‘Flathead’ Winter Wheat

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Flathead is a hard red winter wheat developed by the Montana Agricultural Experiment Station and available to certified seed growers in fall 2019. Flathead is derived from a composite of 2 crosses involving Yellowstone and a Washing State University line, PI 640431, that carries 2 stripe rust seedling resistance genes. Flathead is an early maturing (especially for a Montana line), hollow-stemmed, medium height wheat with white chaff (Table 2). Flathead has average yield, above average test weight, and average protein, with average winter survival. Flathead out-yields other early maturing varieties, such as Brawl Cl Plus and SY Wolf (Table 1). Flathead has excellent resistance to stripe rust and is moderately resistant to both stem rust and dwarf bunt. Flathead has medium PPO and above average milling and baking characteristics (Table 3). 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 pending.

Table 1. Yield of Flathead vs. a set of varieties, 2017-2018[1/]

Variety	Districts							All Locations	Relative maturity
	1 Kalispell	**2** Bozeman	**3** Huntley[2/]	**4** Moccasin[3/]	**5** Conrad[4/]	**5** Havre[5/]	**6**- Sidney & Williston		
location-years	1	2	7	5	6	6	3	30	
Brawl CL Plus	86.9	89.0	84.2	56.0	63.6	49.3	42.6	67.0	**v. early**
Flathead	**106.2**	124.6	99.2	61.5	60.4	52.3	47.0	72.5	**Early**
SY Wolf	71.5	97.4	101.1	59.4	62.0	51.5	49.3	70.0	**Early**
SY Monument	84.1	118.0	105.1	**69.3**	61.8	53.9	55.8	**75.5**	**Medium**
Decade	48.4	86.0	98.9	**63.5**	58.8	53.1	56.1	69.0	**Medium**
FourOsix	92.4	119.5	94.7	61.8	60.9	51.8	52.0	71.2	**M-L**
Keldin	101.3	121.2	**113.7**	**65.2**	66.3	56.4	55.8	**79.0**	**M-L**
LCS Jet	**122.3**	135.0	**116.1**	**65.4**	66.7	50.4	39.1	**78.4**	**Late**
Northern	78.2	119.1	102.9	61.7	63.8	53.8	55.3	73.9	**Late**
LSD (0.05)	**19.2**	**ns**	**9.6**	**6.2**	**ns**	**ns**	**ns**	**4.7**	

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/ = 2017-18 Intrastate and 2018 Off Station tests

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

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

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

6/ includes data from Carter, Loma, Turner

Table 2. Agronomic characteristics of Flathead vs. a set of varieties, 2017-2018[1/]

Variety	Test weight lb/bu	Winter survival %	Heading date Julian	Heading date Calendar	Plant height in	Lodging %	Protein %	Sawfly cutting %	Stripe rust %	Coleoptile length in
location-years	30	2	15		29	2	30	8	2	1
Brawl CL Plus	**62.6**	36	152.7	2-Jun	28.2	18	**13.5**	30	70	**3.5**
Flathead	61.7	46	154.7	4-Jun	29.4	17	12.8	47	**3**	2.6
SY Wolf	61.7	44	155.6	5-Jun	28.5	8	13.0	32	**21**	3.1
SY Monument	60.5	**54**	156.5	6-Jun	28.5	6	12.2	50	**4**	3.1
Decade	60.9	**66**	157.6	7-Jun	30.5	6	**13.3**	39	74	2.9
FourOsix	61.1	47	158.3	7-Jun	29.2	6	12.9	56	**6**	2.8
Keldin	61.7	43	158.8	8-Jun	30.0	6	12.7	45	41	2.8
LCS Jet	58.7	13	159.5	9-Jun	27.0	3	12.6	50	**2**	**3.6**
Northern	60.7	43	160.9	10-Jun	29.9	10	13.1	51	**8**	2.6
LSD (0.05)	**0.6**	**16**	**0.9**		**0.7**	**ns**	**0.2**	**13**	**23**	**0.2**

1/ = 2017-18 Intrastate and 2018 Off Station tests

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Table 3. Mill and bake characteristics of Flathead vs. a set of varieties, 2017-2018: Intrastate Tests only

Variety	PPO [1/]	Kernel hardness	Flour yield %	Flour protein %	Flour Ash %	Mixograph tolerance (1-6)	Mixograph mix time min	Mixograph absorption %	Baking mix time min	Baking absorption %	Baking volume cc
location-years	8	4	8	8	8	8	8	8	8	8	8
FourOsix	0.246	77.7	**72.4**	**12.3**	0.42	2.6	5.2	**67.8**	10.3	**77.8**	**1111**
Northern	**0.126**	85.6	70.4	**12.1**	0.45	2.8	3.4	64.9	4.6	74.3	1075
Flathead	0.247	74.2	**73.1**	**12.0**	0.41	**3.9**	9.1	**68.1**	17.1	**78.6**	1068
Decade	0.265	78.4	71.0	**12.1**	**0.40**	3.0	6.8	**69.0**	15.9	**79.2**	1066
Brawl CL Plus	0.275	75.5	70.8	**12.0**	**0.39**	2.9	4.0	65.5	6.4	75.4	1050
SY Monument	0.181	80.1	72.2	11.1	0.40	**3.5**	7.9	66.0	14.4	76.1	1018
Keldin	0.311	68.0	70.4	11.7	0.44	2.8	5.1	65.2	7.8	75.2	1014
LCS Jet	0.278	69.8	**72.5**	11.5	**0.39**	3.1	5.3	66.0	8.5	76.5	973
LSD (0.05)	**0.044**	**5.2**	**0.8**	**0.5**	**0.02**	**0.7**	**1.4**	**1.8**	**2.8**	**2.0**	**32**

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[1/] low is best for noodles

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