

## MONTANA COUNTIES



# Performance Evaluation and Recommendations for Spring Wheat

2017

# **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 2012-2015 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/index.html>. 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 nursery. These reports are prepared by research personnel of the Montana Agricultural Experiment Station.

## **VARIETY TESTING PROCEDURES**

### **Locations**

Typically, the Advanced Spring Wheat nursery is planted at 8 Montana sites; including Bozeman (dryland), Kalispell (high rainfall), Havre (dryland), Sidney (dryland and irrigated), Huntley (dryland), Moccasin (dryland) and Conrad (dryland).

### **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 nursery. Also evaluated in these nurseries are experimental breeding lines tested against the check varieties

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. 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.

### ADDITIONAL DESCRIPTIVE INFORMATION ON SPRING WHEAT VARIETIES

#### *Hard Red Spring Wheats*

**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/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/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. 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.

**EGAN** – developed in response to identification of the orange wheat blossom midge (OWBM) as a serious yield and quality-reducing pest of spring wheat in the Flathead Valley. The source of resistance is a single gene, referred to as *Sm1*, which causes mortality of the young larvae feeding on developing seed. Egan has the pedigree (McNeal\*5/Glupro)\*2//CAP19/Choteau. Glupro was developed by North Dakota State University, and contains a chromosome segment from the wheat relative *Triticum dicoccoides*. CAP19 (Reeder/BW-277) was developed by North Dakota University and contains the *Sm1* gene for OWBM resistance. To avoid development of resistance in the OWBM to the effect of the *Sm1* gene, Egan should be grown in a 90:10 blend with an OWBM-susceptible spring wheat variety. 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/3/(Frontana//Kenya58/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 has acceptable baking properties.

**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.

**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.

**MOTT** – Developed by North Dakota State University and released by the North Dakota Agricultural Experiment Station in 2009. Mott was released primarily for its resistance to the wheat stem sawfly and adaptation to the western region of North Dakota. It is a medium-tall, awned wheat that matures approximately 2 days later than Reeder and Choteau. Mott is susceptible to moderately susceptible to prevalent races of leaf rust. It is resistant to moderately resistant to prevalent races of stem rust. It is susceptible to tan spot and resistant to Stagonospora leaf blotch. Mott has good milling and baking characteristics and better than average grain protein content.

**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 from the cross IAS#4/H567.71//Stoa/3/ND674. 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. 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.

**SY SOREN** – SY Soren is a hollow stemmed, hard red spring wheat developed by Syngenta Seeds, Inc. and released to AgriPro Associates in 2011. PVP, Title V certificate was issued in 2012. SY Soren was derived from the cross Norpro/Kelby. It has medium maturity and very good test weight. It is a short semidwarf, similar to Brennan. Straw strength is very good, between Kelby and Kuntz. It is resistant to stem rust and moderately resistant to leaf rust. It has

very good tolerance to Fusarium head blight. Overall quality of SY Soren 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.

**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** – A 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. 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.

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

VARIETY	DISTRICT					
	1	2	3	4	5	6
Brennan (P) +	D				D	I
Choteau +		DI	DI	DI	DI	DI
Corbin */(P)+				D	D	
Duclair +	D	D	D	D	D	D
Egan +	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
O'Neal (P) +			D	D	D	
SY Soren (P) +	D	D	D	D	D	D
SY Tyra (P) +	DI	DI	DI	DI	DI	DI
Westbred 926 (P)		DI	DI	DI		
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

