2017

Winter Wheat Variety Trial Archive

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2003 Winter Wheat Crop Performance Results

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Yields in 2003 were very good across most of South Dakota and an improvement over 2002. Moisture levels at most locations were at least adequate in the spring and early summer with favorable cool temperatures in June for crop growth. Central South Dakota suffered moisture stress as shown by low yields and test weights at Pierre, Tripp County, and Hayes (Table 1 and 2). Statewide, the average winter wheat yield (Crop Performance Testing Program) was 56 bu/A in 2003, or 17 bu/A better than in 2002. The better performing varieties in 2003 were Jagalene, Millennium, Wahoo, Expedition, and Wesley.

Stripe rust, a major problem in 2003, was favored by cool conditions in June. Stripe rust normally is not a major problem in South Dakota since it does not overwinter and is not favored by warmer temperatures in June. The Southern Great Plains produced large amounts of spores that blew north to infect South Dakota. Temperatures of 50 to about 62° F favored stripe rust development while daytime temperatures in the 80s with nighttime temperatures above 65° inhibited growth. Long stripes of small yellowish orange pustules of rust on the leaves are a common symptom. Stripe rust can spread rapidly in under

Table 1. Origin, disease reaction, and traits for winter wheat entries tested.

		Traits#				*Disease Reaction+*					
Variety	*Origin*	*Lodging Res*	*End-Use Qlty*	*Winter Hardiness*	*Coleoptile Score##*	*Wht Strk Msc*	*Tan Spot*	*Rust$ Str*	*Rust$ Lf*	*Rust$ Stm*	*PVP**
AP502 CL	AP-03	E	-	F-G	89	MS	S	-	S	MR	**
Alliance	NE-93	G	A@	G	76	MS	VS	MR	S	MS	Yes
Arapahoe	NE-88	F	G	G-E	83	S	S	MS	MR	MR	Yes
CDC Falcon	SK-98	G	-	G-E	85	-	-	MR	-	R	Can
Crimson	SD-97	G	G	G-E	110	MR	R	MR	S	MS	Yes
Expedition	SD-02	F	E	G-E	88	-	MS	MS	MS	R	**
Harding	SD-99	F-G	A	E	100	MR	MR	MS	MR	MR	**
Jagalene	AP-02	E	-	G	92	MR	MR	MR	MR	MR	Yes
Jerry	ND-01	F	G	E	92	-	-	MR	S	R	No
Millennium	NE-99	G	A	F-G	78	S	MS	MR	MS	MR	Yes
Nekota	NE/SD-94	G	G	G	87	MS	MR	S	S	MR	No
NuPlains~W	NE-99	G	A	G	72	S	S	MS	MS	MS	Yes
Ransom	ND-98	F	P	E	107	S	-	-	MR	MR	Yes
Tandem	SD-97	F-G	E	G	112	S	S	MR	S	MR	Yes
Trego~W	KS-99	F-G	E	F-G	80	S	MS	S	MR	R	Yes
Wahoo	NE/WY-01	G	-	G	91	S	-	MR	S	R	Yes
Wesley	NE-98	E	A	G-E	79	S	MR	MR	MS	R	No
SD97W604~W	SD-	E	E	G-E	66		-	-	-	MS	R

~ Hard white wheat variety. @ End-use: HR wheat= baking and HW wheat= noodles.
# E= excellent, A= acceptable, F= fair, G-good, P=poor. ## Percent of Harding(3.2").
+ R= resist., MR= mod.resist., M= inter., MS= mod.susc., S= susc., VS= very susc..
$ Rusts- stripe= str, leaf= lf, and stem= stm.
* Plant variety protection (PVP), title V, certification option - to be sold by variety name only as a class of certified seed.
** PVP application pending or anticipated.

favorable conditions with the flag leaf going from just a few spores to totally gone in about a week. Significant flag leaf damage during grain fill can easily lower test weight and yield. The varieties Nekota and Trego are susceptible. Alliance, Crimson, Jagalene, Millennium, Tandem, Wahoo and Wesley (Table 1) have some resistance.

Table 2. Hard red winter wheat variety performance testing averages 2003.

	Wall		*Bison*		*Hayes*		*Martin*		*Sturgis*		*Oelrichs*		*Kennebec*	
VARIETY	*b/a*	*twt*	*b/a*	*twt*	*b/a*	*twt*	*b/a*	*twt*	*b/a*	*twt*	*b/a*	*twt*	*b/a*	*twt*
AP502 CL	40	63	51	57	60	57	61	59	38	61	73	60	71	57
Alliance	44	62	53	59	54	55	69	60	44	60	71	62	73	59
Arapahoe	36	63	53	60	57	57	68	61	46	61	65	62	78	60
CDC Falcon	41	63	56	60	51	57	61	62	44	62	67	62	85	61
Crimson	42	63	53	62	38	57	60	63	40	60	69	64	66	62
Expedition	39	63	55	61	58	58	68	62	44	61	72	63	82	61
Harding	39	62	53	61	46	57	65	61	40	60	68	62	70	60
Jagalene	35	63	55	62	62	60	68	64	44	63	77	63	89	62
Jerry	41	62	50	61	47	58	59	61	40	60	57	61	75	61
Millennium	42	63	56	62	63	59	69	63	44	62	63	62	77	62
Nekota	42	64	51	60	52	59	60	61	42	61	70	63	68	58
NuPlains~W	44	63	49	63	50	61	58	63	41	63	64	65	60	61
Ransom	37	62	47	60	45	54	56	60	39	59	55	61	64	60
Tandem	43	62	52	61	49	61	68	62	42	63	66	62	65	62
Trego~W	38	63	57	63	55	58	70	62	43	62	70	63	74	60
Wahoo	40	61	54	60	54	55	75	60	45	59	71	60	81	59
Wesley	44	62	52	61	62	56	71	62	41	61	65	61	80	61
SD97W604~W	40	64	57	62	64	61	68	63	45	62	69	63	85	61
Test avg.*:	41	63	52	61	52	58	65	62	43	61	67	62	75	60

Table 3. Hard red winter wheat variety performance testing averages (continued).

	Brookings		*Highmore*		*Platte*		*Pierre*		*Tripp Co.*		*State-wide average*			
												Test		
VARIETY	*b/a*	*twt*	*b/a*	*twt*	*b/a*	*twt*	*b/a*	*twt*	*b/a*	*twt*	*Yield b/a*	*Wt. twt*	*Prot. pct*	
AP502 CL	63	58	40	57	61	54	36	53	43	53	53	57	13.4	#
Alliance	71	60	50	60	55	56	37	55	41	54	55	58	13.2	
Arapahoe	85	60	57	60	60	57	38	53	45	56	57	59	13.7	
CDC Falcon	83	60	53	61	60	56	36	52	47	56	57	59	13.5	
Crimson	85	62	48	63	55	62	42	56	47	61	54	61	14.4	
Expedition	79	62	51	59	64	57	37	56	46	55	58	60	13.5	
Harding	88	61	54	62	55	60	38	55	42	59	55	60	14.1	
Jagalene	90	61	58	62	65	59	33	54	46	57	60	61	13.3	
Jerry	87	60	57	61	57	59	36	55	46	58	54	60	13.8	
Millennium	91	61	57	62	69	59	38	55	50	59	60	61	13.3	
Nekota	79	62	49	61	62	58	34	55	49	57	55	60	12.9	
NuPlains~W	87	60	50	63	51	59	38	53	45	60	53	61	13.8	
Ransom	78	60	48	60	49	58	33	53	45	57	50	59	14.1	
Tandem	75	61	52	64	51	60	35	57	45	60	54	61	13.9	
Trego~W	76	62	52	61	61	58	33	54	43	57	56	60	13.1	
Wahoo	86	59	57	60	65	57	37	53	49	56	59	58	13.4	
Wesley	83	61	55	60	66	56	36	55	43	54	58	59	14.0	
SD97W604~W	90	61	51	62	73	59	36	54	50	57	61	61	13.5	
Test avg.*:	83	60	53	61	62	58	36	54	46	57	56	60	13.5	

~ A hard white (w) winter wheat. * Average of all entries including experimental lines.
# Average of Brookings, Highmore, Wall, Platte, Pierre, Kennebec, and Tripp County locations.

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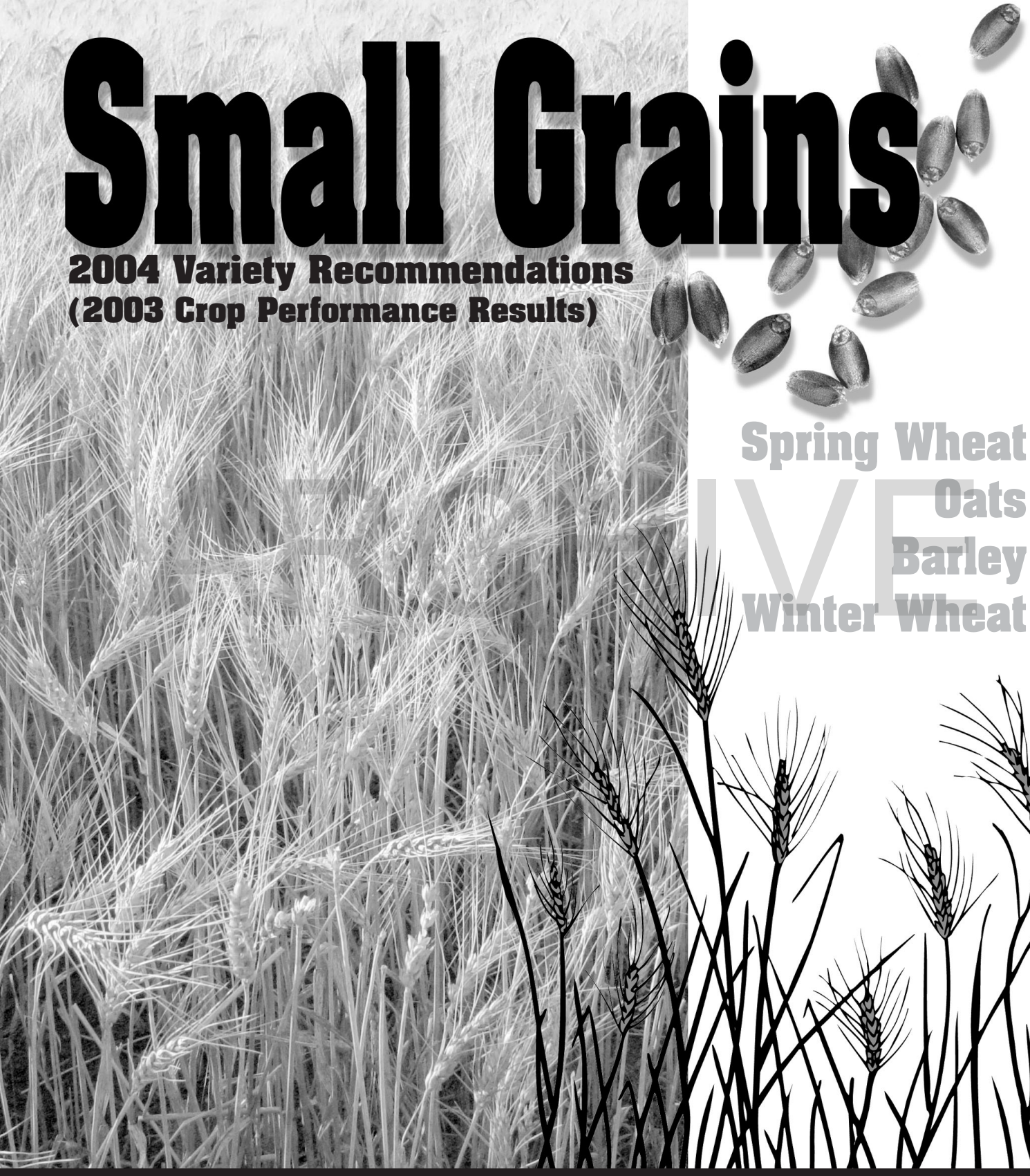
EC 774
Revised
Annually

Small Grains

2004 Variety Recommendations
(2003 Crop Performance Results)



Spring Wheat
Oats
Barley
Winter Wheat

South Dakota State University • Cooperative Extension Service • U.S. Department of Agriculture

This report is available on the World-Wide-Web at http://plantsci.sdstate.edu/varietytrials/vartrial.html

Small Grain Variety Recommendations for 2004

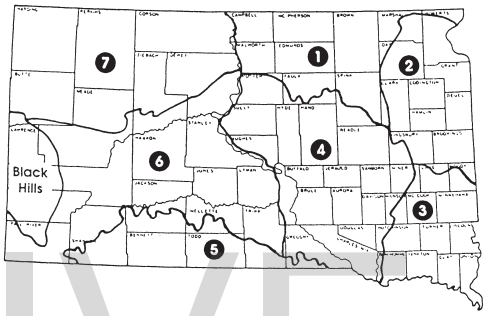
Recommendations are based on data obtained from the South Dakota State University Crop Performance Testing (CPT) Program and regional land-grant university nurseries. Variety performance depends on genetics and the environment. Environmental factors like temperature, moisture, plant pests, soil fertility, soil type, and management practices affect variety performance. Note the performance of recommended varieties in response to environmental conditions is generally better than the performance of other varieties. The better performance of a recommended variety, however, cannot always be guaranteed due to its complex response to the environment. Variety recommendations including the crop adaptation area (CAA) where they are most suited are listed below:

SPRING WHEAT

Recommended:		**Acceptable/Promising:**	
Variety	*CAA*	*Variety*	*CAA*
Briggs @	Statewide	Alsen @	1, 2, 7
Forge @	Statewide	Norpro @	1, 2, 7
Ingot @	Statewide	Parshall @	1, 7
Knudson @	Statewide	Walworth @	Statewide
Oxen @	Statewide		
Reeder @	Statewide		
Russ @	Statewide		

Crop Adaptation Areas for South Dakota

(revised 1992)



OATS

Recommended:		**Acceptable/Promising:**	
Variety	*CAA*	*Variety*	*CAA*
Don	1, 4, 5, 6, 7	Buff (hull-less)	Statewide
Jerry #	Statewide		
Loyal +	1, 2, 4, 6, 7		
Reeves	Statewide		

BARLEY

Recommended:		**Acceptable/Promising:**	
Variety	*CAA*	*Variety*	*CAA*
Excel @	1, 2, 4, 6, 7	Conlon @	1, 4, 6, 7
Lacey @	Statewide	Drummond @	Statewide
Robust @	1, 2, 4, 6, 7		

American Malting Barley Association approved malting varieties for South Dakota - 2003.

Conlon	*Lacey*
Drummond	*Legacy*
Excel	*Morex*
Foster	*Robust*

WINTER WHEAT revised

Recommended:		**Acceptable/Promising:**	
Variety	*CAA*	*Variety*	*CAA*
Alliance @	3, 4*, 5, 6	Crimson @	1*, 2*, 3*, 4*, 6, 7
Arapahoe @	1*, 3, 4*, 5, 6, 7*	Expedition @	1*, 4, 5, 6, 7*
Harding @	1*, 2*, 4, 7	Jagalene @	1*, 3, 4*, 5, 6, 7*
Millennium @	1*, 4*, 5, 6, 7	Trego (white) @	5, 6, 7*
Tandem @	1*, 3, 4*, 5, 6, 7*		
Wesley	1*, 3, 4*, 5, 6, 7*		

@ Plant Variety Protection (PVP) received, applied for, or anticipated; seed sales are restricted to classes of certified seed.

 # PVP non-title V status.

+ Exceptional crown rust resistance

** Plant into protective cover.*

Small Grains

2003 South Dakota Test Results: Variety Traits and Yield Averages

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Kevin K. Kirby, agricultural research manager

Variety selection is a fundamental element in a sound crop production program. This report contains variety recommendations, descriptions, and yield data for the spring-seeded small grains—hard red spring wheat, oat, and barley—and the fall-seeded small grain, hard red winter wheat.

Key factors in variety selection include yield, yield stability, maturity, straw strength, height, test weight, quality, and disease resistance. Yield is important; however, a variety with good disease resistance, straw strength, and high grain quality may be more profitable in some cases than the highest yielding variety.

Disease resistance information is based on reactions to prevalent races of a disease. Disease resistance is not constant, and new races may develop over time.

Variety recommendations (inside cover)

The Plant Science Department Variety Recommendation Committee makes small grain variety recommendations annually. Recommendations for a given crop may vary from one crop adaptation area (CAA) to another.

Crop adaptation areas (see map) are based on soil type, elevation, temperature, and rainfall. Varieties are recommended on the basis of growing season, average rainfall, disease frequency, and farming practices common to a crop adaptation area. Varieties are listed as "Recommended" or "Acceptable/Promising."

Varieties exhibiting a high level of agronomic performance are listed as "Recommended." Each test entry must meet the minimum criteria listed in Table A before it is eligible for the "Recommended" list. Varieties listed as "Acceptable/Promising" have performed well, but do not merit the "Recommended" list or are new varieties with a high performance potential but that do not meet the 3-year criteria (Table A) needed to make the "Recommended" list. A variety needs 2 years and 6 location-years in the SDSU crop performance test trials and/or regional nurseries before it is eligible for the "Acceptable/Promising" list.

Certified seed is the best source of seed and the only way farmers can be assured of the genetic purity of the variety purchased.

How to use this information

Use this report to select small grain varieties for South Dakota.

1. Check the variety-crop adaptation area (CAA) designations for the "Recommended" and "Acceptable/ Promising" lists. Compare these variety-CAA designations with the CAA map of South Dakota. **Identify the varieties suggested for your CAA.**

2. **Evaluate the varieties you selected for desirable traits.** Descriptive information (the traits table) is updated as changes occur. This information is obtained from the SDSU Crop Performance Testing Program and from research plots maintained by plant breeders and plant pathologists. Straw strength, protein, height, and test weight are based on statewide averages. Disease resistance continually changes; therefore, new information is reported as it becomes available. To evaluate maturity compare the relative maturity (heading) rating of each variety to the reference or check variety given.

   The Fusarium head blight tolerance rating for hard red spring wheat is also given. Note that the head

blight ratings show **there is presently no variety resistance to this disease**. It does, however, indicate **some varieties are more tolerant** of the disease than others. In addition, stripe rust became a major concern in 2003. Note the stripe rust reactions of the various varieties in the traits table.

3. **Evaluate each variety you select for yield performance**. Yields are obtained from the SDSU Crop Performance Testing Program. Both 1- and 3-year average yields for each variety tested are included for each test location if the variety was tested for 3 or more years. Yield values for each variety and location average and for each location least-significant-difference (LSD) value are rounded to the nearest bushel per acre.

Location averages, LSD values, and coefficients of variation (CV) values listed below each location yield column are calculated using all entries in each test. This includes both released varieties and experimental lines. Only data for released varieties are reported; therefore, the test average for a location yield column may not equal the average for the individual yields you observe in the table. Likewise, the test LSD values obtained from the location data are also based on both varieties and experimental lines. Varieties and experimental lines are included in the test results for you to see how known varieties compare to experimental lines that may be released in the near future.

Always compare yields from the same period of time. Compare 1-year yields with other 1-year yields, and 3-year yields with other 3-year yields. Do not compare a 1-year average with a 3-year average.

Before evaluating any data at a location, determine whether the data are valid. The CV value at the bottom of each yield column is a measure of experimental error. Yield tests with a CV of 16% or higher contain higher amounts of experimental error than tests with a CV of 10% or less. **Test sites with a CV greater than 15% are not included in the calculations for yield stability. At these sites, the top yielding varieties are not indicated in the table because the validity of the yield differences among the varieties is uncertain as a result of the high level of experimental error**.

The LSD value indicates whether one variety really out yields another. If a yield difference between two varieties is greater than the LSD value, the varieties differ in yield. If the yield difference is equal to or less than the LSD value, the varieties do not statistically differ in yield.

The LSD value may also be used to determine the top yield group for each location. For example, at each location the variety with the highest numerical yield is identified using 1- or 3-year averages. The reported test LSD value is subtracted from the highest yielding variety. Varieties with yields greater than this value (highest yield minus test LSD) are in the top yield group at that location.

For example, the top yielding entry at Brookings for 2003 was an experimental line (not reported) that yielded 67 bu/acre. Subtracting 6 bu/acre (the rounded-off LSD value) from the highest yield entry of 67 bu/acre equals 61 bu/acre. Therefore, all varieties listed in that column yielding 62 bushels or higher are in the top yield group that included Forge, Russ, and Walworth, and one experimental line not reported. Any variety yielding 61 bushels or less is not in the top yield group.

For convenience, varieties in the top yield group at each location have been determined by computer and are listed, with a **plus (+) sign**, in the yield columns of each yield table. Yields are rounded off and reported to the nearest bushel per acre. At some locations, a plus (+) may be absent for all values within a yield column. This indicates the top yielding entries were experimental lines; therefore, no plus signs are indicated because none of the released varieties under test were in the top yield-group.

Sometimes a LSD value is not given and the designation $$ is listed. This indicates yield differences were not significant (NS) or yield differences could not be detected. Therefore, all the varieties have a similar yielding potential and are considered to be in the top yield group. In some cases a high level of experimental error is indicated by a high CV value. In such a case the top yield group is not determined.

When evaluating yield performance, remember that environmental conditions at a test location seldom repeat themselves from year to year. Look at yield data from as many trial locations and years as possible.

Look at the performance or "yield stability" of a variety over several locations. A simple way of evaluating "yield stability" is to see how often a variety is in the

top-yield group over all test locations. For convenience, the top-yield percentage or the percentage of locations where a variety is in the top-yield group has been calculated. **The top yield percentage for each variety is given in the agronomic performance average table for each of the spring-seeded small grains.**

A variety exhibiting a relatively high top yield percentage will appear in the top yield group at many locations, but not necessarily at all locations. For example, a variety with a top yield percentage of 50% or more exhibits good yield stability. In contrast, a variety with a top yield percentage of 30% or less exhibits low yield stability.

Varieties with a high top yield percentage have the ability to adapt to a wide range of environmental conditions across many locations. In contrast, varieties with a low top yield percentage typically adapt to a narrow range of environments. **Look for varieties with a relatively high top-yield percentage of 50% or higher if possible.**

Origin of varieties tested

Public varieties were released from state Agricultural Experiment Stations. Abbreviations for each include:

Colorado--CO	Illinois--IL
Kansas--KS	Minnesota--MN
Nebraska--NE	North Dakota--ND
South Dakota--SD	Texas--TX
Wisconsin--WI	

Many public varieties were developed and released jointly by one or more experiment stations or USDA. Proprietary varieties were released by commercial companies. Company abbreviations for these include:

Agri Pro Wheat, Inc.—AP General Mills—GM
Busch Agricultural Resources, Inc.- BARI

Trial methods

A random complete block design was used in all trials. Plots were harvested with a small plot combine. Plot size differed between the East River and West River locations. East River plots were 5 feet wide and either 12 or 14 feet long;West River plots measured 5 feet wide by 25 feet long. Plots consisted of drill strips with 7- or 8-inch spacing at East River locations and 10-inch spacing at West River locations. Trial locations are listed in Table B. Yield means are generated from four variety replications per location per year.

Fertility and weed control programs differed between East and West River locations. East River plots were fertilized with 60 lb/ac of 18-46-0 (10.8 lb N and 27.6 lb P per acre) down the seed tube at seeding. At Brown County a post-emergence application of Bronate (1 pint) was applied on all the small grain plots. West River plots were fertilized with 6 gal of 10-34-0 per acre (6.6 lb N and 24 lb P per acre) at seeding. Post-emergence applications of 0.5 oz. of Harmony GT (wheat) and 1 pint of Bronate (oats and barley) per acre were applied at the 3- to 5- leaf stage. In addition, .67 pint per acre of Puma was used to control wild oat at Ralph and Bison.

Since seed size can vary greatly among varieties, a seed count is conducted on each entry and all seeding rates are adjusted accordingly. At East River locations the adjusted seeding rates are 28 pure live seeds per square foot; at West River locations rates are 22 pure live seeds per square foot. Under good seedbed preparation and favorable conditions these adjusted seeding rates result in seedling densities of about 25 and 20 plants per square foot at the East and West River locations, respectively. This results in a final stand of about 1.1 million and 870,000 plants per acre, respectively. If you have a poor seedbed, increase the spring grain seeding rate to 32 and 25 seeds per square foot at East and West River locations, respectively. If planting is delayed until May 1 or later, increase the seeding rates to 35 and 28 seeds per square foot at East and West River locations, respectively. Seeding dates are listed in Table B.

Performance trial highlights

HRS Wheat (Tables 1a – 1c). The top performing varieties for year 2003 (variety and top yield percentage) were **Alsen and Forge at 63%**, **Reeder and Russ at 50%**, and **Briggs, Oxen, and Walworth at 38%** (see agronomic performance tables for spring wheat). This means these varieties were in the top-yielding group at 63%, 50%, and 38% of the test locations for 2003. The best top-yield varieties over the past three years were **Forge, Reeder, and Russ at 100%**; **Oxen, Knudson, and Parshall at 83%**; and **Alsen, Briggs, Ingot, NorPro and Walworth at 67%** of the test locations. **Ingot** has consistently exhibited the highest statewide bushel weight in the SDSU-CPT trials for the last few years.

Oat (Tables 2a – 2c). In 2003, **Don, HiFi, and Jerry** exhibited a top yield percentage of **50%**. Over the past

3 years the highest top yield percentages were **Jerry at 80%; and Don, Loyal, and Reeves at 60%**.

NOTE: This year the hull-less varieties Buff and Paul exhibited the highest average bushel weights (43 and 42 lb, respectively) followed by the conventional varieties Hytest, Jerry, and Reeves (40, 38, and 38 lb, respectively).

Barley (Tables 3a – 3c). In 2003, the best top yield group percentages were **Haxby at 75%; Valier at 63%, and Conlon** and **Excel at 38%** of the locations tested. The better varieties over the past three years were **Lacey at 100%; Robust at 80%,** and **Conlon, Drummond, and Excel at 60%** of the test locations. The two-row varieties, Haxby and Conlon, tested 1 to 3 lb higher in bushel weight than the average across all varieties.

HRW Wheat (Tables 4a – 4c). In 2003, the better performing varieties were **Jagalene, Millennium, and Wahoo; followed by the varieties CDC Falcon, Expedition, Wesley, Alliance, and Arapahoe** that performed above average. The best varieties for the past 3 years were **Alliance, Arapahoe, CDC Falcon, Expedition, Millennium, Nekota, Tandem, Trego (white), Wahoo, and Wesley**. Limited subsoil moisture and a lack of timely seasonal moisture were major factors in some winter wheat production areas of South Dakota again this year.

Note the coleoptile length of the various varieties included in the agronomic performance table. The coleoptile length of 3.2 inches for Harding is used as the standard (100%) for making comparisons. The coleoptile length for the varieties Crimson, Ransom, and Tandem are slightly longer than for Harding; the coleoptile length for the varieties Alliance, NuPlains, Millennium, Trego, and Wesley are shorter compared to Harding.

The people who put this report together

The Variety Release/Recommendation Committee includes plant breeders, pathologists, research scientists, Extension agronomists, and managers of the Seed Certification Service and Foundation Seed Stocks Division.

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W. Miller (Oelrichs)
L. Novotny (Martin)
R. Rosenow (Ralph)
M. Stiegelmeier (Selby)
R. Vander Pol (Platte)
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Table A. Minimum criteria required for the recommended list in this publication.

Trait	Crop			
	HRS Wheat	Oats	Barley	HRW Wheat
Yield	3/15*	3/15	3/12	3/15
Bushel weight	3/15	3/15	3/12	3/15
Height	3/15	3/15	3/12	3/15
Lodging	WA	WA	WA	WA
Disease reaction	A	A	A	A
Protein	3/15	-	3/12	3/15
Quality data#	2/4	WA	WA	WA
Unigue traits$	WA	WA	WA	WA

* 3 years/15 location-years. # includes milling and baking.
$ traits that affect production and marketing.
A= annually, WA= when available.

Table B. 2003 Small grain seeding dates by crop and location.

Location	Crops			
	HRS Wheat	Oats	Barley	HRW Wheat
	seeding date			
Beresford	-	Apr 14	-	-
Bison	Apr 9	Apr 9	Apr 9	Sept 17
Brookings	Apr 11	Apr 11	Apr 11	Sept 21
Brown Co.	Apr 8	Apr 8	Apr 8	-
Dakota Lakes	-	-	-	Sept 18
Hayes	-	-	-	Sept 18
Highmore	Apr 10	Apr 10	Apr 10	Sept 19
Kennebec	-	-	-	Sept. 25
Martin	-	-	-	Sept 19
Oelrichs	-	-	-	Sept 26
Platte	-	-	-	Sept 24
Ralph	Apr 9	Apr 9	Apr 9	
Selby	Apr 14	Apr 14	Apr 14	abandoned
South Shore	Apr 15	Apr 15	Apr 15	Oct 3
Spink Co.	Apr 11	-	-	
Sturgis	-	-	-	Sept. 17
Tripp Co.	-	-	-	Sept 24
Wall	Apr 3	Apr 3	Apr 3	Sept 25

Table 1a. Spring wheat variety testing yield averages, 2001-2003.

	Location											
	Brookings		South Shore		Highmore		Spink Co.		Selby		Brown Co.	
Variety	'03	3-yr	'03	3-yr	'03	3-yr	'03	3-yr	'03	3-yr	'03	3-yr
	bu/a											
Alsen	48	45	53+	48+	30+	.	65+	46+	45	37	55+	53+
Briggs	53	51+	52+	51+	28	.	60	46+	54	43+	56+	50+
Chris,CK	40	37	43	35	21	.	49	36	37	32	36	39
Dapps	56	.	46	.	26	.	53	.	50	.	49	.
Forge	65+	59+	48	49+	30+	.	60	47+	60+	45+	50	51+
Granite	54	.	51+	.	27	.	58	.	58	.	48	.
Hanna	54	50	49	48+	28	.	57	45+	45	38	46	46+
Ingot	55	50	49	50+	28	.	54	43	58	43+	45	46+
Knudson	51	49	49	48+	22	.	64	48+	55	44+	55+	49+
Norpro	53	52+	52+	49+	27	.	57	48+	54	45+	47	45
Oklee	44	.	47	.	25	.	58	.	45	.	47	.
Oxen	47	44	50	48+	30+	.	65+	50+	46	40+	50	48+
Parshall	57	55+	47	47+	27	.	55	43	62+	43+	46	46+
Reeder	58	53+	53+	52+	28	.	60	49+	61+	47+	42	47+
Russ	64+	55+	52+	50+	35+	.	63	48+	60+	45+	47	48+
Walworth	65+	53+	50	49+	29	.	58	43	59+	44+	49	44
Test avg.*:	54	50	51	48	28	.	60	46	53	42	49	47
Lsd (5%) $:	6	7	5	6	5	.	5	6	5	7	5	7
Cv (%) #:	7	9	7	6	11	.	5	8	6	8	7	6

+ Entry is in top-yield group - seed yield comments.
* Test trial average - only released varieties are reported.
$ Lsd (5%) - see yield comments.
$$ Differences within a column are not significant.
A measure of experimental error; a value of 15% or less is best.

Table 1b. Spring wheat variety testing yield averages (continued).

							State wide						
							2003					Top yield	
			Location				Bu.			Yield		Group	
	Wall		Bison		Ralph		Prot.	Wt.	Ht.	-- bu/a --		--- % ---	
Variety	'03	3-yr	'03	3-yr	'03	3-yr	pct	lb	in.	'03	3-yr	'03	3-yr
	bu/a												
Alsen	36+	33+	44	.	29	.	15.2	61	31	45	41	63	67
Briggs	31	30	50+	.	33	.	14.5	61	33	46	43	38	67
Chris,CK	31	27	42	.	24	.	15.2	58	35	36	33	0	0
Dapps	31	.	40	.	27	.	15.6	60	34	42	.	0	.
Forge	38+	33+	49+	.	34	.	13.4	61	32	48	45	63	100
Granite	32	.	42	.	28	.	15.5	62	30	44	.	13	.
Hanna	33	29	46+	.	33	.	14.2	60	35	43	41	13	50
Ingot	36+	33+	49+	.	26	.	14.6	62	35	44	42	25	67
Knudson	29	31+	46+	.	28	.	14.6	61	29	44	43	25	83
Norpro	32	30	47+	.	29	.	14.2	58	28	44	43	25	67
Oklee	35	.	42	.	25	.	15.1	61	30	41	.	0	.
Oxen	37+	34+	45	.	26	.	14.7	59	29	44	42	38	83
Parshall	36+	31+	45	.	28	.	15.0	60	34	45	42	25	83
Reeder	37+	34+	49+	.	31	.	14.7	60	31	46	44	50	100
Russ	35	32+	45	.	32	.	14.1	60	33	48	44	50	100
Walworth	37+	33+	43	.	27	.	14.6	60	31	46	42	38	67
Test avg.*:	35	32	45	.	29	.	14.5	60	32	45	42	.	.
Lsd (5%) $:	5	4	5	.	.	.							
Cv (%) #:	10	7	8	.	20	.							

+ Entry is in top-yield group - seed yield comments.
* Test trial average - only released varieties are reported.
$ Lsd (5%) - see yield comments.
$$ Differences within a column are not significant.
A measure of experimental error; a value of 15% or less is best.
* Percent of time a variety appears in the top-yield group across eight (2003) or six (2001-2003) test sites when experimental error was low as indicated by c.v. values of 15% or less.

Table 1c. Origin, disease reaction, and other traits for hard red spring wheat entries for year 2003.

		-- Traits# --		----- Disease reaction+ -----				
		Rel. Hdg.	Ldg.	------ Rust ------			Fusarium Head	PVP
Variety	Origin	day	Resis.	Stripe	Leaf	Stem	Blight~	Status
Alsen	ND-00	+4	VG	R	MR	R	MR	Yes
Briggs	SD-02	0	F	MR	R	R	M	**
Chris,CK	MN-65	+3	P	-	MS	R	S	No
Dapps	ND-03	+2	VG	MR	MR	R	S	**
Forge	SD-97	-1	G	MS	MS	MR	MS	Yes
Granite	WP-02	+5	G	MS	R	MS	-	Yes
Hanna	ABI-03	+2	G	MS	MS	MR	-	Yes
Ingot	SD-98	-1	F	MR	MS	R	M*	Yes
Knudson	AP-01	+2	G	MS	MR	R	MS	Yes
Norpro	AP-00	+3	E	MR	MR	R	MS	Yes
Oklee	MN-03	+2	F	-	MS	-	-	**
Oxen	SD-96	+2	G	MR	MR	R	MS	Yes
Parshall	ND-99	+4	G	R	MS	R	MS	Yes
Russ	SD-95	+2	G	R	MR	R	MS	Yes
Reeder	ND-99	+3	G	MR	MS	R	MS	Yes
Walworth	SD-01	+2	F	S	MS	R	M	Yes

E= excellent, VG= very good, G= good, F= fair, P=poor.
+ R= resistant, MR= moderately resis., M= intermediate,
MS= mod. susceptible, S= susc.
~ Consistent tolerance to head blight in grain yield and quality.
* Plant variety protection (PVP), title V, certification option - to be sold by variety name only as a class of certified seed.
** PVP application pending or anticipated.

Table 2a. Oat variety testing yield averages, 2001-2003.

	Location											
	Brookings		South Shore		Beresford		Highmore		Selby		Brown Co.	
Variety	'03	3-yr	'03	3-yr	'03	3-yr	'03	3-yr	'03	3-yr	'03	3-yr
	bu/a											
Conventional varieties:												
Don	126	112	106+	88+	99	109+	28	.	119+	84	99	.
HiFi	130	.	68	.	101+	.	37	.	106	.	107+	.
Hytest	114	101	84	77	80	83	44+	.	90	72	65	.
Jerry	128	118+	97	87+	109+	108+	38	.	114+	87	103	.
Loyal	129	120+	81	88+	96	98	25	.	95	88	105+	.
Morton	112	.	92	.	96	.	39	.	108	.	93	.
Reeves	121	110	99	91+	94	100+	41+	.	103	78	73	.
Hulless varieties:												
Buff	99	88	73	70	82	80	49+	.	91	72	68	.
Paul	88	62	42	43	61	51	30	.	55	44	40	.
Test avg.*:	118	105	86	81	93	93	38	.	101	79	87	.
Lsd (5%) $:	9	13	10	16	11	16	8	.	8	15	12	.
Cv (%) #:	6	6	8	7	8	6	15	.	6	8	10	.

+ Entry is in top-yield group - seed yield comments.
* Test trial average - only released varieties are reported.
$ Lsd (5%) - see yield comments.
$$ Differences within a column are not significant.
A measure of experimental error; a value of 15% or less is best.

Table 2b. Oat variety testing yield averages (continued).

	Location				State wide						
					2003					Top Yield Group	
	Wall		Bison		Prot.	Bu. Wt.	Ht.	Yield			
	'03	3-yr	'03	3-yr	%	lb.	in.	'03	3-yr	'03	3yr
	bu/a							bu/a		%	
Conventional varieties:											
Don	79+	62+	72+	.	15.9	36	30	91	86	50	60
HiFi	77+	.	72+	.	15.2	35	34	87	.	50	.
Hytest	72	55+	61	.	18.4	40	37	76	74	13	20
Jerry	84+	62+	76+	.	16.4	38	35	93	88	50	80
Loyal	72	56+	73+	.	16.6	36	36	84	87	25	60
Morton	75+	.	76+	.	16.3	36	36	86	.	0	.
Reeves	73	58+	64	.	17.7	38	36	84	82	13	60
Hulless varieties:											
Buff Hls	67	50	56	.	17.8	43	32	73	69	13	0
Paul	52	37	50	.	19.4	41	34	52	49	0	0
Test avg.*:	71	55	69	.	17.0	38	35	83	80		
Lsd (5%) $:	10	10	12	.							
Cv (%) #:	10	10	12	.							

+ Entry is in top-yield group - seed yield comments.
* Test trial average - only released varieties are reported.
$ Lsd (5%) - see yield comments.
$$ Differences within a column are not significant.
A measure of experimental error; a value of 15% or less is best.
* Percent of time a variety appears in the top-yield group across eight (2003) or five (2001-2003) test sites when experimental error was low as indicated by c.v. values of 15% or less.

Table 2c. Origin, disease reaction, and other traits for 2003 oat entries.

		--- Traits# ---			-- Disease reaction+ --				
		Rel.				-- Rust --		Red	
Variety	Origin	Hdg. days	Ldg. Resis.	Grain Color	Smut	Stem	Crown	Leaf	PVP*
Conventional varieties:									
Don	IL-85	0	Good	White	R	MS	S	MR	No
Reeves	SD-02	+1	Good	White	MR	S	MR	MR	No
Hytest	SD-86	+3	Good	Lt.Cream	MR	MS	MS	MS	No
Jerry	ND-94	+4	Good	White	-	MS	MR	MS	Yes
Morton	ND-01	+6	Good	White	-	R	-	-	**
Loyal	SD-00	+7	Good	White	R	MS	R	S	No
HiFi	ND-01	+7	Good	White	-	R	MR	-	**
Hulless varieties:									
Buff Hls	SD-02	+2	Good	Hulless	R	S	MS	MR	No
Paul Hls	ND-94	+6	Good	Hulless	MS	MR	MS	S	Yes

+ R= resistant, MR= moderately resis., MS= mod. susceptible, S= susc.
* Plant variety protection (PVP), title v, certification option - to be sold by variety name only as a class of certified seed.
** PVP application pending or anticipated.

Table 3a. Barley variety testing yield averages, 2001-2003.

