MEMORANDUM

TO: **Wheat Cultivar Release & Recommendation Committee**

FROM: **Phil Bruckner and Jim Berg, Winter wheat breeders**

DATE: **January 28, 2015**

RE: **Changes in Montana Winter Wheat Recommended Variety List**

The following motion and supporting documentation is presented for consideration at the 2015 MAES Cultivar Release and Recommendation Meeting in Bozeman:

Motion: That Jagalene (1.6% of 2014 acreage), Norris (0.8%), Bynum (0), Promontory (0), and Genou (6.6%) be removed from the Montana Winter Wheat Recommended Variety List.

Discussion: The first four varieties removed based on lack of production in the state, and Genou removed based on stem rust susceptibility & poor performance (data attached).

Recommended Solid-Stemmed Winter Wheat Varieties

Phil Bruckner and Jim Berg, Winter Wheat Breeding Program, Montana State University
Small Grain QuickFacts: http://plantsciences.montana.edu./FoundationSeed (Updated 12/2014)

Table 1. Yield of Recommended Solid-Stemmed Winter Wheat varieties, 2010-2014[1/]

Shaded entries are MSU/MAES released varieties since 2011

Variety	Districts							All Locations
	1 Kalispell	2 Bozeman[2/]	3 Huntley[3/]	4 Moccasin[4/]	5 Conrad[5/]	5 Havre[5/]	6- Sidney & Williston	
location-years	5	11	26	23	19	17	6	107
Warhorse	**117.3****	**71.1****	**62.6***	**48.1****	**64.8***	**51.8***	53.7	**61.1****
WB-Quake	**113.0***	**67.4***	**62.6***	**45.9***	**65.2****	**53.1***	52.6	**60.2***
Judee	**111.3***	**70.0***	**62.0***	44.8	**65.0***	**54.3****	45.4	**59.8***
Bearpaw	70.6	**67.3***	**63.7****	**47.6***	**62.7***	**52.2***	54.1	58.4
Rampart	92.6	64.0	56.3	39.6	59.0	48.5	47.3	53.9
Genou	71.7	61.8	56.0	42.3	59.6	50.6	46.8	53.7
LSD (0.05)	**22.3**	**5.4**	**3.1**	**2.5**	**4.3**	**3.0**	**ns**	**2.0**

** = 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 2012-14 Sawfly , 2010-14 Intrastate and 2011-14 Off Station tests

2/ includes data from Dry Creek, Willow Creek

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

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

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

6/ includes data from North Havre, Loma, Turner

Table 2. 'Solid' Varieties: Yield Performance under Sawfly Pressure and % Sawfly Cutting (2010-2013)[1/]

Variety	Yield (bu/a)					Sawfly Cutting (%)				
	Havre	Loma	Turner	Willow Creek	Aver-age	Havre	Loma	Turner	Willow Creek	Aver-age
location-years	2	5	2	1	10	2	5	2	1	10
Judee	72.6	**56.4***	38.2	**39.4***	**54.3****	5	23	5	**2***	14
WBQuake	70.9	**57.4****	39.2	30.9	**53.8***	3	17	6	**2***	10
Warhorse	70.8	**56.3***	31.6	**43.2****	**52.9***	2	**6****	2	**1****	**4****
Bearpaw	68.4	**52.9***	38.1	34.6	**51.2***	4	19	12	**2***	13
Genou	66.2	49.1	38.1	**36.2***	49.0	11	21	13	**2***	16
Rampart	62.7	48.6	33.1	29.7	46.4	5	**13***	6	1	**9***
LSD (0.05)	**ns**	**6.6**	**ns**	**8.5**	**4.1**	**ns**	**9**	**ns**	**7**	**5**

1/ = limited sawfly cutting at Loma (2%) and Havre (4%) in 2014

Table 3. Stem solidness ratings of solid-stemmed varieties, (2010-2014)

