	12.2	10.9	13.5	13.2	12.6
Mean	12.9	12.7	13.4	10.8	11.9	10.9	13.2	13.6	12.4

[†] -- Data not available.

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