

**North Dakota hard red spring wheat variety description table, agronomic traits, 2008.**

Variety	Agent or Origin <sup>1</sup>	Year Released	Beard	Height	Straw Strength	Maturity	Reaction to Disease <sup>2</sup>				
							Stem Rust	Leaf Rust	Foliar Disease	Root Rot	Head (Scab)
AC Superb	Can	2001	Yes	S.dwf.	Strong	M.early	R	S	S	M	S
AP 604 CL	AgriPro	2007	Yes	S.dwf.	M.strong	M.early	R	MS	MS	NA	NA
Ada	MN	2006	Yes	S.dwf.	Strong	Med.	R	MR	MS	NA	MS/S
Alsen	ND	2000	Yes	S.dwf.	Strong	M.early	R	MR-MS	S	M	MR
Bakker Gold	N. Star G.	2006	Yes	Med.	NA	Late	S	M	M	NA	M
Banton	Trigen	2004	Yes	S.dwf.	Strong	M.early	R	MR	MS	NA	S
Bigg Red	WestBred	2004	Yes	S.dwf.	Med.	Med.	R-MR	S	MS	NA	MR
Blade	WestBred/Sabre	2007	Yes	S.dwf.	M.strong	Med.	R	MR	MS	NA	NA
<b>Breaker</b>	<b>WestBred</b>	<b>2007</b>	<b>Yes</b>	<b>S.dwf.</b>	<b>Strong</b>	<b>Med.</b>	<b>R</b>	<b>MR</b>	<b>MS</b>	<b>NA</b>	<b>NA</b>
Briggs	SD	2002	Yes	S.dwf.	Med.	M.early	R-MR	R	MS	S	S
Choteau	MT	2004	Yes	S.dwf.	NA	M.early	NA	NA	NA	NA	NA
Cromwell	Thunder Seed	2007	Yes	S.dwf.	Strong	M.late	NA	MR	MR	NA	S
Dapps	ND	2003	Yes	S.dwf.	Med.	M.early	R	R	M	M	S
Faller	ND	2007	Yes	S.dwf.	Strong	Med.	R	R	MR	NA	MR/MS
FBC Dylan	FBC	2006	Yes	S.dwf.	Med.	Med.	NA	MR	S	NA	NA
Fireball	N. Star G.	2006	Yes	S.dwf.	NA	Med.	NA	R	NA	NA	NA
Freyr	AgriPro	2004	Yes	S.dwf.	Strong	Med.	R	MR-MS	MS	NA	MR
Glenn	ND	2005	Yes	S.dwf.	Strong	M.early	R	R	M	NA	MR
Granger	SD	2004	Yes	S.dwf.	M.strong	M.early	R	R	MS	NA	MS
Granite	WestBred	2002	Yes	S.dwf.	V.strong	M.late	R-MR	MR	S	NA	MS
Hanna	AgriPro	2002	Yes	Med.	Med.	M.early	MR	MS	MS	MS	MS
<b>Hat Trick</b>	<b>Trigen Seed</b>	<b>2007</b>	<b>Yes</b>	<b>S.dwf.</b>	<b>Strong</b>	<b>Med.</b>	<b>R</b>	<b>MR</b>	<b>M</b>	<b>NA</b>	<b>MS/S</b>
Howard	ND	2006	Yes	S.dwf.	Strong	Med.	R	R	M	NA	M
Kelby	AgriPro	2006	Yes	S.dwf.	Strong	M.early	MR	R	M	NA	MR
Knudson	AgriPro	2001	Yes	S.dwf.	Strong	Med.	MR	MR	MR	MS	M
Kuntz	AgriPro	2007	Yes	S.dwf.	Strong	M.early	R	MR	MS	NA	NA
<b>ND 901CL</b>	<b>ND</b>	<b>2007</b>	<b>Yes</b>	<b>S.dwf.</b>	<b>Strong</b>	<b>Med.</b>	<b>MR-</b>	<b>R-MR</b>	<b>MR-MS</b>	<b>NA</b>	<b>S</b>
Norpro	AgriPro	1999	Yes	S.dwf.	Strong	Med.	R	MS-S	M	M	S
Norwell	Thunder Seed	2007	Yes	Med.	M.strong	M.early	NA	MS	S	NA	NA
Oklee	MN	2003	Yes	S.dwf.	Med.	M.early	R	MS	MR	NA	M
Outlook	MT	2002	Yes	S.dwf.	Strong	M.early	NA	NA	NA	NA	NA
Parshall	ND	1999	Yes	Med.	Strong	M.early	MR	S	M	MS	M
Polaris	N. Star G.	2003	Yes	Med.	Strong	Late	NA	MS	MS	NA	S
RB07	MN	2007	Yes	S.dwf.	M.strong	M.early	R	R	MS	NA	NA
Reeder	ND	1999	Yes	S.dwf.	Strong	M.early	R	MS	S	M	S
Rush	WestBred	2006	Yes	S.dwf.	Strong	M.early	NA	NA	NA	NA	NA
Samson	WestBred	2007	Yes	S.dwf.	Strong	M.early	R	MR-MS	MR-MS	NA	S
Saturn	N.Star G.	2003	Yes	Med.	NA	M.late	NA	MR-MS	S	NA	S
Steele-ND	ND	2004	Yes	S.dwf.	Med.	Med.	R	R	MS	MS	M
<b>Tom</b>	<b>MN</b>	<b>2008</b>	<b>Yes</b>	<b>S.dwf.</b>	<b>M.strong</b>	<b>Med.</b>	<b>R</b>	<b>R</b>	<b>NA</b>	<b>NA</b>	<b>MR/MS</b>
Traverse	SD	2006	Yes	S.dwf.	Med.	M.early	R	MR	NA	NA	MR/MS
Trooper	WestBred	2004	Yes	S.dwf.	Strong	M.early	R	MR	S	NA	S
Ulen	MN	2005	Yes	S.dwf.	Med.	M.early	R	MR	MS	NA	S
Vantage	WestBred	2007	Yes	S.dwf.	V.strong	M.late	R	MR-MS	MS	NA	NA

