

Motion: Add Jerry to the list of Winter Wheat Varieties Recommended for Montana in District 6.

Submitted by P.L. Bruckner & J.E. Berg

Jerry is a hard red winter wheat cultivar released by North Dakota State University in 2001. It has been tested in Montana since 2002 (4 years). Jerry is winter hardy, resistant to stem rust, and has acceptable milling and baking quality. Jerry is a conventional height cultivar with medium maturity. In a combined analysis involving 10 environments showing differential winter survival (Table 1), Jerry had superior winter survival and yield performance under cold stress.

Table 1. 2002-2005 Intrastate Winter Wheat Test: Combined Locations w/ Differential Winter Survival and associated Yield
Locations: 4 years at both Sidney and Williston, Conrad and Moccasin in 2004 = 10 locations

Cultivar/Line	Winter Survival (%)				Yield ^{1/} under Winterkill			
	2005	2004-2005	2003-2005	2002-2005	2005	2004-2005	2003-2005	2002-2005
location-years	2	6	8	10	2	6	8	10
Yellowstone	84.2*	60.4*	62.0	60.1	59.7*	59.5*	63.4**	59.7**
Jerry	90.5*	66.1*	66.9*	66.5*	66.1**	61.3**	61.8*	59.1*
Morgan	91.2*	66.8*	69.0*	67.3*	62.2*	58.7*	61.5*	57.9*
Paul	88.7*	63.1*	61.9	59.7	61.2*	57.9*	59.9*	56.3*
CDC Falcon	86.4*	64.2*	64.3	62.6	59.8*	56.6*	58.4*	56.2*
Norstar	91.8**	67.9**	72.2**	73.3**	54.7	54.2	58.0	54.9
Neeley	71.8	57.1	57.7	54.5	52.6	54.6	58.3*	54.6
BigSky	85.1*	63.1*	62.6	59.6	51.4	53.9	55.7	52.4
Rocky	83.6*	61.7*	61.6	56.1	53.6	53.1	55.8	51.6
Tiber	75.7	58.6	59.8	55.5	46.0	50.7	53.3	49.4
Average	76.0	57.8	58.5	55.8	52.8	53.2	55.3	52.0
LSD (0.05)	15.9	8.3	7.3	7.5	6.8	6.6	5.3	4.7
C.V.	10.4	12.6	12.7	15.2	9.8	11.9	10.3	10.4

** = indicates highest value within a column

^{1/} LSD for Yield based on genotype*environment mean square.

* = indicates varieties with values equal to highest variety within a column based on Fisher's protected LSD (p=0.05)

At Sidney (Table 2) and Williston (Table 3), grain yield of Jerry is high indicating good adaptation to district 6. Test weight and grain protein are in the intermediate range and acceptable for commercial production. Across a wider range of Montana environments in the Intrastate (Table 4) and Off-station (Table 5) nurseries, yield performance of Jerry is good but not outstanding.

Jerry is classified by North Dakota State University as resistant to stem rust and foliar disease and moderately resistant to leaf rust. 2005 MSU disease data indicates Jerry has good resistance to stem rust, stripe rust, and leaf spot (Septoria & Tan spot) but is susceptible to eyespot (Table 6).

Milling and baking qualities of Jerry are acceptable and within the range of recommended Montana varieties (Table 7).

Table 2. 2002-2005 Intrastate Winter Wheat Test: Sidney Yield, Test Weight and Protein

