

## MONTANA COUNTIES



50 0 50 100 Miles

## Performance Evaluation and Recommendations for Spring Wheat

2014

**RECOMMENDED  
HARD RED AND DURUM SPRING WHEAT VARIETIES  
FOR MONTANA BY DISTRICT**

<u>HARD RED SPRING WHEAT</u>	<b>District</b>					
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>
Brennan (P) +	D				D	I
Choteau +		DI	DI	DI	DI	DI
Corbin */ (P)+				D	D	
Duclair +	D	D	D	D	D	D
Hank (P) +	DI	DI	DI	DI	DI	DI
Jedd (P) +	DI	DI	DI	DI	DI	DI
Kelby (P) +	D	I		D	D	
McNeal	DI	DI	DI	DI	DI	DI
ONeal (P) +			D	D	D	
SY Tyra (P) +	DI	DI	DI	DI	DI	DI
WestBred 926 (P)		DI	DI	DI		I
Vida +	D	D	D	D	D	D
Volt (P) +	I	I	I	I	I	I
WB Gunnison (P) +			D	D	D	D
WB9879CLP (P) + */		D	D	D	D	D

- I = Irrigated
- D = Dryland
- \*/ = Sawfly areas only
- (P) = A Private Variety
- + = A "Protected" variety under the Plant Variety Protection Act

# **SPRING WHEAT VARIETY PERFORMANCE SUMMARY IN MONTANA**

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## **INTRODUCTION**

The agronomic characteristics of spring wheat varieties evaluated by the Montana Agricultural Experiment Station are compared in this publication with other varieties commonly grown in the state. The objective of this summary is to help farmers select the varieties which will perform best in their area. Data from 2010-2013 is provided for each of the testing sites. Data for varieties grown in previous years can be found on this website: <http://plantsciences.montana.edu/Crops/2013data/2013SpringWheatVarieties.pdf>. The map on the cover shows the districts in the state for purposes of reference for specific areas of adaptation. A brief description of each variety is given which may include a variety's particular advantages or disadvantages. The information was extracted from data collected and analyzed from the Advanced Spring Wheat and Statewide Durum Wheat nurseries. These reports are prepared by research personnel of the Montana Agricultural Experiment Station.

## **VARIETY TESTING PROCEDURES**

### **Locations**

In 2013, the Advanced Spring Wheat nursery was planted at 9 Montana sites; including Bozeman (dryland and irrigated), Kalispell (high rainfall), Havre (dryland), Sidney (dryland and irrigated), Huntley (dryland), Moccasin (dryland) and Conrad (dryland). See page 25 for Research Center locations, soil types and miscellaneous nursery management information.

### **Experimental Design and Data Collection**

Varieties currently recommended, widely grown, recently released or owned (and entered on a fee basis) by private companies are evaluated for agronomic performance in the Advanced Spring Wheat and Statewide Durum nurseries. Also evaluated in these nurseries are experimental breeding lines tested against the check varieties. Nurseries are randomized separately at each location for statistical analysis.

Agronomic data collected throughout the growing season includes heading date, plant height, lodging, disease and insect reactions. Experimental plots are trimmed, measured and harvested with small plot combines. The grain is weighed for yield and test weight. One trait important to wheat growers is resistance to the wheat stem sawfly. The major mode of resistance is a solid versus hollow stemmed variety. To evaluate this trait we cut several stems of each variety and score them on a scale of 1=hollow, 2=2/5 solid, 3=3/5 solid, 4=4/5 solid and 5=solid. The cuts are made in the center of each internode, so there are 5 scores per stem. The five scores are added up to get a total number ranging from 5=very hollow up to 25=very solid. The most reliable solid stemmed varieties should have a total score of at least 18. Entries are submitted to the Cereal Quality Lab at MSU, Bozeman for protein, milling, baking and Asian noodle quality evaluation as needed. Data is analyzed and summarized for each location and overall comparisons are made to determine which varieties and/or experimental lines look promising for Montana producers. When sufficient data is collected and analyzed, promising varieties and/or lines are submitted to the MAES wheat variety release and recommendation committee.

## **WHEAT RECOMMENDATION PROCEDURE FOLLOWED BY THE MAES**

Recommendation of spring wheat varieties is determined on a yearly basis by the Montana Agricultural Experiment Station (MAES) Wheat Variety Release Committee. This 16 member committee is composed of one breeder, one cereal or forage quality scientist, one plant pathologist, one entomologist, one weed scientist, one cropping systems specialist, six Research Center agronomists, one manager from both the Montana Foundation Seed program and the Montana Seed Growers Association, one Montana Wheat and Barley Committee member and one representative from the Montana Agricultural Experiment Advisory Board.

A variety is eligible for recommendation when a minimum of 16 location-years of performance data is obtained from the MAES statewide spring wheat performance trials. Test results must indicate that the variety is equal to or superior in overall merit to specified check cultivars and has end-use quality equal to or exceeding currently recommended varieties. For varieties originating from private companies, recommendation is considered at the request of the company when adequate data is available.

Recommendations of varieties are considered on a case by case basis. Yield performance of a variety is an important criteria, but also considered are test weight, grain protein content, disease and pest resistance and end-use quality data. In general, yield needs to be at least equal to currently recommended varieties in a particular district, unless the variety is being recommended for a specific purpose; such as, sawfly resistance.