<sup>1</sup> Refers to agent or developer: Can = Agriculture Canada; CDC = Crop Development Center, University of Saskatchewan; FBC = Farm Breeders Club; M = University of Minnesota; MT = Montana State University; ND = North Dakota State University; N. Star G. = North Star Genetics; <sup>2</sup> R = resistant; MR = moderately resistant; M = intermediate; MS = moderately susceptible; S = susceptible; VS = very susceptible. **Bold** varieties are those recently released. NA indicates insufficient info is available to make an accurate assessment.

**2008 Hard Red Spring Wheat – Continuously Cropped - No-till**

**Hettinger**

Variety	Days to Head	Plant Height	Lodg.	Test Weight	Grain Protein	---- Grain Yield ----			Average Yield	
	*	inches	0-9**	lbs/bu	%	2006	2007	2008	2 yr	3 yr
						----- Bushels per acre -----				
Briggs	76	37	2.0	56.2	16.5	39.2	47.1	43.9	45.5	43.4
Kelby	76	32	2.0	57.4	15.9	38.6	38.2	50.9	44.6	42.6
Steele-ND	78	38	0.8	54.3	16.0	38.1	41.2	48.1	44.6	42.5
RB07	76	34	1.5	57.0	15.8	35.8	39.0	51.6	45.3	42.1
Alsen	78	37	0.2	53.1	16.6	38.1	37.8	48.2	43.0	41.4
Freyr	78	39	0.0	51.8	16.1	38.0	35.7	47.9	41.8	40.5
Knudson	79	34	0.2	53.0	16.0	36.9	36.0	47.2	41.6	40.0
Granger	77	39	0.2	55.3	16.4	40.0	37.9	41.8	39.8	39.9
Reeder	77	37	1.0	52.6	16.8	40.8	38.5	38.3	38.4	39.2
Rush	77	35	0.5	56.8	16.2	31.0	35.4	50.8	43.1	39.1
Glenn	76	38	1.2	55.3	17.0	35.8	39.4	41.7	40.6	39.0
Parshall	77	40	0.5	53.9	16.8	37.3	37.4	41.7	39.6	38.8
Granite	82	34	0.0	51.5	17.8	33.6	37.2	42.8	40.0	37.9
Howard	78	38	1.0	54.1	16.2	36.3	37.2	39.3	38.2	37.6
Faller	79	37	0.2	51.2	16.7	33.2	42.3	37.0	39.6	37.5
ND901CL	78	38	0.8	54.8	16.5	33.1	35.9	43.1	39.5	37.4
Choteau	79	33	0.8	52.6	16.4	33.8	38.0	40.5	39.2	37.4
Traverse	77	39	0.8	51.2	15.9	38.6	36.4	36.0	36.2	37.0
Kuntz	78	34	1.5	54.7	15.6		37.4	44.4	40.9	
AP604CL	77	38	1.8	54.6	16.8		41.2	38.3	39.8	
Samson	79	34	0.5	54.0	16.3			48.7		
Breaker	79	36	0.0	53.2	16.4			47.8		
Cromwell	79	35	0.8	54.5	17.3			42.2		
Vantage	82	35	0.0	51.3	17.4			41.9		
Blade	78	37	0.5	52.6	16.9			39.4		
Diamond	78	38	1.8	54.9	16.1			33.7		
Trial Mean	78	37	0.8	53.7	16.5	35.9	37.3	42.7	--	--
C.V. %	0.8	3.8	79	1.7	2.2	7.3	7.4	8.7	--	--
LSD .05	1	2	0.9	1.2	0.5	3.6	3.8	5.2	--	--
LSD .01	1	3	1.2	1.6	0.7	4.8	5.1	6.8	--	--

