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**MEMORANDUM**

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

**FROM:** Phil Bruckner, Winter wheat breeder

**DATE:** January 9, 2007

**RE:** Motion to remove BigSky and Tiber from the list of winter wheat varieties recommended in Montana

The following motion and supporting documentation is presented for consideration at the 2007 Cultivar Release and Recommendation Meeting in Bozeman:

**Motion:** That BigSky and Tiber be removed from the list of varieties recommended in Montana for districts 2, 3, and 4.

**Description:** BigSky is currently recommended for production in districts 3, 4, and 5. Tiber is recommended for production in districts 2, 4, and 5. This motion would remove the recommendation for BigSky in districts 3 and 4 and the recommendation for Tiber in districts 2 and 4. The justification for removal from the recommended list is poor yield performance (Tables 1, 3-10) and stripe rust susceptibility (Table 2).

**Table 1. Performance of elite cultivars in the Montana Intrastate and Off-station nurseries, 2002-2006.**

Variety	Yield bu/a	Test weight lb/bu	Winter survival %	Heading date Julian	Plant height in	Lodging index (0-9)	Protein %	Coleop- tile length
Loc/ysrs	90	89	13	46	90	8	89	4
Yellowstone	65.1**	59.6	58.3	162.9	33.3	2.0*	13.0	2.7
Pryor	62.2	59.7	51.4	163.7	30.2	1.2**	12.6	2.7
Promontory	60.0	61.5**	43.9	161.6	32.4	2.0*	12.8	2.6
CDC Falcon	58.9	59.9	61.1*	161.5	29.5	1.7*	12.9	2.7
Neeley	58.6	59.5	50.4	164.3	34.0	2.4*	13.2	3.3
Paul	57.9	58.3	58.2	163.4	31.2	4.0	13.2	2.9
Rocky	57.8	61.4*	54.3	160.4	35.1	4.0	13.0	3.2
Jerry	56.9	59.6	65.9*	162.6	35.5	3.0	13.4	2.9
Genou	56.1	60.5	48.2	162.6	34.0	2.5	13.6	3.8*
Morgan	56.1	59.5	66.0**	164.5	34.3	2.4*	13.1	2.3
Tiber	55.6	60.7	53.1	164.0	36.4	2.7	13.5	3.4
NuSky (HWW)	54.8	59.7	58.2	163.8	34.4	3.0	13.2	2.6
BigSky	54.2	60.4	57.7	162.5	35.7	2.4*	13.9	3.5
Vanguard	53.5	60.4	41.2	162.2	34.3	2.9	14.1**	4.0**
LSD (0.05)	1.9	0.4	5.7	0.5	0.5	1.3	0.2	0.2
CV %	11.6	2.0	13.3	0.7	4.8	49.1	5.0	5.8

**Table 2. Stripe rust reaction of selected cultivars at Kalispell & Bozeman in 2005 & 2006.**

Data collected by by Qingwu Xue/Robert Stougaard & W. Grey.

Exp3501 Intrastate Test	BZN DR%	KAL DR%	DR%	Bzn&Kal	Kal DR%	BZN DR%	Average	OVERALL
STRIPE RUST	2006	2006	2006	2006	2005	2005	2005-06	RATING
Yellowstone	0.0	5.0	2.5	R	5.0	5	3.8	r
Promontory	5.0	3.0	4.0	R	3.0	5	4.0	r
Rampart	1.7	5.0	3.4	R	6.7	24	9.4	r
Jerry	5.0	18.3	11.7	MR	11.7	15	12.5	mr
Vanguard	13.3	6.7	10.0	MR	13.3	24	14.3	mr
Ledger	8.3	16.7	12.5	MR	10.0	44	19.8	mr
Pryor	26.7	11.7	19.2	MR	63.3	46	36.9	s
Rocky	3.3	53.3	28.3	S	60.0	40	39.2	s
CDC Falcon	28.3	43.3	35.8	S	63.3	44	44.7	vs
Genou	15.0	60.0	37.5	S	46.7	70	47.9	vs
<b>Tiber</b>	<b>18.3</b>	<b>50.0</b>	<b>34.2</b>	<b>S</b>	<b>70.0</b>	<b>64</b>	<b>50.6</b>	<b>vs</b>
Morgan	35.0	60.0	47.5	VS	78.3	54	56.8	vs
NuSky (HWW)	41.7	70.0	55.9	VS	70.0	64	61.4	vs
<b>BigSky</b>	<b>53.3</b>	<b>80.0</b>	<b>66.7</b>	<b>VS</b>	<b>85.0</b>	<b>56</b>	<b>68.6</b>	<b>vs</b>
Neeley	48.3	73.3	60.8	VS	93.3	76	72.7	vs
Paul	66.7	75.0	70.9	VS	95.0	74	77.7	vs