If a serious defect in the variety is identified during performance testing, the variety will not be recommended. Examples of defects resulting in non-recommendation include: high probability of low test weight, low grain protein, low baking quality, etc. Lack of variety recommendation by MAES may occur due to a decision by the originating company not to test the variety in statewide performance trials. In this case the lack of recommendation is due to inadequate or no data rather than a specific varietal defect.

**2010-2013 ADVANCED SPRING WHEAT NURSERY, Kalispell: District 1**

VARIETY	YIELD (BU/AC)				TEST WEIGHT (LB/BU)				PROTEIN (%)			
	2013	2012- 2013	2011- 2013	2010- 2013	2013	2012- 2013	2011- 2013	2010- 2013	2013	2012- 2013	2011- 2013	2010- 2013
Brennan	91.2	77.1	63.9	73.2	63.0	62.0	60.8	60.4	15.0	14.3	14.6	14.6
Choteau	106.7	73.9	56.4	65.8	61.1	59.1	56.0	56.8	15.4	14.9	15.7	15.5
Conan	102.7	67.9	49.7	55.9	59.5	57.8	55.2	56.2	14.4	14.4	15.1	15.0
Corbin	95.7	69.9	53.0	63.8	59.7	58.4	56.3	57.0	14.9	14.8	15.4	15.1
Duclair	114.1	85.1	67.0	75.5	61.1	59.1	56.8	57.3	14.6	14.9	15.5	15.3
Fortuna	88.6	74.3	57.9	64.7	61.8	61.4	59.4	59.3	15.5	14.4	15.5	15.2
Jedd	95.3	55.7	39.2	47.7	62.2	57.6	53.2	54.2	13.5	13.9	14.9	14.6
McNeal	107.9	82.5	63.0	68.5	61.4	60.2	57.1	57.7	16.2	15.0	15.7	15.6
Mott	96.3	65.2	48.3	57.2	62.9	61.0	58.1	58.3	15.2	14.4	15.7	15.4
Oneal	96.2	65.1	49.0	54.6	59.4	57.7	55.2	55.9	14.6	14.4	15.5	15.4
Reeder	103.6	83.3	70.3	78.6	62.3	61.7	59.8	60.0	15.5	15.2	15.8	15.6
SY Tyra	108.0	75.0	60.0	72.7	61.4	57.7	55.2	56.3	13.8	13.8	14.4	14.2
Vida	107.2	79.6	59.4	69.3	59.9	59.0	56.9	57.5	15.3	15.1	16.0	15.8
Volt	123.8	106.4	86.2	91.8	63.8	63.4	60.3	60.4	14.6	14.3	15.0	14.7
WB Gunnison	105.8	79.9	61.2	67.0	61.1	60.6	58.4	58.9	14.8	13.9	14.9	14.7
WB9879CL	111.8	80.9	60.3	67.1	61.6	59.8	55.9	56.6	15.1	14.7	15.9	15.7

**2011-2013 ADVANCED SPRING  
WHEAT NURSERY, Kalispell**

VARIETY	HEIGHT (IN)	HEAD DATE	STRIPE RUST
Brennan	32.0	180.4	46.2
Choteau	33.7	183.7	34.9
Conan	33.1	182.0	50.3
Corbin	33.9	181.7	45.5
Duclair	34.4	180.9	36.5
Fortuna	41.3	183.9	39.7
Jedd	27.4	180.9	81.7
McNeal	36.6	184.7	44.2
Mott	36.4	186.2	70.0
Oneal	33.2	184.7	64.1
Reeder	37.3	182.7	29.5
SY Tyra	31.0	182.9	57.5
Vida	35.5	183.5	31.5
Volt	33.2	185.1	12.9
WB Gunnison	33.4	181.4	41.3
WB9879CL	33.2	182.8	42.1

\* Data adjusted to 13% moisture

2010-2013 ADVANCED SPRING WHEAT NURSERY, Bozeman Dry : District 2

VARIETY	YIELD (BU/AC)				TEST WEIGHT (LB/BU)				PROTEIN (%)			
	2013	2012- 2013	2011- 2013	2010- 2013	2013	2012- 2013	2011- 2013	2010- 2013	2013	2012- 2013	2011- 2013	2010- 2013
VOLT	53.6	55.1	54.6	N/A	58.1	60.6	61.1	N/A	16.5	14.9	14.4	N/A
BRENNAN	58.1	56.8	52.9		59.8	60.8	61.2		15.6	15.2	15.3	
SY TYRA	49.1	55.7	56.5		58.0	60.0	60.7		14.9	14.1	13.9	
WB GUNNISON	47.9	52.3	51.2		58.5	59.7	60.0		15.3	14.5	14.6	
CONAN	43.0	44.0	41.8		56.8	58.7	59.1		16.3	15.4	15.3	
CORBIN	42.5	50.4	50.4		58.8	60.6	61.1		15.5	14.7	14.4	
ONEAL	49.7	54.7	53.8		56.0	58.5	59.1		14.8	14.8	14.8	
JEDD	41.7	47.5	49.1		58.3	60.4	61.0		15.6	14.9	14.5	
FORTUNA	48.6	47.4	45.9		59.2	60.7	60.9		15.7	15.5	15.4	
WB9879CLP	45.3	51.5	50.6		58.7	59.9	60.0		15.5	15.2	15.0	
REEDER	49.5	52.5	51.7		57.3	59.5	59.4		16.0	15.5	14.8	
MOTT	41.5	47.2	48.3		58.6	60.7	60.6		15.9	15.5	15.3	
MCNEAL	46.3	50.4	50.8		56.3	58.5	58.6		15.7	15.3	15.1	
CHOTEAU	45.8	50.0	50.0		57.9	59.9	60.0		15.7	15.4	15.4	
VIDA	46.8	55.8	55.7		57.3	59.7	59.9		15.4	14.8	14.8	
DUCLAIR	51.2	53.3	53.0		56.3	58.1	58.7		16.0	15.1	14.8	