\* Days to Head = the number of days from planting to head emergence from the boot.

\*\* Lodging: 0 = none, 9 = lying flat on ground.

Planting Date: April 14

Harvest Date: August 6

Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).

Previous Crop: 2007 = hrsw, 2006 = field pea, 2005 = soybean.

Note: The trial sustained late season heat and moisture stress.

**2008 Spring Wheat Variety Tolerance to Foliar Diseases at Hettinger**

Amanda Schoch & Kayla Hutzenbiler, IPM Crops Scout, Dickinson Res. Ext. Center

Variety	Wheat Stem	----- Leaf Rust -----		----- Tan Spot -----		---- Septoria ----	
	Maggot	Incidence	Severity	Incidence	Severity	Incidence	Severity
	%	%	%	%	%	%	%
Glenn	10	0	0	40	2	20	1
Steele-ND	0	0	0	20	1	40	1
Howard	20	0	0	40	1	10	1
Faller	10	0	0	30	1	0	0
ND901CL	0	0	0	10	1	40	2
Granger	0	0	0	10	1	30	10
Kelby	0	0	0	40	2	20	3
Kuntz	10	20	1	40	7	10	1
Choteau	0	0	0	30	1	10	1
Alsen	30	0	0	40	1	0	0
Reeder	0	0	0	50	3	20	6
Parshall	0	0	0	0	0	50	4
Briggs	10	0	0	40	1	20	1
Fryer	40	0	0	20	1	30	2
Knudson	40	0	0	30	1	50	3
Granite	10	0	0	50	1	30	1
RB07	10	0	0	0	0	10	1
AP604CL	20	40	1	0	0	30	1
Rush	20	0	0	40	6	20	2
Traverse	0	0	0	40	1	30	6
Samson	40	10	1	40	2	20	1
Vantage	20	0	0	30	1	60	4
Breaker	10	0	0	40	3	10	1
Blade	20	0	0	10	1	40	3
Cromwell	10	0	0	40	1	30	1
Diamond	20	0	0	0	0	30	2

Wheat Stem Maggot = percent of stems infected with maggot (white heads).

Disease Incidence = percent of plants infected with disease.

Disease Severity = percent of flag leaf area infected by disease.

Date of observations: July 16 – soft dough stage

Planting Date: April 14

Previous Crop: hrsw

**2008 HRSW Variety Trial - Continuously Cropped - No-till Scranton**

Cooperators: Neal and Justin Freitag, Scranton

Variety	Plant Height	Test Weight	Grain Protein	---- Grain Yield ----			Average Yield		
	inches	lbs/bu	%	2006	2007	2008	2 yr	3 yr	
				----- Bushels per acre -----					
Steele-ND	28	54.6	17.4	57.3	36.1	24.0	30.0	39.1	
Howard	29	54.9	17.3	52.8	42.1	18.6	30.4	37.8	
Granger	27	56.5	17.6	49.9	41.9	18.5	30.2	36.8	
Glenn	29	58.4	17.6	52.9	38.2	18.2	28.2	36.4	
Faller	23	55.1	17.1	44.1	36.2	18.7	27.4	33.0	
Kelby	25	56.1	17.6		32.6	26.7	29.6		
Kuntz	23	57.1	17.1		30.4	24.8	27.6		
Choteau	23	57.9	17.5			22.0			
ND901CL	29	58.8	17.4			19.5			
Trial Mean	27	56.8	17.5	53.5	37.0	21.4	--	--	
C.V. %	3.5	3.3	1.3	5.7	8.6	7.1	--	--	
LSD .05	1	2.7	0.3	4.4	4.6	2.2	--	--	
LSD .01	2	3.7	0.4	5.9	6.2	2.9	--	--	

Planting Date: April 14, 2008

Harvest Date: August 5, 2008

Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).