Cultivar/Line	Grain Yield (bushels/acre)				Test Weight (lb/bu)				Protein (%)			
	2005	2004-2005	2003-2005	2002-2005	2005	2004-2005	2003-2005	2002-2005	2005	2004-2005	2003-2005	2002-2005
		2 yr	3 yr	4 yr		2 yr	3 yr	4 yr		2 yr	3 yr	4 yr
Yellowstone	52.6*	58.5*	65.1*	60.6*	61.0	60.2	60.7	60.3	9.4	11.6	11.5	11.8
Jerry	56.0*	59.2*	61.6*	59.2*	60.8	60.3	60.9	60.7	9.5	11.7	12.3	12.5
CDC Falcon	51.8*	55.3*	59.1*	57.9*	62.0	60.8	61.6	60.9	9.8	11.8	11.6	11.9
Morgan	51.1*	54.2*	60.2*	57.0*	62.2	60.5	61.0	60.3	8.8	11.7	11.7	12.2
Paul	54.0*	56.5*	60.3*	56.5*	61.1	59.9	60.1	59.5	9.8	12.0	12.0	12.2
Neeley	46.8	52.3*	58.1	54.7*	62.0	61.1	61.7	60.8	9.8	11.7	11.6	11.9
Norstar	52.9*	52.5*	58.0	54.5*	61.4	60.6	60.9	60.5	8.2	11.4	11.6	11.9
Rocky	47.4	52.8*	58.7*	54.0	61.5	61.2	62.0	61.7*	8.6	11.0	11.1	11.6
BigSky	48.3	50.4	54.5	51.5	63.8**	62.5*	62.7*	62.3*	9.4	12.2	12.2	12.7
Tiber	36.5	46.6	51.7	48.6	62.5	61.8*	62.2	61.9*	10.9	12.8	13.1*	13.3*
Average	46.1	50.9	55.4	52.3	61.3	60.6	61.5	61.0	9.6	11.8	12.1	12.2
LSD (0.05)	8.5	11.2	7.5	6.5	0.7	1.2	1.0	0.9	ns	1.1	0.7	0.7
C.V.	10.6	18.7	14.3	15.2	0.7	1.0	1.0	1.0	5.6	5.4	4.3	4.3

** = indicates highest value within a column

* = indicates varieties with values equal to highest variety within a column based on Fisher's protected LSD (p=0.05)

Table 3. 2002-2005 Intrastate Winter Wheat Test: Williston Yield, Test Weight and Protein

Cultivar/Line	Grain Yield (bushels/acre)				Test Weight (lb/bu)				Protein (%)			
	2005	2004-2005	2003-2005	2002-2005	2005	2004-2005	2003-2005	2002-2005	2005	2004-2005	2003-2005	2002-2005
		2 yr	3 yr	4 yr		2 yr	3 yr	4 yr		2 yr	3 yr	4 yr
Morgan	71.2**	62.0**	63.8**	57.9**	61.5	60.8	61.0	59.4	13.6	13.8	13.7	14.0
Norstar	61.6	58.7*	62.4*	57.1*	62.8	61.8	61.7	60.5*	13.4	14.0*	13.8	14.2
Jerry	71.1*	60.8*	60.6*	56.7*	61.2	60.8	61.2	59.9	13.9	13.8	13.9	14.2
Yellowstone	68.1*	53.5*	59.6*	54.4*	60.1	59.8	60.5	59.1	12.8	13.1	13.5	13.8
Paul	64.9	51.8*	56.0*	51.6*	59.1	58.8	59.4	58.4	13.1	13.6	13.6	14.1
CDC Falcon	65.4	51.1*	54.3	51.0*	61.7	60.9	61.4	59.4	12.4	12.5	12.8	13.3
Neeley	57.8	49.3	55.9*	50.9*	61.2	60.8	61.3	59.5	13.7	13.9	13.8	13.9
BigSky	56.5	45.3	50.1	46.4	62.5	61.9	62.2	61.1**	14.3	14.7**	14.9*	15.1**
Tiber	56.2	47.6	51.9	46.0	62.6	62.0*	62.2	60.8*	14.2	14.4*	14.5*	14.7*
Rocky	60.3	43.5	48.1	43.5	62.4	61.5	62.1	60.7*	13.4	13.3	13.4	13.7
Average	59.4	47.1	51.0	46.9	61.2	60.5	61.5	59.8	13.1	13.4	13.7	14.0
LSD (0.05)	5.7	12.4	8.8	7.1	1.2	1.1	0.8	1.1	0.8	0.7	0.5	0.5
C.V.	5.4	22.4	18.3	18.6	1.0	0.9	0.7	1.4	2.8	3.2	2.7	2.7