	Location									
	Brookings		South Shore		Highmore		Selby		Brown Co.	
Variety	'03	3-yr	'03	3-yr	'03	3-yr	'03	3-yr	'03	3-yr
Conlon	67	73	85+	80+	39	.	95	72+	64	66
Drummond	90	83	74	75+	46	.	100	76+	67	68
Excel	110+	100+	68	70	46	.	108+	79+	78	74+
Haxby	113+	.	86+	.	54+	.	111+	.	76	.
Lacey	93	93+	75	74+	46	.	103	80+	85+	78+
Robust	103+	92+	74	71	46	.	81	68+	74	72+
Valier	108+	.	78	.	47+	.	102	.	77	.
Test avg.*	100	88	76	74	45	.	101	75	75	72
Lsd (5%) $:	14	14	6	7	7	.	6	NS	5	8
Cv (%) #:	10	10	5	5	11	.	4	10	4	6

+ Entry is in top-yield group - seed yield comments.
* Test trial average - only released varieties are reported.
$ Lsd (5%) - see yield comments.
$$ Differences within a column are not significant.
A measure of experimental error; a value of 15% or less is best.

Table 3b. Barley variety testing yield averages (continued).

Variety	Location Wall '03	Wall 3-yr	Bison '03	Bison 3-yr	Ralph '03	Ralph 3-yr	State wide 2003 Prot. %	Bu. Wt. lb.	Ht. in.	Yield - bu/a - '03	Yield - bu/a - 3-yr	Top yield Group --- % --- '03	Top yield Group --- % --- 3-yr
	bu/a												
Conlon	54+	46+	62+	.	41	32	13.2	50	29	63	60	38	60
Drummond	50	40+	54	.	33	28	13.3	48	32	64	61	0	60
Excel	48	44+	53	.	46+	35	12.2	47	31	70	65	38	60
Haxby	59+	.	62+	.	34	.	12.6	52	28	74	.	75	.
Lacey	50	45+	61+	.	40	32	12.8	49	30	69	65	25	100
Robust	43	39+	58+	.	32	25	13.4	48	32	64	60	25	80
Valier	55+	.	58+	.	45+	.	14.0	50	28	71	.	63	.
Test avg.*:	52	43	58	.	40	31	12.9	49	30	68	63		
Lsd (5%) $:	7	NS	6	.	6	.							
Cv (%) #:	10	11	7	.	11	17							

+ Entry is in top-yield group - seed yield comments.
* Test trial average - only released varieties are reported.
$ Lsd (5%) - see yield comments.
$$ Differences within a column are not significant.
A measure of experimental error; a value of 15% or less is best.
* Percent of time a variety appears in the top-yield group across eight (2003) or five (2001-2003) test sites when experimental error was low as indicated by c.v. values of 15% or less.

Table 3c. Origin, disease reaction, and other traits for barley entries in 2003.

		--------- Traits# ---------								
		Rel.				- Disease Reaction+ -				
		Hdg.	Ldg.	End	Awn		Stem	Blotch		
Variety	Origin	days	Resis.	Use	Texture	Smut	Rust	Spot	Net	PVP
Conlon	ND-96	0	G	Malt	SS	S	S	MS	MR	Yes
Drummond	ND-00	+2	VG	Malt	SS	S	S	R	MS	Yes
Excel	MN-90	+3	VG	Malt	S	S	S	MR	S	Yes
Haxby	MT-02	+2	-	Feed	S	S	-	-	-	Yes
Lacey	MN-00	0	G	Malt	S	S	-	-	-	Yes
Robust	MN-83	+3	G	Malt	S	S	S	MR	S	Yes
Valier	MT-99	+4	-	Feed	R	S	-	-	-	**

E= excellent, G= good, VG= very good, F= fair, P=poor, S= smooth, SS= semi-smooth.

+ R= resistant, MR= moderately resis., M= intermediate, MS= mod. susceptible, S= susc.

* Plant variety protection (PVP), title V, certification option - to be sold by variety name only as a class of certified seed.

** PVP application pending or anticipated.

Table 4a. Hard red winter wheat variety performance testing yield averages, 2001-2003.

	Location									
	Wall		Bison	Hayes	Martin		Sturgis	Oelrichs		Kennebec
VARIETY	'03	3-yr	'03	'03	'03	3-yr	'03	'03	3-yr	'03
AP502 CL	40+	.	51	60+	61	.	38	73+	.	71
Alliance	44+	37+	53+	54+	69	55+	44+	71+	55+	73
Arapahoe	36+	36+	53+	57+	68	59+	46+	65	55+	78
CDC Falcon	41+	37+	56+	51	61	57+	44+	67	52+	85+
Crimson	42+	37+	53+	38	60	50	40	69	54+	66
Expedition	39+	35+	55+	58+	68	56+	44+	72+	57+	82+
Harding	39+	36+	53+	46	65	53	40	68	54+	70
Jagalene	35+	.	55+	62+	68	.	44+	77+	.	89+
Jerry	41+	.	50	47	59	.	40	57	.	75
Millennium	42+	40+	56+	63+	69	60+	44+	63	57+	77
Nekota	42+	36+	51	52	60	57+	42	70	56+	68
NuPlains~W	44+	37+	49	50	58	52	41	64	52+	60
Ransom	37+	34+	47	45	56	49	39	55	48+	64
Tandem	43+	39+	52+	49	68	57+	42	66	55+	65
Trego~W	38+	34+	57+	55	70	56+	43	70	55+	74
Wahoo	40+	39+	54+	54	75+	61+	45+	71+	59+	81+
Wesley	44+	38+	52+	62+	71	61+	41	65	55+	80+
Test avg.*:	41	36	52	52	65	55	43	67	54	75
Lsd (5%) $:	12	NS	6	8	4	7	4	6	NS	10
Cv (%) #:	NS	11	8	11	4	13	6	7	8	10

~W Indicates a hard white winter wheat.
+ Entry is in top-yield group - seed yield comments.
* Test average - only released varieties are reported.
$ Lsd (5%) - see yield comments. $$ Differences within a column are not significant.
# A measure of experimental error, a value of 15% or less is best.

Table 4b. Hard red winter wheat variety performance testing yield averages (continued).

	Location								2003		
	Brookings		Highmore		Platte	Pierre	Tripp Co.		Yield	TWT	Prot.#
VARIETY	'03	3-yr	'03	3-yr	'03	'03	'03	3-yr	b/a	lbs	pct
AP502 CL	63	.	40	.	61	36+	43	.	53	57	13.4
Alliance	71	67+	50	38	55	37+	41	47+	55	58	13.2
Arapahoe	85	73+	57+	43+	60	38+	45	42+	57	59	13.7
CDC Falcon	83	74+	53+	43+	60	36+	47	47+	57	59	13.5
Crimson	85	70+	48	37	55	42+	47	41+	54	61	14.4
Expedition	79	67+	51	35	64	37+	46	48+	58	60	13.5
Harding	88	68+	54+	38	55	38+	42	44+	55	60	14.1
Jagalene	90+	.	58+	.	65+	33+	46	.	60	61	13.3
Jerry	87	.	57+	.	57	36+	46	.	54	60	13.8
Millennium	91+	77+	57+	41+	69+	38+	50+	43+	60	61	13.3
Nekota	79	66+	49	35	62	34+	49+	43+	55	60	12.9
NuPlains~W	87	66+	50	37	51	38+	45	38+	53	61	13.8
Ransom	78	71+	48	38	49	33+	45	45+	50	59	14.1
Tandem	75	68+	52+	39+	51	35+	45	46+	54	61	13.9
Trego~W	76	70+	52+	35	61	33+	43	44+	56	60	13.1
Wahoo	86	73+	57+	42+	65+	37+	49+	42+	59	58	13.4
Wesley	83	72+	55+	38	66+	36+	43	45+	58	59	14.0
Test avg.*:	83	70	53	38	62	36	46	45	56	60	13.5
Lsd (5%) $:	10	NS	6	5	9	NS	5	NS	.	.	.
Cv (%) #:	9	11	9	13	11	12	8	14	.	.	.

Brookings, Highmore, Wall, Platte, Pierre, Kennebec, and Tripp Co. locations.

Table 4c. Origin, disease reaction, and traits for winter wheat entries tested in 2003.

		Traits#					Disease Reaction+					
Variety	Origin	Rel hdg	Ldg Res	End use Qlty	Wntr Hardy Rtg	Cole-optile Pct##	Wht Strk Msc	Tan Spot	Rust Str	Rust Lf	Rust Stm	PVP*
AP502 CL	AP-03	0	E	-	F-G	89	MS	S	-	S	MR	**
Alliance	NE-93	2	G	A	G	76	MS	VS	MR	S	MS	Yes
Arapahoe	NE-88	3	F	G	G-E	83	S	S	MS	MR	MR	Yes
CDC Falcon	SK-98	4	G	-	G-E	85	-	-	MR	-	R	Can
Crimson	SD-97	5	G	G	G-E	110	MR	R	MR	S	MS	Yes
Expedition	SD-02	0	F	E	G-E	88	-	MS	MS	MS	R	**
Harding	SD-99	5	F-G	A	E	100	MR	MR	MS	MR	MR	**
Jagalene	AP-02	3	E	-	G	92	MR	MR	MR	MR	MR	Yes
Jerry	ND-01	6	F	G	E	92	-	-	MR	S	R	No
Millennium	NE-99	4	G	A	F-G	78	S	MS	MR	MS	MR	Yes
Nekota	NE/SD-94	2	G	G	G	87	MS	MR	S	S	MR	No
NuPlains~W	NE-99	3	G	A	G	72	S	S	MS	MS	MS	Yes
Ransom	ND-98	5	F	P	E	107	S	-	-	MR	MR	Yes
Tandem	SD-97	4	F-G	E	G	112	S	S	MR	S	MR	Yes
Trego~W	KS-99	3	F-G	E	F-G	80	S	MS	S	MR	R	Yes
Wahoo	NE/WY-01	3	G	-	G	91	S	-	MR	S	R	Yes
Wesley	NE-98	2	E	A	G-E	79	S	MR	MR	MS	R	No

~W Hard white wheat variety. @End-use: HR= baking and HW wheat= noodles.
E= excellent, A= acceptable, F= fair, G-good, P=poor. ##Percent of Harding (3.2").
+ R= resistant, MR= moderately resist., M= intermediate, MS= mod. susceptible, S= susc., VS= very susc..
$ Rusts: Stripe= str, leaf= lf, and stem= stm.
* Plant variety protection (PVP), title V, certification option - to be sold by variety name only as a class of certified seed.
** PVP application pending or anticipated.

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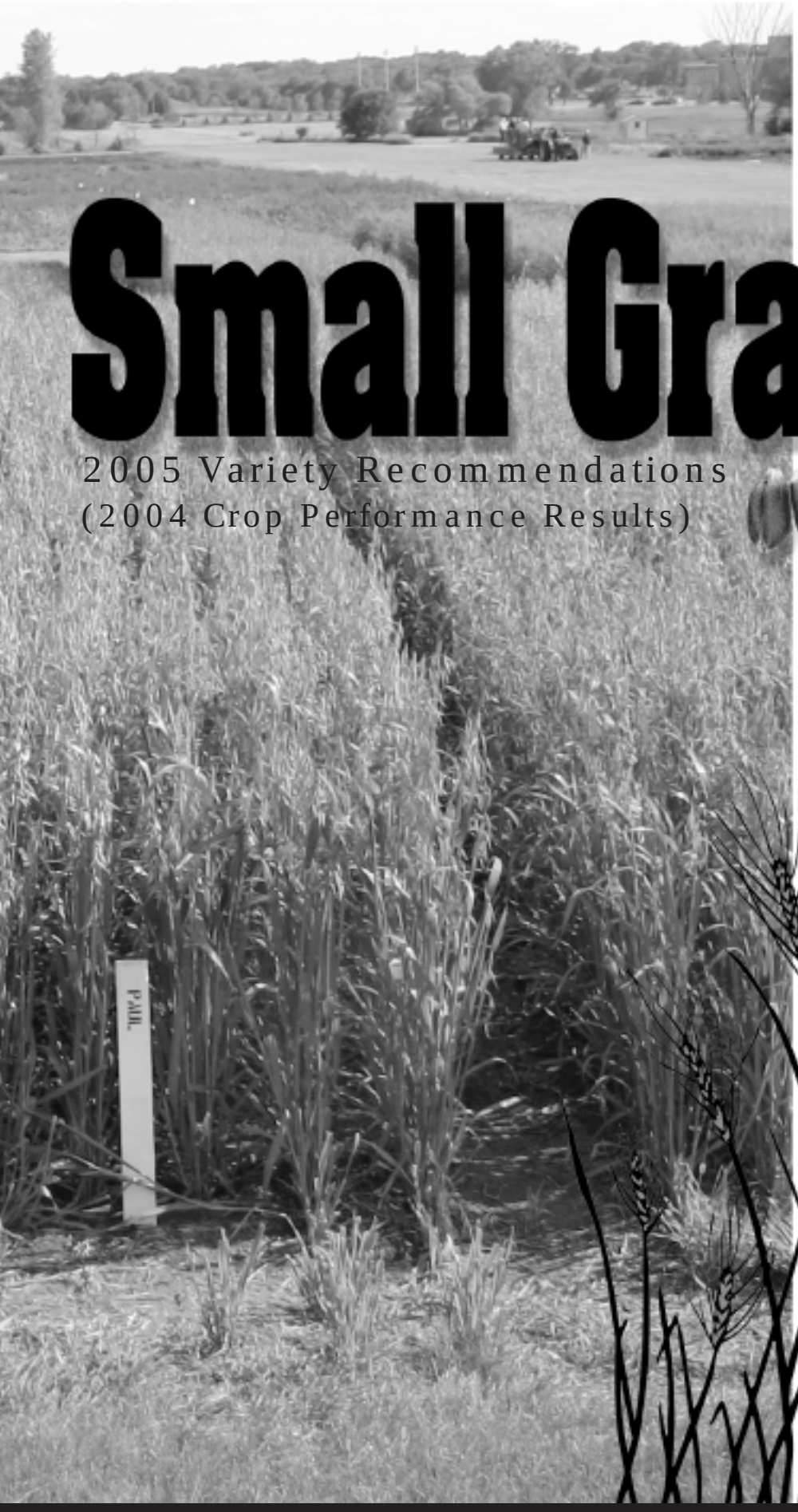

Small Grains

2005 Variety Recommendations
(2004 Crop Performance Results)

Spring Wheat
Oats
Barley
Winter Wheat

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This report is available on the World-Wide-Web at http://plantsci.sdstate.edu/varietytrials/vartrial.html

Small Grain Variety Recommendations for 2005

Recommendations are based on data obtained from the South Dakota State University Crop Performance Testing (CPT) Program and regional land-grant university nurseries. Variety performance depends on genetics and the environment. Environmental factors—temperature, moisture, plant pests, soil fertility, soil type, and management practices—affect variety performance. Note the performance of recommended varieties in response to environmental conditions is generally better than the performance of other varieties. The better performance of a recommended variety, however, cannot always be guaranteed due to its complex response to the environment. Variety recommendations including the crop adaptation area (CAA) where they are most suited are listed below.

SPRING WHEAT

Recommended:		**Acceptable/Promising:**	
Variety	CAA	Variety	CAA
Briggs @	Statewide	Alsen @	1, 2, 7
Forge @	Statewide	Ingot @	Statewide
Granger @	Statewide	Walworth @	Statewide
Knudson @	Statewide		
Norpro @	1, 2, 7		
Oxen @	Statewide		
Reeder @	Statewide		
Russ @	Statewide		

OATS

Recommended:		**Acceptable/Promising:**	
Variety	CAA	Variety	CAA
Don	1, 4, 5, 6, 7	HiFi	1, 2, 7
Jerry #	Statewide	Morton	1, 2, 7
Loyal +	1, 2, 7	Buff (hulless)	Statewide
Reeves	Statewide		

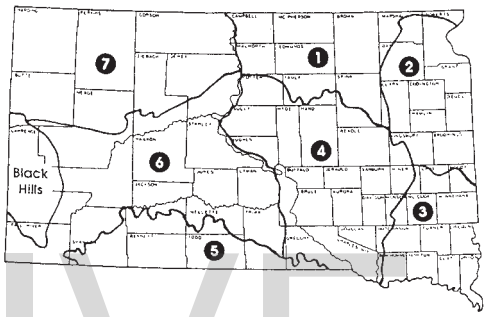
BARLEY

Recommended:		**Acceptable/Promising:**	
Variety	CAA	Variety	CAA
Excel @	1, 2, 4, 6, 7	Conlon @	1, 4, 6, 7
Lacey @	Statewide	Drummond @	Statewide
		Robust @	1, 2, 4, 6, 7
		Haxby @	6, 7 (feed)
		Valier @	6, 7 (feed)

WINTER WHEAT

Recommended:		**Acceptable/Promising:**	
Variety	CAA	Variety	CAA
Alliance @	3, 4*, 5, 6	Expedition @	1*, 4, 5, 6, 7*
Arapahoe @	1*, 3, 4*, 5, 6, 7*	Tandem @	1*, 4*, 5, 6, 7*
Harding @	1*, 2*, 4, 7	Trego (white) @	5, 6, 7*
Jagalene @	1*, 3, 4*, 5, 6, 7*	Wahoo @	3, 4*, 5, 6
Millennium @	1*, 4*, 5, 6, 7		
Wesley	1*, 3, 4*, 5, 6, 7*		

Crop Adaptation Areas for South Dakota
(revised 1992)



PVP non-title V status
+ Exceptional crown rust resistance

American Malting Barley Association approved malting varieties for South Dakota – 2004.

Conlon	Foster	Morex
Drummond	Lacey	Robust
Excel	Legacy	Tradition

@ Plant Variety Protection (PVP) received, applied for, or anticipated; seed sales are restricted to classes of certified seed.
* Plant into protective cover.

Small Grains

2004 South Dakota Test Results: Variety Traits and Yield Averages

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Variety selection is a fundamental element in a sound crop production program. This report contains variety recommendations, descriptions, and yield data for the spring-seeded small grains—hard red spring wheat, oat, and barley—along with the fall seeded small grain, hard red winter wheat.

Key factors in variety selection include yield, yield stability, maturity, straw strength, height, test weight, quality, and disease resistance. Yield is an important factor; however, a variety with good disease resistance, straw strength, and high grain quality may be more profitable in some cases than the highest yielding variety.

Disease resistance information is based on reactions to prevalent races of a disease. Disease resistance is not constant, and new races generally develop over time.

Variety recommendations (inside cover)

The Plant Science Department Variety Recommendation Committee makes small grain variety recommendations annually. Recommendations for a given crop may vary from one crop adaptation area (CAA) to another. CAAs (see map) are based on soil type, elevation, temperature, and rainfall. Varieties are recommended on the basis of growing season, average rainfall, disease frequency, and farming practices common to a crop adaptation area.

Varieties are listed as "Recommended" or "Acceptable/Promising." Varieties exhibiting a high level of agronomic performance are listed as "Recommended." Each test entry must meet the minimum criteria listed in Table A before it is eligible for the "Recommended" list. Varieties listed as "Acceptable/Promising" have performed well but do not merit the "Recommended" list, or are new varieties with a high performance potential but do not meet the 3-year criteria (Table A) needed to make the "Recommended" list. A variety needs 2 years and six location-years in the SDSU crop performance test trials and/or regional nurseries before it is eligible for the "Acceptable/Promising" list.

Certified seed is the best source of seed and the only way farmers can be assured of the genetic purity of the variety purchased.

How to use this information

Use this report to select small grain varieties for South Dakota. Use this bulletin as follows:

1. Check the variety-crop adaptation area (CAA) designations for the "Recommended" and "Acceptable/Promising" lists on the preceding pages. Compare these variety-CAA designations with the CAA map of South Dakota. **Identify the varieties suggested for your CAA.**

2. **Evaluate the varieties you selected for desirable traits.** Descriptive information (traits tables 3, 6, 9, and 12) is updated as changes occur. This information is obtained from the SDSU Crop Performance Testing Program and from research plots maintained by plant breeders and plant pathologists. Data for protein, height, and bushel (test) weight are obtained from every location when possible. Disease resistance continually changes; therefore, new information is reported as it becomes available. To evaluate maturity, compare the relative maturity

(heading) rating of each variety to the reference or check variety given. The *Fusarium* head blight tolerance ratings for hard red spring wheat are also given. Note that the head blight ratings show **there is presently no variety resistance to this disease.** It does, however, indicate **some varieties are more tolerant of the disease than others.**

3. **Evaluate each variety you select for yield performance**. Yields are obtained from the SDSU Crop Performance Testing Program. Both 1- and 3-year average yields for each variety tested are included for each test location if the variety was tested for 3 or more years. Yield values for each variety and location average and for each location least-significant-difference (LSD) value are rounded to the nearest bushel per acre.

Location test yield averages, the high yield averages, LSD values, and coefficient of variation (CV) values for each variety tested are listed below each location yield column. These statistics are calculated from data that include both released varieties and experimental lines. Only data for released varieties are reported; therefore, the test average for a location yield column may not equal the average for the individual yields you observe in the table. Likewise, the test LSD values obtained from the location data are also based on both varieties and experimental lines. Varieties and experimental lines are included in the test results so you can see how known varieties compare to experimental lines that may be released in the near future.

Always compare yields from the same period of time. Compare 1-year yields with other 1-year yields, and 3-year yields with other 3-year yields.

Next, determine whether the data are valid. The CV value listed at the bottom of each yield column is a measure of experimental error. **Yield tests with a CV of 20% or higher contain higher amounts of experimental error than tests with a CV of 10% or less. Test sites with a CV greater than 15% are not included in the calculations for yield stability discussed later. In addition, the top performance group for yield or other agronomic measurements obtained for that site are not indicated in the table because the validity of the yield differences among the varieties is uncertain as a result of the high level of experimental error.**

Use LSD values to evaluate yield differences between varieties. The LSD value indicates if one variety really out yields another. If the yield difference between two varieties is greater than the LSD value, the varieties differ in yield. If the yield difference is equal to or less than the LSD value, the varieties do not statistically differ in yield.

The LSD value can be used to determine the top yield group for each location. For example, at each location the variety with the highest numerical yield is identified using 1- or 3-year averages. The reported test LSD value is subtracted from the highest yielding variety. Varieties with yields greater than this value (highest yield minus test LSD) are in the top yield group at that location. For example, in hard red spring wheat the top yielding entry at Brookings for 2004 was an experimental line (not reported) that yielded 72 bu/acre. Subtracting 5 bu/acre (the rounded-off LSD value) from the highest yield entry of 72 bu/acre gives 67 bu/acre. Therefore, all varieties listed in that column yielding 68 bushels or higher are in the top yield group. However, since the LSD values and reported yield averages are rounded off to the nearest whole bushel, we can say that 67 bu/acre is the more appropriate LSD value in this case. For convenience, averages for varieties in the top yield group at each location are underlined. Sometimes, underlined averages may be absent within a yield column. This indicates the top yielding entries are not reported because they are experimental, not released varieties.

Sometimes, an LSD value is not given and the designation ^NS is listed. This indicates yield differences were not significant (NS) or yield differences could not be detected. Therefore, all the varieties have a similar yielding potential and are considered to be in the top yield group. In contrast, a high level of experimental error is indicated by a high CV value. In such a case the top yield group is not determined.

When evaluating yield performance, remember that environmental conditions at a test location seldom repeat themselves from year to year. Therefore, look at yield data from as many trial locations and years as possible.

Look at the performance or "yield stability" of a variety over several locations. A simple way of evaluating yield stability is to see how often a variety is in the top yield group over all test locations. For convenience, the top yield percentage or the percentage of locations where a variety is in the top yield group has been calculated. **The top yield percentage for each variety of hard red spring wheat is reported in table 1c, for oats in table 4c, and for barley in table 7c.** Top yield percentages for hard red winter wheat are not reported because winter hardiness greatly influences spring stands and makes it impossible to report valid top yield percentages for more than 1 year.

A variety exhibiting a relatively high top yield percentage will appear in the top yield group at many but not necessarily all locations. For example, a variety with a top yield percentage of 50% or more exhibits good yield stability. In contrast, a top yield percentage of 20% or less indicates low yield stability.

Varieties with a high top yield percentage have the ability to adapt to a wide range of environmental conditions across many locations. In contrast, varieties with a low top yield percentage typically adapt to a narrow range of environments. **Look for varieties with a relatively high top yield percentage of 50% or higher if possible.**

Origin of varieties tested

Public varieties were released from state agricultural experiment stations. Abbreviations for each include:

Minnesota – MN
Illinois – IL
Kansas – KS
Montana – MT
Nebraska – NE
North Dakota – ND
South Dakota – SD
Texas – TX
Wisconsin – WI

Many public varieties were developed and released jointly by one or more experiment stations or USDA. Proprietary varieties were released by commercial companies. Company abbreviations for these include:

AgriPro Wheat, Inc. – AW
Busch Agricultural Resources, Inc. – BARI
Westbred, LLC. – WB
North Star Genetics – NSG

Trial methods

A random complete block design is used in all trials. Plots are harvested with a small-plot combine. Plot size differs between the East River and West River locations. East River plots are 5 feet wide and either 12 or 14 feet long. West River plots measure 5 feet wide and 25 feet long. Plots consist of drill strips with 7- or 8-inch spacing at East River locations and 10-inch spacing at West River locations. Trial locations are listed in Table B. Yield means are generated from four variety replications per location per year.

Fertility and weed control programs differed between the East and West River locations. East River plots were fertilized with 60 lb per acre of 18-46-0 (10.8 lb of N and 27.6 lb of phosphorus per acre) down the seed tube at seeding. In addition, at these locations a post-emergence application of Bronate (1.0 pint) was applied on the spring wheat, oats, and barley plots. West River plots were fertilized with 6 gal of 10-34-0 per acre (6.6 lb of nitrogen and 24 lb of phosphorus per acre) at seeding. Post-emergence applications of 0.10 oz of Ally herbicide per acre plus 6 oz active ingredient per acre of 2,4-D (wheat) and 1 pint of Bronate (oats and barley) were applied at the 3- to 5-leaf stage.

Since seed size can vary greatly among varieties, a seed count is conducted on each entry and all seeding rates are adjusted accordingly. At East River locations the adjusted seeding rates are 28 pure live seeds per square foot compared to 22 pure live seeds per square foot at West River locations. Under good seedbed preparation and favorable conditions these adjusted seeding rates result in seedling densities of about 25 and 20 plants per square foot at the East and West River locations, respectively. This results in a final stand of about 1.1 million and 870,000 plants per acre, respectively. If you have a poor seedbed, increase the spring grain seeding rate to 32 and 25 seeds per square foot at East and West River locations, respectively. If planting is delayed until May 1 or later, increase the seeding rates to 35 and 28 seeds per square foot at East and West River locations, respectively. Seeding dates are listed in Table B.

Performance trial highlights

HRS Wheat (Tables 1a – 1c). The top performing varieties for year 2004 (variety and top yield percentage) were **Briggs at 67%; Knudson and Norpro at 44%; and Steele-ND, Oxen, and Mercury at 33%** (table 1c). This means these varieties were in the top yielding group at 67%, 44%, and 33% of the test locations for 2004. The best top yield varieties over the past 3 years were **Briggs, Granger, and Knudson at 100%; Forge, Oxen, Russ, Reeder, and Norpro at 83%; and Walworth, Dapps, Oklee, and Alsen at 33%** of the test locations. The top bushel weight group consisted of the varieties **Ingot, Granger, Granite, and Mercury at 50%** of the locations in 2004. The old check variety **Chris** tended to be the tallest variety across all locations in 2004.

Oat (Tables 4a – 4c). In 2004, **Morton and HiFi** exhibited a top yield percentage of **75%** and **Jerry and Loyal** a top yield percentage of **38%**. Over the past 3 years the highest top yield percentages were **100%** for the varieties **Don, Reeves, Jerry, Morton, Loyal, and HiFi.** In 2004, the variety **Hytest** had the best bushel weight average across all locations, while the varieties **Loyal and HiFi** tended to have the lowest bushel weight average among the standard varieties (tables 5a-5c). Overall, the hulless varieties **Buff, Stark, and Paul** had the highest bushel weight average and the lowest yield average across all locations.

Barley (Tables 7a – 7c). In 2004, the best top yield group percentages for yield were **Eslick at 100%; Lacey and Legacy at 75%; Haxby and Valier at 63%; and Conlon, Tradition, and Drummond at 50%** of the locations tested. The better varieties over the past 3 years were **Lacey and Excel at 100%; Drummond at 67%; and Conlon at 50%** of the test locations. The two-row varieties **Haxby, Eslick,**

and Valier tested 1 to 3 pounds higher in bushel weight than the other varieties across locations (tables 8a-8c). Either **Robust or Legacy or both** were the tallest varieties across all locations.

HRW Wheat (Tables 4a – 4c). In 2004, the better yielding varieties were **Wahoo, Millennium, and Harding;** followed by the variety **Arapahoe**. For the past 3 years, the best yielding varieties were **Wahoo, Jagalene, Arapahoe, Millennium, Tandem, and Harding**. In 2004, the best bushel weight varieties were **Jagalene and Trego** (a white wheat), followed by **Expedition, Tandem, Crimson, Nekota, and Alliance**. Severely limited subsoil moisture and a lack of timely seasonal moisture were the major factors in the western winter wheat production areas of South Dakota again this year.

Note the coleoptile length of the various varieties included in the variety traits table (table 12). Coleoptile length is important because it affects how deep the seed may be planted. A long coleoptile variety can be planted relatively deeper than a short coleoptile variety. The coleoptile length of 3.2 inches for Harding is used as the standard (100%) for comparisons. The coleoptile length for the varieties Tandem and Crimson are slightly longer than for Harding; while the coleoptile length for the varieties Wahoo, Jagalene, Expedition, Nekota, Arapahoe, Trego~W, Alliance, Millennium, Wesley, and Wendy are shorter compared to Harding.

Variety Release/Recommendation Committee

The Variety Release/Recommendation Committee is made up of plant breeders, pathologists, research scientists, Extension agronomists, and managers of the Seed Certification Service and Foundation Seed Stocks Division.

The efforts of the following people in making this publication possible are gratefully acknowledged:
Crop Performance Testing Program –
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W. Miller (Oelrichs)
L. Novotny (Martin)
R. Rosenow (Ralph)
M. Stiegelmeier (Selby)
R. Van Der Pol (Platte)
R. Seidel (Bison)
Nelson Brothers (Miller)
R. and L. Haskins (Hayes)

Table A. Minimum criteria required for the recommended list in this publication.

Trait	Crop			
	HRS Wheat	Oats	Barley	HRW Wheat
Yield	3/15*	3/15	3/12	3/15
Bushel weight	3/15	3/15	3/12	3/15
Height	3/15	3/15	3/12	3/15
Lodging	WA	WA	WA	WA
Disease reaction	A	A	A	A
Protein	3/15	-	3/12	3/15
Quality data#	2/4	WA	WA	WA
Unigue traits$	WA	WA	WA	WA

* 3 years/15 location-years. # includes milling and baking.
$ traits that affect production and marketing.
A= annually, WA= when available.

Table B. 2004 Small grain seeding dates by crop and location.

Location				
	HRS Wheat	Oats	Barley	HRW Wheat
	seeding date			
Beresford	-	Apr 5	-	-
Bison	Apr 12	Apr 12	Apr 12	Abandoned
Brookings	Apr 7	Apr 7	Apr 7	Sept 9
Brown Co.	Apr 2	Apr 2	Apr 2	-
Pierre-DL	-	-	-	Sept 17
Hayes	-	-	-	Abandoned
Highmore	-	-	-	Sept 16
Miller	Apr 5	Apr 5	Apr 5	-
Martin	-	-	-	Abandoned
Oelrichs	-	-	-	Abandoned
Platte	-	-	-	Sept 20
Ralph	Apr 12	Apr 12	Apr 12	-
Selby	Apr 6	Apr 6	Apr 6	-
SouthShore	Apr 12	Apr 12	Apr 12	Sept 4
Spink Co.	Apr 11	-	-	-
Sturgis	-	-	-	Sept.16
Tripp Co.	-	-	-	Sept 18
Wall	Apr 3	Apr 3	Apr 3	Sept 18

Table 1a. Hard red spring yield results, eastern South Dakota locations, 2003-2004.

		Eastern Location Yield Averages (13% moisture)					
		Brookings		South Shore		Eastern Averages	
Variety	(Hdg.)*	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr
Ingot	(1)	45	49	42	41	44	45
Trooper	(1)	50	.	48	.	49	.
Forge	(1)	47	53	49	43	48	48
Walworth	(2)	52	54	46	41	49	48
Briggs	(2)	68	57	61	48	65	53
Granger	(2)	65	55	55	46	60	51
Freyr	(3)	60	.	55	.	58	.
Dapps	(4)	58	52	49	40	54	46
Steele-ND	(4)	62	.	59	.	61	.
Oklee	(4)	58	49	57	42	58	46
Knudson	(4)	68	54	58	45	63	50
Oxen	(4)	52	48	48	42	50	45
Russ	(4)	51	53	49	44	50	49
Reeder	(5)	49	51	50	45	50	48
Norpro	(5)	54	52	43	42	49	47
Chris,CK	(5)	38	38	36	33	37	36
Dandy	(7)	55	.	45	.	50	.
Alsen	(6)	50	47	51	43	51	45
Mercury	(7)	56	.	54	.	55	.
Granite	(7)	54	47	43	40	49	44
Polaris	(9)	50	.	47	.	49	.
Test avg.:		57	51	52	43		
High yield:		72	61	63	49		
# LSD(.05):		5	10	5	7		
## TPG-value:		67	51	58	42		
### CV:		6	7	6	7		

* Heading, the relative difference in days to heading, compared to the variety- Briggs.
# LSD, the amount values in a column must differ to be significantly different.
TPG-value, the minimum value required for the top performance group for yield.
Values that are underlined are in the top performance group for a given column.
Coef. of variation, a measure of trial experimental error; 15% or less is best.

Table 1b. Hard red spring wheat yield results, central South Dakota locations, 2003-2004.

		Central Location Yield Averages (13% moisture)								Central Averages	
		Miller		Spink Co.		Selby		Brown Co.			
Variety	(Hdg.)*	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr
Ingot	(1)	54	.	54	47	36	42	63	47	52	45
Trooper	(1)	59	.	64	.	48	.	73	.	61	.
Forge	(1)	58	.	65	53	51	50	67	50	60	51
Walworth	(2)	58	.	63	50	52	49	65	49	60	49
Briggs	(2)	63	.	72	54	57	51	72	54	66	53
Granger	(2)	51	.	71	57	50	50	76	53	62	53
Freyr	(3)	60	.	57	.	49	.	75	.	60	.
Dapps	(4)	50	.	64	48	48	43	66	48	57	46
Steele-ND	(4)	58	.	68	.	50	.	72	.	62	.
Oklee	(4)	55	.	63	50	52	44	74	49	61	48
Knudson	(4)	60	.	72	56	51	47	76	54	65	52
Oxen	(4)	62	.	65	55	52	45	76	53	64	51
Russ	(4)	59	.	62	52	40	46	72	51	58	50
Reeder	(5)	61	.	66	53	41	46	74	51	61	50
Norpro	(5)	61	.	63	51	54	49	75	51	63	50
Chris,CK	(5)	47	.	44	40	43	38	51	38	46	39
Dandy	(7)	57	.	66	.	51	.	69	.	61	.
Alsen	(6)	54	.	63	52	43	41	69	52	57	48
Mercury	(7)	62	.	62	.	51	.	79	.	64	.
Granite	(7)	53	.	67	50	46	47	72	49	60	49
Polaris	(9)	53	.	52	.	45	.	70	.	55	.
Test avg.:		57	.	65	52	49	46	72	50		
High yield:		66	.	74	60	57	51	83	57		
# LSD(.05):		5	.	7	6	7	9	5	7		
## TPG-value:		61	.	67	54	50	42	78	50		
### CV:		6	.	8	8	10	9	5	7		

* Heading, the relative difference in days to heading, compared to the variety- Briggs.
# LSD, the amount values in a column must differ to be significantly different.
TPG-value, the minimum value required for the top performance group for yield.
Values that are underlined are in the top performance group for a given column.
Coef. of variation, a measure of trial experimental error; 15% or less is best.

Table 1c. Hard red spring wheat yield results, western South Dakota locations, 2003-2004.

		Western Location Yield Averages (13% moisture)											
		Wall		Bison		Ralph		Western Averages		State	State Avg.	State Top Yield Percentage$	
Variety	(Hdg.)*	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr	9 Loc 2004	6 Loc 3-Yr
Ingot	(1)	31	29	25	.	50	.	35	.	44	43	0	33
Trooper	(1)	32	.	26	.	52	.	37	.	50	.	0	.
Forge	(1)	36	30	31	.	57	.	41	.	51	47	22	83
Walworth	(2)	37	31	28	.	57	.	41	.	51	46	22	50
Briggs	(2)	36	27	28	.	52	.	39	.	57	49	67	100
Granger	(2)	34	29	30	.	55	.	40	.	54	48	22	100
Freyr	(3)	35	.	27	.	52	.	38	.	52	.	0	.
Dapps	(4)	33	26	23	.	46	.	34	.	49	43	0	50
Steele-ND	(4)	35	.	27	.	56	.	39	.	54	.	33	.
Oklee	(4)	31	28	28	.	45	.	35	.	51	44	11	50
Knudson	(4)	29	26	24	.	55	.	36	.	55	47	44	100
Oxen	(4)	37	31	27	.	57	.	40	.	53	46	33	83
Russ	(4)	38	30	29	.	57	.	41	.	51	46	11	83
Reeder	(5)	34	30	30	.	57	.	40	.	51	46	11	83
Norpro	(5)	40	28	31	.	61	.	44	.	54	46	44	83
Chris,CK	(5)	33	26	26	.	42	.	34	.	40	36	0	17
Dandy	(7)	34	.	27	.	54	.	38	.	51	.	11	.
Alsen	(6)	30	27	27	.	54	.	37	.	49	44	0	50
Mercury	(7)	29	.	26	.	57	.	37	.	53	.	33	.
Granite	(7)	37	28	27	.	54	.	39	.	50	44	22	33
Polaris	(9)	37	.	34	.	60	.	44	.	50	.	22	.
Test avg.:		35	28	29	.	55	.						
High yield:		40	31	39	.	63	.						
# LSD(.05):		4	^NS	4	.	4	.						
## TPG-value:		36	26	35	.	59	.						
### CV:		8	9	10	.	6	.						

* Heading, the relative difference in days to heading, compared to the variety- Briggs.
$ Percent of test locations a variety appears in the top performance group for yield.
# LSD, the amount values in a column must differ to be significantly different.
TPG-value, the minimum value required for the top performance group for yield.
Values that are underlined are in the top performance group for a given column.
Coef. of variation, a measure of trial experimental error; 15% or less is best.

Table 2a. Hard red spring wheat averages for bushel weight, grain protein, and height, eastern South Dakota locations for 2004.

		Eastern Location Averages for bu.wt., grain protein, and height								
		Brookings			South Shore			Eastern Averages		
Variety	(Hdg.)*	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.
Ingot	(1)	57	13.2	39	57	14.0	41	57	13.6	40
Trooper	(1)	56	13.0	32	54	13.3	33	55	13.2	32
Forge	(1)	55	12.8	37	57	13.7	37	56	13.3	37
Walworth	(2)	58	13.1	37	56	13.9	38	57	13.5	37
Briggs	(2)	60	13.6	37	58	14.5	38	59	14.1	37
Granger	(2)	59	13.2	39	58	14.5	41	58	13.9	40
Freyr	(3)	59	13.3	36	57	15.0	39	58	14.2	38
Dapps	(4)	59	14.1	40	57	15.2	40	58	14.7	40
Steele-ND	(4)	59	13.8	38	57	14.6	39	58	14.2	38
Oklee	(4)	59	13.5	34	58	13.1	38	59	13.3	36
Knudson	(4)	57	13.4	35	56	13.8	36	57	13.6	35
Oxen	(4)	55	13.0	35	55	14.3	35	55	13.7	35
Russ	(4)	56	13.6	39	56	13.6	39	56	13.6	39
Reeder	(5)	56	13.1	37	56	14.1	38	56	13.6	37
Norpro	(5)	57	13.7	35	51	14.4	35	54	14.1	35
Chris,CK	(5)	54	13.6	43	53	15.2	44	53	14.4	44
Dandy	(7)	59	12.6	37	57	13.3	37	58	13.0	37
Alsen	(6)	58	14.2	35	57	14.1	39	57	14.2	37
Mercury	(7)	59	12.9	32	58	15.2	33	58	14.1	33
Granite	(7)	61	14.0	36	56	14.8	36	59	14.4	36
Polaris	(9)	54	13.1	38	50	13.1	37	52	13.1	38
Test avg.:		58	13.3	37	56	13.9	38			
High-value:		62	14.8	43	60	15.2	44			
# LSD(.05):		2	.	1	2	.	2			
## TPG-value:		60	.	42	58	.	42			
### CV:		3	.	2	3	.	5			

* Heading, the relative difference in days to heading, compared to the variety- Briggs.
\# LSD, the amount values in a column must differ to be significantly different.
TPG-value, the minimum or maximum value required for the top performance group.
Values that are underlined are in the top performance group for a given column.
Coef. of variation, a measure of trial experimental error; 15% or less is best.