2011-2013 ADVANCED SPRING WHEAT  
NURSERY, Bozeman Dry

VARIETY	HEIGHT (IN)	HEAD DATE	SOLID STEM SCORE
VOLT	29.2	190.3	7.4
BRENNAN	26.5	185.0	7.8
SY TYRA	25.8	187.7	17.3
WB GUNNISON	26.8	186.3	11.2
CONAN	27.7	186.3	10.1
CORBIN	29.4	185.7	11.9
ONEAL	29.9	188.0	8.7
JEDD	24.4	185.3	8.4
FORTUNA	37.2	187.3	19.4
WB9879CLP	29.0	187.0	23.3
REEDER	30.8	187.0	7.5
MOTT	31.1	188.7	17.2
MCNEAL	30.8	188.0	7.3
CHOTEAU	28.8	186.3	21.5
VIDA	30.3	187.7	11.0
DUCLAIR	30.5	185.0	20.2

**2010-2013 ADVANCED SPRING WHEAT NURSERY, HUNTLEY : District 3**

VARIETY	YIELD				TEST WEIGHT				PROTEIN			
	(BU/AC)				(LB/BU)				(%)			
	2013	2012-2013	2011-2013	2010-2013	2013	2012-2013	2011-2013	2010-2013	2013	2012-2013	2011-2013	2010-2013
VOLT	44.0	51.0	52.3	58.9	60.7	61.2	60.9	61.5	10.6	11.7	12.4	12.0
BRENNAN	40.1	49.7	51.8	55.5	62.0	62.5	61.4	61.8	11.6	12.9	13.4	13.2
SY TYRA	49.6	51.5	49.0	56.0	61.8	61.4	59.3	60.3	9.5	11.2	12.1	11.7
WB GUNNISON	49.1	49.7	49.5	55.5	61.2	60.4	59.8	60.5	10.6	11.8	12.6	12.1
CONAN	45.6	51.0	49.3	54.9	60.2	60.9	60.3	60.7	11.4	12.5	13.2	13.0
CORBIN	51.3	56.9	54.6	59.1	59.9	60.9	59.8	60.5	10.1	11.2	12.2	11.8
ONEAL	49.8	54.1	49.8	56.0	61.4	60.6	59.6	60.6	9.8	11.2	12.3	11.7
JEDD	46.6	50.1	49.1	55.8	61.2	60.9	59.8	60.6	9.9	11.5	12.3	11.9
FORTUNA	43.0	47.7	47.4	51.3	59.4	60.0	59.8	60.3	10.9	12.5	13.3	12.9
WB9879CLP	45.9	53.6	53.0	57.1	60.6	61.2	60.3	60.8	10.3	11.8	12.3	12.6
REEDER	45.0	53.3	53.0	56.9	61.0	61.0	60.1	60.9	10.3	11.7	12.7	12.3
MOTT	46.0	51.3	49.7	54.5	59.9	60.2	59.5	60.0	11.8	12.9	13.6	13.0
MCNEAL	49.9	52.6	48.3	54.4	60.2	59.3	58.4	59.4	10.1	11.6	12.2	11.8
CHOTEAU	48.7	51.4	52.3	57.9	60.6	60.9	59.7	60.4	10.8	12.2	13.0	12.6
VIDA	51.4	55.7	55.4	60.4	60.5	60.3	59.1	59.9	9.2	10.8	12.2	11.8
DUCLAIR	49.9	55.8	56.1	60.2	60.2	60.1	59.1	59.8	9.8	11.3	12.3	11.9

**2011-2013 ADVANCED SPRING WHEAT NURSERY, HUNTLEY**

VARIETY	HEIGHT (IN)	HEAD DATE
VOLT	30.3	171.0
BRENNAN	29.7	169.1
SY TYRA	28.8	171.7
WB GUNNISON	30.2	169.9
CONAN	30.8	169.8
CORBIN	32.5	169.4
ONEAL	32.6	171.1
JEDD	27.2	170.2
FORTUNA	39.4	170.0
WB9879CLP	31.0	171.5
REEDER	33.0	170.1
MOTT	35.0	171.7
MCNEAL	32.1	171.4
CHOTEAU	31.9	170.7
VIDA	32.2	170.9
DUCLAIR	32.4	169.3

