'Bearpaw' and Judee Winter Wheats

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Bearpaw is a solid-stemmed hard red winter wheat with improved yield potential (Tables 1, 2) relative to Genou and Rampart. Bearpaw was developed by the Montana Agricultural Experiment Station and released to seed growers in 2011. Bearpaw was derived from a composite of five F₁ crosses with a common parent, DMS/'Rampart'//'Pronghorn'/3/'Rampart' crossed to 'Rampart', 'NuPlains', and three Montana unreleased hollow experimental lines. Bearpaw is a white-glumed, semi-dwarf (*Rht1*) wheat with medium maturity. Bearpaw performs well in locations were sawfly cutting has occurred (Table 3). Stem solidness is similar to Rampart (Table 3). Bearpaw has average test weight and protein, and below average winter hardiness (Table 4). Bearpaw is susceptible to prevalent races of stripe and leaf rust, but resistant to stem rust. Bearpaw is a high PPO variety with average mill and bake properties (Table 5). Montana State University Research Fees due on seed sold. PVP, Title V has been issued (Certificate #201200407).

Judee is a solid-stemmed hard red winter wheat with improved yield potential (Tables 1, 2) relative to Genou and Rampart. Judee was developed by the Montana Agricultural Experiment Station and released to seed growers in 2011. Judee's pedigree is 'Vanguard'/'Norstar'//'Judith' dwarf/3/ NuHorizon. Judee is a white-glumed, semi-dwarf (*Rht1*) wheat with medium maturity. Judee performs well in locations were sawfly cutting has occurred (Table 3). Stem solidness is good, intermediate between Rampart and Genou (Table 3). Judee has average test weight and protein, and below average winter hardiness (Table 4). Judee is susceptible to prevalent races of leaf rust and stem rust, but resistant to stripe rust. Judee is a high PPO variety with average mill and above average bake properties (Table 5).). Montana State University Research Fees due on seed sold. PVP, Title V has been issued (Certificate #201200161).

Variety						
	3	4	5	5	1,2,6 - non-	All Locations
	Huntley ^{1/}	Moccasin ^{2/}	Conrad ^{3/}	Havre ^{4/}	recommended ^{5/}	
location-years	37	35	25	24	31	152
Decade	67.5**	52.9**	65.0**	53.4*	63.2	60.6**
Judee	62.8	45.7	63.4*	53.4**	70.4**	59.0*
Bearpaw	65.4*	49.6	61.6*	52.2*	62.2	58.4
Genou	57.1	43.2	59.8	51.0	58.7	53.7
Rampart	57.4	40.9	56.9	48.6	64.0	53.5
LSD (0.05)	2.6	2.0	3.5	2.1	6.0	1.7

Table 1. Yield of Bearpaw and Judee, 2009-2015, compared to a set of grown winter wheat varieties

** = 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 Forsyth, Fort Smith, Hardin area, Hysham, Lodge Grass, Molt, Rapelje

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

4/ includes data from North Havre, Loma

3/ includes data from Choteau, Cut Bank, The Knees, Shelby 5/ includes data from Bozeman, Dry Creek, Kalispell, Sidney, Williston

Table 2. Bearpaw and Judee: Yield Performance under Sawfly Pressure and % Sawfly Cutting (2009-2015)

		Y	′ield (bu/a)		Sawfly Cutting (%)					
Variety	Havre	Loma	Turner	Willow	Aver-	Havre	Loma	Turner	Willow	Aver-	
				Creek	age				Creek	age	
location-years	3	7	2	1	13	3	7	2	1	13	
Bearpaw	58.1	52.9*	38.1	34.6	50.4*	3	16*	12*	2*	11*	
Decade	58.3	56.0**	35.5	42.3*	52.3*	11	46	23	13	32	
Genou	59.1	48.5	38.1	36.2*	48.4	8	24*	13*	2*	17*	
Judee	62.8	54.4*	38.2	39.4*	52.7**	5	24*	5**	2*	15*	
Rampart	54.9	48.9	33.1	29.7	46.4	3	11**	6*	1**	8**	
LSD (0.05)	ns	4.7	ns	8.5	3.1	ns	19	6	7	10	

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Table 3. Stem solidness ratings of Bearpaw and Judee compared to other solid-stemmed varieties, (2011-2015)

	Stem Solidness Rating (scale 5-25, higher = more solid)							Stem Solidness by location, 2011-2015				
	2015	2014	2013	2012	2011	2011-15	Bozeman	Conrad	Havre	Loma	Moccasin	
location-years	7	8	8	8	4	35	9	5	9	3	9	
Warhorse	22.0**	22.1**	22.0*	20.4*	21.5**	21.6**	20.1**	22.4**	22.6*	20.9	21.9**	
Bearpaw	19.9	21.5*	21.7*	20.8*	21.0*	21.0*	19.0*	21.8*	22.5*	21.3	21.0*	
Rampart	18.7	21.4*	22.1**	21.0**	21.0*	20.9	17.5	21.9*	23.0**	21.0	21.5*	
Judee	19.3	20.8	21.0*	18.5	20.2*	19.9	17.4	21.1*	21.4	20.0	20.3	
WB Quake	19.2	21.0	20.2	18.9	18.1	19.6	16.8	20.9	21.4	20.3	19.8	
Genou	15.5	19.6	20.7	18.4	17.3	18.5	14.4	19.3	21.0	19.9	19.1	
LSD (0.05)	1.9	1.0	1.2	1.2	1.7	0.7	1.7	1.4	1.1	ns	1.0	

Table 4. Agronomic characteristics of Bearpaw and Judee, 2009-2015, compared to a set of grown winter wheat varieties

Variety	Test weight	Winter survival	Headi	ng date	Plant height	Lodging %	Protein %	Stripe rust	Coleoptile length
	ib/bu	70	Julian	Calendai	11 1		70	70	111
location-years	152	7	71		151	23	151	13	3
Bearpaw	59.2	48	165.2	14-Jun	30.6	21	13.2	46	3.0
Decade	59.3	61**	164.4	13-Jun	31.3	11	13.2	52	3.1
Genou	59.3	44	166.2	15-Jun	34.5	26	13.4	45	4.1
Judee	59.8**	31	165.6	15-Jun	31.0	15*	13.3	12**	3.7
Rampart	59.5*	39	166.2	15-Jun	34.2	26	13.8**	31	4.4
LSD (0.05)	0.3	12	0.3		0.3	8	0.2	11	0.3

Table 5. Mill and bake characteristics of Bearpaw and Judee, 2009-2014, compared to a set of grown winter wheat varieties

Variety	PPO ^{1/}	Kernel	Flour				Mixograph		Baking		
		hardness	yield	protein	ash	tolerance	mix time	absorption	mix time	absorption	volume
			%	%	%	(1-6)	min	%	min	%	сс
location-years	33	33	33	33	33	33	33	33	33	33	33
Bearpaw	0.361	81.3	68.7*	11.6	0.41	3.3	4.5	61.0	7.1	71.2	1022
Decade	0.399	76.8	67.7	11.7	0.41**	4.9**	7.9	65.1**	17.4	75.6**	1078
Genou	0.397	78.6	68.8**	11.9	0.41*	4.0	5.5	63.4	12.1	73.5	1100
Judee	0.381	79.2	67.0	11.8	0.41*	4.1	5.6	61.8	8.7	71.8	1144**
LSD (0.05)	ns	2.0	0.5	ns	0.01	0.4	0.5	0.9	1.2	0.9	22
** = indicates highe		' low is best for noodles									

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