## **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>



2013-2016 ADVANCED SPRING WHEAT NURSERY, KALISPELL : District 1

VARIETY	YIELD (BU/AC)				TEST WEIGHT (LB/BU)				PROTEIN (%)			
	2016	2015- 2016	2014- 2016	2013- 2016	2016	2015- 2016	2014- 2016	2013- 2016	2016	2015- 2016	2014- 2016	2013- 2016
BRENNAN	69.4	85.9	88.6	89.0	61.4	62.0	61.2	61.7	14.9	15.4	15.2	15.1
SY TYRA	85.6	96.0	97.7	100.8	<b>62.7</b>	<b>62.9</b>	61.9	61.8	14.1	14.2	14.0	13.9
SY SOREN	75.3	93.8	99.4	97.9	61.8	62.5	61.8	<b>62.1</b>	15.8	16.0	15.5	15.6
WB GUNNISON	96.7	104.6	108.4	108.1	61.1	62.3	<b>62.1</b>	61.9	13.9	14.6	14.1	14.3
CORBIN	80.8	97.8	103.7	102.7	61.9	62.3	61.8	61.3	15.3	15.1	14.5	14.6
THATCHER	75.6	84.8	85.8	81.5	60.8	61.0	60.4	60.3	15.0	15.6	15.0	15.3
FORTUNA	89.4	92.4	94.1	92.7	61.3	61.5	61.4	61.5	15.6	15.8	15.4	15.4
REEDER	96.6	105.4	105.1	104.5	61.7	62.3	61.8	61.9	15.2	15.0	14.8	15.0
MCNEAL	86.5	93.1	102.7	103.9	60.4	61.1	60.9	61.0	15.9	15.5	14.8	15.1
CHOTEAU	78.0	94.9	99.2	101.1	60.6	61.2	60.8	60.9	15.1	15.3	14.7	14.9
VIDA	96.2	<b>109.9</b>	<b>110.2</b>	<b>110.0</b>	60.9	61.3	60.8	60.6	15.1	15.4	15.0	15.1
DUCLAIR	90.7	106.4	106.4	108.0	60.4	60.6	60.3	60.5	14.9	15.4	15.0	14.9
EGAN	<b>100.8</b>	108.4	108.6	109.4	59.4	60.4	60.4	60.7	<b>15.8</b>	<b>16.4</b>	<b>16.1</b>	<b>16.2</b>
WB9879CLP	74.4	93.8	96.7	100.3	59.7	60.7	60.5	60.8	15.3	15.6	14.9	15.0

PLANT HEIGHT (IN)	HEADING DATE (JULIAN)	STRIPE RUST (%)	LODGING (%)
2013-2016			
31.9	<b>172.0</b>	14.5	0.0
31.8	174.9	18.6	0.0
33.1	174.7	17.1	0.0
35.1	174.0	13.0	0.0
35.9	173.7	14.6	5.8
<b>45.7</b>	178.8	<b>22.7</b>	<b>32.1</b>
43.5	174.6	7.9	17.2
37.4	174.4	12.3	1.1
35.6	176.0	16.4	0.0
35.3	174.7	17.0	0.8
36.1	175.8	15.0	8.5
35.3	172.6	16.6	2.3
36.7	176.4	3.5	0.4
34.6	174.4	14.4	0.0

