

‘Northern’ Winter Wheat

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Northern is a hard red winter wheat developed by the Montana Agricultural Experiment Station and released to growers in fall 2015. Northern was named to commemorate the 100th anniversary of the Northern Agricultural Research Center (NARC) in Havre, Montana. Northern is derived from a cross between a Yellowstone sib line (MT9982) and hard white winter Montana (MTW0072) and Nebraska (NW97S151) experimental lines. Northern is a medium-late maturing, medium-short statured wheat, with white chaff. Northern has average yield (similar to Yellowstone and Colter, see Table 1), average test weight, and average protein (Table 2). Northern is resistant to both stem and stripe rust. Northern has above average milling and average baking properties (Table 3.) Northern is a low PPO cultivar with favorable Asian noodle color stability and noodle score. Plant Variety Protection is pending.

Table 1. Yield of Northern vs. a set of recommended varieties, 2011-2015^{1/}

Variety	Districts							All Locations
	1 Kalispell	2 Bozeman	3 Huntley ^{2/}	4 Moccasin ^{3/}	5 Conrad ^{4/}	5 Havre ^{5/}	6- Sidney & Williston	
location-years	5	5	19	18	14	9	7	77
Yellowstone	119.8*	91.6**	68.8*	56.2**	78.1**	56.4*	60.8	70.2**
Colter	130.2**	89.5*	70.5**	53.3	74.6	55.2*	59.2	69.5*
Northern	113.7*	87.6*	69.3*	55.4*	75.7*	57.6**	56.7	68.7*
CDC Falcon	76.4	71.4	65.4	51.8	70.8	55.3*	57.5	62.4
Decade	50.1	73.7	65.4	52.9	72.9	52.5	55.1	60.9
Jerry	53.4	72.5	61.1	49.3	67.1	48.6	58.6	58.0
LSD (0.05)	16.7	12.6	4.2	2.6	3.1	4.4	ns	3.2

** = 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)

1/ = includes 2011-2015 Intrastate and 2013-2015 Off Station tests

2/ includes data from Fort Smith, Hardin area, Hysham Molt, Rapelje

3/ includes data from Denton, Geraldine, Winifred, Belt

4/ includes data from Choteau, Cut Bank, The Knees, Shelby

5/ includes data from Loma, Turner

Table 2. Agronomic characteristics of Northern vs. a set of recommended varieties, 2011-2015^{1/}

Variety	Test weight	Winter survival	Heading date		Plant height	Lodging	Protein	Saw fly cutting	Stripe rust	Coleoptile length
	lb/bu	%	Julian	Calendar	in	%	%	%	%	in
location-years	77	6	42		77	13	76	8	8	2
CDC Falcon	59.0	63	163.8	13-Jun	29.9	7	12.7	5	50	2.9
Colter	59.6*	57	166.1	15-Jun	33.4	10	12.9*	14	20**	2.9
Decade	59.1	61	163.0	12-Jun	31.7	12	13.1**	9	70	3.2
Jerry	58.4	67	165.0	13-Jun	35.7	14	12.9*	10	73	3.2
Northern	59.5*	52	166.3	15-Jun	31.8	13	13.0*	7	22*	2.5
Yellowstone	59.3*	54	165.5	15-Jun	33.5	10	12.6	9	27*	2.7
LSD (0.05)	0.5	ns	0.4		0.4	ns	0.2	4	12	0.2

1/ = includes 2011-2015 Intrastate and 2013-2015 Off Station tests

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Table 3. Mill and bake characteristics of Northern vs. a set of recommended varieties, 2011-2014

Variety	PPO ^{1/}	Kernel hardness	Flour			Mixograph			Baking		
			yield %	protein %	Ash %	tolerance (1-6)	mix time min	absorption %	mix time min	absorption %	volume cc
location-years	16	16	16	16	16	16	16	16	16	16	16
Colter	0.271	81.5	67.9*	11.2	0.42	5.1**	9.0	63.4*	16.5	74.4*	1035
Decade	0.294	80.1	67.5	11.4*	0.42	4.9*	7.7	64.3**	16.6	74.6**	1054*
Northern	0.108**	88.6	68.2**	11.5**	0.44	3.7	4.3	61.2	5.9	71.1	1076**
Yellowstone	0.202	81.4	68.2*	11.1	0.43	4.7*	8.4	63.0	14.4	73.6*	1063*
LSD (0.05)	0.032	2.6	0.5	0.3	0.01	0.4	1	1.0	1.7	1.0	27

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

1/ polyphenol oxidase, low is best for noodles

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