**Table 3. Kalispell (District 1) Agronomic Comparisons, 2002-2006.**

Variety	Yield bu/a	Test weight lb/bu	Winter survival %	Heading date Julian	Plant height in	Lodging index (0-9)	Protein %
Loc/yrs	5	5		5	5	2	5
Yellowstone	<b>107.3**</b>	<b>62.4*</b>		156.1	34.3	0.0	12.5
Promontory	<b>102.2*</b>	<b>63.8**</b>		154.8	34.0	0.3	12.3
Pryor	87.1	59.5		157.3	31.1	0.0	12.2
Rocky	85.6	<b>63.4*</b>		153.9	38.2	3.1	12.8
CDC Falcon	83.5	<b>60.7*</b>		154.6	30.7	0.0	12.0
Genou	82.7	<b>61.8*</b>		155.7	36.6	0.4	<b>12.9*</b>
<b>Tiber</b>	<b>82.6</b>	<b>61.5*</b>		<b>158.0</b>	<b>40.0</b>	<b>1.3</b>	<b>12.9*</b>
Jerry	82.3	<b>60.9*</b>		156.0	37.7	2.2	<b>13.0*</b>
Vanguard	80.5	<b>62.8*</b>		154.3	37.0	2.1	<b>13.5**</b>
Neeley	76.6	59.1		158.0	37.4	0.1	12.6
Morgan	71.9	59.2		158.4	35.9	1.2	12.7
<b>BigSky</b>	<b>69.5</b>	<b>59.8</b>		<b>156.8</b>	<b>39.1</b>	<b>0.3</b>	<b>13.2*</b>
Paul	64.9	57.1		156.5	32.1	2.9	<b>13.1*</b>
NuSky (HWW)	64.7	58.0		157.5	35.9	1.4	12.3
<b>LSD (0.05)</b>	<b>19.5</b>	<b>3.9</b>		<b>1.3</b>	<b>2.1</b>	<b>ns</b>	<b>0.7</b>
<b>CV %</b>	<b>18.8</b>	<b>5.1</b>		<b>0.7</b>	<b>4.6</b>	<b>187</b>	<b>4.1</b>

**Table 4. Bozeman and Off Stations (District 2) Agronomic Comparisons, 2002-2006**

Variety	Yield bu/a	Test weight lb/bu	Winter survival %	Heading date Julian	Plant height in	Lodging index (0-9)	Protein %
Loc/yrs	9	9		5	9	2	9
Yellowstone	<b>86.8**</b>	59.3		169.2	36.1	0.1	13.4
Promontory	<b>83.8*</b>	<b>61.7**</b>		166.8	35.0	0.1	12.9
Pryor	80.0	58.7		169.7	33.3	0.1	13.2
Rocky	77.9	60.9		165.9	38.9	2.5	13.2
Jerry	76.4	58.7		169.3	40.5	1.5	13.8
CDC Falcon	76.3	58.3		167.5	32.6	0.0	13.6
Neeley	76.2	59.8		169.7	38.4	0.9	13.6
Paul	76.0	57.7		169.4	34.4	2.7	13.5
<b>Tiber</b>	<b>75.1</b>	<b>60.2</b>		<b>169.8</b>	<b>40.9</b>	<b>0.7</b>	<b>14.2*</b>
Genou	74.1	59.9		167.5	37.9	1.0	13.7
NuSky (HWW)	72.7	58.9		169.4	38.3	0.7	13.9
Morgan	72.6	58.7		170.3	37.3	0.7	13.5
Vanguard	70.5	59.7		167.4	37.9	1.4	<b>14.7**</b>
<b>BigSky</b>	<b>69.5</b>	<b>59.5</b>		<b>168.3</b>	<b>39.4</b>	<b>0.1</b>	<b>14.2*</b>
LSD (0.05)	<b>5.8</b>	<b>0.8</b>		<b>1.0</b>	<b>1.6</b>	<b>1.6</b>	<b>0.5</b>
CV %	<b>8.1</b>	<b>1.5</b>		<b>0.5</b>	<b>4.6</b>	<b>83.8</b>	<b>4.1</b>