	Stem Solidness Rating (scale 5-25, higher = more solid)						Stem Solidness by location, 2010-2014					
	2014	2013	2012	2011	2010	2010-14	Bozeman	Conrad	Havre	Loma	Moccasin	Sidney
location-years	8	8	8	4	5	33	8	5	8	3	8	1
Warhorse	**22.1****	**22.0***	**20.4***	**21.5****	**21.2***	**21.5****	**19.5****	**22.2****	**22.5***	20.9	**21.9****	**23.2****
Bearpaw	**21.5***	**21.7***	**20.8***	**21.0***	**22.0****	**21.4***	**19.4***	**22.1***	**22.9****	21.3	**21.2***	**23.1***
Rampart	**21.4***	**22.1****	**21.0****	**21.0***	19.5	**21.1***	**18.7***	**22.0***	**22.9***	21.0	**21.2***	**22.8***
Judee	20.8	**21.0***	18.5	**20.2***	18.9	19.9	17.4	**21.0***	21.2	20.0	20.1	**22.8***
WBQuake	21.0	20.2	18.9	18.1	19.5	19.7	17.1	**21.4***	21.4	20.3	19.2	**21.4***
Genou	19.6	20.7	18.4	17.3	16.3	18.8	15.5	19.2	21.0	19.9	19.2	19.2
LSD (0.05)	**1.0**	**1.2**	**1.2**	**1.7**	**1.0**	**0.6**	**1.3**	**1.6**	**1.2**	**ns**	**1.2**	**2.6**

** = indicates highest yielding variety within a column

* = indicates varieties yielding equal to highest yielding variety within a column based on Fisher's protected LSD (p=0.05)

Table 4. Agronomic characteristics of Recommended Solid-Stemmed Varieties, 2010-2014[1/]

Variety	Test weight	Winter survival	Heading date		Plant height	Lodging %	Protein	Saw fly cutting	Stripe rust	Coleoptile length
	lb/bu	%	Julian	Calendar	in		%	%	%	in
location-years	107	5	47		108	20	106	16	8	3
Bearpaw	59.3	**34***	167.0	16-Jun	30.4	23	13.5	9	54	3.0
Genou	59.3	27	168.1	17-Jun	34.3	27	13.7	11	55	4.1
Judee	**59.8****	27	167.3	16-Jun	31.0	**17***	13.6	10	**15***	3.7
Rampart	**59.7***	26	168.0	17-Jun	34.1	27	**14.1****	**6***	38	4.4
Warhorse	**59.5***	**36****	168.4	17-Jun	30.6	**10****	13.6	**3****	**14****	3.3
WBQuake	**59.5***	**35***	169.5	19-Jun	31.2	**16***	13.3	8	**24***	2.7
LSD (0.05)	**0.4**	**7**	**0.4**		**0.3**	**9**	**0.2**	**3**	**12**	**0.3**

1/ = includes 2012-14 Saw fly , 2010-14 Intrastate and 2011-14 Off Station tests

** = 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)

Table 5. Mill and bake characteristics of Recommended Solid-Stemmed Varieties, 2010-2013

Variety	PPO [1/]	Kernel	Flour			Mixograph			Baking		
		hardness	yield	protein	Ash	tolerance	mix time	absorption	mix time	absorption	volume
			%	%	%	(1-6)	min	%	min	%	cc
location-years	22	22	22	22	22	22	22	22	22	22	22
Bearpaw	0.292	83.8	67.4	11.3	0.42	**3.8***	4.8	60.5	7.2	70.7	1008
Genou	0.338	80.5	67.3	11.9	**0.42***	**4.0****	5.6	**63.5***	11.9	**73.5***	1092
Judee	0.296	80.0	65.3	11.6	**0.42***	**4.0****	5.8	61.3	8.6	71.3	**1129****
Rampart	0.294	82.1	67.7	**12.3****	0.42	**3.8***	6.0	**63.5****	12.3	**73.7****	**1106***
Warhorse	0.277	92.9	66.2	11.6	0.43	3.5	5.2	61.2	7.4	71.6	1062
WBQuake	0.342	78.9	**69.1****	11.6	**0.41****	3.5	5.5	61.9	9.8	71.8	1090
LSD (0.05)	**0.023**	**2.4**	**0.7**	**0.3**	**0.01**	**0.4**	**1.1**	**1.0**	**1.1**	**1.0**	**27**

** = 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