** = indicates highest value within a column

* = indicates varieties with values equal to highest variety within a column based on Fisher's protected LSD (p=0.05)

Table 4. 2002-2005 Intrastate Winter Wheat Test: Combined Locations Yield, Test Weight and Protein

Cultivar/Line	Grain Yield (bushels/acre)				Test Weight (lb/bu)				Protein (%)			
	2005	2004-2005	2003-2005	2002-2005	2005	2004-2005	2003-2005	2002-2005	2005	2004-2005	2003-2005	2002-2005
location-years	8	16	24	30	8	16	24	30	8	16	24	30
Yellowstone	78.4**	75.9**	75.0**	73.4**	59.9	60.0	60.0	59.7	12.9	13.2	13.5	13.6
CDC Falcon	68.4*	67.9	66.7	66.1	59.3	59.9	59.9	59.4	12.6	12.9	13.2	13.3
Jerry	67.3*	67.1	64.3	64.7	59.0	59.6	59.7	59.5	13.5*	13.5	13.9	13.9
Rocky	65.6*	65.8	65.8	64.7	61.4*	61.4*	61.6	61.3*	12.5	12.8	13.2	13.3
Paul	61.2	63.2	64.4	64.0	56.8	57.8	58.2	58.0	13.0	13.4	13.6	13.8
Neeley	58.0	62.6	63.7	63.4	58.2	59.3	59.7	59.4	13.3	13.4	13.7	13.8
Morgan	61.5	62.6	62.3	62.5	58.7	59.3	59.5	59.2	13.0	13.3	13.5	13.7
Tiber	60.7	62.7	61.4	60.6	60.0	60.6	60.8	60.6	13.5*	13.8	14.1	14.2
BigSky	57.6	60.8	60.4	59.5	59.1	60.0	60.3	60.2	13.6*	13.9*	14.2	14.4*
Norstar	51.9	55.7	55.4	55.7	59.5	60.2	60.3	60.2	13.1	13.5	13.9	13.9
Average	66.6	65.6	64.5	63.6	59.6	59.8	60.4	60.0	12.9	13.3	13.6	13.7
LSD (0.05)	13.0	7.9	5.5	4.6	2.5	1.5	1.0	0.8	0.7	0.5	0.4	0.3
C.V.	34.3	29.9	26.2	24.6	4.3	3.6	3.0	2.7	5.5	5.4	5.0	4.6

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* = indicates varieties with values equal to highest variety within a column based on Fisher's protected LSD (p=0.05)

Table 5. 2002-2005 Off-Station Winter Wheat Test: Combined Locations Yield, Test Weight and Protein

Cultivar/Line	Grain Yield (bu/a)			Test Weight (lb/bu)			Protein (%)		
	2005	2004-2005	2003-2005	2005	2004-2005	2003-2005	2005	2004-2005	2003-2005
Location-years	16	26	38	16	25	37	16	25	37
Yellowstone	52.4**	54.9*	56.0**	57.8	58.0	58.3	13.5	13.2	13.0
Neeley	48.2	51.3	52.2	57.9	57.9	58.4	13.6	13.4	13.2
CDC Falcon	47.3	50.5	51.7	58.0	58.5	58.8	13.7	13.1	13.0
Paul	46.4	50.1	51.2	56.3	56.9	57.1	13.8	13.3	13.1
Rocky	46.6	50.0	51.2	59.8*	60.0*	60.2*	13.5	13.2	13.1
Jerry	47.1	50.1	50.5	57.9	58.4	58.5	14.1	13.7	13.3
Morgan	45.7	48.5	49.2	57.8	58.0	58.4	13.6	13.2	13.0
Tiber	46.5	48.2	48.9	59.1	59.4	59.6	13.7	13.5	13.4
Vanguard	46.5	47.6	48.4	58.9	59.1	59.5	14.5*	14.1*	14.0**
BigSky	45.7	47.4	47.9	58.4	58.7	59.3	14.0	13.8	13.7*
Average	47.1	49.7	50.6	58.3	58.6	59.0	13.9	13.4	13.2
LSD (0.05)	3.6	2.9	2.3	0.8	0.6	0.5	0.5	0.4	0.3
C.V. (%)	11.0	10.6	9.9	2.0	2.0	1.9	4.8	5.0	5.1