Previous Crop: 2005 & 2006 = hrww, 2007 = hrsw.

Note: The 2008 trial sustained heat and moisture stress.

**2008 HRSW Variety Trial - Continuously Cropped - No-till Regent**  
 Cooperators: August and Perry Kirschmann, Regent

Variety	Plant Height	Test Weight	Grain Protein	---- Grain Yield ----			Average Yield		
	inches	lbs/bu	%	2006	2007	2008	2 yr	3 yr	
				----- Bushels per acre -----					
Howard	26	52.9	17.3	39.6	54.8	13.5	34.2	36.0	
Glenn	26	54.8	17.4	38.0	48.0	14.6	31.3	33.5	
Steele-ND	27	53.1	17.0	43.2	43.0	13.6	28.3	33.3	
Faller	23	52.2	17.4	35.8	49.6	12.1	30.8	32.5	
Granger	26	53.5	17.0	36.4	44.7	14.0	29.4	31.7	
Kelby	24	58.0	16.8		58.5	19.6	39.0		
Kuntz	23	54.4	16.4		46.3	12.6	29.4		
Choteau	22	55.9	17.4			16.2			
ND901CL	26	57.2	17.4			14.9			
Trial Mean	25	55.6	17.3	38.4	49.4	15.0	--	--	
C.V. %	10.3	3.5	2.2	7.3	9.7	20.9	--	--	
LSD .05	4	2.8	0.6	5.1	1.4	NS	--	--	
LSD .01	5	2.8	0.8	5.5	1.9	NS	--	--	

Planting Date: April 21, 2008

Harvest Date: August 8, 2008

Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).

Previous Crop: 2005, 2006 & 2007 = hrsw.

NS = no statistical difference between varieties.

Note: The 2008 trial sustained severe heat and moisture stress.

**2008 HRSW Variety Trial - Continuously Cropped - No-till    New Leipzig**

Cooperator: Daryl Birdsall, New Leipzig

Variety	Plant Height	Test Weight	Grain Protein	---- Grain Yield ----			Average Yield		
	inches	lbs/bu	%	2006	2007	2008	2 yr	3 yr	
				----- Bushels per acre -----					
Steele-ND	30	56.5	15.0	15.3	31.9	17.7	24.8	21.6	
Glenn	32	58.4	15.1	15.0	32.0	17.5	24.8	21.5	
Howard	30	56.4	15.2	15.9	29.7	16.9	23.3	20.8	
Faller	27	55.2	14.8	12.1	32.6	15.3	24.0	20.0	
Granger	31	58.0	14.4	10.1	28.2	17.9	23.0	18.7	
Kelby	25	56.3	16.2		28.6	18.5	23.6		
Kuntz	25	55.4	15.2		28.5	16.2	22.4		
Choteau	25	55.4	15.5			22.3			
ND901CL	30	60.4	16.2			19.0			
Trial Mean	29	56.9	15.3	13.9	30.8	18.5	--	--	
C.V. %	3.1	4.0	3.9	13.0	14.9	7.4	--	--	
LSD .05	1	3.3	0.9	2.6	NS	2.0	--	--	
LSD .01	2	NS	1.2	4.8	NS	2.7	--	--	

Planting Date: April 23, 2008

Harvest Date: August 8, 2008

Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).

Previous Crop: 2005 & 2006 = hrww, 2007 = hrsw.

NS = no statistical difference between varieties.

Note: The 2006 & 2008 trials sustained severe heat and moisture stress.