**2010-2013 ADVANCED SPRING WHEAT NURSERY, MOCASSIN : District 4**

VARIETY	YIELD				TEST WEIGHT				PROTEIN			
	(BU/AC)				(LB/BU)				(%)			
	2013	2012-2013	2011-2013	2010-2013	2013	2012-2013	2011-2013	2010-2013	2013	2012-2013	2011-2013	2010-2013
VOLT	45.4	35.7	31.9	33.5	61.8	59.9	60.6	60.8	14.6	15.6	15.4	14.7
BRENNAN	47.3	36.3	31.3	33.6	61.6	59.0	60.4	60.5	15.0	16.2	16.2	15.0
SY TYRA	43.1	31.1	28.9	31.4	59.5	57.6	59.5	59.8	14.2	15.9	15.6	14.9
WB GUNNISON	47.0	38.6	34.5	36.2	60.0	58.2	59.2	59.2	14.8	15.5	15.2	14.7
CONAN	45.7	34.4	30.5	33.2	59.7	58.0	59.1	59.0	15.8	16.6	16.4	15.2
CORBIN	44.4	32.8	30.7	32.4	58.3	57.1	58.3	58.3	15.7	17.0	16.4	15.1
ONEAL	51.3	36.7	32.9	35.7	60.4	58.6	59.2	59.4	15.2	16.8	16.5	15.7
JEDD	48.2	35.0	31.6	34.0	60.3	58.6	59.9	59.9	14.4	16.3	16.1	15.2
FORTUNA	39.2	30.4	27.8	30.4	61.0	58.8	59.6	59.8	15.0	16.5	16.1	15.1
WB9879CLP	46.3	30.8	29.0	31.9	60.3	57.7	58.8	59.4	14.8	16.3	16.1	14.9
REEDER	41.1	32.8	30.3	33.0	59.9	57.9	59.1	59.5	15.5	16.6	16.3	15.4
MOTT	38.8	29.9	27.8	30.4	60.7	57.7	58.8	59.0	15.8	17.5	16.9	15.6
MCNEAL	43.2	33.6	30.5	33.1	59.0	57.0	58.2	58.3	15.6	17.2	16.4	15.4
CHOTEAU	43.4	31.2	28.8	31.7	59.7	57.0	58.3	58.8	14.9	16.4	16.1	15.0
VIDA	52.4	38.3	34.1	35.9	58.9	57.3	58.5	58.8	14.0	15.9	15.4	14.5
DUCLAIR	48.9	35.4	32.8	35.1	57.5	55.5	56.9	57.1	15.2	16.7	16.1	14.9

**2011-2013 ADVANCED SPRING WHEAT NURSERY, MOCASSIN**

VARIETY	HEIGHT (IN)	HEAD DATE
VOLT	23.2	184.2
BRENNAN	22.2	182.0
SY TYRA	21.0	184.4
WB GUNNISON	23.9	183.4
CONAN	23.5	182.9
CORBIN	23.5	182.1
ONEAL	23.9	183.9
JEDD	22.0	181.9
FORTUNA	27.9	184.0
WB9879CLP	22.9	183.9
REEDER	22.2	183.2
MOTT	24.1	184.4
MCNEAL	24.3	183.8
CHOTEAU	21.8	182.8
VIDA	23.4	184.6
DUCLAIR	23.8	181.7

**2010-2013 ADVANCED SPRING WHEAT NURSERY, Conrad : District 5**

VARIETY	YIELD (BU/AC)				TEST WEIGHT (LB/BU)				PROTEIN (%)			
	2013	2012- 2013	2011- 2013	2010- 2013	2013	2012- 2013	2011- 2013	2010- 2013	2013	2012- 2013	2011- 2013	2010- 2013
VOLT	78.0	79.5	77.2	72.0	62.8	63.4	62.7	62.8	12.2	12.1	12.4	12.7
BRENNAN	86.6	78.7	76.5	69.0	63.2	63.3	62.9	62.2	13.9	13.7	13.7	13.8
SY TYRA	67.2	74.7	72.5	71.8	61.9	62.6	61.5	61.0	12.4	12.1	12.1	12.2
WB GUNNISON	66.3	68.8	67.6	69.1	62.0	62.4	61.4	61.2	13.3	12.7	12.9	13.0
CONAN	67.1	68.7	66.5	65.2	59.7	60.6	60.5	60.5	14.0	13.7	13.5	13.6
CORBIN	73.8	76.2	73.8	72.6	60.3	61.6	60.6	60.3	13.7	13.1	13.6	13.6
ONEAL	63.8	71.8	69.5	67.1	60.1	61.4	60.8	61.2	13.9	13.0	13.2	13.2
JEDD	64.4	68.0	64.3	63.3	60.5	61.4	60.3	60.0	13.3	12.5	12.7	12.8
FORTUNA	74.5	68.6	66.6	63.7	62.1	62.1	61.8	61.3	13.6	13.1	13.3	13.6
WB9879CLP	73.7	75.1	70.9	72.0	59.9	61.2	60.6	60.6	13.8	13.4	13.6	13.6
REEDER	77.1	75.7	73.6	69.6	60.9	61.6	61.3	61.0	13.7	13.4	13.5	13.6
MOTT	70.1	70.9	66.7	60.7	60.9	61.3	60.5	60.3	13.5	13.4	13.5	13.7
MCNEAL	83.3	78.9	74.9	70.8	60.4	61.1	60.5	60.3	13.0	12.8	12.9	13.0
CHOTEAU	74.4	74.7	76.7	77.8	57.8	59.7	59.9	59.8	13.2	13.1	13.1	13.2
VIDA	79.6	79.8	75.3	71.7	58.9	60.5	60.3	60.0	12.7	12.5	12.5	12.8
DUCLAIR	74.4	74.4	75.6	76.6	58.5	59.8	59.8	59.5	13.6	13.1	13.1	13.3