\* Data adjusted to 13% moisture

2013-2016 ADVANCED SPRING WHEAT NURSERY, BOZEMAN : District 2

VARIETY	YIELD (BU/AC)				TEST WEIGHT (LB/BU)				PROTEIN (%)				PLANT HEIGHT (IN)	HEADING DATE (JULIAN)	SOLIDNESS (5-25)
	2016	2015- 2016	2014- 2016	2013- 2016	2016	2015- 2016	2014- 2016	2013- 2016	2016	2015- 2016	2014- 2016	2013- 2016			
BRENNAN	43.5	36.3	47.8	50.4	61.0	60.8	<u>61.3</u>	<u>60.9</u>	15.8	16.3	16.0	15.9	27.4	177.8	9.3
SY TYRA	46.8	41.1	53.5	52.4	61.6	<u>61.8</u>	<u>61.3</u>	60.5	13.8	14.1	14.2	14.4	25.1	179.8	17.4
SY SOREN	49.9	42.5	53.7	53.5	60.0	61.4	60.5	59.5	15.3	15.7	15.8	15.9	26.7	179.7	7.7
WB GUNNISON	49.3	44.1	53.6	52.2	60.2	61.0	60.2	59.8	14.1	14.1	14.2	14.5	26.7	179.0	11.2
CORBIN	52.7	45.3	53.3	50.6	<u>61.7</u>	61.7	61.1	60.5	14.3	14.5	14.8	15.0	29.5	178.1	11.8
THATCHER	41.8	39.6	42.3	40.7	58.3	58.6	58.0	56.9	14.6	14.5	14.8	15.3	<u>37.3</u>	183.6	7.4
FORTUNA	47.4	42.7	52.4	51.5	61.5	60.7	61.1	60.7	14.5	14.6	14.6	14.9	36.6	180.1	15.1
REEDER	49.3	42.2	52.9	52.1	60.8	60.9	60.2	59.5	15.0	15.2	15.4	15.6	29.2	180.4	7.9
MCNEAL	49.8	41.3	51.8	50.4	59.1	59.3	59.1	58.4	14.9	15.1	15.1	15.2	29.8	180.5	7.9
CHOTEAU	50.1	43.3	53.0	51.2	60.3	60.4	60.3	59.7	15.3	15.5	15.5	15.5	28.0	179.1	<u>19.4</u>
VIDA	<u>61.0</u>	<u>50.5</u>	<u>62.5</u>	<u>58.6</u>	60.6	60.7	59.8	59.2	14.3	14.8	14.8	15.0	29.9	180.0	11.3
DUCLAIR	46.5	42.1	52.5	52.2	57.7	58.9	59.5	58.7	15.0	14.8	14.6	15.0	29.9	<u>177.4</u>	16.4
EGAN	44.3	40.0	46.5	47.9	59.0	58.9	58.9	58.3	<u>16.3</u>	<u>16.7</u>	<u>16.9</u>	<u>16.9</u>	28.4	181.2	7.9
WB9879CLP	44.3	40.5	51.4	49.85	60.0	59.8	60.2	59.83	15.3	15.6	15.5	15.5	27.4	179.9	19.7

2013-2016 ADVANCED SPRING WHEAT NURSERY, HUNTLEY : District 3

VARIETY	YIELD (BU/AC)				TEST WEIGHT (LB/BU)				PROTEIN (%)				PLANT HEIGHT (IN)	HEADING DATE (JULIAN)
	2016	2015- 2016*	2014- 2016	2013- 2016	2016	2015- 2016*	2014- 2016	2013- 2016	2016	2015- 2016*	2014- 2016	2013- 2016		
BRENNAN	84.9	84.9	65.8	57.2	<u>63.7</u>	<u>63.7</u>	<u>58.6</u>	<u>59.7</u>	13.0	13.0	15.5	14.2	32.1	<u>165.5</u>
SY TYRA	81.7	81.7	57.1	54.6	63.2	63.2	56.3	58.1	10.9	10.9	14.0	12.5	30.2	167.9
SY SOREN	83.0	83.0	60.6	55.6	63.2	63.2	57.0	58.1	12.8	12.8	15.5	13.9	31.7	167.2
WB GUNNISON	86.8	86.8	63.4	58.6	62.6	62.6	57.0	58.4	12.6	12.6	14.8	13.4	31.8	166.6
CORBIN	87.5	87.5	65.8	61.0	63.5	63.5	56.6	57.7	11.3	11.3	14.8	13.2	34.1	166.3
THATCHER	54.0	54.0	41.6	39.1	62.3	62.3	55.9	56.8	13.8	13.8	16.4	14.7	<u>44.8</u>	169.2
FORTUNA	60.1	60.1	51.1	48.4	62.5	62.5	57.6	58.2	14.0	14.0	15.6	14.0	43.2	166.8
REEDER	87.4	87.4	64.8	58.2	63.3	63.3	57.0	58.3	12.4	12.4	15.0	13.4	35.3	166.3
MCNEAL	84.2	84.2	61.9	57.9	62.0	62.0	55.9	57.3	12.6	12.6	15.4	13.6	34.6	167.9
CHOTEAU	88.6	88.6	64.1	59.0	62.6	62.6	56.8	58.1	12.2	12.2	15.1	13.6	33.7	168.0
VIDA	89.0	89.0	66.6	61.5	61.7	61.7	55.2	56.9	11.6	11.6	14.6	12.8	34.8	167.6
DUCLAIR	<u>98.1</u>	<u>98.1</u>	<u>71.4</u>	<u>64.2</u>	62.1	62.1	56.2	57.5	12.0	12.0	15.0	13.2	34.9	165.7
EGAN	80.4	80.4	62.7	55.9	62.1	62.1	56.2	57.4	<u>14.3</u>	<u>14.3</u>	<u>17.3</u>	<u>15.3</u>	33.8	168.0
WB9879CLP	86.4	86.4	62.7	57.1	62.7	62.7	56.5	57.9	12.1	12.1	15.1	13.5	33.5	168.1

