

# MSU/MAES Winter Wheat Varieties

Phil Bruckner and Jim Berg, Winter Wheat Breeding Program, Montana State University  
Updated 12/2017

Montana Tested Hard Winter Wheat Varieties:				
Shaded entries are MSU/MAES developed varieties				
Variety	Origin	Release year	Solid-stem	Clearfield
<b>Bearpaw</b>	Montana	2011	X	
<b>Brawl CL Plus</b>	Colorado	2011		X
<b>CDC Falcon</b>	Saskatchewan/WestBred (1999)	1999		
<b>Decade</b>	Montana/North Dakota (2010)	2010		
<b>Judee</b>	Montana	2011	X	
<b>Keldin</b>	WestBred/Monsanto	2011		
<b>Loma</b>	Montana	2016	X	
<b>Northern</b>	Montana	2015		
<b>SY Clearstone 2CL</b>	Montana/Syngenta	2012		X
<b>SY Monument</b>	Syngenta	2014		
<b>SY Wolf</b>	Syngenta	2010	X	
<b>Warhorse</b>	Montana	2015	X	
<b>WB-Quake</b>	WestBred	2011	X	
<b>Yellowstone</b>	Montana	2010		

Table 1. Yield of Winter Wheat varieties, 2015-2017<sup>1/</sup>

Variety	Districts							All Locations
	1 Kalispell	2 Bozeman	3 Huntley <sup>2/</sup>	4 Moccasin <sup>3/</sup>	5 Conrad <sup>4/</sup>	5 Havre <sup>5/</sup>	6- Sidney & Williston	
location-years	2	2	6	7	6	5	3	31
<b>SY Monument</b>	124.3	89.4	73.7	53.1	84.0	61.3	55.6	73.3
<b>Keldin</b>	111.7	85.3	74.3	55.6	85.0	60.3	54.0	72.8
<b>Yellowstone</b>	117.7	89.8	75.9	51.8	78.7	60.8	62.2	72.5
<b>Northern</b>	132.3	83.6	71.6	51.2	79.3	60.1	53.2	71.2
<b>SY Clearstone 2CL</b>	124.6	86.4	72.2	54.1	78.3	57.2	53.6	71.1
<b>SY Wolf</b>	102.2	82.0	76.0	54.6	80.9	57.4	57.0	71.1
<b>Loma</b>	136.4	91.0	69.5	46.9	77.1	55.4	48.9	68.8
<b>Brawl CL Plus</b>	72.5	76.3	70.3	48.5	78.7	56.3	50.0	64.9
<b>Warhorse</b>	129.6	73.7	66.5	47.3	68.9	54.0	42.7	64.4
<b>Judee</b>	122.1	66.5	65.0	44.7	69.4	53.5	42.8	62.5
<b>CDC Falcon</b>	66.4	55.0	65.8	46.9	73.6	54.9	55.1	61.1
<b>WB-Quake</b>	122.5	71.1	61.8	42.6	64.1	53.1	46.4	60.9
<b>Decade</b>	43.9	48.9	64.4	50.5	71.6	54.9	51.6	59.2
<b>Bearpaw</b>	48.9	44.5	64.6	46.5	70.9	47.1	43.9	56.1
<b>LSD (0.05)</b>	33.6	6.9	5.2	5.4	5.9	7.5	ns	5.1