**2011-2013 ADVANCED SPRING  
WHEAT NURSERY, Conrad**

VARIETY	HEIGHT (IN)	HEAD DATE
VOLT	30.7	186.1
BRENNAN	28.5	183.4
SY TYRA	28.1	185.4
WB GUNNISON	30.2	184.3
CONAN	31.5	184.3
CORBIN	31.8	184.3
ONEAL	32.6	185.0
JEDD	27.3	184.1
FORTUNA	38.5	185.4
WB9879CLP	31.0	185.0
REEDER	33.5	184.6
MOTT	35.9	185.4
MCNEAL	32.9	184.8
CHOTEAU	31.6	183.8
VIDA	33.1	185.6
DUCLAIR	32.0	182.5

**2010-2013 ADVANCED SPRING WHEAT NURSERY, SIDNEY (DRY) :District 6**

VARIETY	YIELD (BU/AC)				TEST WEIGHT (LB/BU)				PROTEIN (%)			
	2013	2012	2011- 2012	2010- 2012	2013	2012	2011- 2012	2010- 2012	2013	2012	2011- 2012	2010- 2012
VOLT	N/A	31.0	34.1	38.1	N/A	58.0	59.0	59.8	N/A	14.9	15.2	13.5
BRENNAN		43.9	45.0	44.1		60.0	60.5	60.7		14.2	14.8	14.2
SY TYRA		36.0	41.0	42.4		59.0	59.5	60.0		13.4	13.8	13.0
WB GUNNISON		38.2	35.4	37.5		58.5	58.8	60.0		13.9	14.5	13.2
CONAN		29.7	33.3	34.9		58.5	59.0	60.0		14.7	15.5	14.2
CORBIN		39.0	39.6	42.1		58.0	58.3	58.8		14.3	14.7	13.4
ONEAL		37.0	42.4	44.5		58.5	58.8	59.3		14.1	14.6	13.2
JEDD		36.5	38.2	40.8		59.5	59.5	60.0		13.5	14.4	13.1
FORTUNA		36.5	34.7	37.5		58.5	58.5	59.3		13.4	15.0	13.8
WB9879CLP		36.3	37.0	38.8		57.5	58.0	58.8		14.6	14.6	15
REEDER		41.3	45.2	45.9		58.5	59.0	59.8		13.2	14.4	13.6
MOTT		31.4	37.5	38.8		56.5	58.3	59.2		15.7	15.6	14.3
MCNEAL		35.8	37.5	38.1		56.0	57.0	58.0		14.4	14.9	13.6
CHOTEAU		37.3	40.1	41.9		57.5	58.8	59.5		14.1	14.8	13.7
VIDA		40.0	43.1	46.5		57.0	57.5	58.3		13.6	14.3	13.3
DUCLAIR		39.8	36.9	42.2		57.0	56.8	57.8		13.3	13.7	

**2011-2013 ADVANCED SPRING WHEAT  
NURSERY, Sidney Irrigated**

VARIETY	HEIGHT (IN)	HEAD DATE
VOLT	24.1	178.7
BRENNAN	25.3	174.6
SY TYRA	23.2	176.7
WB GUNNISON	25.3	176.7
CONAN	24.8	176.3
CORBIN	26.3	174.9
ONEAL	27.1	177.5
JEDD	23.4	175.4
FORTUNA	32.2	175.8
WB9879CLP	26.5	176.4
REEDER	26.9	176.0
MOTT	28.0	176.8
MCNEAL	27.8	176.8
CHOTEAU	25.7	175.4
VIDA	27.2	176.0
DUCLAIR	26.1	174.9

**2010-2013 ADVANCED SPRING WHEAT NURSERY, SIDNEY (IRRIGATED) :District 6**

VARIETY	YIELD (BU/AC)				TEST WEIGHT (LB/BU)				PROTEIN (%)			
	2013	2012	2011-2012	2010-2012	2013	2012	2011-2012	2010-2012	2013	2012	2011-2012	2010-2012
VOLT	N/A	38.7	38.0	52.2	N/A	57.6	57.3	58.2	N/A	15.7	15.8	15.3
BRENNAN		72.4	56.4	65.4		59.7	59.9	59.9		16.3	16.8	16.2
SY TYRA		64.9	54.5	61.9		60.1	60.1	59.7		14.8	15.1	14.5
WB GUNNISON		68.4	51.9	60.3		59.1	58.8	59.0		14.8	15.2	14.6
CONAN		58.7	48.3	56.6		58.6	59.1	59.4		16.3	16.3	15.7
CORBIN		61.7	47.8	52.4		58.6	58.1	57.9		15.8	16.2	15.4
ONEAL		68.3	54.0	58.5		57.9	57.7	56.6		15.6	15.9	15.5
JEDD		71.2	52.9	52.3		59.1	59.1	58.0		15.6	16.0	15.5
FORTUNA		50.3	39.3	48.9		58.3	57.2	57.6		15.9	16.4	15.7
WB9879CLP		64.2	56.4	61.2		57.2	57.4	57.6		15.8	16.2	15.5
REEDER		71.2	57.3	66.5		58.7	59.1	59.1		16.0	16.0	15.5
MOTT		54.4	51.7	58.0		58.2	59.1	59.1		15.6	15.9	15.0
MCNEAL		67.8	59.3	61.6		56.4	57.2	57.3		16.2	16.1	15.2
CHOTEAU		56.3	47.2	57.9		56.9	56.7	57.1		16.1	16.6	16.0
VIDA		66.8	55.9	59.9		57.9	57.7	57.3		14.8	15.1	15.1
DUCLAIR		60.7	49.6	61.5		56.6	56.3	57.0		15.7	15.8	