** = indicates highest value within a column

* = indicates varieties with values equal to highest variety within a column based on Fisher's protected LSD (p=0.05)

Table 6. 2005 Intrastate Winter Wheat Test: Disease Reaction Summary by Bill Grey

(Stem Rust Severity = Jim Berg)

Cultivar/Line	Stripe Rust ^{1/}				Stem Rust Severity Ft.Ellis	Leaf Spot ^{2/} Havre		Eyespot ^{3/} Kalispell	
	Bozeman + Kalispell		Kalispell foliage %	Bozeman Score (0-4)		Score (0-4)	Reaction	Severity %	Reaction
	Score (0-4)	Reaction							
BigSky	2.8	S	85.0	2.3	5-Aug R	2.3	MR	14.6	R
CDC Falcon	2.2	S	63.3	1.3	R	1.0	R	22.2	MR
Jerry	0.8	R	11.7	0.7	R	1.3	R	40.9	VS
Morgan	2.7	S	78.3	1.3	R	1.7	MR	17.6	MR
Neeley	3.8	VS	93.3	3.7	S	2.0	MR	23.3	MR
Norstar	3.2	VS	88.3	1.7	S	1.0	R	22.8	MR
Paul	3.7	VS	95.0	3.3	R	1.3	R	20.6	MR
Rocky	2.0	S	60.0	1.0	R	3.0	S	31.5	S
Tiber	3.2	VS	70.0	3.0	S	2.0	MR	14.4	R
Yellowstone	0.3	R	5.0	0.7	S	3.0	S	27.1	S
Average	1.9		37.9	1.8		2.4		24.8	

^{1/} Stripe Rust = Puccinia striiformis var. tritici; Severity Score - 0 = R, 1 = MR, 2 = S, 3 = VS

^{2/} Leafspot - Primary = Septoria, Secondary = Tan Spot; Severity Score - VS > 3.5, S > 2.5, MR > 1.5, R > 1.0

^{3/} Eyespot/Foot rot - Primary = Tapesia, Secondary = Rhizoctonia sharp eyespot = Scale 0 to 50, VS > 35, S > 25, MR > 15, R > 10

Table 7. Milling and baking qualities, Montana Intrastate, 2002-2004, n=12.

ID	Grain						Flour						Flour Ash (%)		
	Hardness			Protein %			Yield %			Protein %			2004	2yr	3yr
	2004	2yr	3yr	2004	2yr	3yr	2004	2yr	3yr	2004	2yr	3yr			
Genou	75.7*	73.7	74.9	12.9	14.2	14.6*	68.5	66.9	66.0	12.0	12.9*	13.0**	0.35*	0.37*	0.36*
Paul	73.3*	73.1	74.8	12.9	14.0	14.1	66.1	65.0	63.9	11.1	11.9	12.1	0.37	0.37*	0.38
Yellowstone	76.1*	79.1**	79.8**	13.4*	14.1	14.1	68.8	67.1	66.3	11.6	12.2	12.1	0.38	0.39	0.39
BigSky	70.0	70.9	72.5	13.8*	14.7*	14.8*	67.8	65.7	65.0	12.0	12.5	12.6	0.34*	0.35*	0.35**
CDC Falcon	65.3	69.6	70.5	12.4	13.5	13.7	65.8	64.4	63.1	11.0	11.8	11.8	0.38	0.39	0.39
Neeley	71.8	73.1	74.6	13.0	13.9	14.1	66.2	65.1	64.3	11.1	11.9	12.0	0.36	0.36*	0.37*
Jerry	64.6	67.8	68.5	12.9	14.1	14.1	69.2	67.7	67.0*	11.3	12.3	12.3	0.37	0.38	0.38
NuSky (HWW)	74.1*	75.5	77.9*	13.4*	14.3	14.2	69.4*	67.6	67.1*	11.5	12.4	12.4	0.35*	0.36*	0.36*
NuWest (HWW)	73.6*	76.4*	78.0*	13.2	13.9	14.0	69.5*	67.8	67.3*	11.2	11.9	12.1	0.36	0.36*	0.36*
Wahoo	71.6	72.3	72.6	12.7	13.7	13.8	67.0	65.8	65.2	11.0	11.7	11.7	0.38	0.38	0.39
Average	71.8	74.2	75.1	13.0	13.9	13.9	68.3	66.9	66.0	11.3	12.0	12.0	0.37	0.37	0.38
LSD (0.05)	4.1	3.4	2.6	1.0	0.6	0.4	1.7	1.2	1.0	0.9	0.5	0.4	0.03	0.03	0.02
C.V.	4.0	4.7	4.2	5.6	4.3	3.9	1.7	1.9	1.8	5.4	4.4	3.9	6.4	7.1	7.6
P-Value	<.0001	<.0001	<.0001	0.0089	<.0001	<.0001	<.0001	<.0001	<.0001	0.0010	<.0001	<.0001	<.0001	0.0012	<.0001

