

MSU/MAES Winter Wheat Varieties

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Montana Tested Hard Winter Wheat Varieties:					
Shaded entries are MSU/MAES developed varieties					
Variety	Origin	Release year	Solid-stem	Forage/ Dual Purpose	Clearfield
Brawl CL Plus	Colorado	2011			X
Decade	Montana/North Dakota (2010)	2010			
FourOsix	Montana	2018			
Judee	Montana	2011	X		
Keldin	WestBred/Monsanto	2011			
Loma	Montana	2016	X		
Northern	Montana	2015			
Ray	Montana	2018		X	
SY Clearstone 2CL	Montana/Syngenta	2012			X
SY Monument	Syngenta	2014			
SY Wolf	Syngenta	2010	X		
Warhorse	Montana	2015	X		
Yellowstone	Montana	2010			

Table 1. Yield of Winter Wheat varieties, 2017-2018^{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	1	1	11	9	9	6	2	39
Keldin	101.3	144.6	90.3	63.5	69.8	47.4	68.7	73.3
SY Monument	84.1	136.7	85.0	64.3	66.7	47.5	61.2	70.3
Northern	78.2	147.8	83.6	59.6	65.8	48.8	64.6	69.1
SY Clearstone 2CL	89.6	142.4	80.4	64.5	66.9	46.8	55.3	69.0
Yellowstone	83.6	137.3	81.9	59.9	66.9	48.1	59.8	68.5
FourOsix	92.4	134.4	82.0	60.8	64.7	45.0	57.4	67.8
Loma	87.6	139.7	78.4	58.5	69.4	47.3	59.3	67.8
SY Wolf	71.5	117.2	83.9	62.1	64.2	44.7	57.4	67.4
Ray	97.2	138.5	78.6	61.2	64.9	45.2	56.8	67.2
Decade	48.4	129.3	80.0	61.3	60.7	46.5	58.9	65.5
Warhorse	92.0	120.7	79.8	57.1	61.9	43.7	57.2	65.1
Brawl CL Plus	86.9	115.3	77.9	54.8	66.0	44.9	49.7	64.5
Judee	94.5	128.2	74.1	58.2	63.7	44.6	55.3	64.4
LSD (0.05)	19.2	11.6	6.6	5.4	4.7	ns	ns	2.9

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/ = 2018 Intrastate and 2017-2018 Off-Station tests

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

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

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

5/ includes data from Carter, Loma, Turner

Table 2. Agronomic characteristics of Winter Wheat Varieties, 2017-2018^{1/}

Variety	Test weight lb/bu	Winter survival %	Heading date		Plant height in	Lodging %	Protein %	Saw fly cutting %	Stripe rust %	Coleoptile length in
			Julian	Calendar						
location-years	39	1	11		38	6	39	9	-	-
Brawl CL Plus	63.0	45	153.6	3-Jun	27.4	22	13.1	31		
Decade	60.9	69	158.9	8-Jun	29.5	27	13.0	41		
FourOsix	61.0	48	159.5	9-Jun	28.4	32	12.6	52		
Judee	61.7	49	159.5	9-Jun	29.5	29	13.1	36		
Keldin	61.5	57	160.1	9-Jun	29.2	37	12.4	48		
Loma	60.3	46	162.5	12-Jun	27.7	20	12.8	29		
Northern	60.7	49	162.3	11-Jun	29.2	34	12.9	46		
Ray	58.6	44	163.9	13-Jun	34.2	46	12.6	49		
SY Clearstone 2CL	59.9	48	161.5	11-Jun	32.1	45	12.5	55		
SY Monument	60.4	60	157.5	7-Jun	28.0	30	11.8	47		
SY Wolf	62.1	51	156.5	6-Jun	27.7	35	12.6	35		
Warhorse	60.7	52	160.8	9-Jun	28.7	15	13.3	6		
Yellowstone	60.1	62	162.0	11-Jun	30.5	34	12.5	52		
LSD (0.05)	0.4	12	0.9		0.6	16	0.2	14		

^{1/} = 2018 Intrastate and 2017-2018 Off-Station tests

ns = non-significant

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)

Table 3. Mill and bake characteristics of Winter Wheat Varieties, 2017

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	4	4	4	4	4	4	4	4	4	4	4
Brawl CL Plus	0.283	75.5	70.4	11.9	0.40	3.3	4.3	64.0	6.4	73.9	1053
Decade	0.276	78.4	70.3	11.9	0.41	3.3	8.1	68.4	18.3	79.1	1053
FourOsix	0.267	77.7	71.9	12.4	0.43	2.5	5.6	68.2	10.9	78.4	1119
Judee	0.242	78.5	70.4	12.4	0.42	3.5	4.7	63.7	7.1	73.5	1126
Keldin	0.326	68.0	69.8	11.5	0.45	3.0	5.3	64.0	8.0	74.0	1010
Loma	0.167	79.5	71.3	11.8	0.42	2.8	7.0	66.1	12.1	76.5	1116
Northern	0.092	85.6	70.0	11.9	0.44	2.5	3.7	64.3	4.2	73.5	1068
Ray	0.098	77.6	72.1	12.0	0.43	3.0	10.3	66.5	15.8	77.3	1046
SY Clearstone 2CL	0.284	75.5	69.5	12.0	0.42	3.8	5.9	64.7	7.5	74.6	1060
SY Monument	0.216	80.1	71.6	11.4	0.43	3.3	8.3	65.5	14.0	76.2	1021
SY Wolf	0.264	78.6	70.0	11.1	0.40	1.5	4.3	61.6	5.8	71.4	994
Warhorse	0.268	89.0	69.4	12.5	0.42	2.5	4.3	64.8	6.1	74.8	1094
Yellowstone^{2/}											
LSD (0.05)	0.057	5.7	1.1	0.7	0.03	ns	2.0	2.6	4.5	2.5	60

bold = indicates highest value w ithin a column

ns = non-significant

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

^{2/} Yellow stone misplanted in 2017 Intrastate tests