\* : No harvest in 2013 due to severe hail

**2011-2013 ADVANCED SPRING WHEAT NURSERY, Sidney Irrigated**

Variety	HEIGHT (IN)	HEAD DATE
VOLT	25.9	181.9
BRENNAN	26.6	178.6
SY TYRA	25.1	180.3
WB GUNNISON	27.5	180.3
CONAN	27.1	180.2
CORBIN	26.5	179.5
ONEAL	28.2	180.5
JEDD	22.4	179.4
FORTUNA	32.9	180.2
WB9879CLP	27.6	181.0
REEDER	29.3	180.4
MOTT	29.2	180.2
MCNEAL	30.2	181.1
CHOTEAU	28.1	180.1
VIDA	25.4	180.2
DUCLAIR	26.7	178.9

**ADDITIONAL DESCRIPTIVE INFORMATION ON  
SPRING WHEAT VARIETIES**  
*Hard Red Spring Wheats*

**AP604 CL** - AP604 CL was developed and released to AgriPro Associates in 2007. It is a CLEARFIELD (CL) wheat derived from a cross between two CL lines, AP601 CL and AP602 CL. AP604 CL contains patented traits and will be managed under a Stewardship Agreement. AP604 CL is a white chaffed, hollow stemmed wheat with an intermediate semi dwarf height. AP604 CL heads 3 days earlier than Reeder and yields competitively on dryland locations across Montana. In disease nurseries in North Dakota, AP604 CL shows moderate resistance to foliar diseases but shows moderate susceptibility to leaf rust and fusarium head blight. Test weight and protein are good and it exhibits acceptable milling and baking quality. This variety is protected under the Plant Variety Protection Act and can only be sold or advertised by variety name as a class of certified seed.

**BRENNAN** - Brennan was developed by Syngenta Seeds, Inc. and released to AgriPro Associates in 2009. Brennan was derived from the cross "Reeder//China Scab #140/N90-0690". It is a hollow stemmed, semidwarf, hard red spring variety that has shown good adaptation across the northern plains including several areas in Montana. It is resistant to stem and leaf rust and has good tolerance to leaf spotting diseases. Its scab rating is intermediate which would make it a good choice for use under irrigation. Brennan has acceptable overall breadmaking quality. This variety is protected under the Plant Variety Protection Act and can only be sold or advertised by variety name as a class of certified seed.

**CHOTEAU** – Developed and released by the Montana Agricultural Experiment Station in 2003. Choteau was derived from the cross of MT 9401/MT 9328. Choteau is a semidwarf hard red spring wheat with solid stems conferring tolerance to the wheat stem sawfly. The spike is lax and tapered with white awns and glumes. Kernels are red, ovate with a medium crease and brush. Choteau is resistant to the prevalent race of stem rust in Montana. Choteau has good grain protein and acceptable milling and baking quality. This variety is protected under the Plant Variety Protection Act and can only be sold or advertised by variety name as a class of certified seed.

**CONAN** - Developed and released by WestBred, LLC. in 1999. Conan was selected from the cross WestBred Rambo x WestBred 906R. Conan is a sawfly tolerant, white chaffed, semidwarf, hard red spring wheat. The spike is mid-dense, strap shaped and awned. The seeds are elliptical with rounded cheeks. The brush is long and collared. Conan is similar to WestBred Rambo in yield, but is 2 to 4 days earlier, .5 to .9 percentage points higher in protein, and has good milling and baking qualities. Conan is resistant to the prevalent races of stripe rust and leaf rust, and has shown good tolerance to Septoria and Tan spot. This variety is protected under the Plant Variety Protection Act.

**CORBIN** - Developed and released by WestBred, LLC in 2006. Corbin is a hard red spring wheat derived from the cross Border x Conan. This line is best adapted to the wheat stem sawfly areas of Montana. Corbin is a one gene semi-dwarf with moderately strong straw. Disease/sawfly ratings for Corbin show it to be moderately resistant to stripe rust and similar to Conan for sawfly tolerance. The head is strap shaped, lax, awned and inclined at maturity. The plant color is green and the leaves and stem have slight waxy coating. The chaff color is white. The glume is acuminate and the shoulders are elevated. The seed is red and elliptical with rounded cheeks. The brush is large with medium length hair and collared. The embryo is mid-sized, the crease is mid-wide and mid-deep. Milling and baking quality is acceptable for the market class being grown in Montana, as determined by the MSU Quality Lab. This variety is protected under the Plant Variety Protection Act.

**DUCLAIR** - Developed and released by the Montana Agricultural Experiment Station in 2011. Duclair was derived from a cross of Choteau//ND695/MT9433. Duclair is an awned semidwarf hard red spring wheat heading one day earlier than and growing ~ one inch taller than Choteau. Duclair generally has more solid stems than Fortuna but slightly less than Choteau. Duclair is resistant to the prevalent races of stem rust and has moderately good resistance to stripe rust in Montana. Duclair exhibits acceptable milling and baking traits. This variety is protected under the Plant Variety Protection Act and can only be sold or advertised by variety name as a class of certified seed.