Table 2b. Hard red spring wheat averages for bushel weight, grain protein, and height, central South Dakota locations for 2004.

		Central Location Averages for bu.wt., grain protein, and height												Central Averages		
		Miller			Spink Co.			Selby			Brown Co.					
Variety	(Hdg.)*	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.
Ingot	(1)	55	16.3	39	58	14.4	40	61	14.4	41	60	14.2	43	59	14.8	41
Trooper	(1)	52	15.0	29	58	14.4	31	57	14.6	31	60	13.4	36	57	14.4	32
Forge	(1)	51	14.9	35	56	14.3	36	59	13.4	41	59	13.6	39	56	14.1	37
Walworth	(2)	52	13.4	34	57	14.5	35	59	14.3	38	59	13.4	40	57	13.9	37
Briggs	(2)	53	14.8	34	58	15.0	36	59	14.9	38	60	14.3	40	58	14.8	37
Granger	(2)	53	14.0	37	57	14.7	40	60	14.8	41	61	14.2	42	58	14.4	40
Freyr	(3)	53	15.3	34	56	14.0	37	59	13.7	36	60	14.0	42	57	14.3	37
Dapps	(4)	51	16.9	40	58	15.9	40	58	16.2	44	59	15.2	41	57	16.1	41
Steele-ND	(4)	53	16.0	34	58	14.9	40	59	15.0	39	58	14.7	41	57	15.2	38
Oklee	(4)	54	16.5	34	58	15.2	34	60	15.3	37	59	14.3	38	58	15.3	36
Knudson	(4)	53	15.3	33	58	14.0	34	59	14.4	34	60	13.2	38	57	14.2	34
Oxen	(4)	51	13.7	33	54	14.5	34	57	14.2	35	57	13.6	39	55	14.0	35
Russ	(4)	53	14.8	37	56	14.6	39	59	14.4	40	57	14.4	39	56	14.6	39
Reeder	(5)	53	15.4	36	57	14.9	38	58	14.5	36	59	14.5	42	57	14.8	38
Norpro	(5)	51	15.0	31	56	14.7	34	59	14.7	34	57	13.9	37	56	14.6	34
Chris,CK	(5)	52	16.7	40	55	15.3	48	58	15.2	46	55	15.1	45	55	15.6	45
Dandy	(7)	54	14.6	39	58	14.2	38	59	14.2	39	61	13.6	40	58	14.2	39
Alsen	(6)	53	14.6	33	58	15.4	36	59	15.3	37	59	14.6	40	57	15.0	36
Mercury	(7)	54	15.6	30	57	14.1	30	60	14.2	31	60	13.1	35	58	14.3	31
Granite	(7)	54	17.9	34	60	15.8	34	60	15.6	36	61	15.3	38	59	16.2	35
Polaris	(9)	52	16.7	35	55	13.8	37	57	13.6	36	57	13.9	40	55	14.5	37
Test avg.:		53	15.2	35	57	14.5	37	59	14.3	38	59	14.0	40			
High-value:		55	17.9	40	60	15.9	48	61	16.2	46	61	15.3	45			
# LSD(.05):		1	.	3	2	.	2	1	.	2	2	.	2			
## TPG-value:		54	.	37	58	.	46	60	.	44	59	.	43			
### CV:		2	.		2	.	4	1	.	4	3	.	4			

* Heading, the relative difference in days to heading, compared to the variety- Briggs.
\# LSD, the amount values in a column must differ to be significantly different.
TPG-value, the minimum or maximum value required for the top performance group.
Values that are underlined are in the top performance group for a given column.
Coef. of variation, a measure of trial experimental error; 15% or less is best.

Table 2c. Hard red spring wheat averages for bushel weight, grain protein, and height, western South Dakota locations for 2004.

		Western Location Averages for bu.wt., grain protein, and height									Western Averages			State Avg.		
		Wall			Bison			Ralph								
Variety	(Hdg.)*	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.
Ingot	(1)	62	17.3	25	60	17.5	28	62	14.7	35	61	16.5	29	59	15.1	37
Trooper	(1)	64	16.5	20	59	16.3	23	59	13.4	26	61	15.4	23	58	14.4	29
Forge	(1)	63	16.9	24	59	15.7	26	62	12.1	31	61	14.9	27	58	14.2	34
Walworth	(2)	61	16.6	23	58	17.4	28	59	12.2	29	59	15.4	26	58	14.3	33
Briggs	(2)	62	18.2	24	58	17.3	27	59	14.2	31	60	16.6	27	59	15.2	34
Granger	(2)	62	16.3	24	60	17.1	27	61	13.5	35	61	15.6	29	59	14.7	36
Freyr	(3)	63	16.1	26	59	17.8	29	61	14.4	30	61	16.1	28	59	14.8	34
Dapps	(4)	62	18.3	25	57	18.5	29	59	16.7	35	59	17.8	30	58	16.3	37
Steele-ND	(4)	63	17.7	25	58	18.4	29	60	15.5	33	60	17.2	29	58	15.6	35
Oklee	(4)	61	17.4	21	59	18.4	24	59	13.9	28	60	16.6	24	59	15.3	32
Knudson	(4)	62	16.7	22	59	17.4	25	60	16.5	29	60	16.9	25	58	15.0	32
Oxen	(4)	61	17.2	23	57	17.8	25	60	13.3	29	59	16.1	25	56	14.6	32
Russ	(4)	61	16.9	25	56	16.5	28	59	15.7	32	59	16.4	28	57	14.9	35
Reeder	(5)	63	17.4	24	58	17.1	26	59	13.8	31	60	16.1	27	58	15.0	34
Norpro	(5)	63	16.1	22	60	18.1	27	59	14.6	28	61	16.3	25	57	15.0	31
Chris,CK	(5)	61	18.0	28	57	17.5	33	58	16.9	36	59	17.5	32	56	15.9	40
Dandy	(7)	62	16.6	25	58	16.0	27	62	15.3	31	61	16.0	28	59	14.5	35
Alsen	(6)	62	17.3	23	61	17.5	27	59	14.2	31	61	16.3	27	59	15.2	33
Mercury	(7)	61	17.2	19	59	16.9	23	61	11.9	26	60	15.3	23	59	14.6	29
Granite	(7)	65	16.9	24	60	17.2	24	60	14.3	29	61	16.1	26	60	15.8	32
Polaris	(9)	63	16.2	24	59	14.8	25	58	12.0	31	60	14.3	27	56	14.1	34
Test avg.:		62	16.7	24	58	16.9	27	60	13.7	31						
High-value:		65	18.3	28	61	18.5	33	62	16.9	38						
# LSD(.05):		1		2	2		3	1		3						
## TPG-value:		64		26	59		30	61		35						
### CV:		1		7	3		7	2		4						

* Heading, the relative difference in days to heading, compared to the variety- Briggs.
\# LSD, the amount values in a column must differ to be significantly different.
\## TPG-value, the minimum or maximum value required for the top performance group.
Values that are underlined are in the top performance group for a given column.
\### Coef. of variation, a measure of trial experimental error; 15% or less is best.

Table 3. Origin, lodging resistance, and disease reactions for hard red spring wheat entries for year 2004.

Variety	(Hdg.)*	Origin	Ldg.# Resis.	Disease reaction+ Rust Stripe	Rust Leaf	Rust Stem	Fusarium Head Blight	PVP** Status
Forge	(1)	SD-97	G	MR	MS	R	M~	Yes
Ingot	(1)	SD-98	G	MR	MS	R	MS^	Yes
Trooper	(1)	WB-04	G	MS	MR	R	MS	Yes
Briggs	(2)	SD-02	G	MR	R	R	MS^	Yes
Granger	(2)	SD-04	G	R	R	R	M	***
Walworth	(2)	SD-01	G	S	MS	R	MS^	Yes
Freyr	(3)	AW-05	G	R	MR	MR	MR	Yes
Dapps	(4)	ND-03	VG	MR	MR	R	S	Yes
Knudson	(4)	AW-01	G	MS	MR	R	MS~	Yes
Oklee	(4)	MN-03	-	R	MS	R	MS^	***
Oxen	(4)	SD-96	G	MR	MR	R	MS~	Yes
Russ	(4)	SD-95	G	R	MR	R	MS~	Yes
Steele-ND	(4)	ND-04	G	R	R	R	MR~	Yes
Chris,CK	(5)	MN-65	P	-	MS	R	S	No
Norpro	(5)	AW-00	VG	MR	MR	R	MS	Yes
Reeder	(5)	ND-99	VG	MR	MS	R	MS~	Yes
Alsen	(6)	ND-00	G	R	MR	R	MR~	Yes
Dandy	(7)	NSG-99	VG	-	S	-	MS	Yes
Granite	(7)	WB-02	G	MS	S	MS	S	Yes
Mercury	(7)	NSG-99	VG	-	MS	R	S	Yes
Polaris	(9)	NSG-03	G	-	-	-	-	Yes

* Heading, the relative difference in days to heading, compared to Briggs.
# E= excellent, G= good, VG= very good, F= fair, P=poor.
+ R= resistant, MR= moderately resis., M= intermediate,
MS= mod. susceptible, S= susc.
^ Indicates disease reaction changed from last year.
~ Consistent tolerance to head blight in grain yield and quality.
** Plant variety protection (PVP), title V, certification option - to be sold by variety name only as a class of certified seed.
*** PVP application pending or anticipated.

Table 4a. Oat yield results, eastern South Dakota locations, 2003-2004.

		Eastern Location Yield Averages (13% moisture)							
		Brookings		South Shore		Beresford		Eastern Averages	
Variety	(Hdg.)*	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr
Standard types:									
Don	(1)	121	115	138	102	153	114	137	110
Reeves	(2)	123	114	135	99	147	106	135	106
Hytest	(4)	126	110	132	91	112	86	123	96
Jerry	(5)	138	120	151	105	154	116	148	114
Morton	(7)	174	126	163	105	161	105	166	112
Loyal	(8)	164	130	155	102	146	103	155	112
HiFi	(8)	174	132	171	103	161	109	169	115
Hulless types:									
Buff Hls	(3)	114	95	131	87	113	88	119	90
Stark Hls	(6)	117	.	130	.	112	.	120	.
Paul Hls	(7)	105	80	117	63	76	53	99	65
Test avg.:		146	114	145	95	148	98		
High yield:		174	132	171	105	174	116		
# LSD(.05):		14	23	10	21	20	20		
## TPG-value:		160	109	161	84	154	96		
### CV:		7	6	5	7	9	8		

* Heading, the relative difference in days to heading, compared to the variety- Don.
# LSD, the amount values in a column must differ to be significantly different.
TPG-value, the minimum value required for the top performance group for yield.
Values that are underlined are in the top performance group for a given column.
Coef. of variation, a measure of trial experimental error; 15% or less is best.

Table 4b. Oat yield results, central South Dakota locations, 2003-2004.

		Central Location Yield Averages (13% moisture)							
		Miller		Selby		Brown Co.		Central Averages	
Variety	(Hdg.)*	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr
Standard types:									
Don	(1)	114	.	87	83	110	.	104	.
Reeves	(2)	105	.	99	82	114	.	106	.
Hytest	(4)	107	.	88	74	112	.	102	.
Jerry	(5)	120	.	116	97	128	.	121	.
Morton	(7)	126	.	115	94	140	.	127	.
Loyal	(8)	115	.	112	91	128	.	118	.
HiFi	(8)	130	.	130	99	149	.	136	.
Hulless types:									
Buff Hls	(3)	102	.	95	75	74	.	90	.
Stark Hls	(6)	100	.	92	.	95	.	96	.
Paul Hls	(7)	86	.	93	57	90	.	90	.
Test avg.:		119	.	108	84	124	.		
High yield:		133	.	137	99	150	.		
# LSD(.05):		14	.	13	18	14	.		
## TPG-value:		119	.	124	81	136	.		
### CV:		8	.	9	7	8	.		

* Heading, the relative difference in days to heading, compared to the variety- Don.
# LSD, the amount values in a column must differ to be significantly different.
TPG-value, the minimum value required for the top performance group for yield.
Values that are underlined are in the top performance group for a given column.
Coef. of variation, a measure of trial experimental error; 15% or less is best.

Table 4c. Oat yield results, western South Dakota locations, 2003-2004.

		Western Location Yield Averages (13% moisture)								State	
		Wall		Bison		Western Averages		State	Avg.	Top Yield Percentage$	
Variety	(Hdg.)*	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr	8 Loc 2004	5 Loc 3-Yr
Standard types:											
Don	(1)	51	58	56	.	54	.	104	94	0	100
Reeves	(2)	52	55	51	.	52	.	103	91	0	100
Hytest	(4)	50	52	57	.	54	.	98	83	0	60
Jerry	(5)	58	60	63	.	61	.	116	100	38	100
Morton	(7)	55	51	61	.	58	.	124	96	75	100
Loyal	(8)	56	51	68	.	62	.	118	95	38	100
HiFi	(8)	63	55	61	.	62	.	130	100	75	100
Hulless types:											
Buff Hls	(3)	46	46	49	.	48	.	91	78	0	20
Stark Hls	(6)	37	.	55	.	46	.	92	.	0	.
Paul Hls	(7)	27	29	45	.	36	.	80	56	0	0
Test avg.:		51	51	59	.						
High yield:		63	60	78	.						
# LSD(.05):		8	10	11	.						
## TPG-value:		55	50	67	.						
### CV:		10	9	13	.						

* Heading, the relative difference in days to heading, compared to the variety- Don.
$ Percent of test locations a variety appears in the top performance group for yield.
# LSD, the amount values in a column must differ to be significantly different.
TPG-value, the minimum value required for the top performance group for yield.
Values that are underlined are in the top performance group for a given column.
Coef. of variation, a measure of trial experimental error; 15% or less is best.

Table 5a. Oat averages for bushel weight, grain protein, and height, eastern South Dakota locations for 2004.

		Eastern Location Averages for bu.wt., grain protein, and height									Eastern Averages		
		Brookings			South Shore			Beresford					
Variety	(Hdg.)*	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.
Standard types:													
Don	(1)	36	12.1	40	36	12.9	38	40	15.9	40	37	13.6	39
Reeves	(2)	36	13.0	47	36	14.1	42	41	18.3	44	38	15.1	44
Hytest	(4)	38	14.4	49	40	15.6	43	43	19.8	44	40	16.6	45
Jerry	(5)	35	12.5	47	38	13.9	44	42	17.9	44	38	14.8	45
Morton	(7)	34	9.2	51	36	13.6	46	38	16.4	45	36	13.1	47
Loyal	(8)	33	11.7	48	35	16.0	43	38	18.1	46	36	15.3	46
HiFi	(8)	33	9.4	49	37	13.1	42	38	16.2	44	36	12.9	45
Hulless types:													
Buff Hls	(3)	40	12.6	43	43	14.6	39	51	20.5	42	45	15.9	41
Stark Hls	(6)	34	9.4	47	42	14.6	43	43	18.9	44	39	14.3	45
Paul Hls	(7)	35	12.1	50	43	14.9	42	46	21.1	43	41	16.0	45
Test avg.:		35	11.8	47	38	14.3	43	42	17.8	44			
High-value:		40	14.4	51	43	16.0	47	51	21.1	48			
#LSD(.05):		2	.	2	2	.	2	1	.	2			
## TPG-value:		38	.	49	41	.	45	50	.	46			
### CV:		3	.	3	3	.	3	2	.	4			

* Heading, the relative difference in days to heading, compared to the variety- Don.
# LSD, the amount values in a column must differ to be significantly different.
TPG-value, the minimum or maximum value required for the top performance group.
Values that are underlined are in the top performance group for a given column.
Coef. of variation, a measure of trial experimental error; 15% or less is best.

Table 5b. Oat averages for bushel weight, grain protein, and height, central South Dakota locations for 2004.

		Central Location Averages for bu.wt., grain protein, and height									Central Averages		
		Miller			Selby			Brown Co.					
Variety	(Hdg.)*	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.
Standard types:													
Don	(1)	38	15.2	32	39	16.1	.	38	13.6	39	38	15.0	35
Reeves	(2)	40	15.6	39	40	17.6	.	39	12.8	47	40	15.3	43
Hytest	(4)	41	17.2	40	40	19.4	.	39	15.5	46	40	17.4	43
Jerry	(5)	39	15.5	38	40	16.8	.	38	13.3	47	39	15.2	43
Morton	(7)	38	15.0	41	36	16.2	.	38	13.7	52	37	15.0	46
Loyal	(8)	38	14.4	40	35	18.1	.	37	13.5	47	37	15.3	44
HiFi	(8)	37	14.7	38	36	16.2	.	36	12.6	46	37	14.5	42
Hulless types:													
Buff Hls	(3)	43	15.7	34	44	18.8	.	39	14.5	44	42	16.3	39
Stark Hls	(6)	37	15.7	40	36	18.4	.	37	14.0	48	36	16.0	44
Paul Hls	(7)	39	17.2	42	41	18.9	.	39	16.7	52	40	17.6	47
Test avg.:		39	15.4	38	38	17.2	.	38	14.0	47			
High-value:		43	17.2	42	44	19.4	.	41	16.7	52			
# LSD(.05):		2	.	3	2	.	.	2	.	3			
## TPG-value:		41	.	39	42	.	.	39	.	49			
### CV:		3	.	6	3	.	.	4	.	4			

* Heading, the relative difference in days to heading, compared to the variety- Don.
\# LSD, the amount values in a column must differ to be significantly different.
TPG-value, the minimum or maximum value required for the top performance group.
Values that are underlined are in the top performance group for a given column.
Coef. of variation, a measure of trial experimental error; 15% or less is best.

Table 5c. Oat averages for bushel weight, grain protein, and height, western South Dakota locations for 2004.

		Western Location Averages for bu.wt., grain protein, and height						Western Averages			State Avg.		
		Wall			Bison								
Variety	(Hdg.)*	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.
Standard types:													
Don	(1)	40	.	25	35	15.7	26	37	.	25	38	14.5	34
Reeves	(2)	40	.	28	35	14.7	31	37	.	29	38	15.2	40
Hytest	(4)	43	.	30	38	17.5	32	40	.	31	40	17.1	40
Jerry	(5)	41	.	28	36	17.1	29	39	.	28	38	15.3	39
Morton	(7)	39	.	30	35	17.4	30	37	.	30	37	14.5	42
Loyal	(8)	38	.	30	37	15.7	29	37	.	29	36	15.4	41
HiFi	(8)	39	.	28	34	16.3	30	37	.	29	37	14.1	40
Hulless types:													
Buff Hls	(3)	50	.	25	40	18.4	25	45	.	25	44	16.4	36
Stark Hls	(6)	45	.	30	37	19.2	32	41	.	31	39	15.7	40
Paul Hls	(7)	47	.	29	40	20.5	31	43	.	30	41	17.3	41
Test avg.:		42	.	28	37	16.8	30						
High-value:		50	.	31	40	20.5	35						
# LSD(.05):		1	.	2	1	.	3						
## TPG-value:		49	.	29	39	.	32						
### CV:		2	.	6	3	.	7						

* Heading, the relative difference in days to heading, compared to the variety- Don.
# LSD, the amount values in a column must differ to be significantly different.
TPG-value, the minimum or maximum value required for the top performance group.
Values that are underlined are in the top performance group for a given column.
Coef. of variation, a measure of trial experimental error; 15% or less is best.

Table 6. Origin, variety traits, and disease reactions for oat entries in 2004.

Variety	(Hdg.)*	Origin	--- Traits --- Ldg. Resis.	Grain Color	-- Disease reaction + -- Smut	-- Rust -- Stem	Crown	Red Leaf	PVP** Status
Standard varieties:									
Don	(1)	IL-85	Good	White	R	MS	S	MR	No
Reeves	(2)	SD-02	Good	White	MR	S	MR-	MR-	No
Hytest	(4)	SD-86	Good	Lt.Cream	MR	MS	MS	MS	No
Jerry	(5)	ND-94	Good	White	-	MS	MR	MS	Yes
Morton	(7)	ND-01	Good	White	-	R	-	-	***
Loyal	(8)	SD-00	Good	White	R	MS	R	S	No
HiFi	(8)	ND-01	Good	White	-	R	MR	-	Yes
Hulless varieties:									
Buff Hls	(3)	SD-02	Good	Hulless	R	S	MS	MR-	No
Stark Hls	(6)	ND-04	Good	Hulless	-	MR	MS	S	***
Paul Hls	(7)	ND-94	Good	Hulless	MS	MR	MS	S	Yes

* Heading, the relative difference in days to heading, compared to Don.
+ R= resistant, MR= moderately resis., MS= mod. susceptible, S= susc.
** Plant variety protection (PVP), title V, certification option - to be sold by variety name only as a class of certified seed.
*** PVP application pending or anticipated.

Table 7a. Barley yield results, eastern South Dakota locations, 2003-2004.

		Eastern Location Yield Averages (13% moisture)					
		Brookings		South Shore		Eastern Averages	
Variety	(Hdg.)*	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr
Lacey	(1)	97	94	104	76	101	85
Conlon	(1)	81	72	102	79	92	76
Tradition	(1)	88	.	107	.	98	.
Drummond	(3)	86	87	98	72	92	80
Haxby	(3)	95	.	110	.	103	.
Excel	(4)	100	100	103	72	102	86
Robust	(4)	93	94	84	68	89	81
Eslick	(4)	112	.	115	.	114	.
Legacy	(4)	96	.	108	.	102	.
Valier	(5)	101	.	106	.	104	.
Test avg.:		95	90	104	72		
High yield:		112	100	119	79		
# LSD(.05):		^NS	10	10	9		
## TPG-value:		81	90	109	70		
### CV:		13	11	6	5		

* Heading, the relative difference in days to heading, compared to the variety-Lacey.
^ Values within a column do not differ significantly (.05 level of probability).
# LSD, the amount values in a column must differ to be significantly different.
TPG-value, the minimum value required for the top performance group for yield.
Values that are underlined are in the top performance group for a given column.
Coef. of variation, a measure of trial experimental error; 15% or less is best.

Table 7b. Barley yield results, central South Dakota locations, 2003-2004.

		Central Location Yield Averages (13% moisture)							
		Miller		Selby		Brown Co.		Central Averages	
Variety	(Hdg.)*	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr
Lacey	(1)	85	.	97	82	112	82	98	82
Conlon	(1)	80	.	75	69	96	67	84	68
Tradition	(1)	84	.	88	.	105	.	92	.
Drummond	(3)	85	.	94	80	99	69	93	75
Haxby	(3)	95	.	77	.	92	.	88	.
Excel	(4)	90	.	97	85	105	76	97	81
Robust	(4)	76	.	76	67	93	72	82	70
Eslick	(4)	97	.	93	.	108	.	99	.
Legacy	(4)	89	.	88	.	117	.	98	.
Valier	(5)	89	.	94	.	99	.	94	.
Test avg.:		87	.	89	77	102	74		
High yield:		97	.	98	85	117	82		
# LSD(.05):		7	.	11	9	11	8		
## TPG-value:		90	.	87	76	108	75		
### CV:		6	.	9	10	8	5		

* Heading, the relative difference in days to heading, compared to the variety- Lacey.
\# LSD, the amount values in a column must differ to be significantly different.
TPG-value, the minimum value required for the top performance group for yield.
Values that are underlined are in the top performance group for a given column.
Coef. of variation, a measure of trial experimental error; 15% or less is best.

Table 7c. Barley yield results, western South Dakota locations, 2003-2004.

		Western Location Yield Averages (13% moisture)											
		Wall		Bison		Ralph		Western Averages		State		State Top Yield Percentage$	
Variety	(Hdg.)*	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr	8 Loc 2004	6 Loc 3-Yr
Lacey	(1)	52	44	40	.	62	41	51	43	81	70	75	100
Conlon	(1)	55	48	41	.	59	38	52	43	74	62	50	50
Tradition	(1)	56	.	36	.	58	.	50	.	78	.	50	.
Drummond	(3)	55	42	37	.	60	38	51	40	77	65	50	67
Haxby	(3)	63	.	29	.	58	.	50	.	77	.	63	.
Excel	(4)	58	45	33	.	61	44	51	45	81	70	63	100
Robust	(4)	60	42	25	.	46	32	44	37	69	63	25	33
Eslick	(4)	55	.	49	.	65	.	56	.	87	.	100	.
Legacy	(4)	53	44	40	.	64	45	52	45	82	.	75	.
Valier	(5)	55	.	41	.	65	.	54	.	81	.	63	.
Test avg.:		56	43	36	.	59	39						
High yield:		63	48	49	.	65	45						
# LSD(.05):		^NS	7	10	.	10	7						
## TPG-value:		47	41	39	.	55	38						
### CV:		12	13	18	.	12	15						

* Heading, the relative difference in days to heading, compared to the variety- Lacey.
$ Percent of test locations a variety appears in the top performance group for yield.
^ Values within a column do not differ significantly (.05 level of probability).
# LSD, the amount values in a column must differ to be significantly different.
TPG-value, the minimum value required for the top performance group for yield.
Values that are underlined are in the top performance group for a given column.
Coef. of variation, a measure of trial experimental error; 15% or less is best.

Table 8a. Barley averages for bushel weight, grain protein, and height, eastern South Dakota locations for 2004.

		Eastern Location Averages for bu.wt., grain protein, and height								
		Brookings			South Shore			Eastern Averages		
Variety	(Hdg.)*	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.
Lacey	(1)	48	11.3	35	47	12.1	39	47	11.7	37
Conlon	(1)	49	12.1	32	50	12.3	36	50	12.2	34
Tradition	(1)	48	9.0	36	48	11.7	39	48	10.4	37
Drummond	(3)	48	11.5	35	46	12.0	39	47	11.8	37
Haxby	(3)	51	11.1	34	50	11.4	36	50	11.3	35
Excel	(4)	49	10.5	36	46	11.4	38	47	11.0	37
Robust	(4)	48	11.3	39	46	11.5	41	47	11.4	40
Eslick	(4)	50	10.4	35	48	10.8	35	49	10.6	35
Legacy	(4)	48	10.6	37	45	12.5	39	46	11.6	38
Valier	(5)	52	11.3	35	50	12.3	37	51	11.8	36
Test avg.:		49	10.9	36	48	11.7	38			
High-value:		52	12.1	39	50	12.5	41			
# LSD(.05):		2	.	2	2	.	2			
## TPG-value:		50	.	37	48	.	40			
### CV:		3	.	3	3	.	3			

* Heading, the relative difference in days to heading, compared to the variety- Lacey.
\# LSD, the amount values in a column must differ to be significantly different.
TPG-value, the minimum or maximum value required for the top performance group.
Values that are underlined are in the top performance group for a given column.
Coef. of variation, a measure of trial experimental error; 15% or less is best.

Table 8b. Barley averages for bushel weight, grain protein, and height, central South Dakota locations for 2004.

		Central Location Averages for bu.wt., grain protein, and height									Central Averages		
		Miller			Selby			Brown Co.					
Variety	(Hdg.)*	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.
Lacey	(1)	49	11.2	35	48	13.2	.	47	13.0	38	48	12.5	36
Conlon	(1)	49	11.5	33	45	12.7	.	49	12.0	36	48	12.1	34
Tradition	(1)	49	11.5	37	47	12.8	.	48	12.2	39	48	12.2	38
Drummond	(3)	48	11.4	36	49	14.2	.	45	14.8	41	48	13.5	39
Haxby	(3)	50	10.5	33	47	14.3	.	50	13.7	36	49	12.8	34
Excel	(4)	48	10.3	37	46	13.0	.	47	11.8	37	47	11.7	37
Robust	(4)	49	11.3	39	47	14.0	.	48	12.8	40	48	12.7	39
Eslick	(4)	49	11.2	31	43	14.9	.	51	13.1	36	48	13.1	33
Legacy	(4)	48	9.9	37	43	14.5	.	48	11.9	38	46	12.1	37
Valier	(5)	50	11.5	34	49	14.8	.	51	13.6	38	50	13.3	36
Test avg.:		49	11.0	35	47	13.7	.	48	13.0	38			
High-value:		50	11.5	39	49	14.9	.	51	14.8	41			
# LSD(.05):		^NS	.	2	2	.	.	2	.	2			
## TPG-value:		47	.	37	47	.	.	50	.	39			
### CV:		3	.	4	4	.	.	3	.	4			

* Heading, the relative difference in days to heading, compared to the variety- Lacey.
^ Values within a column do not differ significantly (.05 level of probability).
# LSD, the amount values in a column must differ to be significantly different.
TPG-value, the minimum or maximum value required for the top performance group.
Values that are underlined are in the top performance group for a given column.
Coef. of variation, a measure of trial experimental error; 15% or less is best.

Table 8c. Barley averages for bushel weight, grain protein, and height, western South Dakota locations for 2004.

		Western Location Averages for bu.wt., grain protein, and height									Western Averages			State Avg.		
		Wall			Bison			Ralph								
Variety	(Hdg.)*	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.
Lacey	(1)	43	13.1	19	40	12.9	25	44	11.7	25	42	12.6	23	46	12.3	31
Conlon	(1)	43	12.7	19	41	13.2	22	44	12.1	25	42	12.7	22	46	12.3	29
Tradition	(1)	39	13.4	19	40	13.2	24	42	11.8	26	40	12.8	23	45	12.0	31
Drummond	(3)	42	13.2	20	42	13.0	26	41	12.0	30	42	12.7	25	45	12.8	33
Haxby	(3)	49	13.6	20	38	14.6	23	47	11.6	22	45	13.3	21	48	12.6	29
Excel	(4)	39	12.8	19	40	12.7	23	43	11.3	23	41	12.3	22	45	11.7	30
Robust	(4)	43	13.9	21	42	13.8	26	44	12.1	23	43	13.3	23	46	12.6	33
Eslick	(4)	45	13.4	18	43	12.7	22	46	12.1	23	45	12.7	21	47	12.3	28
Legacy	(4)	40	13.4	21	42	13.1	27	42	11.8	27	41	12.8	25	44	12.2	32
Valier	(5)	47	14.2	20	40	13.3	22	46	12.1	19	44	13.2	20	48	12.9	29
Test avg.:		43	13.1	20	41	13.2	24	44	11.8	24						
High-value:		49	14.2	21	43	14.6	27	47	12.1	30						
# LSD(.05):		2	.	2	NS	.	3	2	.	4						
## TPG-value:		47	.	19	38	.	24	46	.	26						
### CV:		4	.	9	5	.	9	3	.	8						

* Heading, the relative difference in days to heading, compared to the variety- Lacey.
\# LSD, the amount values in a column must differ to be significantly different.
TPG-value, the minimum or maximum value required for the top performance group.
Values that are underlined are in the top performance group for a given column.
Coef. of variation, a measure of trial experimental error; 15% or less is best.

Table 9. Origin, variety traits, and disease reactions for barley entries tested in 2004.

			Traits#			Disease Reaction+				
Variety	(Hdg.)*	Origin	Ldg. Resis.	Grain Use	Awn Texture	Smut	Stem Rust	Blotch Spot	Blotch Net	PVP** Status
Conlon	(1)	ND-96	G	Malt	SS	S	S	MS	MR	Yes
Lacey	(1)	MN-00	G	Malt	S	S	S	MR	S	Yes
Tradition	(1)	BARI-03	F	Malt	S	S	S	MR	S	***
Drummond	(3)	ND-00	VG	Malt	SS	S	S	R	MS	Yes
Haxby	(3)	MT-02	F	Feed	R	S	-	-	-	Yes
Excel	(4)	MN-90	VG	Malt	S	S	S	MR	S	Yes
Robust	(4)	MN-83	G	Malt	S	S	S	MR	S	Yes
Eslick	(4)	MT-04	F	Feed	R	S	-	-	-	***
Valier	(5)	MT-99	F	Feed	R	S	-	-	-	***
Legacy	(4)	BARI-00	G	Malt	S	S	S	MR	S	Yes

* Heading, the relative difference in days to heading, compared to Lacey.
# E= excellent, G= good, VG= very good, F= fair, P=poor, S= smooth, SS= semi-smooth.
+ R= resistant, MR= moderately resis., M= intermediate, MS= mod. susceptible, S= susc.
** Plant variety protection (PVP), title V, certification option - to be sold by variety name only as a class of certified seed.
*** PVP application pending or anticipated.

Table 10a. Hard Red Winter Wheat (HRWW) yield results, western South Dakota locations, 2003-2004.

		Western Location Yield Averages (13% moisture)					
		Wall		Sturgis		Western Averages	
Variety	(Hdg.)*	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr
Wendy~W	(-1)	45	39	25	.	35	.
Expedition	(0)	47	39	21	.	34	.
Wesley	(2)	48	41	25	.	37	.
Nekota	(2)	45	39	28	.	37	.
Alliance	(2)	46	41	29	.	38	.
Wahoo	(3)	57	44	26	.	42	.
Jagalene	(3)	52	39	24	.	38	.
Trego~W	(3)	36	34	27	.	32	.
Arapahoe	(3)	40	36	22	.	31	.
Millennium	(4)	47	40	29	.	38	.
Tandem	(4)	51	42	26	.	39	.
Crimson	(5)	48	39	27	.	38	.
Harding	(5)	56	41	27	.	42	.
Jerry	(6)	53	.	29	.	41	.
Test avg.:		49	40	26	.		
High yield:		61	44	30	.		
# LSD (.05):		6	^NS	.	.		
## TPG-value:		55	34	.	.		
### CV:		8	10	18	.		

* Heading, the relative difference in days to heading, compared to the variety- Expedition.
^ Values within a column do not differ significantly (.05 level of probability).
# LSD, the amount values in a column must differ to be significantly different.
TPG-value, the minimum value required for the top performance group for yield.
Values that are underlined are in the top performance group for a given column.
Coef. of variation, a measure of trial experimental error; 15% or less is best.

Table 10b. Hard Red Winter Wheat (HRWW) yield results, central South Dakota locations, 2003-2004.

		Central Location Yield Averages (13% moisture)							
		Platte		Pierre		Tripp Co.		Central Averages	
Variety	(Hdg.)*	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr
Wendy~W	(-1)	48	57	42	.	50	**47**	47	.
Expedition	(0)	58	59	45	.	40	**39**	48	.
Wesley	(2)	60	62	47	.	39	**37**	49	.
Nekota	(2)	58	58	51	.	47	**41**	52	.
Alliance	(2)	64	58	53	.	51	**44**	56	.
Wahoo	(3)	63	61	53	.	52	40	56	.
Jagalene	(3)	55	59	58	.	60	49	58	.
Trego~W	(3)	59	58	49	.	57	46	55	.
Arapahoe	(3)	57	58	45	.	47	38	50	.
Millennium	(4)	60	61	47	.	55	43	54	.
Tandem	(4)	63	56	53	.	46	41	54	.
Crimson	(5)	57	54	53	.	38	36	49	.
Harding	(5)	72	60	46	.	52	41	57	.
Jerry	(6)	62	.	46	.	40	.	49	.
Test avg.:		61	59	51	.	49	42		
High yield:		76	63	58	.	60	49		
# LSD(.05):		10	^NS	.	.	8	^NS		
## TPG-value:		66	54	.	.	52	36		
### CV:		12	12	18	.	12	13		

* Heading, the relative difference in days to heading, compared to the variety- Expedition.
^ Values within a column do not differ significantly (.05 level of probability).
# LSD, the amount values in a column must differ to be significantly different.
TPG-value, the minimum value required for the top performance group for yield.
Values that are underlined are in the top performance group for a given column.
Coef. of variation, a measure of trial experimental error; 15% or less is best.

Table 10c. Hard Red Winter Wheat (HRWW) yield results, eastern South Dakota locations, 2003-2004.

		Eastern Location Yield Averages (13% moisture)									
		Brookings		Highmore		Selby		Eastern Averages		State Avg.	
Variety	(Hdg.)*	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr	Bu/A 2004	Bu/A 3-Yr
Wendy~W	(-1)	86	77	66	48	65	.	72	.	53	54
Expedition	(0)	91	76	62	46	62	.	72	.	53	52
Wesley	(2)	96	80	72	51	58	.	75	.	56	54
Nekota	(2)	86	74	72	49	60	.	73	.	56	52
Alliance	(2)	83	71	75	51	71	.	76	.	59	53
Wahoo	(3)	100	83	78	57	70	.	83	.	62	57
Jagalene	(3)	82	79	73	55	72	.	76	.	60	56
Trego~W	(3)	82	73	68	48	63	.	71	.	55	52
Arapahoe	(3)	79	75	74	54	71	.	75	.	54	52
Millennium	(4)	100	84	74	54	70	.	81	.	60	56
Tandem	(4)	84	72	71	52	65	.	73	.	57	53
Crimson	(5)	80	74	64	48	66	.	70	.	54	50
Harding	(5)	93	80	76	54	68	.	79	.	61	55
Jerry	(6)	106	.	79	.	71	.	85	.	61	.
Test avg.:		91	77	73	52	68	.				
High yield:		106	84	82	57	77	.				
# LSD(.05):		16	^NS	8	5	7	.				
## TPG-value:		90	71	74	52	70	.				
### CV:		13	12	8	9	7	.				

* Heading, the relative difference in days to heading, compared to the variety- Expedition.
^ Values within a column do not differ significantly (.05 level of probability).
# LSD, the amount values in a column must differ to be significantly different.
TPG-value, the minimum value required for the top performance group for yield.
Values that are underlined are in the top performance group for a given column.
Coef. of variation, a measure of trial experimental error; 15% or less is best.

Table 11a. Hard Red Winter Wheat averages for bushel weight, grain protein, and height, western South Dakota locations, 2002-2004.

		Western Location Averages for bu.wt., grain protein, and height						Western Averages		
		Wall			Sturgis					
Variety	(Hdg.)*	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.
Wendy~W	(-1)	62	14.8	.	59	16.6	.	61	15.7	.
Expedition	(0)	63	15.0	.	60	16.2	.	61	15.6	.
Wesley	(2)	62	15.3	.	56	16.9	.	59	16.1	.
Nekota	(2)	63	14.8	.	58	16.3	.	60	15.6	.
Alliance	(2)	63	14.1	.	58	14.5	.	61	14.3	.
Wahoo	(3)	62	14.4	.	57	15.8	.	59	15.1	.
Jagalene	(3)	63	14.9	.	60	16.2	.	61	15.6	.
Trego~W	(3)	62	14.7	.	60	15.5	.	61	15.1	.
Arapahoe	(3)	61	15.5	.	56	16.9	.	59	16.2	.
Millennium	(4)	63	14.4	.	58	15.4	.	61	14.9	.
Tandem	(4)	63	15.5	.	60	17.4	.	62	16.5	.
Crimson	(5)	61	14.2	.	58	18.0	.	59	16.1	.
Harding	(5)	62	14.2	.	54	16.7	.	58	15.5	.
Jerry	(6)	62	14.7	.	54	17.1	.	58	15.9	.
Test avg.:		62	14.8	.	57	16.5	.			
High-value:		64	15.9	.	60	18.0	.			
# LSD(.05):		1	.	.	2	.	.			
## TPG-value:		63	.	.	58	.	.			
### CV:		1	.	.	2	.	.			