\* No planting in 2015

2013-2016 ADVANCED SPRING WHEAT NURSERY, MOCCASIN : District 4

VARIETY	YIELD (BU/AC)				TEST WEIGHT (LB/BU)				PROTEIN (%)				PLANT HEIGHT (IN)	HEADING DATE (JULIAN)
	2016	2015- 2016	2014- 2016	2013- 2016	2016	2015- 2016	2014- 2016	2013- 2016	2016	2015- 2016	2014- 2016	2013- 2016		
BRENNAN	32.9	29.5	33.9	37.3	63.3	61.6	61.4	<u>61.4</u>	12.5	15.0	15.5	15.4	27.6	177.1
SY TYRA	33.3	28.3	31.6	34.5	<u>64.3</u>	<u>62.7</u>	<u>61.7</u>	61.2	11.2	13.8	14.2	14.2	24.2	178.5
SY SOREN	30.1	26.8	31.5	34.2	61.9	60.4	59.9	59.7	13.1	15.8	15.8	15.8	26.4	178.6
WB GUNNISON	31.1	30.3	32.6	36.2	62.6	61.5	60.5	60.4	12.0	13.1	13.8	14.1	25.4	177.6
CORBIN	28.6	27.1	29.9	33.6	62.7	61.0	60.0	59.6	13.3	14.9	15.4	15.5	27.7	177.5
THATCHER	31.4	27.4	28.7	30.0	58.7	58.4	58.5	58.4	12.7	14.7	15.2	15.5	<u>32.8</u>	179.8
FORTUNA	25.6	27.1	31.1	33.1	61.4	60.7	60.6	60.7	12.4	13.2	13.9	14.2	32.3	178.3
REEDER	<u>35.4</u>	<u>32.3</u>	34.4	36.1	63.0	61.6	61.1	60.8	12.0	13.3	13.9	14.3	27.6	178.3
MCNEAL	32.4	31.0	34.6	36.7	61.8	60.3	59.4	59.3	12.3	13.7	14.7	14.9	28.6	178.4
CHOTEAU	27.6	26.7	30.3	33.6	62.4	60.7	60.2	60.1	13.3	14.8	15.0	15.0	26.3	177.9
VIDA	32.7	31.3	32.8	37.7	62.3	60.6	59.8	59.6	12.0	13.5	14.1	14.1	26.4	179.0
DUCLAIR	31.9	31.4	32.9	36.9	61.5	59.9	58.6	58.3	11.8	13.0	14.1	14.4	28.5	<u>176.7</u>
EGAN	27.3	28.0	31.2	33.0	61.4	60.0	59.4	59.4	<u>14.6</u>	<u>16.2</u>	<u>16.5</u>	<u>16.6</u>	26.5	178.8
WB9879CLP	34.4	30.7	<u>35.5</u>	<u>38.2</u>	61.9	60.8	60.7	60.6	13.5	14.7	15.1	15.0	25.5	178.8