**FORTUNA** - Developed from the cross, Rescue-Chinook x (Frontana x Kenya 58-Newthatch), made at North Dakota Agricultural Experiment Station with the Crops Research Division of USDA cooperating. A joint North Dakota-Montana release was made in 1966. Fortuna is beardless with white chaff and straw. It is a solid-stemmed variety, resistant to the wheat stem sawfly. Fortuna is susceptible to Septoria and black chaff fungus. It is a relatively high yielding variety with superior milling properties, and has acceptable baking properties.

**HANK** – Developed by WestBred, LLC. and released in 2000. Hank was derived from the cross of WestBred 926/WestBred 936. Hank is an early maturing white chaffed, awned, semidwarf hard red spring wheat. Seed of Hank is elliptical and long with rounded cheeks. The brush is large with long hair and the crease is medium in depth and width. Hank is resistant to stem rust, leaf rust, stripe rust and powdery mildew and has shown good tolerance to Dry Land Root Rot. Hank has good straw strength and is tolerant to shattering. Hank is tolerant to races of the Hessian fly found in the PNW region. Hank is susceptible to damage by the wheat stem sawfly. Hank is tolerant to the wild oat herbicide ‘Avenge’. The milling and baking qualities of Hank are acceptable. Hank is protected under the Plant Variety Protection Act (Certificate # 200000191).

**JEDD** – Jedd was developed by WestBred, LLC from the cross ‘4\*Hank/SWP965-001/Teal11A’ and released in 2008. Jedd contains two patented genes (L1B S653N and L1D S653N) that confer tolerance to the BASF grass herbicide “Beyond” (imazimox). Jedd is semidwarf with good lodging resistance and is medium in heading and maturity. Jedd yields well and has good test weight. Jedd is moderately susceptible to races of stripe rust in western Montana and has good tolerance to Hessian fly biotypes in Washington, but the reaction is unknown for Montana biotypes. Jedd has average grain protein and acceptable milling and baking quality. This variety is protected under the Plant Variety Protection Act and can only be sold or advertised by variety name as a class of certified seed.

**KELBY** – Kelby was developed by AgriPro and released to AgriPro Associates in 2006. Kelby was derived from the cross ‘N97-00117/3/n92-0098//Sumai 3/Dalen’. It is a hollow stemmed, semidwarf, hard red spring wheat. Kelby is an early heading spring wheat and maintains a good test weight across locations. Kelby has the Asian background (Sumai 3) for fusarium head blight resistance giving it an intermediate scab tolerance. It is resistant to stem and leaf rust and shows good tolerance to leaf spotting diseases. It shows moderate susceptibility to stripe rust. Kelby is susceptible to damage by the wheat stem sawfly. Grain protein of Kelby is good and the milling and baking quality is acceptable. This variety is protected under the Plant Variety Protection Act and can only be sold or advertised by variety name as a class of certified seed.

**KUNTZ** – Kuntz was developed by AgriPro and released to AgriPro Associates in 2007. Kuntz was derived from the cross 'N97-0214/3/N93-0338//Sumai3/Dalen'. It is a hollow stemmed, semidwarf, hard red spring wheat with very good straw strength. Kuntz has the Asian background (Sumai 3) for fusarium head blight resistance giving it an intermediate scab tolerance. Maturity of Kuntz is medium-early, similar to Reeder and two days earlier than McNeal. Test weight is average compared to other check varieties and the protein averages slightly lower than checks. Kuntz is resistant to stem rust, moderately resistant to leaf rust and shows good tolerance to leaf spotting diseases. It shows moderate susceptibility to stripe rust and is susceptible to damage by the wheat stem sawfly. Milling and baking quality of Kuntz is fair. This variety is protected under the Plant Variety Protection Act and can only be sold or advertised by variety name as a class of certified seed.

**McNEAL** - Developed from the cross RS6880/Glenman made by the Montana Agricultural Experiment Station. It was released in March 1995. McNeal is a semidwarf, hard red spring wheat with red chaff and tan straw. The spike is awned and mid-dense. The glumes are reddish brown with some white on the outer edges of the lemma and palea. Kernels are red, ovate, medium length with a short brush. The cheeks are slightly rounded with a medium crease. Under Montana growing conditions McNeal is moderately resistant to lodging. It is moderately resistant to prevalent races of stem rust and wheat streak mosaic virus. McNeal is moderately susceptible to leaf rust and stripe rust. It is susceptible to Russian wheat aphid and the wheat stem sawfly. Under some climatic conditions one white chaffed plant per 2,000 plants may appear in the field. McNeal's milling and baking qualities are acceptable by industry.

**ONEAL**- ONeal is a hard red spring wheat developed by WestBred, LLC from the cross 'McNeal/WestBred 906R' and was released in 2008. ONeal is a hollow stemmed, semidwarf wheat with red chaff. ONeal heads about the same as McNeal and one day later than Choteau. ONeal is susceptible to stripe rust. Test weight of ONeal is average with grain protein, milling and baking traits similar to McNeal. This variety is protected under the Plant Variety Protection Act and can only be sold or advertised by variety name as a class of certified seed.

**REEDER** - Developed by the North Dakota Agricultural Experiment Station, the cross involved a relative of 'Stoa', a NDSU experimental line and germplasm from a breeding program in Brazil. Reeder was released in 1999. Reeder is an awned, semidwarf hard red spring wheat. Reeder yields well especially in northeastern Montana and western North Dakota. Reeder has resistance to the upper midwest races of stem and leaf rust. Milling and baking qualities are acceptable. This variety is protected under the Plant Variety Protection Act and can only be sold or advertised by variety name as a class of certified seed.

