

'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. To be sold by variety name only as a class of certified seed. Montana State University Research Fees due on seed sold. PVP, Title V is issued (Certificate# 20160092).

Table 1. Yield of Northern vs. a set of varieties, 2012-2017^{1/}

Variety	Districts							All Locations
	1	2	3	4	5	5	6- Sidney & Williston	
	Kalispell	Bozeman	Huntley ^{2/}	Moccasin ^{3/}	Conrad ^{4/}	Havre ^{5/}		
location-years	5	5	20	19	15	12	7	83
Yellowstone	116.9	92.3	69.0	60.0	83.9	57.3	59.2	71.4
Northern	120.1	86.9	65.5	57.9	83.4	57.8	53.0	69.4
SY Wolf	103.4	89.8	66.5	59.6	84.7	56.9	49.2	69.0
CDC Falcon	74.6	71.2	61.6	54.5	76.6	53.4	55.6	62.4
Decade	50.5	72.0	62.5	55.8	76.8	52.8	51.3	61.0
LSD (0.05)	19.7	11.5	3.2	3.2	2.8	3.7	ns	2.8

bold = indicates highest value within a column

ns = non-significant

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

1/ = includes 2012-2016 Intrastate and 2015-2017 Off Station tests

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

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

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

5/ includes data from Ft. Benton, Loma, Turner

Table 2. Agronomic characteristics of Northern vs. a set of varieties, 2012-2017^{1/}

Variety	Test weight	Winter survival	Heading date		Plant height	Lodging %	Protein %	Saw fly cutting %	Stripe rust %	Coleoptile length in
	lb/bu	%	Julian	Calendar	in		%	%	%	in
location-years	83	5	47		83	14	81	8	7	2
CDC Falcon	58.9	62	160.1	9-Jun	30.0	27	12.3	33	59	2.9
Decade	59.0	59	159.4	8-Jun	31.7	25	12.5	24	73	3.2
Northern	59.3	49	162.5	12-Jun	31.8	25	12.6	18	25	2.5
SY Wolf	60.6	38	158.7	8-Jun	30.9	30	12.2	25	26	3.0
Yellowstone	59.3	54	161.4	10-Jun	33.4	24	12.1	25	38	2.7
LSD (0.05)	0.4	14	0.4		0.4	ns	0.2	ns	15	0.2

1/ = includes 2012-2016 Intrastate and 2015-2017 Off Station tests

ns = non-significant

bold = indicates highest value within a column

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

Table 3. Mill and bake characteristics of Northern vs. a set of varieties, 2012-2016

Variety	PPO ^{1/}	Kernel hardness	Flour			Mixograph			Baking		
			yield	protein	Ash	tolerance	mix time	absorption	mix time	absorption	volume
			%	%	%	(1-6)	min	%	min	%	cc
location-years	20	20	20	20	20	20	20	20	20	20	20
Decade	0.285	75.7	68.6	11.5	0.42	4.6	7.9	<u>64.9</u>	19.2	75.3	1044
Northern	0.104	86.2	69.7	11.8	0.45	3.5	4.1	62.4	6.2	72.2	1076
SY Wolf	0.278	76.3	68.7	11.3	0.41	2.5	4.4	59.2	6.6	69.3	979
Yellowstone	0.217	78.9	68.9	11.3	0.43	4.4	8.3	64.2	16.0	75.0	1052
LSD (0.05)	0.031	2.4	0.7	0.3	0.01	0.5	0.8	1.2	2.0	1.3	30

bold = indicates highest value w ithin a column

bold = indicates varieties w ith values equal to highest variety w ithin a column based on Fisher's Protected LSD (p =0.05)

1/ polyphenol oxidase, low is best for noodles