* Heading, the relative difference in days to heading, compared to the variety- Expedition.
# LSD, the amount values in a column must differ to be significantly different.
TPG-value, the minimum or maximum value required for the top performance group.
Values that are underlined are in the top performance group for a given column.
Coef. of variation, a measure of trial experimental error; 15% or less is best.

Table 11b. Hard Red Winter Wheat averages for bushel weight, grain protein, and height, central South Dakota locations, 2002-2004.

		Central Location Averages for bu.wt., grain protein, and height									Central Averages		
		Platte			Pierre			Tripp Co.					
Variety	(Hdg.)*	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.
Wendy~W	(-1)	61	11.2	.	60	15.6	.	59	12.9	.	60	13.2	.
Expedition	(0)	61	10.8	.	61	15.8	.	58	12.9	.	60	13.2	.
Wesley	(2)	60	11.1	.	59	16.1	.	55	15.0	.	58	14.1	.
Nekota	(2)	60	9.5	.	60	15.3	.	57	12.9	.	59	12.6	.
Alliance	(2)	60	10.8	.	59	14.5	.	57	16.7	.	59	14.0	.
Wahoo	(3)	60	9.1	.	59	15.8	.	55	14.0	.	58	13.0	.
Jagalene	(3)	62	12.0	.	61	15.7	.	58	13.8	.	60	13.8	.
Trego~W	(3)	62	8.9	.	62	14.7	.	59	12.5	.	61	12.0	.
Arapahoe	(3)	60	12.8	.	58	17.1	.	56	14.3	.	58	14.7	.
Millennium	(4)	61	11.2	.	60	15.3	.	57	13.5	.	59	13.3	.
Tandem	(4)	60	9.7	.	61	15.1	.	59	13.3	.	60	12.7	.
Crimson	(5)	63	9.0	.	62	16.9	.	54	14.0	.	60	13.3	.
Harding	(5)	61	9.4	.	60	16.4	.	55	14.9	.	59	13.6	.
Jerry	(6)	60	9.0	.	57	16.3	.	56	14.3	.	58	13.2	.
Test avg.:		61	10.4	.	60	15.7	.	57	13.9	.			
High-value:		63	13.0	.	62	17.1	.	59	16.7	.			
# LSD(.05):		1	.	.	1	.	.	2	.	.			
## TPG-value:		62	.	.	61	.	.	57	.	.			
### CV:		1	.	.	2	.	.	3	.	.			

* Heading, the relative difference in days to heading, compared to the variety- Expedition.
# LSD, the amount values in a column must differ to be significantly different.
TPG-value, the minimum or maximum value required for the top performance group.
Values that are underlined are in the top performance group for a given column.
Coef. of variation, a measure of trial experimental error; 15% or less is best.

Table 11c. Hard Red Winter Wheat averages for bushel weight, grain protein, and height, eastern South Dakota locations, 2002-2004.

		Eastern Location Averages for bu.wt., grain protein, and height									Eastern Averages			State Avg.		
		Brookings			Highmore			Selby								
Variety	(Hdg.)*	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.	Bu. wt. Lb.	Prot. %	Ht. in.
Wendy~W	(-1)	59	12.0	.	58	12.1	.	58	12.0	.	58	12.0	.	60	13.4	.
Expedition	(0)	62	11.3	.	59	11.4	.	58	10.8	.	60	11.2	.	60	13.0	.
Wesley	(2)	60	11.6	.	57	12.6	.	54	12.5	.	57	12.2	.	58	13.9	.
Nekota	(2)	60	11.1	.	58	11.2	.	57	11.4	.	58	11.2	.	59	12.8	.
Alliance	(2)	61	8.9	.	58	10.4	.	57	11.2	.	59	10.2	.	59	12.6	.
Wahoo	(3)	60	11.2	.	60	12.1	.	56	11.6	.	59	11.6	.	58	13.0	.
Jagalene	(3)	61	11.1	.	60	11.6	.	60	10.9	.	60	11.2	.	61	13.3	.
Trego~W	(3)	62	10.8	.	61	10.8	.	59	10.2	.	61	10.6	.	61	12.3	.
Arapahoe	(3)	59	11.7	.	57	11.9	.	58	12.6	.	58	12.1	.	58	14.1	.
Millennium	(4)	61	11.5	.	59	11.9	.	58	11.1	.	59	11.5	.	60	13.0	.
Tandem	(4)	61	11.8	.	59	12.7	.	58	11.1	.	59	11.9	.	60	13.3	.
Crimson	(5)	61	10.9	.	60	12.8	.	58	10.8	.	60	11.5	.	60	13.3	.
Harding	(5)	61	12.0	.	58	12.3	.	58	12.2	.	59	12.2	.	59	13.5	.
Jerry	(6)	59	10.8	.	58	11.9	.	57	11.6	.	58	11.4	.	58	13.2	.
Test avg.:		60	11.5	.	58	11.8	.	58	11.5	.						
High-value:		63	12.7	.	61	12.8	.	60	13.2	.						
# LSD(.05):		1	.	.	1	.	.	1	.	.						
## TPG-value:		60	.	.	60	.	.	59	.	.						
### CV:		1	.	.	1	.	.	1	.	.						

* Heading, the relative difference in days to heading, compared to the variety- Expedition.
# LSD, the amount values in a column must differ to be significantly different.
TPG-value, the minimum or maximum value required for the top performance group.
Values that are underlined are in the top performance group for a given column.
Coef. of variation, a measure of trial experimental error; 15% or less is best.

Table 12. Origin, variety traits, and disease reactions for winter wheat entries tested in 2004.

			Traits#				Disease Reaction +				
Variety	(Hdg.)*	Origin	Ldg Res	End-Use Qlty	Wntr Hardy Rtg	Cole-optile Pct##	Wht Strk Msc	Tan Spot	Rust $ Str	Rust $ Lf	Rust $ Stm	PVP*
Wendy~W	(-1)	SD-04	E	GN	E	67	MS	R	R	MS	MR	***
Expedition	(0)	SD-02	F	EB	G-E	88	S^	MS	MS	MS	R	***
Alliance	(2)	NE-93	G	AB	G	76	MS	VS	MR	S	MS	Yes
Nekota	(2)	NE/SD-94	G	GB	G	87	MS	MR	S	S	MR	No
Wesley	(2)	NE-98	E	AB	G-E	79	S	MR	MR	MS	R	No
Arapahoe	(3)	NE-88	F	GB	G-E	83	S	S	MS		MR	Yes
Trego~W	(3)	KS-99	F-G	EB	F-G	80	S	MS	S	MR	R	Yes
Wahoo	(3)	NE/WY-01	G	-	G	91	S	-	MR	S	R	Yes
Jagalene	(3)	AW-02	E	-	G	92	MS	MR	MR	MR	MR	Yes
Millennium	(4)	NE-99	G	AB	F-G	78	S	MS	MR	MS	MR	Yes
Tandem	(4)	SD-97	F-G	EB	G	112	S	S	MR		MR	Yes
Crimson	(5)	SD-97	G	GB	G-E	110	MR	R	MR		MS	Yes
Harding	(5)	SD-99	F-G	AB	E	100	MR	MR	MS	MR	MR	Yes
Jerry	(6)	ND-01	F	GB	E	92	MS	-	MR		R	No

* Heading, the relative difference in days to heading, compared to Expedition.
~ W Hard white wheat variety.
# E= exc., A= accept., F= fair, G= good, P= poor, B=baking, and N=noodle
##Percent of Harding (3-1/4" long).
+ R= resistant, MR= moderately resist., MS= mod. susceptible, S= susc., VS= very susc.
$ Rusts: Stripe (str), leaf (lf), and stem (stm).
** Plant variety protection (PVP), title V, certification option - to be sold by variety name only as a class of certified seed.
*** PVP application pending or anticipated.

COOPERATIVE EXTENSION SERVICE SDSU

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2006 Winter Wheat Variety Yield Results and Planting Tips

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It was a tough year for winter wheat in South Dakota in 2006. The major winter wheat growing areas in the central and western part of the state suffered serious drought from planting until harvest. Most areas were very dry at planting, which delayed germination until rain came later in the fall. This led to plants with small crowns and little fall growth. Conditions did not improve in the spring with several locations having the driest January to June on record.

Yields from the Crop Performance Testing Program averaged 47 bu/A statewide, but many locations were not harvested due to the drought. Trials at Selby, Bison, Hayes, and Kennebec were too poor to be harvested for yield. Trials at Watertown, Platte, and Dakota Lakes had too much variation for yield results to be reported. The top performing varieties in East River in 2006 were NuDakota, Wesley, Nekota, Alliance, and SD98102; while Hatcher, SD98102, NuDakota, Harry, and Wahoo were best in West River.

The tables give the characteristics and performance of winter wheat varieties tested in South Dakota. Use them to select a variety with the agronomic characteristics suitable for your area and production system. When considering yield, look for varieties that have performed well at locations near your farm over the past 3 years.

Drought causes winter wheat planting dilemma

The major winter wheat producing region of central and western South Dakota is experiencing severe drought, making it difficult to decide whether to plant at all and if so, when to plant. Most of this region has no moisture in the top 3 to 4 feet, making it very difficult to make planting decisions.

Some planting scenarios (with potential problems) producers may opt to take:

1. **Delaying planting until it rains**. In South Dakota the recommended time to plant winter wheat is September 15 through October 10. Wheat plants should be well established before freezing to attain maximum cold tolerance and to accumulate enough energy reserves for the following spring.

Research from western South Dakota has shown that grain yield is decreased and that the crop suffers substantial winter injury when planting is later than October 15. Planting in November or even later may avoid winter injury (because germination is delayed until spring), but our research shows that yield is decreased and, in most cases, yields are lower than spring wheat yields.

Rather than planting late into November, producers may want to consider forgoing winter wheat this fall and. if soil moisture conditions improve, plant a spring crop next year.

2. **Planting into dry soil**. This has many potential problems. First, the minimum soil moisture required to germinate wheat seed is very low, meaning that even under dry conditions the seed can germinate. But if soil moisture is too low to support growth, seedlings will wilt and die, reducing crop stands. Second, the soil may be so

dry that germination will not occur till next spring. Again, producers may be better off waiting to see if soil moisture improves over winter and deciding whether to plant a spring crop. Remember also that seeding in dry soil increases risk of seed decay caused by soil-borne fungi.

3. **Seeding winter wheat into standing stubble**. In areas that may have adequate soil moisture to plant, standing stubble provides a better environment for wheat seed to germinate and seedlings to establish. The standing stubble traps snow over winter months, improving soil moisture conditions, and the trapped snow insulates wheat seedlings against cold temperatures, reducing risk of winter kill.

Seeding winter wheat into broadleaf-crops stubble is recommended to reduce the risk of insect, disease, and weed problems in the rotation. Seeding into wheat stubble should be avoided as this can increase the risk of disease carryover to the following season.

If planting winter wheat into a conventional fallow field, it is important to minimize the number of tillage operations just before planting. Plowing and other deep tillage operations can reduce seedbed firmness, dry the topsoil, and bury protective residues, increasing the risk of winter kill.

4. **Manipulating seeding depth**. The recommended seeding depth for winter wheat is of 1 1/2 to 2 inches in a firm seedbed. For direct seeding, a uniform depth of 1-1 1/2 inches under optimum moisture conditions will give a good stand.

Under dry conditions some producers may be tempted to seed deeper than 2 inches in hopes of getting closer to soil moisture. Planting deeper than 2 inches reduces emergence, however, and can result in weak, spindly seedlings with poor ability to survive the winter. Plant at the recommended seeding depth and make sure there is good soil-to-seed contact especially under drier conditions. If soil cover over the seed is poor, there is risk of exposing the crown and adversely affecting winter survival.

5. **Increasing seeding rates**. - The recommended seeding rate is 22 pure-live-seeds per square foot (approximately 960,000 seeds/acre). Higher seeding rates are suggested when planting in poor seedbed or planting later than the recommended dates. If you choose to plant winter wheat this fall and you have assessed your seedbed as

Table 1. Hard winter wheat yield results - West River locations, 2004–2006 (bu/A).

	Winner		Martin		Oelrichs		Sturgis		Wall		West River	
Variety	2006	3-yr	2006	3-yr	2006	3-yr	2006	3-yr	2006	3-yr	2006	3-yr
SD98102	37	49	52	.	55	.	39	32	43	49	45	44
Hatcher	38	.	55	.	62	.	38	.	41	.	47	.
NuDakota (HWW)	37	.	50	.	58	.	31	.	47	.	45	.
Harry	39	.	44	.	60	.	36	.	46	.	45	.
Alliance	41	47	42	.	54	.	33	30	46	48	43	42
Expedition	37	40	44	.	56	.	33	28	46	45	43	3
Wahoo	35	46	45	.	61	.	36	30	48	53	45	43
Trego (HWW)	38	50	53	.	54	.	36	32	40	42	44	41
Wesley	34	39	48	.	52	.	34	29	42	44	42	37
SD97w609 (HWW)	39	47	47	.	52	.	37	27	45	45	44	40
Wendy (HWW)	38	47	48	.	49	.	33	27	46	46	43	40
Overland	38	.	44	.	52	.	28	.	46	.	42	.
NuFrontier (HWW)	38	.	46	.	57	.	35	.	44	.	44	.
Arapahoe	35	44	45	.	52	.	30	26	42	42	41	38
Millennium	31	46	43	.	56	.	32	32	41	48	41	42
Jagalene	41	52	42	.	57	.	38	31	42	47	44	43
Harding	37	48	40	.	52	.	33	28	42	48	41	41
Nekota	37	43	42	.	50	.	33	29	36	42	40	38
Tandem	36	44	44	.	51	.	35	29	45	46	42	40
Jerry	29	39	43	.	53	.	30	26	39	49	39	38
Overley	30	.	41	.	54	.	29	.	46	.	40	.
Crimson	37	41	42	.	51	.	33	27	34	43	39	37
Mean	37	45	45	.	54	.	33	29	43	46	43	40
CV	9.0	10.7	12.5	.	8.2	.	12.6	15.5	11.2	12.1	.	.
LSD.05	5.4	4.1	8.0	.	6.2	.	6.8	3.8	6.8	4.5	.	.

poor, increase seeding rate to 28 pure-live-seeds per square foot.

Evaluate your own farm situation and decide whether to plant winter wheat this fall or not. In our own assessment, most producers in the dry region of the state may be better off waiting till spring and deciding on which crop to plant based on the soil moisture then.

If planting this fall, plan on having a good weed control program. Weed problems are likely to increase when winter wheat growth is limited by drought stress. Controlling grassy weeds and volunteer wheat 2 weeks prior to planting winter wheat will provide a break in the life cycle of wheat curl mite and help to control wheat streak mosaic and other diseases.

Table 2. Hard winter wheat yield results - East River Locations, 2004 - 2006 (bu/A).

Variety	Brookings		Highmore		East River		State	
	2006	3-yr	2006	3-yr	2006	3-yr	2006	3-yr
SD98102	84	68	42	66	63	67	50	52
Hatcher	78	.	46	.	62	.	50	.
NuDakota (HWW)	89	.	49	.	69	.	50	.
Harry	77	.	45	.	61	.	49	.
Alliance	81	65	48	67	64	66	49	51
Expedition	85	70	40	59	62	65	48	49
Wahoo	78	74	44	69	61	71	48	52
Trego (HWW)	72	58	51	62	62	60	48	49
Wesley	81	71	52	64	67	67	48	49
SD97w609 (HWW)	72	63	46	63	59	63	48	50
Wendy (HWW)	80	68	34	60	57	64	48	49
Overland	85	.	32	.	59	.	47	.
NuFrontier (HWW)	66	.	50	.	58	.	47	.
Arapahoe	82	69	45	67	63	68	46	49
Millennium	79	78	42	66	61	72	46	53
Jagalene	65	59	44	63	55	61	46	51
Harding	71	69	49	67	60	68	45	50
Nekota	76	63	54	63	65	63	45	46
Tandem	65	62	45	63	55	62	45	49
Jerry	78	79	42	66	60	73	45	50
Overley	81	.	26	.	53	.	44	.
Crimson	73	62	46	62	59	62	44	47
Mean	77	68	45	65	61	66	47	50
CV	8.6	12.6	13.2	7.7	.	.	10.7	14.9
LSD.05	9.3	6.9	12.0	4.3	.	.	2.6	1.8

Table 3. Origin, variety traits, and disease reactions for winter wheat entries for 2006.

Variety	(Hdg.)*	Origin	Test Wt	Ldg Res	End-Use Qlty	Wntr Hardy Rtg	Cole-optile Pct##	Wht Strk Msc	Tan Spot	Str	Lf	Stm	PVP*
			---------- Traits# ----------						-- Disease Reaction + --		- Rust $ -		
Wendy~HWW	(-1)	SD-04	59	E	GN	E	67	MS	R	MR	MS	MR	Yes
SD97W609~HWW	(-1)	SD-	59	G	EB	G	67	MR		MR		MR	***
Expedition	(0)	SD-02	59	F	EB	G-E	88	S	MS	MS	MS	R	Yes
Overley	(0)	KS-03	60	G	GB	F-G	92	MR	MR	R	MS	MR	Yes
NuDakota~HWW	(1)	AW-06	57	E		G	.	MS	MR	MR	R	MR	Yes
Alliance	(2)	NE-93	58	G	AB	G	76	MS	VS	MR	S	MS	Yes
Nekota	(2)	NE/SD-94	59	G	GB	G	87	MS	MR	S	S	MR	No
Wesley	(2)	NE-98	57	E	AB	G-E	79	S	MR	MR	MS	R	No
Hatcher	(2)	CO-04	59	E	EB	F-G	92	S		MR	MR	MR	Yes
Arapahoe	(3)	NE-88	59	F	GB	G-E	83	S	S	MS	MR	MR	Yes
Trego~HWW	(3)	KS-99	60	F-G	EB	F-G	80	S	MS	S	MR	R	Yes
Wahoo	(3)	NE/WY-01	58	G	AB	G	91	S		MR	S	R	Yes
Jagalene	(3)	AW-02	60	E	AB	G	92	MS	MR	MR	MS	MR	Yes
Millennium	(4)	NE-99	59	G	AB	F-G	78	S	MS	MR	MS	MR	Yes
Tandem	(4)	SD-97	60	F-G	EB	G	112	S	S	MR	S	MR	Yes
Overland	(4)	NE-06	59	E	AB	G	92	MS	MR	S	MR	MR	***
NuFrontier~HWW	(4)	AW-05	60	G		G	87	MS	MS	MR	MS	MR	Yes
Crimson	(5)	SD-97	59	G	GB	G-E	110	MR	R	MR	S	MS	Yes
Harding	(5)	SD-99	59	F-G	AB	E	100	MR	MR	MS	MR	MR	Yes
SD98102	(5)	SD-	60	G	AB	G	92	MS	MR	MR	MS	R	***
Harry	(5)	NE-03	56	F	AB	G	83	S			MR	MR	Yes
Jerry	(6)	ND-01	59	F	GB	E	92	MS		MR	S	R	No

* Heading, the relative difference in days to heading, compared to Expedition.
~ HWW Hard white wheat variety.
# E= exc., A= accept., F= fair, G= good, P= poor, B= baking, N=noodles.
##Percent of Harding (3-1/4" long).
+ R= resistant, MR= moderately resist., MS= mod. susceptible, S= susc., VS= very susc..
$ Rusts: Stripe (str), leaf (lf), and stem (stm).
** Plant variety protection (PVP), title V, certification option - to be sold by variety name only as a class of certified seed.
*** PVP application pending or anticipated.

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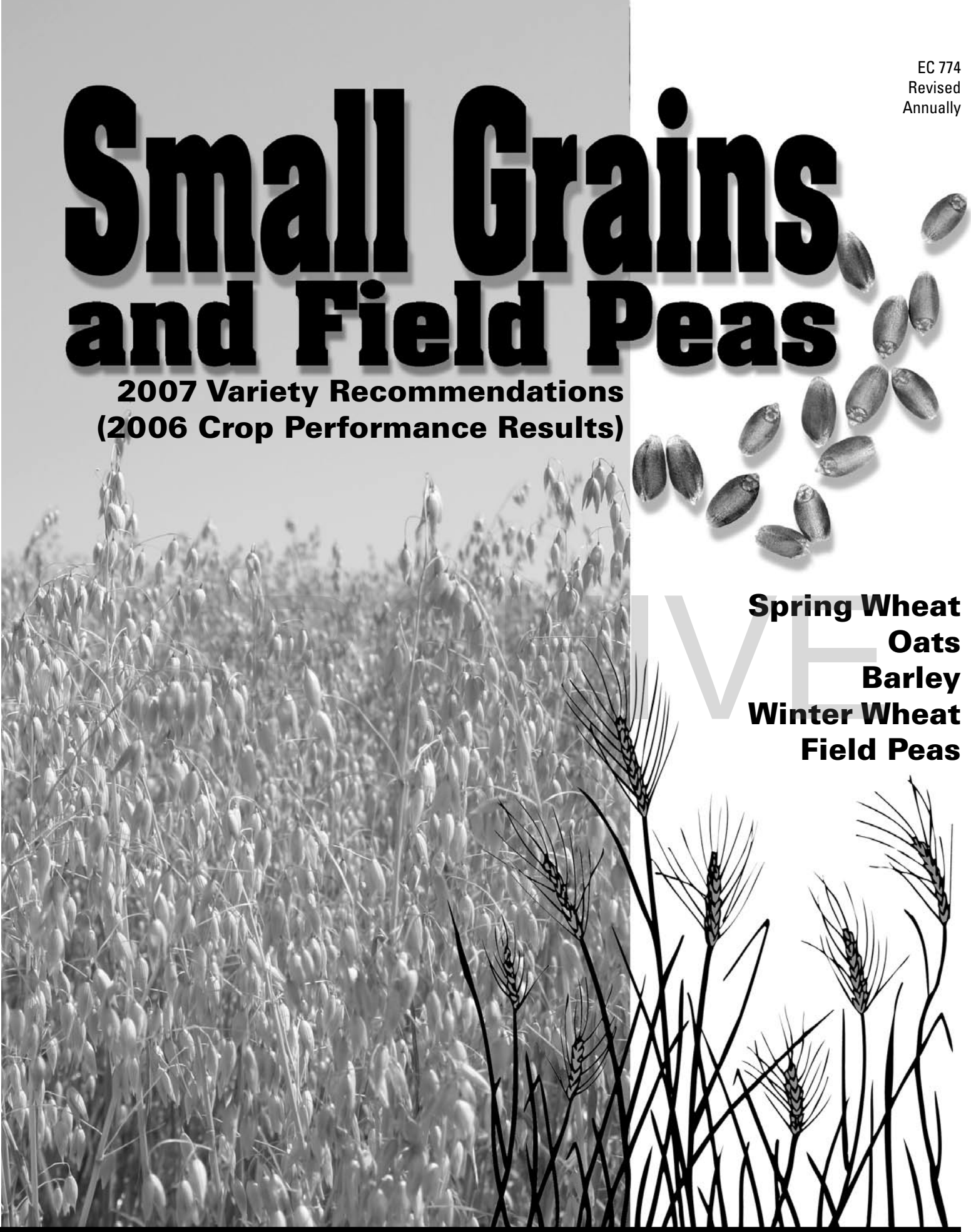
EC 774
Revised
Annually

Small Grains and Field Peas

2007 Variety Recommendations (2006 Crop Performance Results)



Spring Wheat
Oats
Barley
Winter Wheat
Field Peas

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The crop performance trials are available at http://plantsci.sdstate.edu/varietytrials/vartrial.html

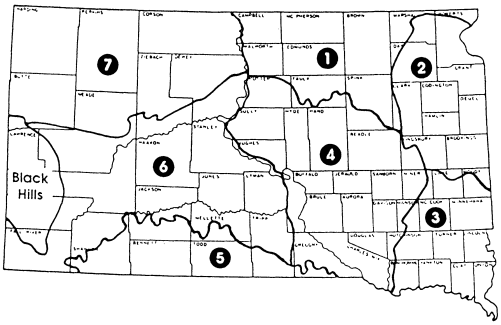
Small Grain Variety Recommendations for 2007

Recommendations are based on data from the South Dakota Crop Performance Testing (CPT) Program and regional land-grant university nurseries. Variety performance depends on genetics and the environment. Environmental factors like temperature, moisture, plant pests, soil fertility, soil type, and management practices affect variety performance. Performance of recommended varieties in response to environmental conditions is generally better than that of other varieties. The better performance of a recommended variety, however, cannot always be guaranteed due to its complex response to the environment. Variety recommendations, including crop adaptation area (CAA) where each is most suited, are listed below:

SPRING WHEAT

Recommended		Acceptable/Promising	
Variety	*CAA*	*Variety*	*CAA*
Briggs @	all except 3	Forge @	all except 3
Freyr @	Statewide	Glenn @	Statewide
Granger @	all except 3	Howard	all except 3
Steele-ND @	all except 3	Knudson @	all except 3
Traverse @	Statewide	Oxen @	all except 3
		Reeder @	5,6,7
		Russ @	all except 3
		Ulen @	all except 3

Crop Adaptation Areas for South Dakota (revised 1992)



OAT

Recommended		Acceptable/Promising	
Variety	*CAA*	*Variety*	*CAA*
Don	1,4,5,6,7	Beach	5,6,7
Jerry #	1,4,5,6,7	HiFi @	1,2,7
Loyal	1,2,7	Morton @	1,2,7
Reeves	Statewide	Buff (hull-less)	Statewide
Stallion	1,2,7		

BARLEY

Recommended		Acceptable/Promising	
Variety	*CAA*	*Variety*	*CAA*
Eslick @- feed	6,7	Conlon @	1,4,6,7
Excel @	1,2,4,6,7	Drummond @	Statewide
Haxby - feed	6,7	Robust @	1,2,4,6,7
Lacey @	Statewide	Tradition @	Statewide
		Rawson	1,2,7

American Malting Barley Association approved malting varieties for South Dakota for 2007:

Conlon	Legacy
Drummond	Morex
Excel	Robust
Foster	Tradition
Lacey	

WINTER WHEAT

Recommended		Acceptable/Promising	
Variety	*CAA*	*Variety*	*CAA*
Alice (white) @	1*,4*,5,6,7*	Alliance @	3,4*,5,6
Darrell @	1*,2*,3,4,5,6,7*	Arapahoe @	1*,3,4*,5,6, 7*
Expedition @	1*,4,5,6,7*	Hatcher @	5,6,7*
Harding @	1*,2*,4,7	Overland @	1*,3,4,*,5,6,7*
Jagalene @	5,6,7*	Wahoo @	3,4*,5,6
Millennium @	1*,4*,5,6,7*		
Wendy (white) @	5,6,7*		
Wesley	5,6,7*		

@ Plant variety protection (PVP) received or anticipated; seed sales are restricted to classes of certified seed.
# PVP non-title V status.
+ Exceptional crown rust resistance.
* Plant into protective cover.

This report is available on the Web at http://www.sdstate.edu/~wpls/http/var/vartrial.html

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Small Grains and Field Peas

2006 South Dakota Test Results, Variety Traits, and Yield Averages

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Variety selection is an important decision in a sound crop production program. This report contains variety recommendations or suggestions, descriptions, and yield data for spring-seeded small grains (hard red spring wheat, oats, and barley), fall-seeded hard red and white winter wheat, and spring-seeded field peas.

Key factors in variety selection include yield, yield stability, maturity, straw strength, height, test weight, quality, and disease resistance. Yield is important; however, a variety with good disease resistance, straw strength, and high grain quality may be more profitable in some cases than a variety merely selected for its yield history.

Disease resistance information is based on reactions to prevalent races of a disease. Disease resistance continually changes over time. Therefore, it is strongly suggested that growers inspect the reaction of a variety every year and not assume its response to a disease is unchanged.

Variety recommendations (inside cover)

The Plant Science Department Variety Recommendation Committee makes small grain variety recommendations annually. Recommendations for a given crop may vary from one crop adaptation area (CAA) to another. Crop adaptation areas (see map) are based on soil type, elevation, temperature, and rainfall. Varieties are recommended on the basis of growing season, annual rainfall, disease frequency, and farming practices common to a given crop adaptation area.

Varieties are listed as "Recommended" or "Acceptable/Promising." Varieties exhibiting a high level of agronomic performance are listed as "Recommended." Each test entry must meet the minimum criteria listed in Table A before it is eligible for the "Recommended" list. Varieties listed as "Acceptable/Promising" have performed well, but do not merit the "Recommended" list or are new varieties with a high performance potential but do not meet the 3-year criteria (Table A) needed to make the "Recommended" list. A variety needs 2 years and six location-years in the SDSU crop performance test trials and/or regional nurseries before it is eligible for the "Acceptable/Promising" list.

Certified seed is the best source of seed and the only way farmers can be assured of the genetic purity of the variety purchased.

How to use this information

Use this report as follows:

1. Check the variety-crop adaptation area (CAA) designations for the "Recommended" and "Acceptable/ Promising" lists on the preceding page. Compare these variety-CAA designations with the CAA map of South Dakota. **Identify the varieties suggested for your CAA.**

2. **Evaluate the varieties you selected for desirable traits.** Descriptive information (Tables 3, 6, 9, 12, and 15) is updated as changes occur. This information is obtained from the SDSU Crop Performance Testing Program and from research plots maintained by plant breeders and plant pathologists. Data like protein, height, and bushel weight (test weight) are obtained from every location when possible. To evaluate maturity, compare the relative maturity (heading) rating of each variety to the reference variety given.

Disease resistance continually changes; therefore, new information is reported as it becomes available. The Fusarium head blight tolerance ratings for hard red spring wheat are given. Note the ratings show there is presently **no variety resistance to head blight.** It does, however, indicate **some varieties are more tolerant than others.**

3. **Evaluate each variety you select for agronomic performance.** Yields and other agronomic performance data are obtained from the SDSU Crop Performance Testing Program. Both 1- and 3-year average yields for each variety tested are included for each test location if the variety was tested for 3 or more years. Yield values for each variety and location average and each location least-significant-difference (LSD) values are rounded to the nearest bushel per acre (bu/acre).

Yield averages for hard red spring wheat are reported in Tables 1a–c, for oats in Tables 4a–4b, for barley in Tables 7a–b, for hard red and white winter wheat in Tables 10a–b, and for field pea in Tables 13a–b. Averages for agronomic data like bushel weight, protein content levels, and plant height in hard red spring wheat are reported in Tables 2a–c, for oats in Tables 5a–b, for barley in Tables 8a–b, for hard red and white winter wheat in Tables 11a–b, and for field pea in Tables 14a–b.

The location test-trial yield average, high yield average, low yield average, LSD value, yield value required to qualify for the

top-performance group for yield, and test-trial coefficient of variation (CV) value are listed below each location yield column. These statistics are calculated from data that include both released varieties and newer experimental lines in each performance test trial; this enables us to compare varieties to experimental lines that may be released soon.

Always compare yields from the same period of time. Compare 1-year yields with other 1-year yields and 3-year yields with other 3-year yields.

Next, determine whether the data at a given test location are valid. The CV value at the bottom of each yield column is a measure of experimental error. **Yield tests with a CV of 15% or higher contain higher levels of experimental error than tests with a CV of 10% or less.** Test sites with a CV greater than 15% are not included in the calculations for yield stability. Likewise, the LSD value and the top performance group for yield or other performance variables are not indicated if the CV exceeds 15%.

Use LSD values to evaluate yield differences between varieties. The LSD value indicates if one variety really outyields another. If the yield difference between two varieties is greater than the LSD value, the varieties differ in yield. If the yield difference is equal to or less than the LSD value, the varieties do not statistically differ in yield.

The LSD value can also be used to determine the top performance group (TPG) for each location. For example, at each location the variety with the highest numerical yield is identified using 1- or 3-year averages. The LSD value is subtracted from the highest yielding variety. Varieties with yields greater than this value (highest yield minus test LSD) are in the top yield group at that location.

For example, in hard red spring wheat, the top yielding entry at Brookings for 2006 was the experimental line SD 3943 that yielded 59 bu/acre (Table 1a). Subtracting 6 bu/acre (the rounded-off LSD value) from the highest yield entry of 59 bu/acre equals 53 bu/acre. Therefore, all varieties listed in that column yielding more than 53 bu are in the TPG.

Since the LSD values and reported yield averages are rounded off to the nearest whole bushel we can say that 53 bu/acre can also be included in the TPG. Therefore, due to rounding off of yield average to the nearest bushel, all varieties at Brookings with a 2006 yield average of 53 bu/acre or higher are in the TPG for yield.

The TPG of varieties for any other given performance variable can be determined in the same manner (except for lodging) and is easily identified in all the performance tables. The TPG value for yield, bushel weight, and height are minimum TPG values whereas the TPG value for lodging is a maximum TPG value. The TPG value for a given location and variable is determined by either subtracting the LSD value from the highest numerical yield, bushel weight, or height value within a column to obtain a minimum TPG value. For lodging, add the LSD value from the lowest numerical lodging score value to obtain a maximum TPG value.

For example, at Brookings the TPG value 53 bu/acre for yield in 2006 was indicated in Table 1a. Likewise, at Brookings the TPG for lodging score can be identified. In this case, adding the lodging score LSD of zero (0) to the lowest numerical lodging score value of 1 results in a maximum TPG value of 1 (0 + 1 = 1). In this case all varieties with a lodging score of 1 or less are in the TPG for lodging performance (Table 2a). This year all the entries showed little lodging (1); hence there was no difference between the entries in lodging response at Brookings.

At the bottom of each table column is listed the "TPG value," defined as the yield or bushel weight values that a given variety must attain or exceed in value for the variety to be considered in the top performing group. For example, 6 bu/acre is the column LSD value and 53 bu/acre is the TPG value for Brookings.

For reading convenience, the TPG values for all variables are reported as "TPG value" at the bottom of each variable column in each table. More importantly, all varieties in the TPG within a column are identified with the plus (+) symbol next to the reported variable average in each column.

Sometimes, an LSD value is not given and the designation NS^ is listed. This indicates yield differences were not significant (NS) or yield differences could not be detected. Therefore, all the varieties have a similar yielding potential and are considered to be in the TPG. In test trials with high levels of experimental error (CV exceeds 15%), LSD values and TPG values are not reported because the data is invalid.

When evaluating yield performance, remember that environmental conditions at a test location seldom repeat themselves from year to year. Therefore, look at yield data from as many trial locations and years as possible.

Look at the performance or "yield stability" of a variety over several locations. A simple way of evaluating yield stability is to see how often a variety is in the TPG for yield over all test locations.

For convenience, the top yield frequency or the percentage of locations where a variety is in the TPG for yield has been calculated. The top yield percentage for each variety of hard red spring wheat is reported in Tables 1a–c, for oats in Table 4a–b, and for barley in Table 7a–c. Top yield frequencies for hard red winter wheat are not reported because winter hardiness greatly influences spring stands and makes it impossible to report valid top yield frequencies for more than a year. The top yield frequency for field pea was not calculated because there were only three locations harvested.

A variety exhibiting a relatively high top yield frequency will appear in the top yield group at many locations but not necessarily at all locations. For example, a variety with a top yield frequency of 50% or more exhibits good yield stability. In contrast, a top yield frequency of 20% or less indicates low yield stability.

Varieties with a high top yield frequency have the ability to adapt to a wide range of environmental conditions across many locations. In contrast, varieties with a low top yield frequency typically adapt to a narrow range of environments. **Look for varieties with a relatively high top yield percentage of 50% or higher if possible.**

If you are evaluating winter wheat varieties, it is suggested that you also review the relative coleoptile length values reported in Table 12. Generally, varieties with relatively long coleoptiles are able to germinate and emerge from a deeper seeding depth than varieties with shorter coleoptiles. This trait may be advantageous in years where the soil moisture is deeper than the normal seeding zone.

The coleoptile length of 3.2 inches for Harding is used as the reference standard (100%) for making comparisons. The coleoptile length for the varieties Tandem and Crimson are slightly

longer than for Harding; the coleoptile length for the varieties Alice, Alliance, Arapahoe, Darrell, Expedition, Jagalene, Millennium, Nekota, Trego~W, Wahoo, and Wesley are shorter compared to Harding. Note the coleoptile length for Wendy is the shortest of all entries and this variety may exhibit poor emergence if planted as deep as Tandem or Crimson that have longer coleoptiles.

Origin of varieties tested

Public varieties were released from state agricultural experiment stations. Abbreviations for each include:

Colorado- CO
Illinois- IL
Kansas- KS
Minnesota- MN
Montana- MT
Nebraska- NE
North Dakota- ND
South Dakota- SD
Wisconsin- WI

Many public varieties were developed and released jointly by one or more experiment stations or USDA. Proprietary varieties released by commercial companies and tested by brand name include:

AgriPro Wheat, Inc.- AW
Busch Agricultural Resources, Inc.- BARI
General Mills- GM
Meridian Seeds, LLC- MS
Westbred, LLC- WB

Trial methods

A random complete block design is used in all trials. Plots are harvested with a small plot combine. Plot size differs between the East River and West River locations. East River plots are 5 feet wide and either 12 or 14 feet long compared to West River plots measuring 5 feet wide and 25 feet long. Plots consist of drill strips with 7- or 8-inch spacing at East River locations and 10-inch spacing at West River locations. Trial locations are listed in Table B. Yield means are generated from four variety replications per location per year.

Fertility and weed control programs differed between the East and West River locations. East River plots were fertilized with 60 lb/acre of 18-46-0 (10.8 lb N and 27.6 lb P per acre) down the seed tube at seeding. In addition, at these locations a post-emergence application of Bronate (1.0 pint) was applied on the spring wheat, oats, and barley plots.

West River plots were fertilized with 6 gal of 10-34-0 per acre (6.6 lb N and 24 lb P per acre) at seeding. Post-emergence applications of 0.10 oz of Ally herbicide per acre plus 6 oz active ingredient per acre of 2,4-D (wheat) and 1 pint of Bronate (oats and barley) were applied at the 3- to 5-leaf stage.

Field pea plots were seeded at 7 pure-live-seeds (PLS) per square foot with inoculated seed and received 3 oz/acre of Pursuit pre-emergence at West River locations, 2.8 oz/acre Spartan plus 4 oz/acre Sencor pre-emergence, and .75 pt/acre Poast post-emergence at Selby.

Since seed size can vary greatly among varieties, a seed count is conducted on each entry and all seeding rates are adjusted accordingly. The spring-seeded small grain trials were seeded at 28 PLS/square foot compared to rates of 22 PLS/square foot for the fall-seeded winter wheat trials. Under good seedbed preparation and favorable conditions these adjusted seeding rates result in seedling densities of about 25 and 20 seedlings per square foot at the spring-seeded and fall-seeded small grain trials, respectively. This results in a final stand of about 1.1 million and 870,000 plants/acre, respectively.

If the seedbed is poor, increase the spring-seeded grain seeding rate to 32 PLS/square foot. If planting is delayed until May 1 or later, increase the seeding rates to 35 PLS/square foot. If the seedbed is poor, increase the fall-seeded winter wheat seeding rate to 28 PLS/square foot. Seeding dates are listed in Table B.

Performance trial highlights

General - Agronomic performance of all small grain crops in 2006 was quite variable statewide as the result of different moisture levels around the state.

Generally, the effects of moisture stress on the 2006 crop started last fall when many West River areas suffered from a lack of moisture that still persists today. The critical factor is that many West River areas have little if any subsoil moisture to grow any fall- or spring-seeded small grains.

During the spring of 2006, the drought areas gradually expanded both east and west of the Missouri River. Consequently, a number of small grain test trials were abandoned as the result of drought, poor stands, or other factors; or the data was dropped because too much experimental error was associated with the test trial for the data to be valid. These dropped test trials are indicated in Table B.

Table comments - Tables 1a–c, 4a–b, 7a–c, 10a–b, and 13a–b are first sorted (high to low) by state 3-year and then sorted (high to low) by state 2006 yield averages. Likewise, Tables 2a–c, 5a–b, 8a–c, 11a–c, and 14a–b are sorted (high to low) by state bushel weight (BW). Care should be taken when reading the yield average tables because the varieties are first sorted by 3-year averages and then by the 2006 averages.