2013-2016 ADVANCED SPRING WHEAT NURSERY, CONRAD : District 5

VARIETY	YIELD (BU/AC)				TEST WEIGHT (LB/BU)				PROTEIN (%)				PLANT HEIGHT (IN)	HEADING DATE (JULIAN)
	2016	2015- 2016	2014- 2016	2013- 2016	2016	2015- 2016	2014- 2016	2013- 2016	2016	2015- 2016	2014- 2016	2013- 2016		
BRENNAN	64.9	57.5	64.8	70.2	<u>64.6</u>	<u>64.1</u>	<u>63.1</u>	<u>63.1</u>	<u>14.6</u>	15.1	14.4	14.3	28.3	175.8
SY TYRA	59.9	62.5	72.0	70.8	63.0	62.2	61.4	61.5	13.2	13.7	12.7	12.7	27.6	177.4
SY SOREN	56.8	53.6	66.6	70.9	63.7	61.5	61.4	61.6	14.2	15.3	14.3	14.1	29.0	177.3
WB GUNNISON	66.3	59.1	69.1	68.4	63.5	62.1	62.2	62.1	12.4	13.5	12.9	13.0	30.4	176.1
CORBIN	65.6	58.8	71.8	72.3	64.2	62.1	62.0	61.6	13.1	14.0	13.4	13.5	30.4	175.8
THATCHER	49.5	48.2	53.6	56.9	62.4	60.7	59.9	59.9	13.0	14.0	13.7	13.6	<u>36.7</u>	179.6
FORTUNA	61.7	55.4	63.8	66.5	63.3	61.9	61.3	61.5	13.2	14.2	13.7	13.7	36.2	177.6
REEDER	63.3	59.3	74.4	75.1	63.2	61.9	61.8	61.6	13.7	14.7	13.6	13.6	31.8	176.9
MCNEAL	54.0	56.2	68.3	72.1	62.8	61.0	60.9	60.8	13.0	14.3	13.8	13.6	31.3	178.8
CHOTEAU	60.5	55.0	61.3	64.6	62.2	61.2	60.3	59.7	13.4	14.5	13.8	13.6	28.8	176.8
VIDA	<u>73.5</u>	<u>64.8</u>	<u>74.5</u>	<u>75.8</u>	62.6	60.7	60.9	60.4	13.3	14.5	13.2	13.1	31.7	177.9
DUCLAIR	60.0	54.8	68.1	69.7	60.5	58.8	59.5	59.2	13.6	14.8	13.7	13.7	30.7	<u>174.5</u>
EGAN	65.5	61.0	66.5	68.0	63.1	61.1	60.8	60.6	<u>14.6</u>	<u>15.7</u>	<u>14.9</u>	<u>14.9</u>	30.9	177.2
WB9879CLP	59.5	53.4	66.8	68.5	62.4	61.0	61.0	60.7	13.9	14.9	14.1	14.1	29.6	177.7