**2008 HRSW Variety Trial - Continuously Cropped - No-till Mandan**

Cooperator: USDA-ARS, Mandan

Variety	Plant Height	Test Weight	Grain Protein	---- Grain Yield ----			Average Yield		
	inches	lbs/bu	%	2006	2007	2008	2 yr	3 yr	
				----- Bushels per acre -----					
Granger	41	56.3	14.5	30.4	58.8	64.2	61.5	51.1	
Glenn	39	57.8	15.0	30.2	64.6	56.2	60.4	50.3	
Steele-ND	37	54.6	14.8	29.6	58.2	59.5	58.8	49.1	
Howard	36	55.2	14.6	30.4	59.3	57.6	58.4	49.1	
Faller	35	54.3	14.4	20.5	60.4	58.5	59.4	46.5	
Kelby	30	56.9	14.7		61.1	67.6	64.4		
Kuntz	32	56.4	14.0		60.1	67.7	63.9		
Choteau	32	54.3	15.0			60.5			
ND901CL	38	55.9	15.4			58.9			
Trial Mean	36	55.5	14.8	29.7	59.0	61.7	--	--	
C.V. %	2.3	1.5	3.4	9.3	5.3	6.0	--	--	
LSD .05	1	1.2	NS	4.7	5.3	5.4	--	--	
LSD .01	2	1.7	NS	6.3	7.3	7.2	--	--	

NS = no statistical difference between varieties.

Planting Date: April 22, 2008

Harvest Date: August 12, 2008

Seeding Rate: 1.1 million live seeds / acre (approx. 1.6 bu/A).

Previous Crop: 2005 & 2006 = hrww, 2007 = hrsw.

**Table 2. North Dakota hard red spring wheat variety descriptions, quality traits, 2008.**

Variety	Quality Factors	
	Test Weight	Wheat Protein
AC Superb	avg.	avg.
AP 604 CL	high	avg.
Ada	high	avg.
Alsen	high	avg.
Bakker Gold	low	low
Banton	high	avg.
Bigg Red	high	low
Blade	high	avg.
<b>Breaker</b>	<b>high</b>	<b>avg.</b>
Briggs	avg.	avg.
Choteau	avg.	avg.
Cromwell	high	avg.
Dapps	low	high
Faller	avg.	low/avg.
FBC Dylan	high	low
Freyr	avg.	avg.
Glenn	v.high	avg.
Granger	avg.	avg.
Granite	high	high
Hanna	high	avg.
<b>Hat Trick</b>	<b>avg.</b>	<b>avg.</b>
Howard	high	avg.
Kelby	high	avg.
Knudson	high	low/avg.
Kuntz	high	low
<b>ND 901CL</b>	<b>high</b>	<b>avg.</b>
Norpro	avg.	low
Norwell	avg.	low/avg.
Oklee	high	avg.
Parshall	high	avg.
Polaris	avg.	avg.
RB07	high	avg.
Reeder	high	avg.
Rush	high	avg.
Samson	avg.	low
Saturn	low	avg.
Steele-ND	high	avg.
<b>Tom</b>	<b>avg.</b>	<b>avg.</b>
Traverse	avg.	low
Trooper	avg.	low/avg.
Ulen	avg.	avg.
Vantage	high	high

**Bold** varieties were recently released and ratings are based on limited data. NA indicates insufficient information is available to make an accurate assessment.

### Importance of End-use Quality

Hard red spring wheat from the northern Great Plains is known around the world for its excellent end-use quality. Millers and bakers consider many factors in determining the quality and value of wheat they

purchase. Several key parameters are: high test weight (for optimum milling yield and flour color), high falling number (>300 seconds indicates minimal sprout damage), high protein content (the majority of HRS export markets want at least 14 percent protein) and excellent protein quality (for superior bread-making quality as indicated by traditional strong gluten proteins, high baking absorption and large bread loaf volume).

Millers and bakers are gaining a better understanding of their individual needs for consistent, high-quality wheat and flour to succeed in a very competitive industry. Wheat buyers are becoming increasingly sophisticated in their ability to test and source for quality. The U.S. grain trade is receiving requests for adding functional performance specifications to purchase contracts to obtain more consistent end-use performance. The majority of HRS wheat buyers are looking for traditional strong gluten properties (Farinogram rating of 6 to 7); however, instances arise where processors are looking for specific quality parameters, providing marketing alternatives for the wheat you produce.

Gluten strength, and milling and baking quality ratings, are provided for individual varieties in Tables 3 and 4, based on the results from the NDSU field plot variety trials. These ratings are applied to varieties grown for multiple years at seven NDSU Research Extension Centers across the state to provide producers and end users with end-use performance data. The wheat protein data often are higher than obtained in actual production, but can be used to compare differences among varieties. In addition, actual commercial end-use quality can vary due to a number of factors, with environmental conditions, planting date and location having the greatest impact.

The following photo illustrates the difference between bread made with good-quality wheat (loaf on the left) and that made with poor-quality wheat (loaf on the right).