You are encouraged to first evaluate yield performance by looking at the 3-year averages. Then look at the 2006 yield averages. In some cases, varieties that were only tested in 2006 produced the highest numerical yields for year 2006. In other cases, however, the highest numerical yields may have been produced by varieties that have been tested for 3 years or more.

In either case, remember to examine all values in the 2006 yield column, regardless if they were tested for one year or for 3 years. Although some new entries may have produced numerically higher yields than some varieties tested for 3 years, they may all be in the top-performance group for yield in 2006.

HRS Wheat (Tables 1a – 2c) - The top entries for yield for the past 3 years (2004–06) by variety or experimental line and top yield frequency were SD 3868 at 100%; Briggs, Granger, and Traverse at 86%; Steele-ND at 71%; Freyr and SD 3860 at 57%; and Forge, Knudson, Oxen, and Reeder at 43% (Tables 1b–c). This means these entries exhibited very good yield stability or the ability to adapt to a wide range of production environments by being

in the top performance group for yield at more than 43% of the test locations during the past 3-year period.

The top yield frequency entries for yield in 2006 included SD 3868, SD 3942, and Traverse at 71%; SD 3860, SD 3870, and SD 3943 at 57%; and Forge, Howard, Oxen, Reeder, and SD 3879 at 43% of the test locations.

The top bushel weight entries (based on state averages in Tables 2b–c) included 2 entries at 62 lb; 11 entries at 61 lb; 16 entries at 60 lb, and 6 entries at 59 lb for year 2006.

The check variety Chris (36 inches) tended to be the tallest variety across all locations in 2006 followed by entries SD 3879 at 33 inches and CS3100-Q~W, Granger, Russ, SD 3860, SD 3934, SD 3868, and Traverse at 32 inches in 2006 (Tables 2b–c).

The top protein entries on a state average basis included Chamberlin at 16.6%, Granite at 16.2%, Kelby at 16.1%, and Alsen at 15.8% protein content.

Oats (Tables 4a – 5c) - Top performing entries for yield for the past 3 years (2004–06) by variety and top yield frequency included HiFi, Morton, Loyal, and Stallion at 100%; and Jerry at 60% (Table 4b). This means these varieties exhibited very good yield stability or the ability to adapt to a wide range of production environments by being in the top performance group for yield at more than 60% of the test locations during the past 3-year period. Top-performing entries for yield in 2006 were the experimental lines SD 011315-15 at 83%; SD 020701 and SD 030888 at 67%; and Baker, Beach, SD 030324, and SD 021021 at 50% of the test locations.

In 2006, on a state basis, the hull-less entries Buff, Paul, and Stark at 44, 42, and 40 lb, respectively, had the best bushel or test weight average across all locations. Among the hulled entries the varieties Hytest, Beach, and Stallion at 39 lb followed by Loyal, SD 020883, SD 020536, and SD 030888 at 38 lb were the highest in bushel weight. In contrast, the entry GG-304 at 30 lb was the lowest state bushel weight among the standard hulled varieties (Tables 5a–b).

Among the entries tested, Hytest at 36 inches was the tallest and GG-304 at 21 inches was the shortest in height in 2006 (Table 5a–b). In 2006, there was little if any lodging across the state (Table 5a–b). The hulled variety Hytest at 19.5% and the hull-less varieties Buff and Paul at 18.2% exhibited the highest grain protein levels for 2006 (Tables 5a–b).

Barley (Tables 7a – 8c) - The top performing entries for yield for the past 3 years (2004–06) by variety and top yield frequency included Eslick at 100%; Haxby at 83%; Excel at 67%; and Conlon, Lacey, and Tradition at 50% (Tables 7b–c). This means these varieties exhibited very good yield stability or the ability to adapt to a wide range of production environments by being in the top performance group for yield at more than 50% of the test locations during the past 3-year period.

The top-performing entries for yield in 2006 included Eslick at 83%; and Haxby and Rawson at 67% of the test locations. The hull-less varieties Stanuwax and Meresse weighed 4 to 5 lb more in bushel weight than the two-row varieties Eslick and Conlon, which in turn weighed 1 to 2 lb more in bushel weight than the other varieties across all locations (Tables 8b–c). In contrast, the variety Stellar-ND tended to have the lowest bushel weight average across the state (Tables 8b–c).

The varieties Robust, Tradition, Drummond, and Legacy tended to be the tallest varieties across all locations statewide (Tables 8b–c).

As seen in Tables 8b–c, the lodging scores for Conlon and Pronghorn were higher than for the other entries and indicated these varieties tended to lodge slightly more than the other entries tested in 2006.

Grain protein content ranged from 12.6 to 16.3% across the state. At the East River locations (Table 8b) the protein ranged 5% from about 13.3 to 17.3%; while at the West River locations (Table 8c) protein levels were lower and ranged 3.4% from 9.4 to 12.8%.

HRW Wheat (Tables 10a – 12) - The top entries for yield for the past 3 years (2004–06) by variety and state yield average (Tables 10b–c) include Wahoo, Millennium, and SD97059-2 at 54 bu/acre. The top entries for yield in 2006 were the entries NuDakota~W at 52 bu/acre; Hatcher at 51 bu/acre; SD01058 and SD98W175-1 at 50 bu/acre; and Alliance, Darrell, Expedition, Harry, Trego~W, Wahoo, and Wesley at 49 bu/acre.

The top bushel weight entries (state averages in Tables 11a–b) included 4 entries at 62 lb; 9 entries at 61 lb; 12 entries at 60 lb, and 4 entries at 59 lb for year 2006.

The varieties or experimental lines Harding, Jerry, SD02279, and SD01058 at 30 inches tended to be the tallest while NuDakota and Wendy at 24 inches tended to be the shortest entries (state averages Tables 11a–b).

Grain protein content ranged from a low of 12.8% for SD01W064 to a high of 14.9% for Jerry on a state basis. At the West River locations (Table 11a), protein levels ranged from a low of 12.0% to a high of 14.9%, while at the East River locations (Table 11b) protein levels were slightly lower and ranged from a low of 11.8% to a high of 14.4% for year 2006.

Field Pea (Tables 13a – 15c) - The top entries for yield for 2006 by variety and test location were Polstead, Cooper, Stratus, Tudor, and CDC Mozart at Beresford (Table 13a); and Polstead, Cooper, Stratus, Camry, SW Midas, and Topeka at Wall (Table 13b), and Polstead, Cooper, Stratus, Camry, SW Midas, Eclipse, SW Cabot, SW Capri, and Grande at Hayes (Table 13b).

The varieties Aragorn, SW Midas, Topeka, SW Salute, CDC Mozart, SW Capri, and Tudor produced bushel weights of 60 lb or higher on a state average (Tables 14a–b). Protein levels in the grain were not determined for year 2006.

The entries Grande at 20 inches and Camry and Stratus at 13 inches were the tallest and shortest varieties, respectively, in year 2006. In 2006, lodging scores were only obtained at Wall and Hayes where lodging was not observed.

The Variety Release/Recommendation Committee includes plant breeders, pathologists, research scientists, Extension agronomists, and managers of the Seed Certification Service and Foundation Seed Stocks Division.

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Table A. Minimum criteria required for the recommended list in this publication.

Trait	Crop			
	HRS Wheat	Oats	Barley	HRW Wheat
Yield	3/15*	3/15	3/12	3/15
Bushel weight	3/15	3/15	3/12	3/15
Height	3/15	3/15	3/12	3/15
Lodging	WA	WA	WA	WA
Disease reaction	A	A	A	A
Protein	3/15	-	3/12	3/15
Quality data#	2/4	WA	WA	WA
Unique traits$	WA	WA	WA	WA

* 3 years/15 location-years.
# includes milling and baking.
$ traits that affect production and marketing.
A= annually, WA= when available.

Table B. Date test trials were seeded, by crop and test location, for year 2006.

Location	Crop				
	HRS Wheat	Oats	Barley	Field Pea	HRW Wheat (Fall 2005)
Beresford	-	15-Apr	-	15-Apr	-
Bison		-	8-May	8-May	Sept. 19
Brookings	12-Apr	12-Apr	12-Apr		Sept. 23
Brown Co.	10-Apr	10-Apr	10-Apr		-
Pierre-DL	-	-	-		Sept. 20
Hayes	-	-	-	12-Apr	Sept. 22
Highmore	-	-	-		Sept.16
Kennebec	-	-	-		Sept. 20
Martin	-	-	-		Sept. 23
Miller	5-Apr	5-Apr	5-Apr		-
Oelrichs	-	-	-		Sept. 21
Okaton		17-Apr			
Platte	-	-	-		Sept. 14
Ralph	8-May	8-May	8-May		-
Selby	11-Apr	11-Apr	11-Apr	5-Apr	Sept. 9
South Shore	14-Apr	14-Apr	14-Apr	12-Apr	Sept. 8
Spink Co.	14-Apr	-	-		-
Sturgis	-	-	-		Sept. 19
Tripp Co.	-	-	-		Sept. 14
Wall	13-Apr	13-Apr	13-Apr	11-Apr	Sept. 15

*Darkened dates indicates test trials, by location and crop, that were not harvested because of drought or other factors; or the data was dropped because the level of experimental error in the test trial was too high for the data to be valid or acceptable.

Table 1a. HRS wheat yield results - South Dakota East River locations, 2004-2006.

Variety (Hdg.)* - by 3-yr then 2006 state avg.	Location Yield Avg. (Bu/A) at 13% moist.						East Yield Avg. (Bu/A)	
	Brookings		South Shore		Spink Co.			
	2006	3-Yr	2006	3-Yr	2006	3-Yr	2006	3-Yr
Traverse (0)	58+	63+	53+	59+	65	66+	59	62
SD 3868	53+	56+	46	56+	68+	70+	56	60
Granger (0)	51	55+	46	53+	65	65+	55	58
Briggs (0)	53+	57+	47	54+	63	67+	54	59
SD 3860	54+	57+	46	51	63	63+	53	55
Steele-ND (3)	50	53	49+	55+	64	65+	54	57
Knudson (2)	52	56+	42	52	60	65+	50	56
Freyr (1)	49	51	46	51	63	60	53	54
Glenn (3)	45	49	42	52	59	63+	50	54
Oxen (2)	52	48	48	46	71+	61	55	53
Forge (-1)	53+	50	45	47	67	60	53	52
Walworth (0)	52	50	41	45	66	61	53	52
Ulen (2)	47	49	43	48	64	63+	53	53
Reeder (3)	47	48	43	43	59	57	52	50
Trooper (-1)	54+	51	40	44	64	62	52	53
Russ (2)	45	49	43	47	53	56	49	51
Alsen (4)	46	45	45	48	59	58	51	51
Granite (5)	45	47	39	40	56	57	50	49
Chris,CK (3)	41	39	36	36	50	45	45	41
SD 3942	57+	.	48	.	69+	.	57	.
SD 3870	54+	.	45	.	72+	.	56	.
SD 3943	59+	.	52+	.	65	.	57	.
Howard (4)	49	.	50+	.	63	.	54	.
SD 3879	52	.	46	.	65	.	55	.
SD 3851	51	.	42	.	63	.	50	.
SD 3941	52	.	46	.	60	.	52	.
Ada (0)	48	.	46	.	63	.	53	.
SD 4001	55+	.	40	.	61	.	52	.
CS3100L~W (6)	46	.	44	.	54	.	51	.
Kelby (2)	46	.	43	.	60	.	50	.
CS3100Q~W (3)	43	.	41	.	58	.	49	.
Banton (1)	47	.	43	.	63	.	49	.
SD 3927	46	.	43	.	57	.	48	.
SD 4002	52	.	39	.	60	.	49	.
Chamberlin (0)	39	.	39	.	56	.	43	.
SD 3934	39	.	39	.	57	.	40	.
Test avg. :	49	51	44	49	62	61		
High avg. :	59	63	53	59	72	70		
Low avg. :	39	39	36	36	50	45		
# Lsd(.05) :	6	8	4	6	4	7		
## TPG-value :	53	55	49	53	68	63		
### C.V. :	8	7	7	7	5	7		

* Heading, the relative days to heading, compared to the variety - Briggs.

Lsd, the amount two values in a column must differ to be significantly different.

TPG-value, the minimum value required for the top-performance group (TPG) for yield.

A plus sign (+) indicates values within a column that qualify for the TPG.

Coef. of variation, a measure of trial experimental error, 15% or less is best.

Table 1b. HRS wheat yield results- South Dakota East River locations, 2004-2006 (Continued).

Variety (Hdg.)* - by 3-yr then 2006 state avg.	Location Yield Avg. (Bu/A) at 13% moist.				East Yield Avg. (Bu/A)		State Yield Avg. (Bu/A)		State Top-Yield Freq. ** (%)	
	Selby		Brown Co.							
	2006	3-Yr	2006	3-Yr	2006	3-Yr	2006	3-Yr	2006	3-Yr
Traverse (0)	57+	53+	62+	69+	59	62	52	55	71	86
SD 3868	53	52+	59+	67+	56	60	50	54	71	100
Granger (0)	61+	52+	53	63+	55	58	49	52	14	86
Briggs (0)	52	51+	56+	64+	54	59	48	52	29	86
SD 3860	48	43	55+	61	53	55	49	51	57	57
Steele-ND (3)	54	49+	54	61	54	57	48	51	29	71
Knudson (2)	50	47+	48	61	50	56	45	50	14	43
Freyr (1)	54	47+	55+	63+	53	54	48	49	29	57
Glenn (3)	50	46	53	59	50	54	45	49	14	29
Oxen (2)	55	47+	51	61	55	53	50	48	43	43
Forge (-1)	51	47+	49	57	53	52	48	48	43	43
Walworth (0)	50	47+	54	59	53	52	47	48	14	29
Ulen (2)	49	45	60+	62+	53	53	47	48	29	29
Reeder (3)	56+	42	57+	62+	52	50	48	47	43	43
Trooper (-1)	51	47+	49	60	52	53	46	47	14	14
Russ (2)	50	43	56+	61	49	51	45	47	14	29
Alsen (4)	51	44	53	58	51	51	45	46	14	0
Granite (5)	52	44	56+	58	50	49	44	45	14	0
Chris,CK (3)	42	37	55+	49	45	41	40	38	14	0
SD 3942	50	.	59+	.	57	.	51	.	71	.
SD 3870	52	.	57+	.	56	.	50	.	57	.
SD 3943	51	.	56+	.	57	.	50	.	57	.
Howard (4)	50	.	59+	.	54	.	49	.	43	.
SD 3879	53	.	59+	.	55	.	49	.	43	.
SD 3851	45	.	51	.	50	.	47	.	29	.
SD 3941	47	.	56+	.	52	.	47	.	29	.
Ada (0)	52	.	54	.	53	.	47	.	0	.
SD 4001	49	.	53	.	52	.	46	.	0	.
CS3100L~W (6)	49	.	63+	.	51	.	45	.	14	.
Kelby (2)	49	.	53	.	50	.	45	.	0	.
CS3100Q~W (3)	46	.	59+	.	49	.	44	.	14	.
Banton (1)	45	.	46	.	49	.	44	.	0	.
SD 3927	45	.	50	.	48	.	44	.	0	.
SD 4002	43	.	52	.	49	.	44	.	0	.
Chamberlin (0)	40	.	42	.	43	.	39	.	0	.
SD 3934	23	.	41	.	40	.	37	.	37	.
Test avg. :	49	46	54	61						
High avg. :	61	53	63	69						
Low avg. :	23	37	41	49						
# Lsd(.05) :	5	6	8	7						
## TPG-value :	56	47	55	62						
### C.V. :	7	8	10	7						

* Heading, the relative days to heading, compared to the variety - Briggs.

Lsd, the amount two values in a column must differ to be significantly different.

TPG-value, the minimum value required for the top-performance group (TPG) for yield.

A plus sign (+) indicates values within a column that qualify for the TPG.

Coef. of variation, a measure of trial experimental error, 15% or less is best.

** Frequency or percent of all test locations that a variety was in the TPG for yield.

Table 1c. HRS wheat yield results- South Dakota West River locations, 2004-2006.

Variety (Hdg.)* - by 3-yr then 2006 state avg.	Location Yield Avg. (Bu/A at 13% moist.)				West Yield Avg. (Bu/A)		State Yield Avg. (Bu/A)		State Top-Yield Freq. ** (%)	
	Wall		Ralph							
	2006	3-Yr	2006	3-Yr	2006	3-Yr	2006	3-Yr	2006	3-Yr
Traverse (0)	39+	32+	32	40	36	36	52	55	71	86
SD 3868	37+	34+	34+	43+	36	39	50	54	71	100
Granger (0)	35	33+	32	40	34	37	49	52	14	86
Briggs (0)	33	32+	33	39	33	36	48	52	29	86
SD 3860	38+	36+	36+	44+	37	40	49	51	57	57
Steele-ND (3)	33	32+	34+	41+	34	37	48	51	29	71
Knudson (2)	32	29	34+	40	33	35	45	50	14	43
Freyr (1)	32	32+	35+	41+	34	37	48	49	29	57
Glenn (3)	37+	34+	32	39	35	37	45	49	14	29
Oxen (2)	36+	33+	37+	42+	37	38	50	48	43	43
Forge (-1)	38+	34+	34+	42+	36	38	48	48	43	43
Walworth (0)	35	33+	34+	40	35	37	47	48	14	29
Ulen (2)	35	32+	32	37	34	35	47	48	29	29
Reeder (3)	35	33+	37+	42+	36	38	48	47	43	43
Trooper (-1)	32	28	30	38	31	33	46	47	14	14
Russ (2)	35	32+	33	41+	34	37	45	47	14	29
Alsen (4)	33	28	31	39	32	34	45	46	14	0
Granite (5)	30	29	27	37	29	33	44	45	14	0
Chris,CK (3)	32	28	25	30	29	29	40	38	14	0
SD 3942	40+	.	35+	.	38	.	51	.	71	.
SD 3870	37+	.	32	.	35	.	50	.	57	.
SD 3943	37+	.	32	.	35	.	50	.	57	.
Howard (4)	35	.	34+	.	35	.	49	.	43	.
SD 3879	36+	.	34+	.	35	.	49	.	43	.
SD 3851	38+	.	37+	.	38	.	47	.	29	.
SD 3941	38+	.	33	.	36	.	47	.	29	.
Ada (0)	33	.	32	.	33	.	47	.	0	.
SD 4001	35	.	29	.	32	.	46	.	0	.
CS3100L~W (6)	32	.	27	.	30	.	45	.	14	.
Kelby (2)	32	.	33	.	33	.	45	.	0	.
CS3100Q~W (3)	37	.	27	.	32	.	44	.	14	.
Banton (1)	32	.	32	.	32	.	44	.	0	.
SD 3927	36	.	32	.	34	.	44	.	0	.
SD 4002	32	.	29	.	31	.	44	.	0	.
Chamberlin (0)	31	.	28	.	30	.	39	.	0	.
SD 3934	31	.	26	.	29	.	37	.	37	.
Test avg. :	35	32	32	40						
High avg. :	40	36	37	44						
Low avg. :	30	28	25	30						
# Lsd (.05) :	4	4	3	3						
## TPG-value :	36	32	34	41						
### C.V. :	8	10	8	7						

* Heading, the relative days to heading, compared to the variety - Briggs.

Lsd, the amount two values in a column must differ to be significantly different.

TPG-value, the minimum value required for the top-performance group (TPG) for yield.

A plus sign (+) indicates values within a column that qualify for the TPG.

Coef. of variation, a measure of trial experimental error, 15% or less is best.

** Frequency or percent of all test locations that a variety was in the TPG for yield.

Table 2a. HRS wheat averages for bushel weight (BW), height (HT), lodging (LDG), and grain protein (PRT)- South Dakota East River locations for 2006.

Variety (Hdg.)* - by state BW avg.	Location Avg. - BW, HT, LDG									East Avg. - BW, HT, LDG, PRT			
	Brookings			South Shore			Spink Co.						
	BW lb	HT in	LDG **	BW lb	HT in	LDG **	BW lb	HT in	LDG **	BW lb	HT in	LDG **	PRT %
SD 3927	64+	33	1+	62+	30	1+	59	33	1+	62	31	1	16.4
SD 3941	63+	34	1+	62+	32	1+	60	33	1+	62	31	1	15.6
Chamberlin (0)	63+	31	1+	62+	29	1+	59	30	1+	61	29	1	16.8
Glenn (3)	64+	32	1+	62+	32	1+	60	35	1+	62	32	1	15.5
SD 3860	64+	35	1+	61+	33	1+	57	35	1+	62	33	1	14.8
SD 3851	63+	34	1+	61+	32	1+	60	35	1+	62	31	1	15.5
Trooper (-1)	63+	30	1+	60	27	1+	60	30	1+	62	28	1	15.0
SD 3942	63+	31	1+	61+	29	1+	60	30	1+	62	29	1	14.8
Banton (1)	62	32	1+	61+	30	1+	59	34	1+	61	30	1	16.2
SD 3879	63+	36	1+	59	33	1+	60	37	1+	62	34	1	15.5
Forge (-1)	65+	33	1+	61+	31	1+	59	34	1+	61	31	1	14.7
Freyr (1)	62	34	1+	61+	32	1+	60	34	1+	61	33	1	15.5
Ada (0)	63+	31	1+	60	29	1+	60	31	1+	61	30	1	15.9
SD 3943	63+	32	1+	61+	30	1+	61	32	1+	62	30	1	14.9
SD 4001	64+	34	1+	61+	30	1+	59	33	1+	61	31	1	15.0
Kelby (2)	63+	27	1+	63+	27	1+	57	29	1+	61	27	1	16.4
Ulen (2)	62	34	1+	59	33	1+	60	33	1+	61	32	1	15.9
Granite (5)	64+	32	1+	60	29	1+	59	32	1+	61	30	1	16.2
CS3100Q~W (3)	63+	36	1+	60	31	1+	59	36	1+	61	33	1	14.8
Howard (4)	63+	33	1+	59	33	1+	59	33	1+	61	33	1	15.1
SD 4002	64+	33	1+	61+	30	1+	58	32	1+	61	30	1	14.6
Granger (0)	62	35	1+	60	33	1+	58	37	1+	61	34	1	15.5
Alsen (4)	61	33	1+	60	31	1+	60	32	1+	61	31	1	15.9
Briggs (0)	62	33	1+	59	30	1+	59	33	1+	61	30	1	15.9
Reeder (3)	62	32	1+	59	31	1+	58	34	1+	60	32	1	15.3
Russ (2)	62	35	1+	60	34	1+	57	35	1+	60	33	1	15.5
Oxen (2)	62	32	1+	60	30	1+	58	32	1+	60	30	1	15.4
Steele-ND (3)	62	34	1+	60	33	1+	58	34	1+	60	33	1	15.5
SD 3934	62	34	1+	60	32	1+	57	35	1+	60	33	1	15.3
Knudson (2)	62	30	1+	60	29	1+	58	32	1+	60	29	1	15.3
Walworth (0)	62	33	1+	59	30	1+	57	33	1+	60	31	1	15.8
Chris,CK (3)	62	37	1+	59	35	1+	57	42	1+	60	37	1	15.7
Traverse (0)	61	35	1+	59	33	1+	58	35	1+	60	33	1	14.9
SD 3868	61	36	1+	58	33	1+	58	36	1+	60	33	1	14.7
SD 3870	61	35	1+	58	32	1+	59	36	1+	60	32	1	14.8
CS3100L~W (6)	62	29	1+	58	26	1+	56	27	1+	60	27	1	13.9
Test avg. :	63	33	1	60	31	1	59	33	1				
High avg. :	65	37	1	63	35	1	61	42	2				
Low avg. :	61	27	1	58	26	1	56	27	1				
# Lsd(.05) :	2	1	0	2	1	0	2	2	1				
## TPG-value :	63	.	1	61	.	1	59	.	2				
### C.V. :	2	3	0	2	3	0	3	4	8				

* Heading, the relative days to heading, compared to the variety - Briggs.

** Lodging score: 0= all plants erect, 3= 50% of plants lodged at 45º-angle, 5= all plants flat.

Lsd, the amount two values in a column must differ to be significantly different.

^ Variable differences within a column are non-significant (NS) at the .05 level of probability.

Table 2b. HRS wheat averages for bushel weight (BW), height (HT), lodging (LDG), and grain protein (PRT)- South Dakota East River locations (Continued).

Variety (Hdg.)* - by state BW avg.	Location Avg.- BW, HT, LDG						East Avg. - BW, HT, LDG, PRT				State Avg. - BW, HT, LDG, PRT			
	Selby			Brown Co.										
	BW lb	HT in	LDG **	BW lb	HT in	LDG **	BW lb	HT in	LDG **	PRT %	BW lb	HT in	LDG **	PRT %
SD 3927	62+	31	1+	64+	27	1+	62	31	1	16.4	62	30	1	15.7
SD 3941	62+	30	1+	64+	26	1+	62	31	1	15.6	62	30	1	15.1
Chamberlin (0)	61+	29	1+	63+	25	1+	61	29	1	16.8	61	28	1	16.6
Glenn (3)	62+	32	1+	62+	29	1+	62	32	1	15.5	61	31	1	15.2
SD 3860	62+	32	1+	64+	30	1+	62	33	1	14.8	61	32	1	14.4
SD 3851	62+	29	1+	62+	27	1+	62	31	1	15.5	61	31	1	14.8
Trooper (-1)	62+	28	1+	63+	24	1+	62	28	1	15	61	27	1	15.0
SD 3942	62+	29	1+	63+	26	1+	62	29	1	14.8	61	28	1	14.3
Banton (1)	62+	30	1+	62+	27	1+	61	30	1	16.2	61	30	1	15.6
SD 3879	62+	33	1+	64+	30	1+	62	34	1	15.5	61	33	1	15.1
Forge (-1)	62+	31	1+	60	26	1+	61	31	1	14.7	61	30	1	14.4
Freyr (1)	62+	34	1+	62+	30	1+	61	33	1	15.5	61	31	1	15.0
Ada (0)	62+	30	1+	63+	29	1+	61	30	1	15.9	61	29	1	15.6
SD 3943	62+	29	1+	62+	25	1+	62	30	1	14.9	60	29	1	14.7
SD 4001	61+	29	1+	62+	28	1+	61	31	1	15	60	30	1	15.3
Kelby (2)	62+	29	1+	61	24	1+	61	27	1	16.4	60	26	1	16.1
Ulen (2)	62+	33	1+	61	28	1+	61	32	1	15.9	60	31	1	15.5
Granite (5)	62+	32	1+	62+	26	1+	61	30	1	16.2	60	28	1	16.2
CS3100Q~W (3)	61+	32	1+	64+	31	1+	61	33	1	14.8	60	32	1	14.8
Howard (4)	61+	33	1+	64+	32	1+	61	33	1	15.1	60	31	1	14.6
SD 4002	60	29	1+	62+	28	1+	61	30	1	14.6	60	30	1	14.4
Granger (0)	62+	34	1+	62+	30	1+	61	34	1	15.5	60	32	1	14.8
Alsen (4)	62+	32	1+	61	28	1+	61	31	1	15.9	60	30	1	15.8
Briggs (0)	61+	31	1+	63+	26	1+	61	30	1	15.9	60	30	1	15.1
Reeder (3)	62+	32	1+	62+	29	1+	60	32	1	15.3	60	30	1	14.8
Russ (2)	60	34	1+	63+	30	1+	60	33	1	15.5	60	32	1	15.2
Oxen (2)	62+	31	1+	58	27	1+	60	30	1	15.4	60	29	1	15.2
Steele-ND (3)	61+	33	1+	61	30	1+	60	33	1	15.5	60	31	1	15.4
SD 3934	62+	33	1+	60	30	1+	60	33	1	15.3	60	32	1	15.0
Knudson (2)	61+	29	1+	58	26	1+	60	29	1	15.3	59	28	1	15.1
Walworth (0)	61+	31	1+	61	27	1+	60	31	1	15.8	59	30	1	15.2
Chris,CK (3)	59	37	1+	63+	36	2	60	37	1	15.7	59	36	1	15.6
Traverse (0)	59	33	1+	61	28	1+	60	33	1	14.9	59	32	1	14.3
SD 3868	59	30	1+	62+	30	1+	60	33	1	14.7	59	32	1	14.3
SD 3870	59	31	1+	62+	29	1+	60	32	1	14.8	59	31	1	14.6
CS3100L~W (6)	60	26	1+	64+	24	1+	60	27	1	13.9	.	25	1	14.3
Test avg. :	61	31	1	62	28	1								
High avg. :	62	37	1	64	36	1								
Low avg. :	59	26	1	58	24	1								
# Lsd(.05) :	1	2	0	2	2	1								
## TPG-value :	61	.	1	62	.	1								
### C.V. :	0	4	0	3	6	9								

* Heading, the relative days to heading, compared to the variety - Briggs.

** Lodging score: 0= all plants erect, 3= 50% of plants lodged at 45º-angle, 5= all plants flat.

Lsd, the amount two values in a column must differ to be significantly different.

TPG-value, the minimum or maximum value required for the top-performance group (TPG).

A plus sign (+) indicates values within a column that qualify for the TPG.

Coef. of variation, a measure of trial experimental error.

^ Variable differences within a column are non-significant (NS) at the .05 level of probability.

Table 2c. HRS wheat averages for bushel weight (BW), height (HT), lodging (LDG), and grain protein (PRT)- South Dakota West River locations for 2006.

Variety (Hdg.)* - by state BW avg.	Location Avg. - BW, HT, LDG						West Avg. - BW, HT, LDG, PRT				State Avg. - BW, HT, LDG, PRT			
	Wall			Ralph										
	BW lb	HT in	LDG **	BW lb	HT in	LDG **	BW lb	HT in	LDG **	PRT %	BW lb	HT in	LDG **	PRT %
SD 3927	.	27	1+	60	33	1+	60	30	0	13.9	62	30	1	15.7
SD 3941	.	26	1+	60	32	1+	60	29	0	13.9	62	30	1	15.1
Chamberlin (0)	.	24	1+	61	27	1+	61	25	0	16	61	28	1	16.6
Glenn (3)	.	27	1+	56	33	1+	56	30	0	14.3	61	31	1	15.2
SD 3860	.	27	1+	59	34	1+	59	30	0	13.5	61	32	1	14.4
SD 3851	.	28	1+	58	33	1+	58	30	0	13.2	61	31	1	14.8
Trooper (-1)	.	22	1+	57	26	1+	57	24	0	14.8	61	27	1	15.0
SD 3942	.	24	1+	56	31	1+	56	27	0	12.9	61	28	1	14.3
Banton (1)	.	26	1+	59	30	1+	59	28	0	14.2	61	30	1	15.6
SD 3879	.	27	1+	57	34	1+	57	30	0	14.1	61	33	1	15.1
Forge (-1)	.	27	1+	57	31	1+	57	29	0	13.6	61	30	1	14.4
Freyr (1)	.	26	1+	58	29	1+	58	27	0	14	61	31	1	15.0
Ada (0)	.	26	1+	57	28	1+	57	27	0	14.8	61	29	1	15.6
SD 3943	.	25	1+	55	31	1+	55	28	0	14.1	60	29	1	14.7
SD 4001	.	28	1+	56	31	1+	56	29	0	15.9	60	30	1	15.3
Kelby (2)	.	23	1+	58	26	1+	58	24	0	15.4	60	26	1	16.1
Ulen (2)	.	26	1+	58	31	1+	58	28	0	14.4	60	31	1	15.5
Granite (5)	.	22	1+	56	24	1+	56	23	0	16.3	60	28	1	16.2
CS3100Q~W (3)	.	25	1+	55	31	1+	55	28	0	15	60	32	1	14.8
Howard (4)	.	27	1+	56	30	1+	56	28	0	13.5	60	31	1	14.6
SD 4002	.	26	1+	56	30	1+	56	28	0	13.8	60	30	1	14.4
Granger (0)	.	26	1+	57	33	1+	57	30	0	13.2	60	32	1	14.8
Alsen (4)	.	24	1+	57	30	1+	57	27	0	15.5	60	30	1	15.8
Briggs (0)	.	26	1+	56	32	1+	56	29	0	13.1	60	30	1	15.1
Reeder (3)	.	25	1+	57	28	1+	57	26	0	13.8	60	30	1	14.8
Russ (2)	.	26	1+	58	33	1+	58	29	0	14.6	60	32	1	15.2
Oxen (2)	.	25	1+	58	28	1+	58	26	0	14.7	60	29	1	15.2
Steele-ND (3)	.	26	1+	56	31	1+	56	28	0	15	60	31	1	15.4
SD 3934	.	26	1+	57	31	1+	57	28	0	14.2	60	32	1	15.0
Knudson (2)	.	24	1+	58	28	1+	58	26	0	14.4	59	28	1	15.1
Walworth (0)	.	25	1+	56	31	1+	56	28	0	13.6	59	30	1	15.2
Chris,CK (3)	.	28	1+	55	35	1+	55	32	0	15.2	59	36	1	15.6
Traverse (0)	.	26	1+	55	33	1+	55	29	0	13	59	32	1	14.3
SD 3868	.	26	1+	54	32	1+	54	29	0	13.3	59	32	1	14.3
SD 3870	.	27	1+	53	32	1+	53	29	0	14.1	59	31	1	14.6
CS3100L~W (6)	.	20	1+	.	22	1+	.	21	0	15.3	.	25	1	14.3
Test avg. :	.	25	1	57	30	1								
High avg. :	.	28	1	61	35	1								
Low avg. :	.	20	1	53	22	1								
# Lsd(.05) :	.	2	0	2	2	0								
## TPG-value :	.	.	1	59	.	1								
### C.V. :	.	4	0	3	5	0								

* Heading, the relative days to heading, compared to the variety - Briggs.

** Lodging score: 0= all plants erect, 3= 50% of plants lodged at 45º-angle, 5= all plants flat.

Lsd, the amount two values in a column must differ to be significantly different.

TPG-value, the minimum or maximum value required for the top-performance group (TPG).

A plus sign (+) indicates values within a column that qualify for the TPG.

Coef. of variation, a measure of trial experimental error.

^ Variable differences within a column are non-significant (NS) at the .05 level of probability.

Table 3. Origin, variety traits, and disease reactions for HRS wheat entries tested in 2006.

Variety	Origin	(Hdg.)*	Ldg Res	Rust			Fusarium Head Blight	PVP** Status
				Stripe	Stem	Leaf		
Forge	SD-97	-1	G#	MS+	MR+	MS+	MS+~	Yes
Trooper	WPB-04	-1	G	MS	R	MR	MS~	Yes
Traverse	SD-06	0	G	MR	R	MR	MR~	Yes*
Briggs	SD-02	0	G	MR	R	MR	M~	Yes
Chamberlin	WPB-06	0	G	-	R	MS	MS	***
Granger	SD-04	0	G	MR	R	MR	M~	Yes
Walworth	SD-01	0	G	S	R	MS	M~	Yes
Ada	MN-06	0	G	-	R	R	MS~	***
Banton	SS-04	1	VG	-	-	MR	M~	***
Freyr	AW-05	1	G	R	MR	MR	MR~	Yes
Knudson	AW-01	2	G	MS	R	MR	MS~	Yes
Oxen	SD-96	2	G	MR	R	MS	MS~	Yes
Russ	SD-95	2	G	MR	R	MS	MS~	Yes
Ulen	MN-04	2	G	-	R	MR	MS	Yes
Kelby	AW-06	2	VG	-	MR	R	MR	***
Chris,CK	MN-65	3	P	-	R	MS	S	No
CS3100Q~W	MS-	3	G	-	-	-	MR	***
Glenn	ND-05	3	G	MR	R	R	MR~	***
Reeder	ND-99	3	VG	MR	R	MS	MS~	Yes
Steele-ND	ND-04	3	G	MR	MR	R	MR~	Yes
Alsen	ND-00	4	G	R	R	MS	MR~	Yes
Howard	ND-06	4	G	-	R	R	MR~	No
Granite	WPB-02	5	G	MS	MS	S	S~	Yes
CS3100L~W	MS-	6	G	-	-	-	MS~	***
Experimental lines:								
SD 3851	SD-	-	-	-	-	-	-	-
SD 3860	SD-	-	-	-	-	-	-	-
SD 3868	SD-	-	-	-	-	-	-	-
SD 3870	SD-	-	-	-	-	-	-	-
SD 3879	SD-	-	-	-	-	-	-	-
SD 3927	SD-	-	-	-	-	-	-	-
SD 3934	SD-	-	-	-	-	-	-	-
SD 3941	SD-	-	-	-	-	-	-	-
SD 3942	SD-	-	-	-	-	-	-	-
SD 3943	SD-	-	-	-	-	-	-	-
SD 4001	SD-	-	-	-	-	-	-	-
SD 4002	SD-	-	-	-	-	-	-	-

* Heading, the relative difference in days to heading, compared to Briggs.

E= excellent, G= good, VG= very good, F= fair, P= poor.

+ R= resistant, MR= moderately resist., MS= mod. susceptible, S= susc., VS= very susc..

~ Indicates variety exhibits a consistent tolerance to head blight in grain yield and quality.

** Plant variety protection (PVP), title V, certification option - to be sold by variety name only as a class of certified seed.

*** PVP application pending or anticipated.

Table 4a. Oat yield results - South Dakota East River locations, 2004-2006.

Variety (Hdg.)* - by 3-yr then 2006 state average	Location Yield Avg. (BU/A at 13% moist.)								East Yield Avg. (BU/A)		State Yield Avg. (Bu/A)		State Yield Freq. ** (%)	
	Brookings		So. Shore		Beresford		Brown Co.							
	2006	3-Yr	2006	3-Yr	2006	3-Yr	2006	3-Yr	2006	3-Yr	2006	3-Yr	2006	3-Yr
HiFi (8)	129	143+	112	143+	137	131+	112+	128+	111	136	100	119	17	100
Stallion (8)	136+	132+	120	131+	139	139+	96	118+	111	130	100	115	17	100
Morton (7)	117	130+	112	138+	132	127+	97	115+	104	128	94	113	0	100
Loyal (8)	124	133+	112	127+	130	125+	99	108+	105	123	94	109	0	100
Jerry (5)	111	120	114	118	103	121+	50	100+	87	115	80	103	0	60
Don (1)	105	115	110	116	103	113	53	98	86	111	79	99	17	0
Reeves (2)	101	110	106	113	99	111	48	96	80	108	74	95	0	20
Hytest (4)	91	102	100	107	85	86	71	95	80	98	73	88	0	20
Buff, Hls (3)	88	96	91	102	79	92	48	73	70	91	64	81	0	0
Stark, Hls (6)	76	86	70	95	48	79	70	80	61	85	54	74	0	0
Paul, Hls (7)	78	83	77	92	75	70	77	83	70	82	63	72	0	0
SD 011315-15	142+	.	130+	.	137	.	103+	.	117	.	106	.	83	.
SD 030324	140+	.	123	.	151+	.	116+	.	119	.	106	.	50	.
SD 020701	125	.	125+	.	144+	.	92	.	111	.	101	.	67	.
SD 021021	124	.	124+	.	137	.	103+	.	111	.	101	.	50	.
SD 030888	140+	.	132+	.	144+	.	75	.	112	.	101	.	67	.
SD 020536	123	.	115	.	146+	.	102+	.	111	.	100	.	50	.
Baker (4)	125	.	118	.	131	.	98	.	108	.	98	.	33	.
Beach (6)	127	.	118	.	123	.	100+	.	107	.	97	.	50	.
SD 031128	118	.	128+	.	125	.	62	.	99	.	91	.	34	.
Maida (7)	114	.	110	.	124	.	78	.	97	.	88	.	17	.
SD 020883	93	.	112	.	117	.	49	.	86	.	79	.	17	.
GG-304	94	.	96	.	63	.	69	.	76	.	69	.	0	.
Test avg.:	115	114	112	117	117	109	83	99						
High avg. :	142	143	132	143	151	139	118	128						
Low avg. :	76	83	70	92	48	70	48	73						
# Lsd(.05) :	9	20	8	16	11	24	18	29						
## TPG-value :	133	123	124	127	140	115	100	99						
### C.V. :	5	8	5	7	7	12	15	10						

* Heading, the relative days to heading, compared to the variety - Don.