**SY TYRA** - a hard red spring wheat initially developed at Montana State University for release by Syngenta Seeds, Inc. It originated from a marker assisted backcross project with the final cross as "Choteau/4\*Norpro". It has a semi-solid stem which confers some tolerance to the wheat stem sawfly. Yield performance has been very good statewide. Test weight has been very high averaging one pound heavier than Choteau. It has medium maturity similar to Reeder. It is a short semidwarf with very good straw strength. Protein levels have been slightly lower (.3%) than Vida. Overall milling and baking characteristics are acceptable. This variety is protected under the Plant Variety Protection Act and can only be sold or advertised by variety name as a class of certified seed.

**VIDA** - Vida was derived from the cross of Scholar/Reeder made in 1998 by the Montana Agricultural Experiment Station. Vida was released in 2005. Vida is a high yielding hard red spring with moderate resistance to leaf and stripe rust but is moderately susceptible to stem rust. Vida is a semidwarf wheat with white glumes and awns. Kernels are red, ovate with rounded cheeks and a mid-deep crease. Vida has good milling and baking characteristics. This variety is protected under the Plant Variety Protection Act and can only be sold or advertised by variety name as a class of certified seed.

**VOLT** – Volt is a hard red spring wheat developed by Dr. Peter Franck with the plant breeding company, PZO Pflanzenzucht Oberlimpurg, in Germany and has been thoroughly tested by WestBred, LLC and released in 2008. Volt is a high yielding semidwarf wheat under irrigated conditions with good tolerance to stripe rust and fusarium head blight. Volt heads four days later than Hank. Volt is a hollow stemmed wheat susceptible to wheat stem sawfly damage. Volt has fair milling and baking quality. This variety is protected under the Plant Variety Protection Act and can only be sold or advertised by variety name as a class of certified seed.

**WB GUNNISON** - Hard Red Spring Wheat developed by WestBred from the cross Conan/Agawam and released in 2011. WB-Gunnison is being released as a high quality hard red spring wheat that is intended to replace Conan and Corbin acres. For the 3 year period 2008 - 2010, (22 locations), the average per acre yield of WB-Gunnison in the MSU Intrastate Trials is 55.5 bushels, compared to Conan at 51.3 bushels and Corbin at 55.7 bushels. The average test weight has been 60.6 lbs, which is .5 pounds heavier than Conan and .6 lbs heavier than Corbin. Protein levels have averaged 13.8%, which is .4 percentage points lower than Conan and .2 percentage points lower than Corbin. The average plant height of WB-Gunnison is 30 inches, which is similar to Conan and Corbin. The average heading date of WB-Gunnison is similar to Corbin and 1 day earlier than Conan. Milling and baking quality data indicate that WB-Gunnison has acceptable quality. Disease/sawfly ratings for WB-Gunnison show it to be MR to stripe rust. WB-Gunnison is a hollow stemmed variety, but has high yields under wheat stem sawfly pressure due to relative non-preference in small plot nursery trials. This variety is protected under the Plant Variety Protection Act and can only be sold or advertised by variety name as a class of certified seed.

**WB9879CLP** - WB9879CLP was derived from the cross of Choteau\*3//Choteau/IMI8134 made in 2004 to be used as a Clearfield wheat. WB9879CLP is an awned semidwarf hard red spring wheat heading one and a half days later than Choteau while plant height is 30 inches the same as Choteau. WB9879CLP has solid stems similar to Choteau averaging 20-23 over two years. WB9879CLP exhibits acceptable milling and baking quality traits similar to Choteau. WB9879CLP is currently licensed exclusively to WestBred-Monsanto with PVP title V protection.

## **PLANT VARIETY PROTECTION (PVP)**

The developer of a new distinct variety may obtain protection (essentially a patent) for that variety if he/she chooses to do so, provided the variety meets the requirements of the Plant Variety Protection Act of 1970. This Act permits the owner or developer of a variety to prohibit others from selling, sexually multiplying, using for propagation for seed, or using to produce a hybrid, seed of his variety.

Two options, for plant variety protection, are available to the developer of the variety.

Under the first option, the developer of the variety or his/her agent may sell either certified or uncertified seed of the variety. If the developer of the variety has reason to believe that anyone is infringing on his/her rights, he/she may resort to civil action. The other option ("certification option") for protecting a variety utilizes the provision of Title V of the Federal Seed Act. A variety protected in this manner may be sold by variety name only as a class of certified seed. It is the responsibility of the seller to inform the buyer if the variety is protected. Each container of seed sold should be labeled with a tag indicating the type of protection which the owner has. Under the first option, the label will state: "Unauthorized Propagation Prohibited - U.S. Protected Variety." If the owner of the variety has chosen the other option for variety protection, the label will state, "Unauthorized Propagation Prohibited - To be Sold by Variety Name Only as a Class of Certified Seed - U.S. Protected Variety."

PLEASE NOTE: Varieties protected under the 1994 PVP act no longer can be sold without permission of the variety owner (the farmer exemption has been excluded)

A complete listing of all protected varieties is available in the "Official Journal of the Plant Variety Protection Office" which may be obtained upon request from:

Plant Variety Protection Office  
Warehouse Division, AMS  
U.S. Dept. of Agriculture  
National Agricultural Library  
Beltsville, MD 20705  
Phone: (301) 504-5518  
Internet: <http://www.ams.usda.gov/science/pvpo/pvpindex.htm>

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