

‘Yellowstone’ and ‘Decade’ Winter Wheats

Phil Bruckner and Jim Berg, Winter Wheat Breeding Program, Montana State University
Updated 12/2015

Yellowstone is a white-chaffed hard red winter wheat developed by the Montana Agricultural Experiment Station and released to seed growers in 2005. Yellowstone’s pedigree is ‘Judith’ x ‘Promontory’. Yellowstone is a very high yielding (Table 1) winter hardy variety with medium test weight, maturity, height, and grain protein (Table 2). Yellowstone has good milling and excellent baking quality (Table 3). It is resistant to stripe rust, but susceptible to stem rust. Yellowstone is recommended in Districts 1-5. Montana State University Research Fees due on seed sold. PVP, Title V has been issued (Certificate #200600284).

Decade is a white-chaffed hard red winter wheat developed by the Montana Agricultural Experiment Station and released to seed growers in 2010. Decade is a joint release with the North Dakota Agricultural Experiment Station. Decade was selected from a composite of three closely related F1 populations containing such varieties as a sib line of ‘Wesley’, ‘CDC Clair’, ‘NuWest’, ‘Tiber’, and ‘Redwin’. Decade is a high yielding (Table 1) winter hardy variety well adapted to western North Dakota and eastern Montana with medium to high test weight, early maturity, reduced height, and medium to high grain protein (Table 2). Decade has excellent milling and baking quality (Table 3). It is resistant to stem rust, but susceptible to stripe rust. Relative to CDC Falcon, Decade is equivalent in yield potential and winter survival, with improved test weight, earlier maturity, higher grain protein content, superior milling characteristics and higher water absorption. Montana State University Research Fees due on seed sold. PVP, Title V has been issued (Certificate #201100096).

Table 1. Yield of Yellowstone and Decade, 2010-2015, compared to a set of grown winter wheat varieties.

Variety	Districts							All Locations
	1 Kalispell	2 Bozeman ^{1/}	3 Huntley ^{2/}	4 Moccasin ^{3/}	5 Conrad ^{4/}	5 Havre ^{5/}	6 - Sidney, Williston	
location-years	6	10	36	30	24	16	8	130
Yellowstone	126.8**	69.6**	68.1**	55.7**	70.7**	56.8**	61.0**	66.7**
Decade	63.0	60.8	67.0*	53.2	64.4	53.4	55.8*	60.3
CDC Falcon	86.9	57.5	64.0	51.3	63.5	54.8*	57.9*	60.0
Judee	113.7*	63.8*	62.1	46.2	62.9	53.7	41.4	58.8
Bearpaw	72.4	57.4	65.0	50.6	61.3	53.0	51.0	58.4
Jerry	64.0	58.0	59.7	48.5	58.2	48.9	59.3*	55.8
Genou	70.6	53.6	56.9	43.7	59.1	51.1	47.0	53.3
Rampart	94.0	55.7	56.9	41.2	56.2	48.6	44.3	53.0
LSD (0.05)	15.6	6.2	2.9	2.1	3.4	2.7	6.6	1.9

** = 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 data from Dry Creek, Willow Creek

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

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

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

5/ includes data from North Havre, Loma, Turner

Table 2. Agronomic characteristics of Yellowstone and Decade, 2010-2015, compared to a set of grown winter wheat varieties

Variety	Test weight lb/bu	Winter survival %	Heading date		Plant height in	Lodging %	Protein %	Sawfly cutting %	Stripe rust %	Coleoptile length in
			Julian	Calendar						
location-years	129	7	53		129	20	129	17	9	3
Bearpaw	59.0	48	165.7	15-Jun	30.8	18	13.1	6*	59	3.0
CDC Falcon	58.9	63*	165.5	15-Jun	29.8	5**	12.7	18	45	2.9
Decade	59.2	61*	164.6	14-Jun	31.4	10*	13.1	19	71	3.1
Genou	59.2	44	166.6	16-Jun	34.7	25	13.3	12*	59	4.1
Jerry	58.4	67**	166.7	16-Jun	35.4	15	13.0	24	70	3.2
Judee	59.7**	31	166.1	15-Jun	31.2	13*	13.2	10*	15**	3.7
Rampart	59.4*	39	166.7	16-Jun	34.3	26	13.8**	5**	41	4.4**
Yellowstone	59.0	53	167.2	16-Jun	33.1	11*	12.7	22	24*	2.7
LSD (0.05)	0.3	11	0.4		0.4	9	0.2	8	11	0.2

** = indicates highest value within a column

ns = non-significant

* = 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 Yellowstone and Decade, 2009-2014, compared to a set of grown winter wheat varieties

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	24	24	24	24	24	24	24	24	24	24	24
Bearpaw	0.402	80.9	68.6*	11.2	0.41	3.4	4.6	60.3	7.0	70.5	999
Decade	0.439	76.5	67.7	11.4*	0.41**	4.9**	7.6	64.4**	16.7	74.8**	1056
Genou	0.426	78.0	68.6**	11.6**	0.41*	4.1	5.6	62.8	11.9	72.8	1077
Judee	0.423	79.1	66.7	11.4*	0.41*	4.0	5.6	61.1	8.3	71.0	1118**
Yellowstone	0.299	79.4	68.4*	11.0	0.42	4.8*	8.3	62.8	14.3	73.5	1051
LSD (0.05)	0.057	2.6	0.6	0.3	0.01	0.4	0.6	1.0	1.2	1.0	26

** = 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/} low is best for noodles