Lsd, the amount two values in a column must differ to be significantly different.

TPG-value, the minimum value required for the top-performance group (TPG) for yield.

A plus sign (+) indicates values within a column that qualify for the TPG.

Coef. of variation, a measure of trial experimental error, 15% or less is best.

** Frequency or percent of all test locations that a variety was in the TPG for yield.

Table 4b. Oat yield results - South Dakota West River Locations, 2004-2006.

Variety (Hdg.)*- by 3-yr then 2006 state averages	Location Yield Avg. (BU/A at 13% moist.)				West Yield Avg. (BU/A)		State Yield Avg. (Bu/A)		State Yield Freq. ** (%)	
	Wall		Okaton							
	2006	3-Yr	2006	3-Yr	2006	3-Yr	2006	3-Yr	2006	3-Yr
HiFi (8)	66	52+	41	.	54	.	100	119	17	100
Stallion (8)	65	53+	42	.	54	.	100	115	17	100
Morton (7)	62	53+	41	.	52	.	94	113	0	100
Loyal (8)	62	50+	37	.	50	.	94	109	0	100
Jerry (5)	58	55+	41	.	50	.	80	103	0	60
Don (1)	59	52+	46+	.	53	.	79	99	17	0
Reeves (2)	47	46+	40	.	44	.	74	95	0	20
Hytest (4)	51	49+	38	.	45	.	73	88	0	20
Buff, Hls (3)	46	40	32	.	39	.	64	81	0	0
Stark, Hls (6)	40	30	18	.	29	.	54	74	0	0
Paul, Hls (7)	44	30	27	.	36	.	63	72	0	0
SD 011315-15	73+	.	48+	.	61	.	106	.	83	.
SD 030324	66	.	42	.	54	.	106	.	50	.
SD 020701	70+	.	52+	.	61	.	101	.	67	.
SD 021021	67	.	52+	.	60	.	101	.	50	.
SD 030888	67	.	49+	.	58	.	101	.	67	.
SD 020536	67	.	48+	.	58	.	100	.	50	.
Baker (4)	70+	.	44+	.	57	.	98	.	34	.
Beach (6)	68+	.	44+	.	56	.	97	.	50	.
SD 031128	62	.	48	.	55	.	91	.	17	.
Maida (7)	58	.	45+	.	52	.	88	.	17	.
SD 020883	60	.	45+	.	53	.	79	.	17	.
GG-304	58	.	34	.	46	.	69	.	0	.
Test avg. :	61	46	42	.						
High avg. :	73	55	52	.						
Low avg. :	40	30	18	.						
# Lsd (.05) :	5	10	8	.						
## TPG-value :	68	45	44	.						
### C.V. :	6	15	14	.						

* Heading, the relative days to heading, compared to the variety - Don.

Lsd, the amount two values in a column must differ to be significantly different.

TPG-value, the minimum value required for the top-performance group (TPG) for yield.

A plus sign (+) indicates values within a column that qualify for the TPG.

Coef. of variation, a measure of trial experimental error, 15% or less is best.

** Frequency or percent of all test locations that a variety was in the TPG for yield.

Table 5a. Oat averages for bushel weight (BW), height (HT), lodging (LDG), and grain protein (PRT) - South Dakota East River locations for 2006.

Variety (Hdg.)* - by state BW avg.	Location Avg. - BW, HT, LDG												East Avg. - BW, HT, LDG, PRT				State Avg. - BW, HT, LDG, PRT			
	Brookings			South Shore			Beresford			Brown Co.										
	BW lb	HT in	LDG **	BW lb	HT in	LDG **	BW lb	HT in	LDG **	BW lb	HT in	LDG **	BW lb	HT in	LDG **	PRT %	BW lb	HT in	LDG **	PRT %
Buff, Hls (3)	45+	35	1+	42+	33	1+	46+	35	1+	44+	27	1+	44	31	1	18.2	44	29	1	18.2
Paul, Hls (7)	42	42	2+	41+	37	1+	42	38	1+	46+	32	1+	42	35	1	18.2	42	33	1	18.2
Stark, Hls (6)	41	42	1+	41+	37	1+	40	38	1+	42	32	1+	40	35	1	17.8	40	34	1	17.8
Hytest (4)	39	42	3	41+	40	3	41	40	1+	39	36	1+	40	37	1	19.5	39	36	1	19.5
Beach (6)	38	42	2+	43+	39	2+	40	40	1+	39	33	1+	40	36	1	15.5	39	34	1	15.5
Stallion (8)	39	42	2+	40	37	2+	41	40	1+	39	33	1+	40	36	1	17.2	39	34	1	17.2
SD 030888	40	33	2+	38	31	1+	40	32	1+	38	27	1+	39	29	1	15.9	38	27	1	15.9
SD 020536	38	39	2+	37	33	3	40	34	1+	39	29	1+	39	32	1	16.2	38	30	1	16.2
SD 020883	39	37	2+	38	35	2+	38	34	1+	36	29	1+	38	32	1	17.2	38	31	1	17.2
Loyal (8)	38	41	2+	40	38	3	40	38	1+	38	34	1+	39	36	1	17.8	38	34	1	17.8
SD 031128	38	39	1+	38	37	1+	39	36	1+	35	29	1+	38	34	1	16.3	37	32	1	16.3
SD 020701	36	40	2+	39	36	3	39	37	1+	37	33	1+	38	34	1	16.5	37	33	1	16.5
SD 011315-15	36	41	2+	36	36	2+	39	37	1+	39	30	1+	38	34	1	15.5	37	32	1	15.5
Jerry (5)	38	40	2+	36	38	2+	39	37	1+	34	31	1+	37	34	1	16.6	37	32	1	16.6
Morton (7)	38	43	1+	38	37	1+	38	40	1+	37	35	1+	37	36	1	16.5	37	34	1	16.5
Reeves (2)	37	39	2+	38	37	3	38	38	1+	33	32	1+	37	35	1	16.1	36	33	1	16.1
SD 030324	34	42	2+	38	38	3	40	38	1+	38	33	1+	37	36	1	16.3	36	34	1	16.3
Maida (7)	36	42	2+	38	37	2+	36	40	1+	37	32	1+	37	36	1	17.4	36	34	1	17.4
SD 021021	37	37	1+	37	34	1+	38	35	1+	38	30	1+	36	32	1	17.6	36	30	1	17.6
HiFi (8)	36	42	1+	36	36	1+	38	37	1+	36	32	1+	36	35	1	15.6	36	33	1	15.6
Don (1)	36	32	2+	36	32	1+	37	32	1+	34	26	1+	36	29	1	15.6	36	28	1	15.6
Baker (4)	34	38	1+	36	35	1+	38	36	1+	35	31	1+	36	33	1	15.9	35	32	1	15.9
GG-304	29	25	1+	28	23	1+	31	24	1+	34	20	1+	31	22	1	16.1	30	21	1	16.1
Test avg. :	37	39	2	38	35	2	39	36	1	38	30	1								
High avg. :	45	43	3	43	40	3	46	40	1	46	36	1								
Low avg. :	29	25	1	28	23	1	31	24	1	33	20	1								
# Lsd(.05) :	2	2	1	2	2	1	2	2	0	3	3	0								
## TPG-value :	43	.	2	41	.	2	44	.	1	43	.	1								
### C.V. :	4	3	35	4	3	26	4	3	0	5	7	0								

* Heading, the relative days to heading, compared to the variety - Don.

** Lodging score: 0= all plants erect, 3= 50% of plants lodged at 45º-angle, 5= all plants flat.

Lsd, the amount two values in a column must differ to be significantly different.

TPG-value, the minimum or maximum value required for the top-performance group (TPG).

A plus sign (+) indicates values within a column that qualify for the TPG.

Coef. of variation, a measure of trial experimental error.

^ Variable differences within a column are non-significant (NS) at the .05 level of probability.

Table 5b. Oat averages for bushel weight (BW), height (HT), lodging (LDG), and grain protein (PRT)- South Dakota West River locations for 2006.

Variety (Hdg.)* - by state BW avg.	Location Avg. - BW, HT, LDG						West Avg. - BW, HT, LDG, PRT				State Avg. - BW, HT, LDG, PRT			
	Wall			Okaton										
	BW lb	HT in	LDG **	BW lb	HT in	LDG **	BW lb	HT in	LDG **	PRT %	BW lb	HT in	LDG **	PRT %
Buff, Hls (3)	44+	24	1+	43+	22	1+	44	23	1	.	44	29	1	18.2
Paul, Hls (7)	41+	28	1+	41+	24	1+	41	26	1	.	42	33	1	18.2
Stark, Hls (6)	38	29	1+	.	24	1+	.	27	1	.	40	34	1	17.8
Hytest (4)	38	30	1+	37	26	1+	38	28	1	.	39	36	1	19.5
Beach (6)	39	28	1+	36	23	1+	38	26	1	.	39	34	1	15.5
Stallion (8)	39	27	1+	35	24	1+	37	25	1	.	39	34	1	17.2
SD 030888	39	23	1+	36	19	1+	38	21	1	.	38	27	1	15.9
SD 020536	39	25	1+	36	21	1+	38	23	1	.	38	30	1	16.2
SD 020883	40	26	1+	38	24	1+	39	25	1	.	38	31	1	17.2
Loyal (8)	37	27	1+	34	23	1+	35	25	1	.	38	34	1	17.8
SD 031128	38	28	1+	36	24	1+	37	26	1	.	37	32	1	16.3
SD 020701	38	26	1+	34	24	1+	36	25	1	.	37	33	1	16.5
SD 011315-15	38	26	1+	32	21	1+	35	24	1	.	37	32	1	15.5
Jerry (5)	37	26	1+	35	24	1+	36	25	1	.	37	32	1	16.6
Morton (7)	37	28	1+	32	25	1+	35	26	1	.	37	34	1	16.5
Reeves (2)	37	27	1+	36	27	1+	36	27	1	.	36	33	1	16.1
SD 030324	36	28	1+	32	24	1+	34	26	1	.	36	34	1	16.3
Maida (7)	36	28	1+	33	24	1+	35	26	1	.	36	34	1	17.4
SD 021021	32	24	1+	35	22	1+	33	23	1	.	36	30	1	17.6
HiFi (8)	36	26	1+	32	24	1+	34	25	1	.	36	33	1	15.6
Don (1)	36	23	1+	34	22	1+	35	22	1	.	36	28	1	15.6
Baker (4)	35	26	1+	32	24	1+	34	25	1	.	35	32	1	15.9
GG-304	32	18	1+	27	15	1+	29	16	1	.	30	21	1	16.1
Test avg. :	37	26	1	35	23	1								
High avg. :	44	30	1	43	27	1								
Low avg. :	32	18	1	27	15	1								
# Lsd (.05) :	3	2	0	2	2	0								
## TPG-value :	41	.	1	41	.	1								
### C.V. :	6	5	0	3	6	0								

* Heading, the relative days to heading, compared to the variety - Don.

** Lodging score: 0= all plants erect, 3= 50% of plants lodged at 45º-angle, 5= all plants flat.

Lsd, the amount two values in a column must differ to be significantly different.

TPG-value, the minimum or maximum value required for the top-performance group (TPG).

A plus sign (+) indicates values within a column that qualify for the TPG.

Coef. of variation, a measure of trial experimental error.

^ Variable differences within a column are non-significant (NS) at the .05 level of probability.

Table 6. Origin, variety traits, and disease reactions for oat entries tested in 2006.

Variety	Origin	(Hdg.)*	Ldg	Grain	Smut	Rust		Red	PVP**
			Res	Color		Stem	Crown	Leaf	Status
Don	IL-85	1	Good	White	R	MS	S	MR	No
Reeves	SD-02	2	Good	White	MR	S	MS	MS	No
Hytest	SD-86	4	Good	Lt.Cream	MR	MS	S	S	No
Baker	IA-	4	Good	White	-	-	MS	MS	Yes#
Jerry	ND-94	5	Good	White	MS	MS	S	MS	Yes
Beach	ND-04	6	Good	White	R	S	MS	MS	No
Maida	ND-06	7	Good	White	-	-	-	-	No
Morton	ND-01	7	Good	White	R	MR	R	MS	Yes
HiFi	ND-01	8	Good	White	MR	R	MR	MS	Yes
Loyal	SD-00	8	Good	White	R	S	MR	S	No
Stallion	SD-06	8	Good	White	S	S	MR	MR	***
Hull-less types:									
Buff, Hls	SD-02	3	Good	Hulless	R	S	MS	MR	No
Stark, Hls	ND-04	6	Good	Hulless	-	MR	MS	S	***
Paul, Hls	ND-94	7	Good	Hulless	MS	MR	MS	S	Yes
Experimental lines:									
SD 020883	SD-	-	-	-	-	-	-	-	-
SD 030888	SD-	-	-	-	-	-	-	-	-
SD 031128	SD-	-	-	-	-	-	-	-	-
GG-304	GM-	-	-	-	-	-	-	-	-
ND 961161	ND-	-	-	-	-	-	-	-	-
SD 011315-15	SD-	-	-	-	-	-	-	-	-
SD 021021	SD-	-	-	-	-	-	-	-	-
SD 020536	SD-	-	-	-	-	-	-	-	-
SD 020701	SD-	-	-	-	-	-	-	-	-
SD 030324	SD-	-	-	-	-	-	-	-	-

* Heading, the relative difference in days to heading, compared to Don.

Special licensing agreement required.

+ R= resistant, MR= moderately resist., MS= mod. susceptible, S= susc., VS= very susc..

** Plant variety protection (PVP), title V, certification option - to be sold byvariety name only as a class of certified seed.

*** PVP application pending or anticipated.

Table 7a. Barley yield results- South Dakota East River locations, 2004-2006.

Variety (Hdg.)* - by 3-yr then 2006 state avg.	Location Yield Avg. (BU/A at 13% moist.)						East Yield Avg. (BU/A)	
	Brookings		South Shore		Miller			
	2006	3-Yr	2006	3-Yr	2006	3-Yr	2006	3-Yr
Eslick (3)	96+	97+	78	94+	56+	72+	81	88
Haxby (2)	86	87	90+	99+	42	69+	78	84
Lacey (0)	77	84	78	91+	51+	62	68	81
Excel (3)	82	86	75	87	44	63+	70	81
Tradition (0)	62	77	76	92+	37	59	62	78
Drummond (2)	69	76	77	88	36	56	65	77
Legacy (3)	78	81	72	88	40	57	64	78
Conlon (0)	61	68	82	90	54+	65+	66	74
Stellar-ND (2)	74	81	69	84	38	55	61	75
Robust (3)	68	76	71	77	36	51	59	69
Rawson (2)	81	.	84+	.	50+	.	73	.
Meresse~ (2)	55	.	59	.	36	.	55	.
Pronghorn~ (3)	52	.	54	.	41	.	52	.
Stanuwax~ (1)	54	.	58	.	37	.	50	.
Test avg. :	71	81	73	89	43	61		
High avg. :	96	97	90	99	56	72		
Low avg. :	52	68	54	77	36	51		
# Lsd(.05) :	7	9	7	8	7	9		
## TPG-value :	89	88	83	91	49	63		
### C.V. :	6	9	7	7	11	8		

* Heading, the relative days to heading, compared to the variety - Lacey.

~ Hull-less type, used in food.

Lsd, the amount two values in a column must differ to be significantly different.

TPG-value, the minimum value required for the top-performance group (TPG) for yield.

A plus sign (+) indicates values within a column that qualify for the TPG.

Coef. of variation, a measure of trial experimental error, 15% or less is best.

Table 7b. Barley yield results- South Dakota East River locations, 2004-2006 (Continued).

Variety (Hdg.)* - by 3-yr then 2006 state avg.	Location Yield Avg. (BU/A at 13% moist.)				East Yield Avg. (BU/A)		State Yield Avg. (BU/A)		State Top-Yield Freq. ** (%)	
	Selby		Brown Co.							
	2006	3-Yr	2006	3-Yr	2006	3-Yr	2006	3-Yr	2006	3-Yr
Eslick (3)	95+	90+	81+	88+	81	88	71	77	83	100
Haxby (2)	94+	83+	79+	81+	78	84	71	75	67	83
Lacey (0)	72	82+	64	87+	68	81	62	71	17	50
Excel (3)	77	83+	72+	86+	70	81	61	71	34	67
Tradition (0)	71	78+	65	84+	62	78	55	69	0	50
Drummond (2)	73	82+	68	81+	65	77	58	68	0	33
Legacy (3)	73	77+	57	85	64	78	57	68	0	17
Conlon (0)	70	69	65	80+	66	74	60	65	17	50
Stellar-ND (2)	63	77+	63	79+	61	75	53	65	0	33
Robust (3)	53	65	68	75	59	69	52	61	0	17
Rawson (2)	74	.	74+	.	73	.	66	.	67	.
Meresse~ (2)	60	.	63	.	55	.	50	.	0	.
Pronghorn~ (3)	52	.	60	.	52	.	45	.	0	.
Stanuwax~ (1)	49	.	52	.	50	.	45	.	0	.
Test avg. :	70	79	67	83						
High avg. :	95	90	81	88						
Low avg. :	49	65	52	75						
# Lsd(.05) :	9	14	10	12						
## TPG-value :	86	76	71	76						
### C.V. :	9	8	11	8						

* Heading, the relative days to heading, compared to the variety - Lacey.

~ Hull-less type, used for food.

Lsd, the amount two values in a column must differ to be significantly different.

TPG-value, the minimum value required for the top-performance group (TPG) for yield.

A plus sign (+) indicates values within a column that qualify for the TPG.

Coef. of variation, a measure of trial experimental error, 15% or less is best.

** Frequency or percent of all test locations that a variety was in the TPG for yield.

Table 7c. Barley yield results- South Dakota West River locations, 2004-2006.

Variety (Hdg.)* - by 3-yr then 2006 state avg.	Location Yield Avg. (BU/A at 13% moist.)		West Yield Avg. (BU/A)		State Yield Avg. (BU/A)		State Top-Yield Freq. ** (%)	
	Wall							
	2006	3-Yr	2006	3-Yr	2006	3-Yr	2006	3-Yr
Eslick (3)	56+	48+	56	48	71	77	83	100
Haxby (2)	56+	50+	56	50	71	75	67	83
Lacey (0)	49	42	49	42	62	71	17	50
Excel (3)	52+	45+	52	45	61	71	34	67
Tradition (0)	43	39	43	39	55	69	0	50
Drummond (2)	48	42	48	42	58	68	0	33
Legacy (3)	49	41	49	41	57	68	0	17
Conlon (0)	53	49+	53	49	60	65	17	50
Stellar-ND (2)	42	36	42	36	53	65	0	33
Robust (3)	45	43+	45	43	52	61	0	17
Rawson (2)	53+	.	53	.	66	.	67	.
Meresse~ (2)	40	.	40	.	50	.	0	.
Pronghorn~ (3)	35	.	35	.	45	.	0	.
Stanuwax~ (1)	35	.	35	.	45	.	0	.
Test avg. :	47	44						
High avg. :	56	50						
Low avg. :	35	36						
# Lsd (.05) :	4	7						
## TPG-value :	52	43						
### C.V. :	6	12						

* Heading, the relative days to heading, compared to the variety - Lacey.

~ Hull-less type, used for food.

Lsd, the amount two values in a column must differ to be significantly different.

TPG-value, the minimum value required for the top-performance group (TPG) for yield.

A plus sign (+) indicates values within a column that qualify for the TPG.

Coef. of variation, a measure of trial experimental error, 15% or less is best.

** Frequency or percent of all test locations that a variety was in the TPG for yield.

Table 8a. Barley averages for bushel weight (BW), height (HT), lodging (LDG), and grain protein (PRT)- South Dakota East River locations for 2006.

Variety (Hdg.)* - by state BW avg.	Location Avg. - BW, HT, LDG									East Avg. - BW, HT, LDG, PRT			
	Brookings			South Shore			Miller						
	BW lb	HT in	LDG **	BW lb	HT in	LDG **	BW lb	HT in	LDG **	BW lb	HT in	LDG **	PRT %
Stanuwax~ (1)	51	29	1+	53+	29	1+	57+	22	1+	54	25	1	15.8
Meresse~ (2)	55+	26	1+	51+	24	1+	56+	17	1+	55	22	1	17.3
Haxby (2)	51	29	1+	51+	29	1+	50	18	2	51	25	1	13.6
Eslick (3)	51	29	1+	47	28	1+	51	20	2	51	25	2	13.3
Conlon (0)	49	28	3	44	27	3	50	19	3	49	24	2	13.7
Pronghorn~ (3)	48	29	2	45	26	2	53	20	3	50	25	2	15.9
Rawson (2)	49	30	1+	46	31	1+	50	20	1+	49	26	1	14.3
Tradition (0)	49	32	1+	47	32	1+	48	21	1+	48	27	1	14.2
Robust (3)	49	34	1+	46	32	3	47	21	1+	48	27	2	14.2
Lacey (0)	48	31	1+	46	30	3	49	21	1+	48	26	2	14.3
Drummond (2)	48	33	1+	47	32	2	46	19	1+	47	27	1	14.7
Excel (3)	48	32	1+	46	31	3	49	19	1+	48	26	2	13.8
Legacy (3)	48	34	1+	44	32	3	48	18	1+	47	26	2	14.3
Stellar-ND (2)	47	31	1+	45	30	2	48	19	1+	47	25	1	14.4
Test avg. :	49	30	1	47	29	2	50	19	1				
High avg. :	55	34	3	53	32	3	57	22	3				
Low avg. :	47	26	1	44	24	1	46	17	1				
# Lsd(.05) :	2	2	0	3	1	0	1	2	1				
## TPG-value :	53	.	1	50	.	1	56	.	1				
### C.V. :	2	4	16	4	3	20	2	7	28				

* Heading, the relative days to heading, compared to the variety - Lacey.

** Lodging score: 0= all plants erect, 3= 50% of plants lodged at 45º-angle, 5= all plants flat.

~ Hull-less type, used for food.

Lsd, the amount two values in a column must differ to be significantly different.

TPG-value, the minimum or maximum value required for the top-performance group (TPG).

A plus sign (+) indicates values within a column that qualify for the TPG.

Coef. of variation, a measure of trial experimental error.

Table 8b. Barley averages for bushel weight (BW), height (HT), lodging (LDG), grain protein (PRT)- South Dakota East River locations (Continued).

Variety (Hdg.)* - by state BW avg.	Location Avg. - BW, HT, LDG						East Avg. - BW, HT, LDG, PRT				State Avg. - BW, HT, LDG, PRT			
	Selby			Brown Co.										
	BW lb	HT in	LDG **	BW lb	HT in	LDG **	BW lb	HT in	LDG **	PRT %	BW lb	HT in	LDG **	PRT %
Stanuwax~ (1)	58+	25	2	53	22	1+	54	25	1	15.8	54	24	1	15.3
Meresse~ (2)	58+	23	2	56+	21	1+	55	22	1	17.3	53	22	1	16.3
Haxby (2)	53	26	2	51	24	1+	51	25	1	13.6	50	24	1	13.1
Eslick (3)	53	26	3	52	22	1+	51	25	2	13.3	49	24	1	12.6
Conlon (0)	53	24	3	49	23	1+	49	24	2	13.7	48	24	2	13.3
Pronghorn~ (3)	52	28	3	52	23	1+	50	25	2	15.9	48	24	2	15.4
Rawson (2)	50	25	1+	49	24	1+	49	26	1	14.3	47	25	1	13.8
Tradition (0)	51	27	2	47	23	1+	48	27	1	14.2	47	26	1	13.7
Robust (3)	51	26	2	49	24	1+	48	27	2	14.2	46	26	1	13.7
Lacey (0)	52	24	2	46	23	1+	48	26	2	14.3	46	25	1	13.7
Drummond (2)	50	28	2	46	22	1+	47	27	1	14.7	46	26	1	14.1
Excel (3)	51	25	2	48	22	1+	48	26	2	13.8	46	25	1	13.3
Legacy (3)	51	26	2	46	22	1+	47	26	2	14.3	46	25	1	13.7
Stellar-ND (2)	49	25	2	46	21	1+	47	25	1	14.4	45	25	1	13.7
Test avg. :	52	25	2	49	22	1								
High avg. :	58	28	3	56	24	1								
Low avg. :	49	23	1	46	21	1								
# Lsd(.05) :	2	2	1	2	2	0								
## TPG-value :	56	.	1	54	.	1								
### C.V. :	2	5	19	3	7	0								

* Heading, the relative days to heading, compared to the variety - Lacey.

** Lodging score: 0= all plants erect, 3= 50% of plants lodged at 45º-angle, 5= all plants flat.

~ Hull-less type, used for food.

Lsd, the amount two values in a column must differ to be significantly different.

TPG-value, the minimum or maximum value required for the top-performance group (TPG).

A plus sign (+) indicates values within a column that qualify for the TPG.

Coef. of variation, a measure of trial experimental error.

^ Variable differences within a column are non-significant (NS) at the .05 level of probability.

Table 8c. Barley averages for bushel weight (BW), height (HT), lodging (LDG), and grain protein (PRT)- South Dakota West River locations for 2006.

Variety (Hdg.)* - by state BW avg.	Location Avg. - BW, HT, LDG			West Avg. - BW, HT, LDG, PRT				State Avg. - BW, HT, LDG, PRT			
	Wall										
	BW lb	HT in	LDG	BW lb	HT in	LDG	PRT %	BW lb	HT in	LDG	PRT %
Stanuwax~ (1)	53+	20	1+	53	20	1	12.7	54	24	1	15.3
Meresse~ (2)	51	18	1+	51	18	1	11.2	53	22	1	16.3
Haxby (2)	49	21	1+	49	21	1	10.7	50	24	1	13.1
Eslick (3)	47	20	1+	47	20	1	9.4	49	24	1	12.6
Conlon (0)	48	20	1+	48	20	1	11.3	48	24	2	13.3
Pronghorn~ (3)	46	21	1+	46	21	1	12.8	48	24	2	15.4
Rawson (2)	46	22	1+	46	22	1	11.4	47	25	1	13.8
Tradition (0)	47	22	1+	47	22	1	11.1	47	26	1	13.7
Robust (3)	45	22	1+	45	22	1	11.2	46	26	1	13.7
Lacey (0)	45	22	1+	45	22	1	10.6	46	25	1	13.7
Drummond (2)	47	22	1+	47	22	1	11.4	46	26	1	14.1
Excel (3)	44	22	1+	44	22	1	10.3	46	25	1	13.3
Legacy (3)	44	21	1+	44	21	1	11.0	46	25	1	13.7
Stellar-ND (2)	44	22	1+	44	22	1	10.2	45	25	1	13.7
Test avg. :	47	21	1								
High avg. :	53	22	1								
Low avg. :	44	18	1								
# Lsd (.05) :	1	2	NS^								
## TPG-value :	52	.	1								
### C.V. :	2	5	0								

* Heading, the relative days to heading, compared to the variety - Lacey.

~ Hull-less type, used for food.

Lsd, the amount two values in a column must differ to be significantly different.

TPG-value, the minimum or maximum value required for the top-performance group (TPG).

A plus sign (+) indicates values within a column that qualify for the TPG.

Coef. of variation, a measure of trial experimental error.

^ Variable differences within a column are non-significant (NS) at the .05 level of probability.

Table 9. Origin, variety traits, and disease reactions for barley entries tested in 2006.

Variety	Origin	(Hdg.)*	Ldg	Grain	Awn##	Loose	Stem	Blotch+		PVP**
			Res	Use	Texture	Smut	Rust	Spot	Net	Status
Two-row types:										
Conlon	ND-96	0	G	Malt	SS	S	S	MS	MR	Yes
Haxby	MT-02	2	F	Feed	R	S	-	-	-	No
Rawson	ND-05	2	F	Feed	SR	S	S	R	MS	No
Eslick	MT-04	3	F	Feed	R	S	-	-	-	***
Six-row types:										
Lacey	MN-00	0	G	Malt	S	S	S	MR	S	Yes
Tradition	BARI-03	0	F	Malt	S	S	S	MR	S	Yes
Stellar-ND	ND-05	2	G	~	SS	S	S	MR	MS	Yes
Drummond	ND-00	2	VG	Malt	SS	S	S	R	MS	Yes
Excel	MN-90	3	VG	Malt	S	S	S	MR	S	Yes
Robust	MN-83	3	G	Malt	S	S	S	MR	S	Yes
Legacy	BARI-00	3	G	Malt	S	S	S	MR	S	Yes
Hull-less types:										
Stanuwax~	WPB	1	G	Food	-	-	-	-	-	Yes
Meresse~	WPB	2	G	Food	-	-	-	-	-	Yes
Pronghorn~	WPB	3	F	Food	-	VS	MS	MS	S	Yes

* Heading, the relative difference in days to heading, compared to Lacey.

~ Hull-less type, used for food.

E= excellent, G= good, VG= very good, F= fair, P= poor.

S= smooth,SS= semi-smooth, SR= semi-rough and R= rough texture.

+ R= resistant, MR= moderately resist., MS= mod. susceptible, S= susc., VS= very susc..

** Plant variety protection (PVP), title V, certification option - to be sold by variety name only as a class of certified seed.

*** PVP application pending or anticipated.

Table 10a. Hard red and white wheat yield results - South Dakota West River locations, 2004-2006.

Variety (Hdg.)* - by 3-yr then 2006 state yield avg.	Location Yield Avg. (BU/A) at 13% moist.										West Yield Avg. (BU/A)		State Yield Avg. (BU/A)	
	Wall		Martin		Sturgis		Oelrichs		Winner					
	2006	3-Yr	2006	3-Yr	2006	3-Yr	2006	3-Yr	2006	3-Yr	2006	3-Yr	2006	3-Yr
Wahoo (3)	47+	53+	41	.	36+	30+	61+	.	35	46+	44	43	49	54
Millennium (4)	42+	49+	39	.	32+	32+	55	.	31	46+	40	42	46	54
SD97059-2	45+	50+	39	.	30	27	45	.	31	48+	38	42	45	54
Darrell (4)	41+	49+	47+	.	39+	32+	57+	.	37	49+	44	43	49	53
Harding (5)	43+	49+	37	.	33+	28+	52	.	37	48+	40	42	46	52
Jerry (6)	40+	50+	42	.	30	26	54	.	29	39	39	38	45	52
Alliance (2)	46+	48+	40	.	33+	30+	54	.	41+	47+	43	42	49	51
Arapahoe (3)	43+	43	44+	.	30	26	53	.	35	44	41	38	48	50
Jagalene (3)	42+	47+	38	.	38+	31+	59+	.	41+	52+	44	43	47	50
Wesley (2)	45+	45	46+	.	34+	29+	53	.	34	39	42	38	49	49
Trego~W (3)	40+	42	52+	.	36+	32+	54	.	38	50+	44	41	49	49
Alice (0)	46+	45	47+	.	37+	27	53	.	39	47+	44	40	48	49
Wendy~W (-1)	47+	46+	47+	.	33+	27	49	.	38	47+	43	40	47	49
Tandem (4)	44+	46+	41	.	35+	29+	52	.	37	44	42	40	46	49
Expedition (0)	46+	45	41	.	33+	28+	59+	.	37	40	43	38	49	48
Nekota (2)	34	42	38	.	33+	29+	54	.	37	43	39	38	47	48
Crimson (5)	35	44	41	.	33+	27	53	.	37	41	40	37	46	47
NuDakota~W (2)	47+	.	48+	.	31	.	60+	.	37	.	45	.	52	.
Hatcher (2)	40+	.	48+	.	38+	.	64+	.	38	.	46	.	51	.
SD01058	44+	.	49+	.	35+	.	56	.	40+	.	45	.	50	.
SD98W175-1	43+	.	45+	.	33+	.	58+	.	45+	.	45	.	50	.
Harry (5)	46+	.	41	.	36+	.	63+	.	39	.	45	.	49	.
NuFrontier~W (5)	46+	.	44+	.	35+	.	58+	.	38	.	44	.	48	.
SD02279	49+	.	39	.	31	.	52	.	36	.	41	.	48	.
SD96240-3-1	46+	.	38	.	28	.	47	.	38	.	39	.	47	.
Overland	45+	.	41	.	28	.	52	.	38	.	41	.	46	.
SD02480	45+	.	40	.	26	.	53	.	39	.	41	.	46	.
SD01W064	45+	.	43+	.	30	.	47	.	39	.	41	.	45	.
SD01122	44+	.	42	.	29	.	53	.	28	.	39	.	44	.
Overley (0)	47+	.	41	.	29	.	55	.	30	.	40	.	44	.
Test avg. :	44	47	43	.	33	29	54	.	37	45				
High avg. :	49	53	52	.	39	32	64	.	45	52				
Low avg. :	34	42	37	.	26	26	45	.	28	39				
# Lsd (.05) :	9	7	9	.	7	4	7	.	5	7				
## TPG-value :	40	46	43	.	32	28	57	.	40	45				
### C.V. :	12	12	13	.	13	15	8	.	9	11				

* Heading, the relative days to heading, compared to the variety - Expedition.

Lsd, the amount two values in a column must differ to be significantly different.

TPG-value, the minimum value required for the top-performance group (TPG) for yield.

A plus sign (+) indicates values within a column that qualify for the TPG.

Coef. of variation, a measure of trial experimental error, 15% or less is best.

Table 10b. Hard red and white wheat yield results - South Dakota East River locations, 2004-2006.

Variety (Hdg.)* - by 3-yr then 2006 state yield avg.	Location Yield Avg. (BU/A) 13% moist.				East Yield Avg. (BU/A)		State Yield Avg. (BU/A)	
	Brookings		Highmore					
	2006	3-Yr	2006	3-Yr	2006	3-Yr	2006	3-Yr
Wahoo (3)	78+	73+	44+	69+	61	71	49	54
Millennium (4)	79+	77+	42	66+	61	72	46	54
SD97059-2	82+	76+	41	70+	62	73	45	54
Darrell (4)	83+	67	42	66+	63	67	49	53
Harding (5)	71	69	49+	67+	60	68	46	52
Jerry (6)	80+	80+	42	66+	61	73	45	52
Alliance (2)	83+	65	48+	67+	66	66	49	51
Arapahoe (3)	86+	69	45+	67+	66	68	48	50
Jagalene (3)	67	56	44+	63+	56	60	47	50
Wesley (2)	80+	69	52+	64+	66	67	49	49
Trego~W (3)	75	57	51+	62+	63	60	49	49
Alice (0)	70	62	46+	63+	58	63	48	49
Wendy~W (-1)	80+	67	34	60	57	64	47	49
Tandem (4)	71	63	45+	63+	58	63	46	49
Expedition (0)	86+	70+	40	59	63	65	49	48
Nekota (2)	76	61	54+	63+	65	62	47	48
Crimson (5)	75	61	46+	62+	61	62	46	47
NuDakota~W (2)	89+	.	49+	.	69	.	52	.
Hatcher (2)	80+	.	46+	.	63	.	51	.
SD01058	77+	.	50+	.	64	.	50	.
SD98W175-1	80+	.	44+	.	62	.	50	.
Harry (5)	76	.	45+	.	61	.	49	.
NuFrontier~W (5)	67	.	50+	.	59	.	48	.
SD02279	73	.	54+	.	64	.	48	.
SD96240-3-1	84+	.	46+	.	65	.	47	.
Overland	85+	.	32	.	59	.	46	.
SD02480	76	.	41	.	59	.	46	.
SD01W064	73	.	37	.	55	.	45	.
SD01122	60	.	52+	.	56	.	44	.
Overley (0)	82+	.	26	.	54	.	44	.
Test avg. :	77	67	45	65				
High avg. :	89	80	54	70				
Low avg. :	60	56	26	59				
# Lsd (.05) :	11	10	12	8				
## TPG-value :	77	70	44	62				
### C.V. :	8	13	13	7				

* Heading, the relative days to heading, compared to the variety - Expedition.

Lsd, the amount two values in a column must differ to be significantly different.

TPG-value, the minimum value required for the top-performance group (TPG) for yield.

A plus sign (+) indicates values within a column that qualify for the TPG.

Coef. of variation, a measure of trial experimental error, 15% or less is best.

Table 11a. Hard red and white wheat averages for bushel weight (BW), height (HT), and grain protein (PRT)- South Dakota West River locations for 2006.

Variety (Hdg.)* - by state BW avg.	Location Avg.- BW and HT										West Avg.- BW, HT, PRT			State Avg.- BW, HT, PRT		
	Wall		Martin		Sturgis		Oelrichs		Winner							
	BW lb	HT in	BW lb	HT in	BW lb	HT in	BW lb	HT in	BW lb	HT in	BW lb	HT in	PRT %	BW lb	HT in	PRT %
SD98W175-1	62+	25	65+	28	65+	22	63+	28	58+	20	63	25	13.9	62	27	13.5
Jagalene (3)	62+	20	62	25	67+	23	62+	31	59+	20	62	24	14.0	62	26	13.6
SD02480	61+	23	64+	25	67+	20	62+	27	57+	20	62	23	14.3	62	26	13.7
SD01W064	63+	26	64+	28	63	25	60	30	58+	22	62	26	13.7	62	28	12.8
NuFrontier~W (5)	61+	24	63+	27	64	23	62+	29	58+	20	61	25	13.5	61	27	13.4
Darrell (4)	61+	29	62	29	66+	25	61	30	58+	22	62	27	14.5	61	29	13.9
Crimson (5)	59	26	62	28	63	26	64+	30	57+	24	61	27	14.7	61	29	14.5
Tandem (4)	62+	26	61	27	63	25	62+	31	57+	22	61	26	14.3	61	29	14.1
SD02279	61+	28	63+	28	64	26	61	31	55	24	61	27	14.6	61	30	14.4
SD01058	61+	31	63+	27	64	24	61	31	58+	24	61	27	14.0	61	30	13.9
Alice (0)	61+	21	64+	25	64	22	59	27	56+	21	61	23	14.1	61	25	13.5
Overley (0)	61+	23	63+	27	64	21	59	31	58+	22	61	25	14.9	61	27	14.4
Nekota (2)	59	17	61	24	64	22	61	28	56+	23	60	23	14.5	61	25	14.2
Trego~W (3)	61+	18	60	26	62	21	61	27	57+	19	60	22	13.8	61	25	13.0
Wendy~W (-1)	61+	21	64+	24	64	20	59	26	56+	18	61	22	13.8	60	24	13.8
Millennium (4)	61+	24	63+	28	64	24	60	30	53	23	60	26	14.7	60	29	13.9
Arapahoe (3)	60	25	61	28	64	24	61	31	55	22	60	26	14.8	60	29	14.3
Harding (5)	60	28	61	28	64	27	60	31	56+	20	60	27	14.9	60	30	14.5
Hatcher (2)	61+	21	62	25	64	21	62+	29	54	18	60	23	13.8	60	25	13.8
Expedition (0)	60	23	62	25	63	23	59	30	58+	20	60	24	13.8	60	27	13.9
SD01122	62+	29	61	27	63	24	62+	30	53	23	60	27	15.1	60	29	14.5
Overland	61+	29	61	27	63	22	59	29	56+	21	60	25	13.8	60	28	13.0
Jerry (6)	60	25	62	28	63	25	62+	31	54	23	60	26	15.4	60	30	14.9
SD97059-2	61+	27	61	26	63	25	59	29	56+	22	60	26	15.2	60	28	14.2
SD96240-3-1	60	24	61	25	62	22	59	28	56+	21	60	24	14.4	60	27	13.9
Alliance (2)	59	24	60	24	65	21	57	28	55	22	59	24	12.0	60	26	11.9
NuDakota~W (2)	58	22	61	24	63	20	59	27	54	18	59	22	13.7	59	24	13.6
Wahoo (3)	59	25	60	26	63	24	58	29	55	20	59	25	14.2	59	27	13.6
Wesley (2)	58	21	60	25	62	20	58	28	52	18	58	22	15.0	59	25	14.5
Harry (5)	58	23	58	26	62	24	59	31	52	21	58	25	13.8	58	27	13.2
Test avg. :	60	.	62	26	64	23	60	29	56	.						
High avg. :	63	.	65	29	67	27	64	31	59	.						
Low avg. :	58	.	58	24	62	20	57	26	52	.						
# Lsd (.05) :	2	.	2	3	2	2	2	2	3	.						
## TPG-value :	61	.	63	.	65	.	62	.	56	.						
### C.V. :	2	.	2	7	2	4	2	4	3	.						