**Table 5. Huntley and Off Stations (District 3) Agronomic Comparisons, 2002-2006.**

Variety	Yield bu/a	Test weight lb/bu	Winter survival %	Heading date Julian	Plant height in	Lodging index (0-9)	Protein %
Loc/yrs	26	25		9	26	4	25
Yellowstone	<b>64.9**</b>	60.3		157.6	33.1	4.0	11.9
Pryor	<b>63.7*</b>	60.8		156.9	29.8	2.4	11.3
Neeley	59.6	60.5		158.8	33.5	4.2	11.9
Promontory	59.1	<b>62.0**</b>		155.8	32.5	3.8	11.6
Paul	58.0	59.5		156.9	30.5	5.3	11.8
CDC Falcon	57.1	60.8		155.4	29.2	3.4	11.8
Jerry	55.8	60.4		156.3	34.8	4.1	12.1
Genou	55.7	<b>61.6*</b>		156.7	33.6	4.3	12.2
Rocky	55.6	<b>61.7*</b>		154.2	34.4	5.2	12.1
<b>Tiber</b>	<b>55.3</b>	<b>61.5*</b>		<b>157.8</b>	<b>35.8</b>	<b>4.4</b>	<b>12.1</b>
Morgan	55.0	60.8		157.9	33.8	3.8	12.0
<b>BigSky</b>	<b>54.7</b>	<b>61.5*</b>		<b>155.9</b>	<b>35.4</b>	<b>4.7</b>	<b>12.5</b>
Vanguard	54.2	<b>61.6*</b>		156.1	34.1	4.1	<b>12.9**</b>
NuSky (HWW)	53.4	60.3		157.4	33.6	5.1	12.2
LSD (0.05)	<b>3.2</b>	<b>0.6</b>		<b>1.1</b>	<b>0.8</b>	<b>ns</b>	<b>0.4</b>
CV %	<b>10.2</b>	<b>1.8</b>		<b>0.7</b>	<b>4.4</b>	<b>31.5</b>	<b>5.8</b>

**Table 6. Moccasin and Off Stations (District 4) Agronomic Comparisons, 2002-2006**

Variety	Yield bu/a	Test weight lb/bu	Winter survival %	Heading date Julian	Plant height in	Lodging index (0-9)	Protein %
Loc/yrs	20	20	1	9	20		20
Yellowstone	<b>52.4**</b>	58.4	90.0	166.3	34.3		13.8
Pryor	<b>51.5*</b>	58.6	86.7	168.5	30.3		13.5
Promontory	50.2	<b>60.4*</b>	78.3	166.7	33.2		13.7
CDC Falcon	49.0	58.9	85.0	166.4	30.2		13.7
Paul	49.0	57.0	88.3	167.7	32.0		13.8
Neeley	48.9	58.2	86.7	168.7	34.1		14.1
Rocky	48.5	<b>60.5**</b>	81.7	165.0	36.5		14.0
Morgan	47.1	58.4	88.3	169.8	35.0		13.7
Jerry	46.6	58.5	88.3	167.4	35.5		14.2
<b>Tiber</b>	46.5	59.4	83.3	169.1	36.8		14.2
Genou	46.4	59.2	83.3	166.9	34.6		<b>14.5*</b>
NuSky (HWW)	46.4	59.2	85.0	168.9	34.8		13.4
<b>BigSky</b>	44.6	59.1	88.3	167.1	36.2		<b>14.6*</b>
Vanguard	44.4	59.1	83.3	166.8	34.6		<b>14.7**</b>
LSD (0.05)	<b>2.1</b>	<b>0.6</b>		<b>1.2</b>	<b>1.1</b>		<b>0.4</b>
CV %	<b>7.2</b>	<b>1.7</b>		<b>0.8</b>	<b>5.1</b>		<b>5.0</b>