2013-2016 ADVANCED SPRING WHEAT NURSERY, HAVRE : District 5

VARIETY	YIELD (BU/AC)				TEST WEIGHT (LB/BU)				PROTEIN (%)				PLANT HEIGHT (IN)	HEADING DATE (JULIAN)	SAWFLY CUT (%)
	2016	2015- 2016	2014- 2016	2013- 2016	2016	2015- 2016	2014- 2016	2013- 2016	2016	2015- 2016	2014- 2016	2013- 2016			
BRENNAN	38.4	42.4	42.1	45.6	<u>59.8</u>	<u>58.2</u>	<u>59.3</u>	<u>60.3</u>	16.3	16.5	16.3	16.1	26.4	<u>172.3</u>	0.9
SY TYRA	32.8	37.3	40.3	46.3	55.8	54.7	56.9	58.7	16.3	16.4	16.0	15.3	26.0	174.6	0.4
SY SOREN	42.2	43.3	43.0	46.4	58.5	55.8	57.0	58.5	15.9	16.6	16.4	16.0	25.4	174.1	0.9
WB GUNNISON	34.0	36.9	39.0	43.4	56.8	56.5	57.0	58.4	15.0	15.8	15.6	15.2	26.0	174.0	0.2
CORBIN	45.7	<u>44.0</u>	42.3	46.5	58.6	56.0	57.1	58.5	15.0	16.2	16.2	15.6	27.9	173.0	0.4
THATCHER	32.3	30.8	31.5	34.9	55.6	52.9	53.5	55.5	16.0	17.1	16.9	16.4	<u>33.9</u>	177.3	2.1
FORTUNA	36.4	35.3	35.9	39.3	59.0	56.8	57.4	58.6	15.9	16.1	15.9	15.8	31.9	174.5	1.1
REEDER	44.7	43.5	44.2	48.9	58.2	56.3	57.0	58.5	15.1	16.2	16.1	15.9	28.4	174.8	1.7
MCNEAL	39.2	41.3	41.4	44.3	55.7	55.1	55.7	57.2	15.4	16.2	16.1	15.8	28.6	175.5	<u>4.3</u>
CHOTEAU	36.8	38.2	38.8	42.6	58.1	55.5	56.4	57.7	15.7	16.2	16.2	16.0	26.3	174.7	0.6
VIDA	40.5	43.2	<u>44.8</u>	<u>50.4</u>	56.5	55.2	56.3	57.8	15.6	16.1	15.8	15.3	27.9	175.6	1.3
DUCLAIR	38.6	40.9	42.9	47.6	57.5	55.0	56.0	57.3	15.4	16.2	16.0	15.6	27.3	173.8	0.6
EGAN	<u>46.5</u>	42.7	41.1	44.7	57.0	55.3	55.8	57.1	<u>17.4</u>	<u>17.8</u>	<u>17.6</u>	<u>17.2</u>	26.9	175.4	1.4
WB9879CLP	43.6	40.8	40.7	45.2	57.7	55.8	56.7	58.0	15.8	16.3	16.3	15.9	26.5	175.1	0.5

2013-2016 ADVANCED SPRING WHEAT NURSERY, SIDNEY (Dry) : District 6

VARIETY	YIELD (BU/AC)				TEST WEIGHT (LB/BU)				PROTEIN (%)				PLANT HEIGHT (IN)	HEADING DATE (JULIAN)
	2016	2015- 2016*	2014- 2016	2013- 2016*	2016	2015- 2016*	2014- 2016	2013- 2016*	2016	2015- 2016*	2014- 2016	2013- 2016*		
BRENNAN	44.4	44.4	46.7	46.7	<u>63.9</u>	<u>63.9</u>	62.7	62.7	13.6	13.6	12.9	12.9	29.2	170.4
SY TYRA	45.8	45.8	44.0	44.0	63.8	63.8	<u>62.9</u>	<u>62.9</u>	11.9	11.9	11.2	11.2	27.7	170.5
SY SOREN	41.6	41.6	44.1	44.1	63.7	63.7	62.1	62.1	12.7	12.7	12.2	12.2	26.4	170.7
WB GUNNISON	36.3	36.3	32.3	32.3	63.8	63.8	62.4	62.4	12.0	12.0	11.8	11.8	28.0	171.0
CORBIN	43.2	43.2	37.2	37.2	63.3	63.3	62.2	62.2	12.1	12.1	11.9	11.9	27.6	<u>170.0</u>
THATCHER	35.0	35.0	34.3	34.3	61.2	61.2	60.1	60.1	13.3	13.3	12.6	12.6	<u>36.4</u>	176.4
FORTUNA	38.8	38.8	40.7	40.7	62.7	62.7	61.9	61.9	13.4	13.4	12.8	12.8	<u>36.4</u>	171.4
REEDER	<u>50.7</u>	<u>50.7</u>	<u>48.4</u>	<u>48.4</u>	63.3	63.3	<u>62.9</u>	<u>62.9</u>	12.8	12.8	12.1	12.1	31.1	171.5
MCNEAL	44.5	44.5	43.7	43.7	61.7	61.7	60.9	60.9	13.5	13.5	12.4	12.4	29.3	171.7
CHOTEAU	46.2	46.2	42.7	42.7	62.5	62.5	61.5	61.5	12.4	12.4	12.4	12.4	28.5	170.5
VIDA	45.2	45.2	47.4	47.4	60.9	60.9	61.0	61.0	13.6	13.6	12.2	12.2	29.4	171.2
DUCLAIR	45.6	45.6	45.4	45.4	62.6	62.6	61.3	61.3	12.0	12.0	11.8	11.8	30.1	<u>170.0</u>
EGAN	37.4	37.4	35.6	35.6	61.9	61.9	61.2	61.2	<u>13.8</u>	<u>13.8</u>	<u>13.3</u>	<u>13.3</u>	29.7	171.9
WB9879CLP	39.7	39.7	36.2	36.2	63.5	63.5	62.0	62.0	11.9	11.9	12.4	12.4	27.2	171.2