* Heading, the relative days to heading, compared to the variety - Expedition.

Lsd, the amount two values in a column must differ to be significantly different.

TPG-value, the minimum or maximum value required for the top-performance group (TPG).

A plus sign (+) indicates values within a column that qualify for the TPG.

Coef. of variation, a measure of trial experimental error.

Table 11b. Hard red and white wheat averages for bushel weight (BW), height (HT), and grain protein (PRT)- South Dakota East River locations for 2006.

Variety (Hdg.)* - by state BW avg.	Location Averages- BW, HT, LDG				East River Averages- BW, HT, LDG, PRT			State Averages- BW, HT, LDG, PRT		
	Brookings		Highmore							
	BW lb	HT in	BW lb	HT in	BW lb	HT in	PRT %	BW lb	HT in	PRT %
SD98W175-1	61+	37	61+	.	61	.	13.1	62	27	13.5
Jagalene (3)	60	35	62+	.	61	.	13.1	62	26	13.6
SD02480	61+	38	60+	.	61	.	13.2	62	26	13.7
SD01W064	60	39	62+	.	61	.	11.8	62	28	12.8
NuFrontier~W (5)	63+	37	60+	.	61	.	13.3	61	27	13.4
Darrell (4)	61+	41	60+	.	61	.	13.3	61	29	13.9
Crimson (5)	62+	42	62+	.	62	.	14.3	61	29	14.5
Tandem (4)	61+	43	62+	.	61	.	14.0	61	29	14.1
SD02279	61+	45	62+	.	62	.	14.2	61	30	14.4
SD01058	60	41	60+	.	60	.	13.9	61	30	13.9
Alice (0)	61+	34	61+	.	61	.	13.0	61	25	13.5
Overley (0)	62+	38	60+	.	61	.	13.8	61	27	14.4
Nekota (2)	62+	37	61+	.	61	.	13.9	61	25	14.2
Trego~W (3)	61+	38	61+	.	61	.	12.3	61	25	13.0
Wendy~W (-1)	61+	34	58	.	60	.	13.8	60	24	13.8
Millennium (4)	60	48	61+	.	61	.	13.2	60	29	13.9
Arapahoe (3)	62+	42	60+	.	61	.	13.8	60	29	14.3
Harding (5)	61+	43	60+	.	60	.	14.1	60	30	14.5
Hatcher (2)	61+	36	59	.	60	.	13.8	60	25	13.8
Expedition (0)	61+	42	60+	.	61	.	14.1	60	27	13.9
SD01122	60	43	60+	.	60	.	14.0	60	29	14.5
Overland	61+	42	61+	.	61	.	12.2	60	28	13.0
Jerry (6)	60	48	60+	.	60	.	14.4	60	30	14.9
SD97059-2	60	41	60+	.	60	.	13.2	60	28	14.2
SD96240-3-1	60	39	59	.	60	.	13.4	60	27	13.9
Alliance (2)	61+	40	60+	.	60	.	11.8	60	26	11.9
NuDakota~W (2)	61+	35	59	.	60	.	13.5	59	24	13.6
Wahoo (3)	59	41	59	.	59	.	13.0	59	27	13.6
Wesley (2)	60	37	60+	.	60	.	14.0	59	25	14.5
Harry (5)	58	38	57	.	57	.	12.6	58	27	13.2
Test avg. :	61	40	60	.						
High avg. :	63	48	62	.						
Low avg. :	58	34	57	.						
# Lsd (.05) :	2	.	2	.						
## TPG-value :	61	.	60	.						
### C.V. :	2	.	1	.						

* Heading, the relative days to heading, compared to the variety - Expedition.

Lsd, the amount two values in a column must differ to be significantly different.

TPG-value, the minimum or maximum value required for the top-performance group (TPG).

A plus sign (+) indicates values within a column that qualify for the TPG.

Coef. of variation, a measure of trial experimental error.

Table 12. Origin, variety traits, and disease reactions for winter wheat entries tested for 2006.

Variety	Origin	(Hdg.)*	Ldg Res	End-use	Winter Hardy	Cole-optile	Wheat Steak	Tan-spot	Rust			PVP
				Qlty	Rtg	Pct##	Mo-saic		Rust Stripe	Rust Leaf	Rust Stem	
Wendy~W	SD-04	-1	E	GN	E	67	MS	R	MR	MS	MR	Yes
Alice	SD-06	0	G	EB	F	78	MR	MS	-	MS	MR	***
Expedition	SD-02	0	F	GB	G-E	88	S	MS	MS	MS	R	Yes
Overley	KS-03	0	E	EB	P	-	MR	MR	R	R	R	Yes
Alliance	NE-93	2	G	AB	G	76	MS	VS	MR	S	MS	Yes
Nekota	NE/SD-94	2	G	GB	G	87	MS	MR	S	S	MR	No
Wesley	NE-98	2	E	GB	G-E	79	S	MR	MR	MS	R	No
Hatcher	CO-04	2	G	GB	-	-	S	-	MS	MS	MR	Yes
NuDakota~W	AW-06	2	G	AB	-	.	MR	MR	R	R	R	***
Arapahoe	NE-88	3	F	GB	G-E	83	S	S	MS	MR	MR	Yes
Trego~W	KS-99	3	F-G	AB	F-G	80	S	MS	S	MS	R	Yes
Wahoo	NE/WY-01	3	G	GB	G	91	S	-	MR	S	R	Yes
Jagalene	AW-02	3	E	AB	G	92	MS	MR	MR	MR	MR	Yes
Darrell	SD-06	4	G	EB	G	89	MR	MS	-	MS	R	***
Millennium	NE-99	4	G	AB	F-G	78	S	MS	MR	MS	MR	Yes
Tandem	SD-97	4	F-G	EB	G	112	S	S	MR	S	MR	Yes
Crimson	SD-97	5	G	GB	G-E	110	MR	R	MR	S	MS	Yes
Harding	SD-99	5	F-G	AB	E	100	MR	MR	MS	MR	MR	Yes
Harry	NE-02	5	G	AB	G	-	S	-	-	MR	MR	No
NuFrontier~W	GM-00	5	F	EB	F	.	S	-	-	MS	MR-MS	Yes
Overland	NE-06	5	G	AB	-	88	-	-	S	MR	MR	***
Jerry	ND-01	6	F	GB	E	92	MS	-	MR	S	R	No
Exp. lines:												
SD01122	-	-	-	-	-	.	-	-	-	-	-	-
SD96240-3-1	-	-	-	-	-	.	-	-	-	-	-	-
SD97059-2	-	-	-	-	-	.	-	-	-	-	-	-
SD01W064	-	-	-	-	-	.	-	-	-	-	-	-
SD01058	-	-	-	-	-	.	-	-	-	-	-	-
SD02279	-	-	-	-	-	.	-	-	-	-	-	-
SD02480	-	-	-	-	-	.	-	-	-	-	-	-
SD98W175-1	-	-	-	-	-	.	-	-	-	-	-	-

* Heading, the relative difference in days to heading, compared to Expedition.

~ W, Hard white wheat variety.

E= exc., A= accept., F= fair, G= good, P= poor, B= baking, N=noodles.

Percent of Harding (3-1/4" long).

+ R= resistant, MR= moderately resist., MS= mod. susceptible, S= susc., VS= very susc..

** Plant variety protection (PVP), title V, certification option - to be sold by variety name only as a class of certified seed.

*** PVP application pending or anticipated.

Table 13a. Field pea yield results at one east South Dakota location for 2006.

Variety (Mat.)* - by 2006 state yield avg.	Location Yield Avg. (Bu/A) 13% moist.	East Yield Avg. (Bu/A)	State Yield Avg. (BuA)
	Beresford		
	2006	2006	2006
Polstead (M)	79+	79	43
Cooper (L)	76+	76	42
Stratus (M)	77+	77	41
Tudor (M)	74+	74	39
Camry (M)	64	64	38
SW Midas (E)	68	68	38
CDC Mozart (M)	72+	72	37
SW Salute (E)	70	70	37
Topeka (E)	67	67	37
Eclipse (M)	67	67	37
SW Cabot (E)	64	64	36
SW Capri (E)	66	66	36
Fusion (M)	66	66	36
Tamora (L)	63	63	35
Grande (M)	60	60	34
DS-Admiral (E)	62	62	34
CEB 1093 (M)	64	64	34
Aragorn (M)	62	62	33
SW Marquee (E)	68	68	33
AP-18 (M)	60	60	32
Cruiser (M)	56	56	31
Integra (E)	54	54	31
Carneval (M)	54	54	31
CDC Striker (M)	59	59	28
K2 (M)	45	45	26
Majoret (E)	39	39	25
Test avg. :	64		
High avg. :	79		
Low avg. :	39		
# Lsd (.05) :	7		
## TPG-value :	72		
### C.V. :	8		

* Early- E, medium- M, or late- L maturity.

Lsd, the amount two values in a column must differ to be significantly different.

TPG-value, the minimum value required for the top-performance group (TPG) for yield.

A plus sign (+) indicates values within a column that qualify for the TPG.

Coef. of variation, a measure of trial experimental error, 15% or less is best.

Table 13b. Field pea yield results at two west South Dakota locations, 2006.

Variety (Mat.)* - by 2006 state yield avg.	Location Yield Avg. (Bu/A at 13% moist.)		West Yield Avg. (Bu/A)	State Yield Avg. (Bu/A)
	Wall	Hayes		
	2006	2006	2006	2006
Polstead (M)	33+	18+	26	43
Cooper (L)	33+	17+	25	42
Stratus (M)	30+	16+	23	41
Tudor (M)	28	15	22	39
Camry (M)	32+	17+	25	38
SW Midas (E)	30+	16+	23	38
CDC Mozart (M)	25	14	20	37
SW Salute (E)	26	15	21	37
Topeka (E)	30+	15	23	37
Eclipse (M)	28	16+	22	37
SW Cabot (E)	27	16+	22	36
SW Capri (E)	24	17+	21	36
Fusion (M)	27	14	21	36
Tamora (L)	28	14	21	35
Grande (M)	26	16+	21	34
DS-Admiral (E)	26	15	21	34
CEB 1093 (M)	26	13	20	34
Aragorn (M)	23	14	19	33
SW Marquee (E)	19	13	16	33
AP-18 (M)	21	14	18	32
Cruiser (M)	24	13	19	31
Integra (E)	26	13	20	31
Carneval (M)	23	15	19	31
CDC Striker (M)	16	10	13	28
K2 (M)	22	12	17	26
Majoret (E)	22	13	18	25
Test avg. :	26	15		
High avg. :	33	18		
Low avg. :	16	10		
# Lsd (.05) :	3	2		
## TPG-value :	30	16		
### C.V. :	9	9		

* Early- E, medium- M, or late- L maturity.

Lsd, the amount two values in a column must differ to be significantly different.

TPG-value, the minimum value required for the top-performance group (TPG) for yield.

A plus sign (+) indicates values within a column that qualify for the TPG.

Coef. of variation, a measure of trial experimental error, 15% or less is best.

Table 14a. Field pea averages for bushel weight (BW), height (HT), and lodging (LDG) at one east South Dakota location for 2006.

Variety (Mat.)* - by state BW avg.	Location Avg. - BW, HT, LDG			East Avg. - BW, HT, LDG, PRT				State Avg. - BW, HT, LDG		
	Beresford									
	BW lb	HT in	LDG**	BW lb	HT in	LDG**	PRT %	BW lb	HT in	LDG**
Aragorn (M)	65+	.	.	65	.	.	.	62	16	0
SW Midas (E)	63+	.	.	63	.	.	.	61	17	0
Topeka (E)	62+	.	.	62	.	.	.	61	15	0
SW Salute (E)	62+	.	.	62	.	.	.	60	17	0
CDC Mozart (M)	60+	.	.	60	.	.	.	60	14	0
SW Capri (E)	60+	.	.	60	.	.	.	60	18	0
Tudor (M)	61+	.	.	61	.	.	.	60	18	0
Cruiser (M)	59	.	.	59	.	.	.	59	18	0
CEB 1093 (M)	60	.	.	60	.	.	.	59	17	0
Polstead (M)	60	.	.	60	.	.	.	59	15	0
K2 (M)	58	.	.	58	.	.	.	59	16	0
Eclipse (M)	60+	.	.	60	.	.	.	59	14	0
Carneval (M)	60+	.	.	60	.	.	.	59	18	0
Fusion (M)	59	.	.	59	.	.	.	59	16	0
Camry (M)	58	.	.	58	.	.	.	59	13	0
DS-Admiral (E)	60+	.	.	60	.	.	.	59	17	0
Grande (M)	59	.	.	59	.	.	.	59	20	0
AP-18 (M)	58	.	.	58	.	.	.	59	17	0
Cooper (L)	59	.	.	59	.	.	.	58	17	0
Stratus (M)	58	.	.	58	.	.	.	58	13	0
SW Cabot (E)	57	.	.	57	.	.	.	58	15	0
Tamora (L)	56	.	.	56	.	.	.	57	17	0
Majoret (E)	56	.	.	56	.	.	.	57	18	0
Integra (E)	56	.	.	56	.	.	.	56	17	0
CDC Striker (M)	59	.	.	59	.	.	.	.	18	0
SW Marquee (E)	59	.	.	59	.	.	.	.	19	0
Test avg. :	59	.	.							
High avg. :	65	.	.							
Low avg. :	56	.	.							
# Lsd (.05) :	5	.	.							
## TPG-value :	60	.	.							
### C.V. :	6	.	.							

* Early- E, medium- M, or late- L maturity.

** Lodging scale: 0 = all plants erect, 3 = 50% lodged at 45º angle, 5 = all flat.

Lsd, the amount two values in a column must differ to be significantly different.

TPG-value, the minimum or maximum value required for the top-performance group (TPG).

A plus sign (+) indicates values within a column that qualify for the TPG.

Coef. of variation, a measure of trial experimental error.

Table 14b. Field pea averages for bushel weight (BW), height (HT), and lodging (LDG) at two west South Dakota locations for 2006.

Variety (Mat.)* - by state BW avg.	Location Avg. - BW, HT, LDG						Western Avg. - BW, HT, LDG			State Avg. - BW, HT, LDG		
	Wall			Hayes								
	BW lb	HT in	LDG	BW lb	HT in	LDG	BW lb	HT in	LDG	BW lb	HT in	LDG
Aragorn (M)	59+	18	0+	.	14	0+	.	16	0	62	16	.
SW Midas (E)	59+	19	0+	.	15	0+	.	17	0	61	17	.
Topeka (E)	60+	18	0+	.	13	0+	.	15	0	61	15	.
SW Salute (E)	59+	19	0+	.	16	0+	.	17	0	60	17	.
CDC Mozart (M)	61+	16	0+	.	13	0+	.	14	0	60	14	.
SW Capri (E)	60+	19	0+	.	16	0+	.	18	0	60	18	.
Tudor (M)	59+	19	0+	.	16	0+	.	18	0	60	18	.
Cruiser (M)	59+	20	0+	.	17	0+	.	18	0	59	18	.
CEB 1093 (M)	59+	20	0+	.	15	0+	.	17	0	59	17	.
Polstead (M)	58	17	0+	.	13	0+	.	15	0	59	15	.
K2 (M)	60+	18	0+	.	15	0+	.	16	0	59	16	.
Eclipse (M)	58	16	0+	.	12	0+	.	14	0	59	14	.
Carneval (M)	58	20	0+	.	17	0+	.	18	0	59	18	.
Fusion (M)	59+	18	0+	.	14	0+	.	16	0	59	16	.
Camry (M)	59+	15	0+	.	12	0+	.	13	0	59	13	.
DS-Admiral (E)	58	18	0+	.	16	0+	.	17	0	59	17	.
Grande (M)	59+	23	0+	.	16	0+	.	20	0	59	20	.
AP-18 (M)	59+	17	0+	.	17	0+	.	17	0	59	17	.
Cooper (L)	58	19	0+	.	14	0+	.	17	0	58	17	.
Stratus (M)	58	15	0+	.	12	0+	.	13	0	58	13	.
SW Cabot (E)	59+	18	0+	.	13	0+	.	15	0	58	15	.
Tamora (L)	58	19	0+	.	16	0+	.	17	0	57	17	.
Majoret (E)	58	20	0+	.	16	0+	.	18	0	57	18	.
Integra (E)	57	19	0+	.	14	0+	.	17	0	56	17	.
CDC Striker (M)	.	19	0+	.	17	0+	.	18	0	.	18	.
SW Marquee (E)	.	20	0+	.	17	0+	.	19	0	.	19	.
Test avg. :	59	18	0	.	15	0						
High avg. :	61	23	0	.	17	0						
Low avg. :	57	15	0	.	12	0						
# Lsd (.05) :	2	2	0	.	2	0						
## TPG-value :	59	.	0	.	.	0						
### C.V. :	2	8	0	.	12	0						

* Early- E, medium- M, or late- L maturity.

** Lodging scale: 0 = all plants erect, 3 = 50% lodged at 45º angle, 5 = all flat.

Lsd, the amount two values in a column must differ to be significantly different.

TPG-value, the minimum or maximum value required for the top-performance group (TPG).

A plus sign (+) indicates values within a column that qualify for the TPG.

Coef. of variation, a measure of trial experimental error.

^ Variable differences within a column are non-significant (NS) at the .05 level of probability.

Table 15. Origin, traits, and disease reactions for field pea entries tested in 2006.

Variety	Rel.* mat.	Seed color	Leaf# type	Ht.## (inch)	Lodging (0-10)~	Powdery mildew@	Mycos-phaerella blight@	Fusarium Wilt@	Seeds per lb	PVP$ or PBR Status
DS-Admiral	E	Yellow	SL	25	1	VG	F	F	2000	Yes
Aragorn	M	Green	SL	-	-	-	-	-	2200	
AP-18	M	Green	SL	22	1	-	-	-	2100	
SW Cabot	E	Yellow	SL	-	-	P	P	P	1900	
Camry	M	Green	SL	19	1	VG	F	F	2000	Yes
CEB 1093	M	Green	SL	-	-	-	-	-	1700	
SW Capri	E	Yellow	SL	-	-	P	F	P	2200	
Carneval	M	Yellow	SL	22	0	F	F	P	2100	Yes
Cooper	L	Green	SL	26	0	VG	F	F	1700	Yes
Cruiser	M	Green	SL	24	3	P	F	P	2200	
Eclipse	M	Yellow	SL	23	1	VG	F	F	1900	Yes
Fusion	M	Yellow	SL	-	-	-	-	-	2000	
Grande	M	Yellow	N	28	6	P	F	P	2300	Yes
Integra	E	Yellow	SL	25	1	P	P	F	1900	
K2	M	Green	SL	-	-	-	-	-	2200	
Majoret	E	Green	SL	24	1	P	F	P	2100	Yes
SW Marquee	E	Yellow	SL	26	0	-	-	-	2300	
SW Midas	E	Yellow	SL	24	0	VG	F	F	2200	Yes
CDC Mozart	M	Yellow	SL	22	4	VG	P	F	2100	
Polstead	M	Yellow	SL	-	-	-	-	-	1900	
SW Salute	E	Yellow	SL	26	3	VG	F	P	2000	Yes
Stratus	M	Green	SL	21	5	VG	F	P	1900	Yes
CDC Striker	M	Green	SL	-	-	F	F	G	1900	
Tamora	L	Green	SL	-	-	-	-	-	1700	
Topeka	E	Yellow	SL	21	6	VG	F	P	2100	Yes
Tudor	M	Yellow	SL	27	0	VG	P	F	1700	Yes

$ Plant variety protection (PVP, US) or Plant breeders rights (PBR, CAN) application is pending or anticipated.

* Early- E, medium- M, or late- L maturity.

Normal- N or semi-leafless- SL leaf type.

~ 1 = all plants erect, 3 = 50% lodged at 45º angle, 5 = all flat.

** Very good- VG, good- G, fair- F, poor- P disease resistance.

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2008 Winter Wheat Variety Yield Results and Planting Tips

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2008 turned out to be an excellent year for winter wheat production in most of South Dakota. Though conditions were very dry for planting last fall, most of the central and eastern part of the state had good rains in Oct. to get the wheat off to a good start. There were areas in the west central and northwest part of the state that did not get rain in the fall, and in those areas the wheat did not make it through the winter. From May on through the summer most of the state had plentiful rainfall and cool conditions, which led to excellent wheat yields — with reports of some fields exceeding 100 bushels per acre. The main problems in 2008 were tan spot early in the season, rust that came in later in the season in the central part of the state, and the difficultly getting the crop harvested with the rainy humid conditions in July and early Aug.

Yields from the Crop Performance Testing Program averaged 71 bu/A statewide, with all locations making it to harvest.

- The top-performing varieties East River in 2008 were Smoky Hill, Overland, NuDakota, Wendy, Expedition, and Fuller.
- The top-performing varieties West River in 2008 were Overland, NuDakota, Smoky Hill, Wendy, Expedition, and Hawken.
- The varieties with the best three-year statewide average yields were Overland, NuDakota, Wendy, Expedition, Wesley, and Arapahoe.

Tables 1, 2, and 3 give the characteristics and performance of winter wheat varieties tested in South Dakota. Use them to select a variety with the agronomic characteristics suitable for your area and production system. When considering yield, look for varieties that have performed well at locations near your farm over the past three years. The intensive managed sites (IMS) at Brookings and Winner had fungicides applied to them, whereas the regular CPTs at those locations did not. Brookings had 4 oz/acre of Folicur applied at heading. At Winner, 5 oz/acre (half rate) of Stratego plus 1 gal/acre 6-16-6 was applied with the herbicide in the spring.

Recommended Varieties for 2009

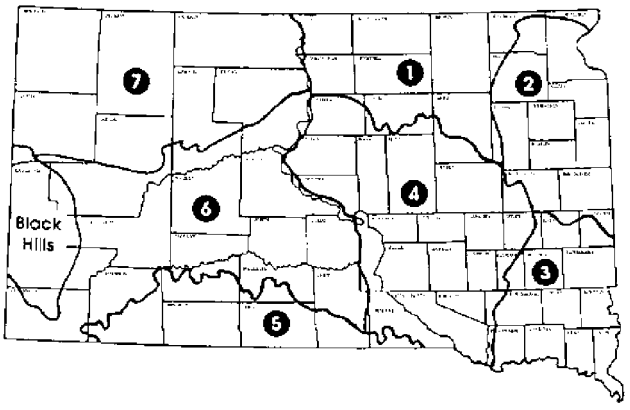
Recommended:

Variety	*Crop Adaptation Area*
Alice (white)[PVP]	1[pc], 4[pc], 5, 6, 7[pc]
Expedition[PVP]	1[pc], 4[pc], 5, 6, 7[pc]
Harding[PVP]	1[pc], 2[pc], 4, 7
Millenium[PVP]	1[pc], 4[pc], 5, 6, 7[pc]
Overland[PVP]	1[pc], 3, 4[pc],5, 6, 7[pc]
NuDakota (white)[PVP]	5, 6, 7[pc]
Wendy (white)[PVP]	5, 6, 7[pc]
Wesley	5, 6, 7[pc]

Acceptable/Promising

Variety	*Crop Adaptation Area*
Arapahoe[PVP]	1[pc], 3, 4[pc], 5, 6, 7[pc]
Darrell[PVP]	1[pc], 4[pc], 5, 6, 7[pc]
Hatcher[PVP]	5, 6, 7[pc]
Hawken[PVP]	3, 4[pc], 5, 6

Crop adaptation areas for South Dakota (revised 1992)



[PVP] U.S. Plant Variety Protection applied for and/or issued; seed sales of these varieties are restricted to classes of certified seed.
[pc] Plant into protective cover.

Winter Wheat Production Tips

Winter wheat planting season is around the corner. Here are some tips that will set the crop for success in 2009:

1. Choose a variety with good agronomic characteristics that is both recommended for your area and, on average, performed well in locations near your farm in the last few years.
2. Direct seed into standing stubble. The standing stubble traps snow and the trapped snow insulates wheat seedlings against cold temperatures, reducing risk of winterkill. Seeding winter wheat into broadleaf crops stubble is recommended to reduce the risk of insect, disease, and weed problems in the rotation. Seeding into wheat stubble should be avoided as this can increase the risk of disease carryover to the following season. If planting winter wheat into a fallow field, it is important to minimize the number of tillage operations just before planting. Plowing and other deep-tillage operations can reduce seedbed firmness, dry the topsoil, and bury protective residues increasing the risk of winter kill.
3. Control weeds now. Controlling grassy weeds and volunteer wheat crop two weeks prior to planting winter wheat will provide a break in the life cycle of wheat curl mite and help to control wheat streak mosaic and other diseases.
4. Plant on time. In South Dakota the recommended time to plant winter wheat is Sept. 15 through Oct. 10. Wheat plants should be well established before freezing to attain maximum cold tolerance and to accumulate enough energy reserves for the following spring. Planting wheat too early may produce excessive fall growth, reducing

Table 1. Hard winter wheat yield results - West River Locations, 2006 – 2008 (bu/A)

Variety (Hdg.)* - by 3-yr then 2008 state yield avg.	Location Yield Avg. (Bu/a at 13% moist.)										West Yield Avg. (bu/a)		State Yield Avg. (bu/a)	
	Wall		Kennebec	Hayes	Winner		Winner-IMS	Sturgis	Martin					
	2008	3-Yr	2008	2008	2008	3-Yr	2008	2008	2008	3-Yr	2008	3-Yr	2008	3-Yr
Overland (4)	85+	61+	91+	78	75+	57+	84+	45+	59	47+	74	55	78	60
NuDakota~W (3)	78	62+	84	75	83+	58+	84+	38+	58	47+	71	56	77	60
Wendy~W (-)	84+	64+	79	83+	68	52+	81+	30	60	48+	69	55	75	58
Expedition (0)	80+	61+	77	81+	70	51+	76+	40+	68+	48+	70	53	75	57
Wesley (2)	79+	61+	76	77	65	49	82+	39+	64+	52+	69	54	72	57
Arapahoe (3)	71	56	86	73	61	50+	68	28	61	49+	64	52	68	57
Millennium (4)	76	56	89	77	68	52+	71	40+	63	47+	69	52	72	56
Alice~W (-)	77	60+	77	74	71	52+	78+	40+	63	48+	69	53	72	56
Hatcher (2)	65	56	73	71	72	49	77+	45+	71+	52+	68	52	70	56
Wahoo (3)	75	58+	82	75	58	47	58	39+	69+	50+	65	52	67	56
Darrell (5)	73	55	81	79+	67	47	73	41+	68+	49+	69	50	72	55
Harding (5)	67	52	86	71	61	49	60	34	59	44	63	48	66	53
Tandem (4)	68	55	82	82+	56	46	66	37+	62	46	65	49	65	52
Jerry (5)	62	49	76	66	56	42	69	33	55	43	60	45	62	50
Jagalene (3)	77	58+	62	70	57	42	82+	38+	54	39	63	46	67	49
Smoky Hill (4)	81+	.	84	85+	69	.	84+	41+	58	.	72	.	78	.
Hawken (3)	79+	.	78	73	79+	.	83	34	63	.	70	.	73	.
InfinityCL (3)	72	.	82	78	75+	.	70	33	69+	.	68	.	72	.
RonL (2)	71	.	79	75	73	.	81	37+	60	.	68	.	72	.
Fuller (2)	78	.	75	76	77+	.	70	38+	62	.	68	.	72	.
Settler CL (3)	75	.	74	79+	70	.	74	33	67+	.	67	.	68	.
Test avg. :	74	57	81	76	69	50	74	37	63	47	68	52	71	56
High avg. :	85	64	95	85	83	58	86	45	71	52	74	56	78	60
Low avg. :	62	49	62	66	56	42	58	28	54	39	63	45	62	49
# LSD (0.05):	7	7	6	7	9	9	11	9	8	6				
## TPG-value :	79	58	90	79	75	50	76	36	64	47				
### C.V. :	6	10	5	6	10	10	11	14	8	9				

* Heading, the relative difference in days to heading, compared to Expedition.

If the difference between two varieties within a column equals or exceeds the LSD value, the difference is significant; if not, the difference is nonsignificant (NS) at the 0.05 level of probability.

Minimum value required for variety to qualify for the top performance group (TPG).

\+ Indicates values within a column that qualify for the TPG.

###A measure of experimental error, 15% or less is best for yield.

amounts of soil moisture and nutrients. Early planted wheat may act as a host for leaf curl mites that transmit wheat streak mosaic virus and also increase the risk of root and crown rot diseases. Research from western South Dakota has shown that grain yield is decreased and that the crop suffers substantial winter injury when planting is later than Oct. 15.

5. Don't plant too deep or too shallow. Plant winter wheat at a depth of 1.5 to 2 inches in a firm seedbed. Planting deeper than 2 inches reduces emergence and can result in weak spindly seedlings with a poor ability to survive the winter. For those direct seeding, a uniform depth of 1 to 1.5 inches under optimum moisture conditions will give a good stand. If it is necessary to plant deeper to get to moisture, growers should choose a variety with a longer coleoptile (table 3). Make sure there is good soil-to-seed contact, especially under drier conditions. If soil cover over the seed is poor there is risk of exposing the crown and adversely affecting winter survival.
6. Plant the right amount of seed. The recommended seeding rates are 22 pure live seeds per square foot (approximately 960,000 seeds/acre). If you have a poor seedbed or are planting later than the recommended dates, increase seeding rate to 28 pure live seeds per square foot. However, properly managed winter wheat has a tremendous ability to tiller and can compensate for thin stands.
7. Test soils and apply fertilizer based on soil test results and yield expectations. Research has shown that phosphorus helps winter survival by stimulating root growth and tillering in the fall. Therefore, if soil test results indicate low phosphorus, application of the required rate is recommended.

Table 2. Hard winter wheat yield results - East River Locations, 2006 – 2008 (bu/A)

Variety (Hdg.)* - by 3-yr then 2008 state yield avg.	Location Yield Avg. (Bu/a at 13% moist.)								East Yield Avg. (bu/a)		State Yield Avg. (bu/a)	
	Brookings		Brookings-IMS	South Shore	Selby	Onida	Pierre	Platte				
	2008	3-Yr	2008	2008	2008	2008	2008	2008	2008	3-Yr	2008	3-Yr
Overland (4)	79	74+	90+	65	84+	85+	57+	85+	77	.	78	60
NuDakota~W (3)	91+	73+	95+	44	83+	79+	55+	88+	75	.	77	60
Wendy~W (-)	83	69+	89	56	84+	81+	42	81+	73	.	75	58
Expedition (0)	80	69+	96+	60	76	81+	45	85+	73	.	75	57
Wesley (2)	77	66+	92+	57	73	80+	49	71	71	.	72	57
Arapahoe (3)	75	71+	72	53	74	73	44	67	65	.	68	57
Millennium (4)	74	69+	78	60	78	76	49	77	69	.	72	56
Alice~W (-)	79	62	88	63	71	79+	48	69	71	.	72	56
Hatcher (2)	81	66+	87	50	75	66	48	73	68	.	70	56
Wahoo (3)	78	67+	79	53	67	69	45	66	65	.	67	56
Darrell (5)	84	67+	90+	54	76	74	49	72	71	.	72	55
Harding (5)	75	65+	73	52	71	69	52	64	65	.	66	53
Tandem (4)	70	60	75	51	70	69	36	63	62	.	65	52
Jerry (5)	68	65+	70	48	74	65	28	66	59	.	62	50
Jagalene (3)	70	55	82	43	65	80+	60+	72	67	.	67	49
Smoky Hill (4)	94+	.	97+	58	78	80+	58+	84+	78	.	78	.
Hawken (3)	88	.	89	62	73	71	37	72	70	.	73	.
InfinityCL (3)	82	.	85	55	78	71	47	71	70	.	72	.
RonL (2)	74	.	89	59	72	75	53	70	70	.	72	.
Fuller (2)	84	.	92+	49	77	79+	51	69	72	.	72	.
Settler CL (3)	75	.	87	41	61	70	37	66	62	.	68	.
Test avg. :	81	67	86	53	75	75	46	74	69	.	71	56
High avg. :	97	74	97	65	84	86	60	88	78	.	78	60
Low avg. :	68	55	70	36	61	65	25	63	59	.	62	49
# LSD (0.05):	7	65	8	-	6	9	8	9				
## TPG-value :	91	10	90	-	79	78	53	80				
### C.V. :	6	8	6	21	6	9	12	9				

* Heading, the relative difference in days to heading, compared to Expedition.

If the difference between two varieties within a column equals or exceeds the LSD value, the difference is significant; if not, the difference is nonsignificant (NS) at the 0.05 level of probability.

Minimum value required for variety to qualify for the top performance group (TPG).

+ Indicates values within a column that qualify for the TPG.

A measure of experimental error, 15% or less is best for yield.

Table 3. Origin, variety traits, and disease reactions for winter wheat entries for 2008

Variety	(Hdg.)*	Lodging Resis.#	End-Use Qlty#	Winter Hardy Rtg#	Cole-optile Pct##	Wheat Steak Mosaic+	Tan-spot+	Rust			PVP**
								Stripe+	Leaf+	Stem+	
Alice~W	-1	G	EB	G	78	MR	MS	-	4	MR	Pdg***
Wendy~W	-1	E	GN	E	67	MS	R	MR	6	MR	Yes
Expedition	0	F	GB	G-E	88	S	MS	MS	7	R	Yes
Fuller	2	F-G	AB	G		MS	MR	-	2	MR	Pdg
Hatcher	2	G	GB	F-G	89	S	-	MS	6	MR	Yes
RonL	2	G-E	GB	G		MR	_	R	9	MR	Yes
Wesley	2	E	GB	G-E	79	S	MR	MR	4	R	No
Arapahoe	3	F	GB	G-E	83	S	S	MS	2	MR	Yes
Hawken	3	E	AB	G	-	MS	MR	MR	3	MR	Yes
InfinityCL	3	G	AB	G		S	-	MR	3	MR	Yes
Jagalene	3	E	AB	G	92	MS	MR	MR	9	MR	Yes
NuDakota~W	3	E	AB	G-E	-	MR	-	MR	4	MR	Yes
Wahoo	3	G	AB	G	91	S	-	MR	5	R	Yes
SettlerCL	3	G	AB	G	-	S	-	MS	4	MR	Yes
Millennium	4	G	AB	F-G	78	S	MS	MR	2	MR	Yes
Overland	4	G	AB	E	89	-	-	R	1	R	Yes
Smoky Hill	4	G	EB	G		MS	MR	MR	1	R	Yes
Tandem	4	F-G	EB	G	12	S	S	MR	7	MR	Yes
Darrell	5	G	EB	G	89	MR	MS	-	6	R	Yes
Harding	5	F-G	AB	E	0	MR	MR	MS	2	MR	Yes
Jerry	5	F	GB	E	92	MS	-	MR	3	R	No

* Heading, the relative difference in days to heading, compared to Expedition.
~ W, Hard white wheat variety.
# E= exc., A= accept., F= fair, G= good, P= poor, B= baking, N=noodles.
##Percent of Harding (3-1/4" long).
+ R= resistant, MR= moderately resist., MS= mod. susceptible, S= susc., VS= very susc.
** Plant variety protection (PVP), title V certification option- sold by variety name only as a class of certified seed.
*** PVP application pending.

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2009 Winter Wheat Variety Yield Results and Planting Tips

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2009 turned out to be mixed bag for winter wheat production in South Dakota. Some areas in the west and central part of the state did not get much rain in the fall. Dry conditions in these areas delayed germination, setting back seedling development and resulting in thin stands. The Wall, Martin, and Pierre locations were within this dry region. At Martin, a combination of thin stands and downy brome weed pressure adversely affected plant development and yield. Yield results from Martin are not included in this report. Most locations in the eastern part of the state had adequate moisture in the fall to get winter wheat off to a good start. Weather conditions remained cool and wet for most of the growing season in the western part of the state. These conditions slowed down crop development and delayed harvest. Two locations (Sturgis and Bison) were not harvested in time for the results to be included in this publication. Yield results from the two locations will be included in the publication EC774 – 2009 Crop Performance Results, which will be available at the end of the year.

Yields from harvested Crop Performance Testing locations averaged 62 bu/A statewide.

- The top-performing varieties West River in 2009 were Overland, Expedition, Smoky Hill, Settler CL, and Wahoo.
- The top-performing varieties East River in 2009 were Smoky Hill, Overland, Wendy, Expedition, Darrell, and Wesley.
- The varieties with the best statewide average yields in 2009 were Expedition, Overland, Smoky Hill, Settler CL, Darrell, and Wahoo.

Tables 1, 2, 3, and 4 give the characteristics and performance of winter wheat varieties tested in South Dakota. Use them to select a variety with the agronomic characteristics suitable for your area and production system. When considering yield, look for varieties that have performed well at locations near your farm over the past three years. The intensive managed sites (IMS) at Brookings and Winner had fungicides applied to them, whereas the regular CPTs at those locations did not. Brooking had 4 oz/acre of Folicur applied at heading. At Winner, 5 oz/acre (half rate) of Stratego plus 1 gal/acre 6-16-6 was applied with the herbicide in the spring.

WINTER WHEAT PRODUCTION TIPS

Winter wheat planting season is around the corner. Here are some tips that will set the crop for success in 2010:

1. Choose a variety with good agronomic characteristics that is both recommended for your area and, on average, performed well in locations near your farm in the last few years.

2. Direct seed into standing stubble. The standing stubble traps snow and the trapped snow insulates wheat seedlings against cold temperatures, reducing risk of winterkill. Seeding winter wheat into broadleaf crops stubble is recommended to reduce the risk of insect, disease, and weed problems in the rotation. Seeding into wheat stubble should be avoided, as this can increase the risk of disease carryover to the following season. If planting winter wheat into a fallow field, it is important to minimize the number of tillage operations just before planting. Plowing and other deep-tillage operations can reduce seedbed firmness, dry the topsoil, and bury protective residues, thus increasing the risk of winter kill.

3. Control weeds now. Controlling grassy weeds and volunteer wheat crop two weeks prior to planting winter wheat will provide a break in the life cycle of wheat curl mite and help to control wheat streak mosaic and other diseases.

4. Plant on time. In South Dakota the recommended time to plant winter wheat is Sept. 15 through Oct. 10. Wheat plants should be well established before freezing to attain maximum cold tolerance and to accumulate enough energy reserves for the following spring. Planting wheat too early may produce excessive fall growth, reducing amounts of soil moisture and nutrients. Early planted wheat may act as a host for leaf curl mites that transmit wheat streak mosaic virus and also increase the risk of root and crown rot diseases. Research from western South Dakota has shown that grain yield is decreased and that the crop suffers substantial winter injury when planting is later than Oct. 15.

5. Don't plant too deep or too shallow. Plant winter wheat at a depth of 1.5 to 2 inches in a firm seedbed. Planting deeper than 2 inches reduces emergence and can result in weak, spindly seedlings with a poor ability to survive the winter. For those direct seeding, a uniform depth of 1 to 1.5 inches under optimum moisture conditions will give a good stand. If it is necessary to plant deeper to get to moisture, growers should choose a variety with a longer coleoptile (Table 4). Make sure there is good soil-to-seed contact, especially under drier conditions. If soil cover over the seed is poor, there is risk of exposing the crown and adversely affecting winter survival.