**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)

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

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

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

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, 2015-2017<sup>1/</sup>**

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	31	1	15		30	5	30	4	4	1
<b>Bearpaw</b>	59.3	73	155.9	5-Jun	29.8	27	<b>12.4</b>	<b>8</b>	73	3.0
<b>Brawl CL Plus</b>	<b>61.8</b>	53	151.1	31-May	30.7	19	<b>12.3</b>	37	70	3.5
<b>CDC Falcon</b>	59.7	94	156.0	5-Jun	28.9	25	11.9	39	52	2.9
<b>Decade</b>	59.7	78	155.9	5-Jun	30.5	34	<b>12.2</b>	30	70	2.9
<b>Judee</b>	<b>61.1</b>	40	156.3	5-Jun	30.9	33	<b>12.3</b>	<b>14</b>	<b>14</b>	3.7
<b>Keldin</b>	60.8	28	156.5	6-Jun	31.0	42	11.7	39	35	2.8
<b>Loma</b>	60.0	95	158.2	7-Jun	29.8	32	12.0	<b>16</b>	<b>14</b>	2.8
<b>Northern</b>	60.1	85	158.4	7-Jun	31.3	40	<b>12.2</b>	<b>19</b>	<b>19</b>	2.6
<b>SY Clearstone 2CL</b>	59.6	73	156.9	6-Jun	33.7	42	11.7	28	<b>30</b>	2.9
<b>SY Monument</b>	59.4	75	155.2	4-Jun	30.9	34	11.2	32	<b>14</b>	3.1
<b>SY Wolf</b>	<b>61.7</b>	55	154.9	4-Jun	30.3	39	11.8	31	<b>23</b>	3.1
<b>Warhorse</b>	60.2	78	157.5	7-Jun	30.4	21	<b>12.5</b>	<b>5</b>	<b>13</b>	3.2
<b>WB-Quake</b>	60.5	75	157.9	7-Jun	30.8	29	<b>12.2</b>	<b>10</b>	<b>27</b>	2.6
<b>Yellowstone</b>	60.0	93	156.9	6-Jun	32.6	30	11.7	22	33	2.7
<b>LSD (0.05)</b>	<b>0.7</b>	<b>22</b>	<b>0.7</b>		<b>0.6</b>	ns	<b>0.3</b>	<b>17</b>	<b>18</b>	<b>0.2</b>

<sup>1/</sup> = 2015-2016 Intrastate and 2017 Off-Station tests

**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 Winter Wheat Varieties, 2015-2016**

Variety	PPO <sup>1/</sup>	Kernel hardness	Flour			Mixograph			Baking		
			yield %	protein %	Ash %	tolerance (1-6)	mix time min	absorption %	mix time min	absorption %	volume cc
location-years	8	8	8	8	8	8	8	8	8	8	8
<b>Bearpaw</b>	0.286	77.2	<b>70.7</b>	<b>11.0</b>	0.42	3.0	4.3	61.3	8.4	71.4	945
<b>Brawl CL Plus</b>	0.282	65.6	68.8	<b>11.4</b>	<b>0.40</b>	3.0	4.6	<b>63.2</b>	9.6	<b>73.6</b>	1009
<b>Decade</b>	0.252	70.1	68.8	10.7	0.41	<b>4.3</b>	8.0	<b>63.6</b>	21.9	<b>74.4</b>	970
<b>Judee</b>	0.258	77.0	68.8	<b>11.2</b>	0.41	<b>3.8</b>	5.2	62.1	11.3	72.2	<b>1082</b>
<b>Keldin</b>	0.329	64.0	69.0	10.3	0.44	<b>3.6</b>	4.9	61.4	10.3	71.9	916
<b>Loma</b>	0.163	77.4	<b>71.5</b>	10.6	0.42	<b>3.8</b>	6.7	<b>63.6</b>	17.7	<b>75.1</b>	<b>1033</b>
<b>Northern</b>	<b>0.096</b>	82.8	<b>70.9</b>	<b>11.3</b>	0.46	3.0	3.9	<b>62.5</b>	6.6	72.3	1014
<b>SY Clearstone 2CL</b>	0.276	73.7	68.5	10.4	0.43	<b>3.6</b>	5.4	<b>62.4</b>	10.2	73.2	980
<b>SY Monument</b>	0.174	71.8	69.9	10.1	<b>0.39</b>	<b>4.0</b>	9.1	<b>62.7</b>	19.2	<b>74.3</b>	928
<b>SY Wolf</b>	0.252	70.6	68.5	10.5	<b>0.40</b>	2.6	4.6	58.7	7.6	69.0	921
<b>Warhorse</b>	0.251	87.1	69.1	<b>11.5</b>	0.45	3.0	4.6	<b>63.3</b>	8.7	<b>73.7</b>	1009
<b>Yellowstone</b>	0.235	73.4	68.7	10.7	0.43	<b>3.9</b>	8.0	<b>64.0</b>	17.5	<b>75.3</b>	991
<b>LSD (0.05)</b>	<b>0.037</b>	<b>3.7</b>	<b>1.3</b>	<b>0.6</b>	<b>0.01</b>	<b>0.6</b>	<b>1.2</b>	<b>1.9</b>	<b>3.4</b>	<b>2.0</b>	<b>58</b>

**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)

<sup>1/</sup> polyphenol oxidase, low is best for noodles