**Table 7. Havre and Off Stations (District 5) Agronomic Comparisons, 2002-2006.**

Variety	Yield bu/a	Test weight lb/bu	Winter survival %	Heading date Julian	Plant height in	Lodging index (0-9)	Protein %
Loc/yrs	12	12	1	5	12		12
Yellowstone	<b>55.1**</b>	59.0	36.7	162.8	29.7		14.5
Pryor	<b>53.9*</b>	59.1	12.0	163.6	27.5		14.3
CDC Falcon	<b>52.6*</b>	59.3	41.7	160.9	26.1		14.3
Neeley	<b>52.4*</b>	58.9	17.0	162.6	29.1		14.4
Genou	<b>51.7*</b>	59.6	25.0	162.7	29.7		14.9
Rocky	<b>51.2*</b>	<b>61.3**</b>	25.0	160.1	30.1		14.0
NuSky (HWW)	50.5	59.7	23.3	163.2	30.8		14.8
Paul	50.3	57.7	43.3	162.9	26.8		14.9
Vanguard	49.8	59.8	20.0	161.7	30.1		<b>15.2</b>
Jerry	49.6	58.8	56.7	162.5	31.0		14.8
Promontory	49.3	<b>60.8*</b>	0.3	161.0	28.9		13.9
Morgan	49.0	58.3	48.3	164.4	30.5		14.8
<b>Tiber</b>	48.4	60.2	22.0	162.3	31.3		14.8
<b>BigSky</b>	48.0	59.6	38.3	162.0	30.9		<b>15.6</b>
LSD (0.05)	<b>4.2</b>	<b>0.7</b>		<b>1.2</b>	<b>1.4</b>		<b>0.5</b>
CV %	<b>10.1</b>	<b>1.5</b>		<b>0.6</b>	<b>5.8</b>		<b>4.5</b>

**Table 8. Conrad and The Knees (District 5) Agronomic Comparisons, 2002-2006.**

Variety	Yield bu/a	Test weight lb/bu	Winter survival %	Heading date Julian	Plant height in	Lodging index (0-9)	Protein %
Loc/yr	8	8	1	4	8		8
Pryor	<b>73.3**</b>	61.0	55.8	165.0	34.8		12.2
Paul	<b>73.1*</b>	59.9	58.9	165.8	35.8		12.6
Yellowstone	<b>72.3*</b>	59.9	44.7	165.3	37.8		12.5
CDC Falcon	<b>70.9*</b>	<b>61.8*</b>	60.3	163.5	33.1		12.8
Rocky	<b>70.0*</b>	<b>62.7**</b>	57.4	162.5	40.0		12.5
Neeley	<b>68.1*</b>	60.3	54.1	166.5	38.9		13.1
Promontory	<b>68.0*</b>	<b>62.5*</b>	46.0	163.8	36.6		12.5
Genou	67.5	<b>61.8*</b>	50.8	165.0	39.0		<b>13.2*</b>
<b>BigSky</b>	67.4	61.5	61.9	164.5	40.5		<b>13.5*</b>
NuSky (HWW)	65.3	60.0	49.2	165.8	39.4		12.9
Morgan	63.8	60.7	63.2	166.8	38.8		12.5
<b>Tiber</b>	<b>63.4</b>	<b>61.5</b>	<b>52.8</b>	<b>165.3</b>	<b>42.1</b>		<b>13.3*</b>
Vanguard	61.6	61.5	52.6	163.8	39.9		<b>13.7**</b>
Jerry	61.0	61.0	57.7	164.3	41.6		<b>13.2*</b>
<b>LSD (0.05)</b>	<b>5.6</b>	<b>1.0</b>		<b>1.4</b>	<b>1.6</b>		<b>0.6</b>
<b>CV %</b>	<b>8.3</b>	<b>1.6</b>		<b>0.6</b>	<b>3.7</b>		<b>5.0</b>