\* No harvest in 2013 and 2015 due to severe hail

2013-2016 ADVANCED SPRING WHEAT NURSERY, SIDNEY (Irrigated) : District 6

VARIETY	YIELD (BU/AC)				TEST WEIGHT (LB/BU)				PROTEIN (%)				PLANT HEIGHT (IN)	HEADING DATE (JULIAN)
	2016	2015- 2016	2014- 2016	2013- 2016*	2016	2015- 2016	2014- 2016	2013- 2016*	2016	2015- 2016	2014- 2016	2013- 2016*		
BRENNAN	66.0	59.3	72.9	72.9	61.1	62.0	61.3	61.3	15.1	14.6	14.7	14.7	31.3	172.2
SY TYRA	71.9	62.6	76.8	76.8	60.1	61.7	60.8	60.8	13.3	13.1	13.2	13.2	31.1	173.2
SY SOREN	<b>72.8</b>	58.9	74.8	74.8	61.3	62.2	61.6	61.6	14.6	15.1	14.9	14.9	31.6	172.8
WB GUNNISON	60.6	63.3	76.8	76.8	<b>61.6</b>	<b>62.4</b>	<b>61.4</b>	<b>61.4</b>	13.8	13.8	13.8	13.8	32.3	173.7
CORBIN	59.7	60.3	72.3	72.3	60.3	61.4	60.8	60.8	14.6	14.6	14.4	14.4	34.2	172.4
THATCHER	50.6	44.4	53.5	53.5	58.8	59.9	59.3	59.3	15.0	15.4	15.2	15.2	<b>39.8</b>	177.6
FORTUNA	53.0	50.0	60.5	60.5	59.8	60.7	60.0	60.0	14.7	14.8	14.8	14.8	37.6	173.5
REEDER	70.7	60.9	78.5	78.5	61.5	62.2	61.4	61.4	15.3	15.5	15.2	15.2	36.0	173.5
MCNEAL	66.3	65.0	75.8	75.8	60.0	60.8	60.2	60.2	14.4	14.2	14.2	14.2	36.1	174.8
CHOTEAU	71.2	65.5	77.4	77.4	59.8	60.6	59.9	59.9	14.7	14.8	14.7	14.7	34.0	172.4
VIDA	59.8	54.9	71.2	71.2	58.6	59.6	59.2	59.2	15.2	15.4	15.0	15.0	34.7	174.6
DUCLAIR	70.8	<b>67.1</b>	<b>81.4</b>	<b>81.4</b>	60.3	60.8	60.2	60.2	14.3	14.4	14.2	14.2	34.9	<b>172.1</b>
EGAN	65.9	59.2	73.1	73.1	59.2	60.1	59.4	59.4	<b>16.1</b>	<b>16.0</b>	<b>16.0</b>	<b>16.0</b>	34.6	174.9
WB9879CLP	68.3	63.4	77.1	77.1	60.2	61.3	60.5	60.5	14.5	14.4	14.5	14.5	34.4	173.8

\* No harvest in 2013 due to severe hail