Table 7. cont.

ID	Test Bake																	
	Mixograph									Bake						Loaf volume (cc)		
	Tolerance			Mix time (min.)			Absorption %			Mix time (min.)			Absorption %			2004	2yr	3yr
	2004	2yr	3yr	2004	2yr	3yr	2004	2yr	3yr	2004	2yr	3yr	2004	2yr	3yr	2004	2yr	3yr
Genou	4.5	4.4	4.6	4.7	4.8	5.4	60.5*	62.4*	62.8**	9.6	9.9	11.7	70.6	72.1*	73.1*	1055	1097*	1129**
Paul	4.8	4.8	5.1	5.0	5.5	5.8	57.9	59.7	60.1	7.5	8.0	8.8	68.5	70.2	70.4	1066*	1101**	1121*
Yellowstone	5.5	5.3	5.8	6.7	7.1	7.6	61.3*	61.8*	61.3	11.6	11.9	13.5	72.8*	74.0**	74.2**	1079*	1100*	1105*
BigSky	4.8	5.0	5.4	4.8	4.6	4.8	61.3*	62.1*	62.2*	7.7	7.1	8.1	73.3**	73.1*	73.2*	1043	1053	1076
CDC Falcon	3.8	3.8	4.3	4.7	4.5	5.0	58.5	60.6	60.2	8.0	7.5	8.8	69.3	70.9	71.0	1025	1063*	1075
Neeley	5.3	5.1	5.3	4.5	4.7	4.9	59.0	60.6	60.5	7.1	7.5	8.2	70.0	71.9	71.5	984	1030	1051
Jerry	4.8	5.1	5.3	4.3	4.6	4.8	59.9	62.0*	61.4	6.4	7.6	7.8	70.0	72.2	71.6	994	1043	1046
NuSky (HWW)	4.8	4.4	4.8	4.4	4.9	5.0	60.5	62.0*	61.6	6.8	7.3	8.3	70.7	72.2	72.0	1026	1044	1041
NuWest (HWW)	4.0	3.9	4.4	4.6	4.8	4.9	60.1	61.0	60.8	6.7	7.0	8.0	70.1	71.9	71.5	999	1032	1036
Wahoo	4.0	4.3	4.5	3.8	3.8	4.0	59.6	60.6	59.8	5.2	5.3	5.4	69.7	70.7	69.8	968	1017	1018
Average	4.5	4.3	4.7	4.7	4.6	4.9	59.9	61.1	60.7	7.5	7.2	8.1	70.6	71.8	71.5	1026	1056	1068
LSD (0.05)	0.9	0.7	0.6	0.9	0.7	0.6	2.1	1.4	1.1	2.2	1.6	1.5	2.2	1.5	1.3	77	46	38
C.V.	14.3	16.9	15.2	13.5	14.6	16.2	2.6	2.2	2.3	20.5	22.4	22.8	2.2	2.1	2.2	5.0	4.5	4.4
P-Value	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	0.0043	<.0001	<.0001	<.0001	<.0001	<.0001	0.0002	<.0001	<.0001	0.0016	<.0001	<.0001