**Table 9. Sidney (District 6) Agronomic Comparisons, 2002-2006.**

Variety	Yield bu/a	Test weight lb/bu	Winter survival %	Heading date Julian	Plant height in	Lodging index (0-9)	Protein %
Loc/yr	5	5	5	5	5		5
Yellowstone	<b>60.7**</b>	60.3	<b>74.0*</b>	163.6	29.4		11.8
Pryor	<b>59.6*</b>	60.6	67.8	165.1	28.0		11.2
Jerry	<b>58.3*</b>	60.8	<b>81.2**</b>	163.2	32.4		12.9
CDC Falcon	<b>57.8*</b>	61.0	<b>75.8*</b>	162.0	27.0		11.9
Morgan	<b>57.5*</b>	60.4	<b>79.4*</b>	165.0	31.9		12.1
Paul	<b>56.3*</b>	59.7	<b>72.1*</b>	165.4	29.5		12.4
NuSky (HWW)	55.3	60.7	<b>76.1*</b>	164.7	31.9		12.9
Neeley	55.0	60.8	60.9	165.1	32.2		12.0
Rocky	53.6	<b>61.8*</b>	70.0	160.6	31.4		11.8
Promontory	53.1	<b>62.3**</b>	55.3	162.3	28.8		12.3
<b>BigSky</b>	51.8	<b>62.2*</b>	<b>72.5*</b>	163.8	32.5		12.8
<b>Tiber</b>	48.5	<b>61.7*</b>	66.7	165.5	33.5		<b>13.3*</b>
Genou	47.1	60.8	60.5	163.7	30.9		12.9
Vanguard	41.6	60.8	46.8	164.6	30.8		<b>13.8**</b>
<b>LSD (0.05)</b>	<b>4.9</b>	<b>0.7</b>	<b>10.7</b>	<b>1.0</b>	<b>1.4</b>		<b>0.8</b>
<b>CV %</b>	<b>7.2</b>	<b>1.0</b>	<b>12.3</b>	<b>0.5</b>	<b>3.6</b>		<b>5.1</b>

**Table 10. Williston, ND (District 6) Agronomic Comparisons, 2002-2006.**

Variety	Yield bu/a	Test weight lb/bu	Winter survival %	Heading date Julian	Plant height in	Lodging index (0-9)	Protein %
Loc/yrs	5	5	5	4	5		5
<b>Morgan</b>	<b>54.7**</b>	58.9	<b>52.3**</b>	165.3	31.6		14.1
<b>Jerry</b>	<b>53.9*</b>	59.5	<b>49.6*</b>	163.8	32.8		14.1
<b>Yellowstone</b>	<b>52.1*</b>	58.6	43.3	164.9	30.1		13.8
<b>CDC Falcon</b>	48.1	59.0	<b>45.6*</b>	162.8	25.7		13.3
<b>Paul</b>	47.8	57.7	41.0	165.3	28.7		14.3
<b>Neeley</b>	46.6	59.1	38.6	166.5	30.8		14.0
<b>NuSky (HWW)</b>	46.2	59.6	43.6	165.1	31.4		13.9
<b>Pryor</b>	44.6	58.2	35.1	166.3	27.0		13.5
<b>BigSky</b>	44.4	<b>60.6*</b>	39.9	163.9	32.4		<b>15.1**</b>
<b>Tiber</b>	43.8	<b>60.3*</b>	39.7	166.1	32.5		<b>14.6*</b>
<b>Rocky</b>	42.5	<b>60.6*</b>	38.4	163.0	30.7		13.5
<b>Promontory</b>	39.3	<b>60.9**</b>	33.8	162.6	28.3		13.4
<b>Genou</b>	38.9	58.9	32.9	164.6	30.3		<b>14.8*</b>
<b>Vanguard</b>	37.3	58.9	29.0	164.7	30.1		<b>15.0*</b>
<b>LSD (0.05)</b>	<b>5.8</b>	<b>0.9</b>	<b>6.7</b>	<b>1.8</b>	<b>1.3</b>		<b>0.5</b>
<b>CV %</b>	<b>9.9</b>	<b>1.2</b>	<b>13.2</b>	<b>0.8</b>	<b>3.3</b>		<b>3.0</b>

\*\* = indicates highest value within a column

ns = not significant at  $p \leq 0.05$

\* = indicates values equal to highest value within a column based on Fisher's protected LSD ( $p=0.05$ )