6. Plant the right amount of seed. The recommended seeding rates are 22 pure live seeds per square foot (approximately 960,000 seeds/acre). If you have a poor seedbed or are planting later than the recommended dates, increase seeding rate to 28 pure live seeds per square foot. However, properly managed winter wheat has a tremendous ability to tiller and can compensate for thin stands.

7. Test soils and apply fertilizer based on soil test results and yield expectations. Research has shown that phosphorus helps winter survival by stimulating root growth and tillering in the fall. Therefore, if soil test results indicate low phosphorus, application of the required rate is recommended.

Table 1. Winter wheat yield results - West River Locations, 2007 – 2009 (Bu/A)

Variety, Heading [1]	Location Yield Avg. (Bu/a at 13% moist.)										Western		State	
	Kennebec		Wall		Hayes		Winner				Yield Avg. bu/a		Yield Avg. bu/a	
							CPT		IMS*					
	2009	3-Yr	2009	3-Yr	2009	3-Yr	2009	3-Yr	2009	3-Yr	2009	3-Yr	2009	3-Yr
**SD06069, -	65	.	57	.	50	.	73	.	81	.	65	.	66	.
Smoky Hill, 5	61	.	43	.	50	.	81	.	81	.	63	.	66	.
**SD05118, -	64	.	48	.	51	.	80	.	73	.	63	.	65	.
**SD06158, -	64	.	53	.	46	.	72	.	78	.	63	.	65	.
Expedition, 1	62	60	39	57	55	64	75	63	86	.	63	.	65	.
Overland, 5	60	69	51	62	51	60	73	67	79	.	63	.	64	.
Settler CL, 4	60	.	45	.	57	.	77	.	83	.	64	.	63	.
Wahoo, 4	70	67	53	59	49	60	74	59	76	.	64	.	63	.
Darrell, 6	60	60	46	56	54	62	70	57	75	.	61	.	63	.
NuDakota~W, 4	58	63	42	59	47	58	84	72	78	.	62	.	62	.
Wesley, 3	59	62	43	59	46	58	73	61	74	.	59	.	62	.
**SD06163, -	63	.	44	.	54	.	69	.	73	.	61	.	62	.
Fuller, 3	53	.	38	.	46	.	81	.	80	.	60	.	62	.
**SD05W018, -	51	.	45	.	47	.	69	.	72	.	57	.	62	.
Wendy~W, 0	46	56	42	61	52	63	77	64	72	.	58	.	62	.
Art, 1	47	.	37	.	50	.	77	.	76	.	57	.	61	.
Millennium, 5	59	67	50	58	50	59	73	64	71	.	61	.	61	.
Infinity CL, 4	58	.	49	.	55	.	73	.	76	.	62	.	61	.
Hawken, 4	52	60	39	58	47	58	75	65	81	.	59	.	61	.
**SD03164-2, -	48	.	43	.	48	.	72	.	78	.	58	.	61	.
Radiant, 5	62	.	56	.	56	.	59	.	65	.	60	.	60	.
Striker, 5	61	.	46	.	54	.	69	.	69	.	60	.	60	.
Lyman, 4	53	71	41	54	50	60	76	66	67	.	57	.	60	.
Harding, 6	63	66	51	54	50	59	65	57	64	.	59	.	60	.
Hatcher, 3	46	55	49	58	45	56	75	61	77	.	58	.	59	.
Jagalene, 4	53	48	36	54	46	55	71	52	84	.	58	.	59	.
Arapahoe, 4	59	66	46	56	51	59	72	61	67	.	59	.	59	.
Alice~W, 0	53	56	38	56	47	56	71	61	75	.	57	.	59	.
Jerry, 6	58	58	55	53	51	55	60	51	58	.	56	.	58	.
AP503CL2, 4	54	.	35	.	49	.	64	.	76	.	56	.	57	.
Test avg. :	57	61	45	57	50	59	73	61	75	.	60	.	62	.
High avg. :	70	71	57	62	57	64	84	72	86	.	65	.	66	.
Low avg. :	46	48	35	53	45	55	59	51	58	.	56	.	57	.
#LSD (0.05):	8	9	5	NS	6	4	10	8	9		5		3	
##TPG-value :	62	62	52	53	51	60	74	64	77		60		63	
###C.V. :	10	7	7	8	8	8	10	9	9		13		13	

[1] Heading- days earlier or later (- or +) than Expedition, the check variety (Ck) for maturity.

* Indicates intensive management study (IMS).# If the difference between two varieties within a column equals or exceeds the LSD value, the difference is significant; if not, the difference is nonsignificant (NS) at the 0.05 level of probability.

Minimum value required for variety to qualify for the top performance group (TPG).

+ Indicates values within a column that qualify for the TPG.

###A measure of experimental error, 15% or less is best for yield.

** Indicates breeding lines from the SDSU breeding program.

Table 2. Winter wheat yield results - East River Locations, 2007 - 2009 (Bu/A)

Variety, Heading [1]	Location Yield Avg. (Bu/a at 13% moist.)												Eastern Yield		State	
	Brookings				Selby		Platte		Onida		Pierre		Yield Avg. bu/a		Yield Avg. bu/a	
	CPT		IMS*													
	2009	3-Yr	2009	3-Yr	2009	3-Yr	2009	3-Yr	2009	3-Yr	2009	3-Yr	2009	3-Yr	2009	3-Yr
SD06069, -	75	.	86	.	78	.	68	.	48	.	43	.	66	.	66	.
Smoky Hill, 5	66	.	84	.	77	.	81	.	49	.	48	.	68	.	66	.
SD05118, -	72	.	85	.	79	.	79	.	48	.	40	.	67	.	65	.
SD06158, -	70	.	79	.	84	.	75	.	47	.	50	.	68	.	65	.
Expedition, 1	71	65	84	.	70	71	83	75	49	61	46	50	67	.	65	.
Overland, 5	65	68	73	.	73	78	79	78	52	66	50	58	65	.	64	.
Settler CL, 4	63	.	74	.	69	.	72	.	51	.	46	.	63	.	63	.
Wahoo, 4	54	60	63	.	75	68	81	68	49	59	48	52	62	.	63	.
Darrell, 6	72	64	73	.	76	66	73	65	52	61	43	46	65	.	63	.
NuDakota~W, 4	67	67	73	.	75	71	71	73	46	62	42	50	62	.	62	.
Wesley, 3	68	63	66	.	75	67	83	73	49	63	46	50	65	.	62	.
SD06163, -	67	.	72	.	74	.	83	.	43	.	44	.	64	.	62	.
Fuller, 3	68	.	83	.	72	.	69	.	47	.	41	.	63	.	62	.
SD05W018, -	75	.	81	.	74	.	71	.	46	.	48	.	66	.	62	.
Wendy~W, 0	66	65	79	.	77	73	79	71	48	62	48	51	66	.	62	.
Art, 1	78	.	76	.	77	.	72	.	45	.	36	.	64	.	61	.
Millennium, 5	62	64	73	.	72	73	73	73	47	61	41	51	61	.	61	.
Infinity CL, 4	65	.	78	.	69	.	68	.	48	.	37	.	61	.	61	.
Hawken, 4	64	68	74	.	74	65	70	68	50	61	42	45	62	.	61	.
SD03164-2, -	71	.	78	.	63	.	80	.	44	.	44	.	63	.	61	.
Radiant, 5	60	.	75	.	83	.	52	.	51	.	43	.	61	.	60	.
Striker, 5	67	.	77	.	78	.	60	.	37	.	38	.	60	.	60	.
Lyman, 4	69	71	81	.	67	76	73	71	45	59	38	49	62	.	60	.
Harding, 6	63	63	73	.	77	72	65	66	44	58	40	51	60	.	60	.
Hatcher, 3	58	60	77	.	68	59	66	64	51	57	37	43	60	.	59	.
Jagalene, 4	50	50	68	.	70	55	76	60	51	58	45	49	60	.	59	.
Arapahoe, 4	64	65	73	.	71	70	71	67	44	59	34	46	60	.	59	.
Alice~W, 0	68	62	79	.	62	61	67	62	46	60	39	48	60	.	59	.
Jerry, 6	62	60	73	.	76	72	64	61	45	55	33	37	59	.	58	.
AP503CL2, 4	68	.	70	.	64	.	68	.	41	.	39	.	58	.	57	.
Test avg. :	66	63	76	.	73	68	72	68	47	60	42	49	63	.	62	.
High avg. :	78	71	86	.	84	78	83	78	52	66	50	58	68	.	66	.
Low avg. :	50	50	63	.	62	55	52	60	37	55	33	37	58	.	57	.
#LSD (0.05):	12	11	9		10	14	9	12	6	8	7	10	4		3	.
##TPG-value :	66	60	77		74	64	74	66	46	58	43	48	63		63	.
C.V. :	13	9	9		9	7	9	9	10	8	11	9	12		13	.

[1] Heading- days earlier or later (- or +) than Expedition, the check variety (Ck) for maturity.

* Intenive management study (IMS).

Note: Additional table footnotes in Table 1.

Table 3. Western, eastern, and statewide winter wheat grain protein averages in 2009. Table sorted by state protein average.

Variety, Heading [1]	Protein average by region		
	West	East	State
	%	%	%
Art, 1	16.1	14.2	14.8
Wesley, 3	15.6	14.0	14.5
Harding, 6	15.7	13.9	14.4
Arapahoe, 4	15.3	13.9	14.3
Jerry, 6	15.2	13.9	14.3
SD03164-2, -	15.6	13.7	14.3
Striker, 5	15.0	13.9	14.2
Lyman, 4	15.0	13.9	14.2
Hawken, 4	14.9	13.9	14.2
SD06163, -	15.9	13.4	14.1
Wendy~W, 0	14.9	13.8	14.1
Wahoo, 4	14.7	13.8	14.1
SD06069, -	14.8	13.8	14.1
Jagalene, 4	14.6	13.8	14.0
Fuller, 3	14.7	13.6	13.9
Smoky Hill, 5	14.7	13.5	13.9
SD05118, -	14.7	13.5	13.8
Millennium, 5	14.3	13.5	13.8
NuDakota~W, 4	14.6	13.4	13.8
Alice~W, 0	15.0	13.2	13.7
Radiant, 5	14.1	13.5	13.7
Expedition, 1	14.6	13.3	13.7
Darrell, 6	14.7	13.1	13.5
Overland, 5	14.3	13.2	13.5
SD06158, -	14.7	13.0	13.5
AP503CL2, 4	14.4	13.1	13.5
SD05W018, -	14.3	13.0	13.3
Settler CL, 4	13.8	12.9	13.1
Infinity CL, 4	13.9	12.8	13.1
Hatcher, 3	13.9	12.8	13.1
Test avg. :	14.8	13.5	13.9
High avg. :	16.1	14.2	14.8
Low avg. :	13.8	12.8	13.1
#LSD (.05):	0.3	0.5	0.4
## TPG-value :	15.8	13.7	14.4
### C.V. :	2.0	6.0	5.0

[1] Heading- days earlier or later (- or +) than Expedition, the check variety (Ck) for maturity.

Note: Additional table footnotes in Table 1.

Table 4: Origin, variety traits, and disease reactions for winter wheat entries for 2008

Variety	Rel Hdg [1]	Origin	Ldg Res#	Winter Hardy Rtg#	End-Use Qlty#	Coleoptile Length##	Wheat Streak Mosaic+	Disease / Reactions				PVP Status**
								Tan-Spot+	Rust Stripe+	Rust Leaf+	Rust Stem+	
Alice~W	0	SD-06	G	G	EB	78	MR	MS	-	MS	MR	Yes
Wendy~W	0	SD-04	E	E	GN	67	MS	R	MR	MS	MR	Yes
Art	1	AP-08	E	G	-	-	S	MR	R	R	MR	Yes
Expedition	1	SD-02	F	G-E	GB	88	S	MS	MS	S	R	Yes
Fuller	3	KS-07	F-G	G	AB	-	MS	MR	-	MR	MR	Pdg
Hatcher	3	CO-04	G	F-G	GB	89	S	-	MS	MS	MR	Yes
Wesley	3	NE-98	E	G-E	GB	79	S	MR	MR	MS	R	No
AP503CL2	4	AP-08	E	G-E	-	-	MS	MR	MR	S	MR	Yes
Arapahoe	4	NE-88	F	G-E	GB	83	S	S	MS	MR	MR	Yes
Hawken	4	AP-07	E	G	AB	-	MS	MR	MR	MR	MR	Yes
Infinity CL	4	NE-05	G	G	AB	-	S	-	MR	MR	MR	Yes
Jagalene	4	AP-02	E	G	AB	92	MS	MR	MR	S	MR	Yes
Lyman	4	SD-08	F	G	AB	90	S	MR	MS	R	R	Pdg
NuDakota~W	4	AP-06	E	G-E	AB	-	MR	MR	MR	MS	MR	Yes
Settler CL	4	NE-08	G	G	AB	-	S	-	MS	MS	MR	Pdg
Wahoo	4	NE/WY-01	G	G	AB	91	S	-	MR	MS	R	Yes
Millennium	5	NE-99	G	F-G	AB	78	S	MS	MR	MR	MR	Yes
Overland	5	NE/SD-07	G	E	AB	89	-	-	R	R	R	Pdg
Radiant	5	CAN-05	E	G-E	AB	-	R	-	S	S	-	-
Smoky Hill	5	WPB-07	G	G	EB	-	MS	MR	R	R	MR	Yes
Striker	5	WB-09	E	E	-	-	-	MS	MR	R	MR	Yes
Darrell	6	SD-06	G	G	EB	89	MR	MS	-	MS	R	Yes
Harding	6	SD-99	F-G	E	AB	100	MR	MR	MS	MR	MR	Yes
Jerry	6	ND-01	F	E	GB	92	MS	-	MR	MR	R	No
SD03164-2	-	SD-	-	-	-	-	-	-	-	-	-	-
SD05118	-	SD-	-	-	-	-	-	-	-	-	-	-
SD05W018	-	SD-	-	-	-	-	-	-	-	-	-	-
SD06069	-	SD-	-	-	-	-	-	-	-	-	-	-
SD06158	-	SD-	-	-	-	-	-	-	-	-	-	-
SD06163	-	SD-	-	-	-	-	-	-	-	-	-	-

[1] Heading- days earlier or later (- or +) than Expedition, the check variety (Ck) for maturity.

~ W, Hard white wheat variety.

E= exc., A= accept., F= fair, G= good, P= poor, B= baking, N=noodles.

##Percent of Harding (3-1/4" long).

+ R= resistant, MR= moderately resist., MS= mod. susceptible, S= susc., VS= very susc.

** Plant variety protection (PVP), title V certification option- sold by variety name only as a class of certified seed.

South Dakota
Cooperative Extension Service

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Winter Wheat Variety Recommendations for Fall 2009

Recommendations are based on information from the South Dakota Crop Performance Testing (CPT) Program and regional land-grant university nurseries. Variety performance depends on genetics and the environment. Environmental factors like temperature, moisture, plant pests, soil fertility, soil type, and management practices affect variety performance. The performance of recommended varieties in response to environmental conditions is generally better than that of other varieties. The better performance of a recommended variety, however, cannot always be guaranteed due to its complex response to the environment. Variety recommendations, including crop adaptation area (CAA) where each is most suited, pertinent information for successful production are listed below:

PVP Plant variety protection has been issued or is anticipated; seed sales are restricted to classes of certified seed.
pc Plant into protective cover.
* In 2009, this variety was very susceptible to *Fusarium* Head Blight (Head scab) and Crown rot diseases..

WINTER WHEAT

Recommended		**Acceptable/Promising**	
Variety	*CAA*	*Variety*	*CAA*
Alice (white) PVP	1pc, 4pc, 5, 6, 7pc	Arapahoe PVP	1pc, 3, 4pc, 5, 6, 7pc
Expedition PVP	1pc, 4, 5, 6, 7pc	Darrell PVP	1pc, 4, 5, 6,7 pc
Harding PVP	1pc, 2pc, 4, 7	Hatcher PVP	5, 6, 7pc
Millennium PVP	1pc, 4pc, 5, 6, 7pc	Hawken PVP	3, 4pc, 5, 6
Nu Dakota PVP	5, 6, 7pc	Lyman PVP	1pc, 3, 4pc, 5, 6, 7pc
Overland PVP	1pc, 3, 4pc, 5, 6, 7pc	Smoky Hill PVP	5, 6, 7pc
Wendy (white) PVP	5, 6, 7pc	Wesley *	5, 6, 7pc

EC 774
Revised
Annually

2011 Variety Recommendations (2010 Crop Performance Results)

Small Grains

SPRING WHEAT • OATS • WINTER WHEAT

South Dakota State University • Cooperative Extension Service • U.S. Department of Agriculture

The crop performance trials are available at http://plantsci.sdstate.edu/varietytrials/vartrial.html

Small Grain Variety Recommendations for 2011

Recommendations are based on information from the South Dakota Crop Performance Testing (CPT) Program and regional university trials. Variety performance depends on genetics and environmental factors like temperature, moisture, plant pests, soil fertility, soil type, and management practices. The performance of recommended varieties in response to environmental conditions is generally better than that of other varieties. The better performance of a recommended variety, however, cannot always be guaranteed due to its complex response to the environment. Variety recommendations, including crop adaptation area (CAA) where each is most suited, are listed below:

PVP Plant variety protection has been issued or is anticipated; seed sales are restricted to classes of certified seed.

South Dakota Spring Wheat & Oat Variety Recommendations

Hard Red Spring Wheat:

Recommended		Acceptable/Promising	
Variety	**CAA**	**Variety**	**CAA**
Albany PVP	Statewide	Barlow PVP	Statewide
Brick PVP	Statewide	Granger PVP	All except 3
Faller PVP	Statewide	Howard PVP	Statewide
RB07 PVP	All except 3	Sampson PVP	5, 6, 7
Steele-ND PVP	All except 3		
Traverse PVP	Statewide		
Select PVP	Statewide		

Spring Oat:

Recommended		Acceptable/Promising	
Variety	**CAA**	**Variety**	**CAA**
Beach PVP	5, 6, 7	Buff (hulless)	Statewide
Colt PVP	Statewide	Hi Fi PVP, non-title V	All except 3
Shelby427 PVP	Statewide	Jerry PVP, non-title V	5, 6, 7
Souris PVP	Statewide	Rockford PVP	All except 3
Stallion PVP	All except 3	Streaker PVP (hulless)	Statewide

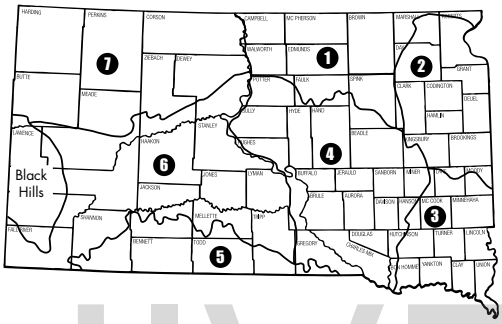
South Dakota Winter Wheat Variety Recommendations

Hard Red Winter Wheat:

Recommended		Acceptable/Promising	
Variety	**CAA**	**Variety**	**CAA**
Alice (white) PVP	1pc, 4pc, 5, 6, 7pc	Art PVP	1pc, 2pc, 3, 4pc
Expedition PVP	1pc, 2pc, 4pc, 5, 6, 7pc	Darrell PVP	1pc, 4pc, 5, 6, 7pc
Lyman[1, PVP]	1pc, 2pc, 3, 4pc, 5, 6, 7pc	Harding[2, PVP]	1pc, 2pc, 4, 7
Millennium[2, PVP]	1pc, 4pc, 5, 6, 7pc	Hatcher[2, PVP]	5, 6, 7pc
Overland PVP	1pc, 3, 4pc, 5, 6, 7pc	Hawken[2, PVP]	3, 4pc, 5, 6
Smoky Hill[2, PVP] (non-title V)	5, 6, 7pc	Settler CL[2, PVP]	5, 6, 7pc
Wendy (white)[2, PVP]	5, 6, 7pc	Wesley[2, PVP]	5, 6, 7pc

PC Crop should be planted into protective cover or stubble.
[1]Variety is moderately resistant to Fusarium Head Blight (FHB or Scab).
[2]Varieties are susceptible to FHB.

Crop Adaptation Areas for South Dakota (revised 1992)



This report is available on the Web at http://www.sdstate.edu/ps/extension/crop-mgmt/index.cfm

EC 774-11: Access at http://pubstorage.sdstate.edu/AgBio_Publications/articles/EC774-11.pdf.

Small Grains

2010 South Dakota Test Results, Variety Traits, and Yield Averages

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Kevin K. Kirby and Jesse Hall, agricultural research mamagers
Bruce Swan, senior agricultural research technician

Variety selection is a very important management decision in a sound crop production system. This report includes variety recommendations, traits, and disease reactions along with the yield, grain protein, and bushel weight for hard red spring wheat, spring oat, and winter wheat, and lodging scores and plant height data for spring wheat and oat.

Key factors in variety selection include yield, yield stability or top-yield frequency, maturity, lodging resistance, height, bushel weight or test weight, grain protein, and disease resistance. Yield is important; however, a variety with good disease resistance, lodging resistance, and high grain quality may be more profitable than a variety selected for yield alone.

Disease resistance is based on reactions to prevalent races of a disease. Disease resistance changes over time. Thus, growers should inspect variety disease reactions annually and not assume they have not changed.

Variety Recommendations (inside cover)

The SDSU Variety Recommendation Committee makes small grain variety recommendations annually. Recommendations for a crop may vary from one crop adaptation area (CAA) to another. Crop adaptation areas (see map) are based on soil type, elevation, temperature, and rainfall. Varieties are recommended on the basis of growing season, annual rainfall, disease incidence, and farming practices common to a given CAA.

Varieties are listed as "Recommended" or "Acceptable/Promising." Varieties with a high level of agronomic performance are listed as "Recommended." Entries must meet the minimum requirements listed in table A before they are eligible for the "Recommended" list. Varieties listed as "Acceptable/Promising" have performed well but do not meet the criteria for the "Recommended" list. A variety needs two years and six location-years in the SDSU crop performance trials or regional nurseries before it's eligible for the "Acceptable/Promising" list.

Certified seed is the best source of seed and the only way to assure genetic and variety purity.

How to Use This Information

It is suggested that growers use this publication as follows:

1. Check the variety CAA designations for the "Recommended" and "Acceptable/ Promising" lists on the inside cover and compare them to the CAA map of South Dakota. **Identify varieties that fit your CAA.**

2. **Evaluate the varieties you selected for desirable traits.** Variety descriptive information (tables D, E, and F) is updated as changes occur and is obtained from crop testing and research plots. Protein, height, and bushel weight (test weight) data are obtained from every location when possible. Disease resistance ratings continually change; so new information is reported as it becomes available. Evaluate maturity by comparing the relative heading rating of each variety. The *Fusarium* head blight tolerance ratings for hard red spring wheat are also given. These head blight ratings show **there is no variety resistance to this disease**. The ratings do, however, indicate that **some varieties are more tolerant of the disease than other varieties**.

3. **Evaluate each variety you select for agronomic performance**. Average 2010, 2-yr and 3-yr yields for each variety are included for each test location if it has been tested for three or more years. Yield and least-significant-difference (LSD) values are rounded to the nearest bushel per acre. Yield averages for spring wheat are reported in tables 1a, oat in tables 2a, and winter wheat in tables 3a. Bushel weight, grain protein, and lodging score values are rounded to the nearest-tenth of a value. Average values for grain protein levels are reported in tables 1b, 2b, and 3b; for bushel weight in tables 1c, 2c, and 3c; and for lodging scores in tables 1d and 2d. Plant height is rounded to the nearest whole inch and is reported in tables 1e and 2e, respectively.

The high and low yield variety averages, the test yield average, the least significant difference (LSD) value or the yield value needed to identify the top-performance group (TPG-value), and the test coefficient of variation (CV) values are listed below each location yield column. Similarly, the averages for bushel weight, height, lodging, and grain protein, the LSD values needed to identify the TPG, and the test CV values for each variable are listed below each variable column. Performance information is derived from data that includes both released varieties and experimental

lines. Thus you can compare current varieties to experimental lines that may be released in the near future.

Comparing yields over years

Always compare current or one-year yields with other one-year yields, two-year yields with other two-year yields, and three-year yields with other three-year yields.

Determine if data is valid

Always determine if the data is valid. The coefficient of variation (CV) value listed at the bottom of each yield column is a measure of experimental error. Yield tests with CV values of 15% or higher contain a higher level of experimental error than tests with a CV of 10% or less. Test sites with a CV greater than 15% are not included in the calculations for yield stability discussed later. Likewise, the LSD value and the top performance group for yield are not shown if the CV exceeds 15%.

Use LSD values to evaluate yield differences between varieties

The LSD value indicates if the yield or other performance variable of one variety is significantly different from another variety. If the difference between two varieties is greater than the LSD value, the varieties differ. If the difference is equal to or less than the LSD value, the varieties do not significantly differ. For example, at Brookings, the variety Faller averaged 63 bu/a in 2010 compared to Albany at 56 bu/a. Did the yield difference between these varieties differ significantly? Compare the yield difference of 7 bu/a between the varieties (63–56) to the LSD value of 5 bu/a. Since the 7 bu/a difference is more than the LSD value of 5 bu/a, the varieties do differ significantly in yield. If the difference between Faller and Albany was 4 bu/a, their difference would have been less than 5 bu/a; therefore, the yield difference between these varieties would then not be significant.

Use the LSD value to determine the top performance group (TPG) entries

At each location the test entry or entries that qualify for the TPG can be identified using one- or three-year averages. The test LSD value is subtracted from the entry with highest average for yield or other variable (TPG-value). Entries with averages greater than the TPG value (highest yield minus test LSD) are in the top yield group for yield or other variables like protein, bushel weight, lodging score or plant height. For example, in spring wheat the top yielding entry at Warner for 2010 was Faller at 71 bu/a (table 1a). Subtracting the LSD value of 4 bu/a from the highest yield entry of 71 bu/a equals 67 bu/a. Generally, entries in that column yielding 68 bu/a or higher are in the TPG. However, we can also say a yield of 67 bu/a also qualifies as a TPG-value because the yield averages are rounded to the nearest bushel. This inclusion of 67 bu/a acre in the TPG also makes the results indicated in the table (rounded values) agree with the results of the statistical analysis, which determines variety differences to the nearest tenth of bushel.

Similarly, the TPG of entries for the bushel weight, plant height, lodging score, and grain protein can also be identified for each table column. Note that the TPG-values for the yield, bushel weight, tall height, and grain protein are minimum TPG-values, because the LSD value is subtracted from the highest average value to identify the TPG. In addition, the TPG for plant height may be identified by calculating either a maximum or minimum TPG-value. For example, you might subtract the LSD-value from the tallest entry to identify the tallest entries or TPG varieties suitable for use as forage. In contrast, you might add the LSD-value to the shortest entry to identify the shortest TPG if you are looking for short varieties. The TPG values for all variables are reported as "TPG-value" at the bottom of each variable table with all column values that qualify for the TPG identified by shaded values within a column.

Sometimes, a LSD value is not given and the designation NS^ is listed. This indicates variety differences were not significant (NS) or could not be detected. Therefore, all the varieties have a similar potential and are considered to be in the TPG. In test trials, if the experimental error (CV) exceeds 15%, the LSD and TPG values are not reported because the data contains too much experimental error to be valid.

Use top-yield group for yield information to evaluate variety yield stability

When evaluating yield performance, remember that environmental conditions change over locations and over years. Therefore, look at performance data from as many test locations and years as possible. Look at the "yield stability" of a variety over many locations. A simple way of evaluating yield stability is to see how often a variety is in the TPG for yield over all test locations. The top-yield frequency (expressed as percent) is the number of locations where an entry was in the TPG for yield. This year the agronomic performance tables for the entries tested are reported as two regions. Thus, the **East River** top yield percentages for spring wheat and oats are reported in **tables 1a** and **tables 3a**, respectively. The **West River** top yield percentages for spring wheat and oat entries are reported in **tables 2a** and **tables 4a**, respectively. Top-yield frequencies for winter wheat are not determined because winter kill can cause large variations in frequency.

A variety with a relatively high top-yield frequency will appear in the top yield group at many locations. For example, a variety with a top yield percentage of 50% or more exhibits better yield stability than a percentage of 20% or less. A percentage of 50% or higher is considered good for one year, and percentages of 80–100% are common for the longer 3-yr period. High percentages for the 3-yr period are generally more common than for the current year because there is two more years of data, which tends to reduce yield variability and enables the test to more easily identify the TPG at each location. Varieties with a high top-yield percentage have the ability to adapt to a wide range of environmental conditions over many locations. In contrast, entries with a low top-yield frequency typically adapt to a narrow range of environments. Look for entries with top-yield percentages **of 50% or higher** if possible, but don't be surprised if the percentages near 100% for the longer three-year period.

Use of origin, traits, and disease reactions tables

Small grain growers are encouraged to use the traits and disease reaction tables for spring wheat (table D), oat (table E), and winter wheat (table F) because they are up-dated annually for traits and disease race reactions.

When evaluating winter wheat entries, it is suggested that you also review the relative coleoptile length values reported in table F. Entries with relatively long coleoptiles are able to germinate and emerge from deeper seeding depths than entries with shorter coleoptiles. This trait may be advantageous in years where the soil moisture is deeper than the normal seeding zone. The coleoptile length of 3.2" for Harding is used as the reference standard (100%) for making comparisons. The coleoptiles of Alice, Wendy,

Arapahoe, Darrell, Expedition, Millennium, and Wesley are shorter than for Harding. Note: the coleoptile for Wendy is relatively short and may exhibit poor emergence if planted deep.

Origin of Varieties Tested

Public varieties were released from state Agricultural Experiment Stations. Abbreviations for each include:

Colorado – CO	Illinois – IL
Kansas – KS	Minnesota – MN
Montana – MT	Nebraska – NE
North Dakota – ND	South Dakota – SD
Wisconsin – WI	

Many public varieties were developed and released jointly by one or more experiment stations or the USDA. Proprietary entries tested by seed companies and listed by crop include:

Wheat: AgriPro Coker – AC, Trigen Seed – TS, Westbred – WB

Trial Methods–East River locations

A random complete block design was used in all trials. Plots were harvested with a small plot combine. Plots were 5-feet wide and either 12- or 14-feet long when harvested. Plots consisted of drill strips with 7- or 8-inch spacing. Trial locations are listed in table A. Yield means are generated from four replications per location.

Plots were fertilized with nitrogen for a yield goal of 60 to 70 bushels per acre, depending on the cooperator. In addition, at these locations a post-emergence tank-mix of Bronate plus Puma at labeled rates was applied on the spring wheat for weed control. Also, at the Miller, Selby and Frankfort spring wheat plots, Folicur was applied by cooperators according to label directions at recommended rates to protect against *Fusarium* head blight. Chemical weed control consisted of 4.5 oz/a Spartan pre-emergence at South Shore and Selby.

Seed size can vary greatly among varieties, so a seed count is conducted on each entry and all seeding rates are adjusted accordingly. The spring-seeded wheat was seeded at 42 pure live seeds (PLS) and oats at 28 PLS per square foot. The fall-seeded winter wheat trial seeding rates were 22 PLS per square foot. Under good seedbed preparation and favorable conditions, these seeding rates result in seedling densities of about 38 and 20 seedlings per square foot, or densities of about 1.65 million and 870,000 seeds/a, in the spring-seeded and fall-seeded trials, respectively. Increase the spring seeding rates to 46 PLS per square foot if the seedbed is poor and to 50 PLS per square foot if seeding is delayed to May 1 or later. In winter wheat, increase the seeding rate to 28 PLS per square foot if the seedbed is poor. Seeding dates are listed in table B.

Trial Methods–West River locations

A random complete block design is used in all trials. Plots are planted with a small plot drill and harvested with a small plot combine. Plots are 5-feet wide and 25-feet long when harvested. Plots consisted of six 10-inch rows. Trial locations are listed in table A. Variety yield means are generated from four replications per location per year.

Plots were fertilized with nitrogen for a yield goal of 45 to 60 bushels per acre, depending on the location. In addition, 6 gal/a of 10-34-0 was applied in the seed trench with the drill. At the Hayes, Kennebec, Okaton, Sturgis and Martin sites, herbicides were applied by the cooperator. For weed control at Wall, 1 pt/a Widematch + 8 oz/a MCPA was applied. Weed control for the spring wheat at Bison and Ralph consisted of 1 pt/a Widematch + 8 oz/a MCPA + Axial XL and the oats at Bison had 1 pt/a Widematch + 8 oz/a MCPA applied.

Seed size can vary greatly among varieties, so a seed count is conducted on each entry and all seeding rates are adjusted accordingly. The spring-seeded small grain trials were seeded at 42 pure live seeds (PLS) per square foot. The fall-seeded winter wheat trial seeding rates were 22 PLS per square foot. Under good seedbed preparation and favorable conditions these seeding rates result in seedling densities of about 38 and 20 seedlings per square foot, or densities of about 1.65 million and 870,000 seeds/a, in the spring-seeded and fall-seed small grain trials, respectively. Increase the spring seeding rates to 46 PLS per square foot if the seedbed is poor and to 50 PLS per square foot if seeding is delayed to May 1 or later. In winter wheat, increase the seeding rate to 28 PLS per square foot if the seedbed is poor. Seeding dates are listed in table B.

Variety Release/Recommendation Committee

Includes plant breeders, pathologists, research scientists, extension agronomists, and managers of the Seed Certification Service and Foundation Seed Stocks Division.

The efforts following SDSU people are gratefully acknowledged:

SDSU Oat Breeding Project – *L. Hall*
SDSU Spring Wheat Breeding Project – *K. Glover and J. Kleinjan*
SDSU Winter Wheat Breeding Project – *W. Berzonsky and S. Kalsbeck*
Brookings Agronomy Farm – *D. Doyle and Staff*
Northeast Research Farm (South Shore) – *A. Heuer*
Southeast Research Farm (Beresford) – *R. Berg and Staff*
Dakota Lakes Research Farm (Pierre) – *D. Beck and Staff*

The cooperation and resources of these cooperators are gratefully acknowledged:

Cooperator	Location	Cooperator	Location
R. Seidel	Bison	L. Erickson	Ralph
R. & L. Haskins	Hayes	Tom Fiedler	Selby
M. Aamot	Kennebec	M. Stiegelmeier	Selby
L. & C. Novotny	Martin	S. Masat	Spink Co.
Nelson Brothers	Miller	D. Wilson	Sturgis
H. Roghair	Okaton	B. Jorgensen	Tripp Co.
T. Young	Onida	D. Patterson	Wall
R. Van Der Pol	Platte	A. & I. Ryckman	Warner

This report is available on the World-Wide-Web at http://www.sdstate.edu/~wpls/http/var/vartrial.html

Table A. Minimum requirements needed for the recommended list

Trait	Crop		
	Spring Wheat	Oats	Winter Wheat
Yield, protein,	3/15*	3/15	3/15
bushel weight, and	3/15	3/15	3/15
plant height	3/15	3/15	3/15
Lodging & unique traits	WA	WA	WA
Disease reactions	A	A	WA
Quality data#	2/4	WA	3/15

* 3 years/15 location-years. # Milling & baking. $ Production & marketing

Table B. 2009 and 2010 seeding dates by crop

Location	2010		2009
	HRS Wheat	Oats	HRW Wheat
Eastern:			
Beresford	-	Apr. 10*	Sept. 18
Brookings	Apr. 12	Apr. 12	Sept. 28 both trials
Dakota Lakes	-	-	Sept. 17
Miller	Apr. 15	Apr. 15	-
Onida	-	-	Sept. 15
Platte	-	-	Sept. 18
Selby	Apr. 12	Apr. 12	Sept. 15 both trials
South Shore	Apr. 20	Apr. 20	-
Frankfort	Apr. 12	-	-
Warner	Apr. 16	Apr. 16	-
Western:			
Bison	Apr. 21	Apr. 21	Sept. 28
Hayes	-	-	Sept. 22
Kennebec	-	-	Sept. 23
Martin	-	-	Sept. 29
Okaton	-	Apr. 12	-
Ralph	Apr. 21	-	-
Sturgis	-	-	Sept. 28
Wall	Mar. 31	Mar. 31	Sept. 29

* Oat plots were flooded out.

Table C. Explanation of performance table footnotes.

No.	Explanation of footnotes
[1]	**Tables with yield, bushel weight, height, and grain protein averages:** Heading (small grains) – The number of days an entry takes to grow from the emergence stage to the heading stage (complete head emergence). This value is determined by comparing the entry with a known maturity check variety listed in footnote 1 at the bottom of each performance table. The heading value, if known, is listed after each variety name.
[2]	~W (winter wheat) – Denotes a white wheat variety.
[3]	Top-yield frequency – the frequency (%) over all test sites that an entry was in the top performance group for yield. A value of 50% or higher is considered good.
[4]	Lodging score (all crops): 0= all plants erect, 3= 50% of plants lodged at 45°-angle, 5= all plants flat.
[5]	Least Significant Difference (LSD 0.05) – the difference two values within a column must equal or exceed to be significantly different from one another at the 0.05 level of probability. If the difference is less than this LSD value the difference between the values compared is nonsignificant (NS).
[6]	TPG-value – the minimum value within a column that yield, bushel weight, tall height, and protein must equal or exceed; or the maximum value within a column that short height and lodging scores must equal or be less than to qualify for the top performance group (TPG). See more discussion in section titled Use the LSD value to determine the top performance group (TPG) entries. TPG- values are shaded.
[7]	Coefficient of variation (C.V.) - the percent of experimental error associated with a trial. Ideally, the value for yield is less than 15%. Values less than 5% are less common while values of 6 to 15% are more common. If values exceed 15%, the trial has too much experimental error to be valid so the data is omitted.
[8]	**Tables with crop variety origin, traits, and disease reaction information:** Lodging Resistance & Winter Hardy Ratings: P- poor, F- fair, G- good, VG- very good, or E- excellent.
[9]	End-use Quality (winter wheat): A- acceptable, F- fair, G- good, E- excellent for B- baking or N- noodles.
[10]	Coleoptile Length (winter wheat) - value is expressed as a percentage of the variety Harding (3-1/4" long).
[11]	Fusarium head blight or scab rating- 1= resistant, 2-3= moderately resistant, 4= moderately susceptible, and 5= susceptible.
[12]	Other disease reactions: VS- very susceptible, S- susceptible, MS- moderately susceptible, MR-moderately resistant, R-resistant, VR-very resistant, M- mixture of both susceptible and resistant types.
[13]	Plant variety protection (PVP), title V certification option, sold by variety name only as a class of certified seed. Status is yes, no, or pending.

Table D. Origin, traits, and disease reactions for spring wheat varieties tested in 2010, sorted early to late maturity by relative heading (Rel Hdg).

Variety, Heading Variety	Origin	Rel Hdg [1]	Ldg Res [8]	Rust [13]			Fusarium Head Blight [11]	PVP Status [14]
				Stripe	Stem	Leaf		
Brick	SD-08	0	G	-	R	R-MR	1-R	Yes
Select	SD-09	1	G	MR	R-MR	R-MR	2-MR	Pdg
Briggs-Ck	SD-02	2	G	MR	MR	R	4-MS	Yes
Granger	SD-04	2	G	MR	MR	R-MR	3-MR	Yes
Traverse	SD-06	2	G	MR	MR	R	3-MR	Yes
Barlow	ND-09	3	G	-	MR	R-MR	4-MS	Yes
Hat Trick	TSS-07	3	G	MR	MR	R-MR	4-MS	Yes
Sabin	MN-09	3	G	-	MR	R	2-MR	Yes
Brennan	AC-09	4	G	MS	MR	MR	4-MS	Yes
Samson	WB-07	4	VG	S	MR	R	4-MS	Yes
Tom	MN-08	4	G	-	MR	MR	3-MR	Yes
RB07	MN-07	4	G	MS	MR	MR	3-MR	Yes
Breaker	WB-07	5	-	S	MR	MR-MS	2-MR	Yes
Brogan	WB-09	5	-	S	MR	MR-MS	4-MS	Yes
Chris	MN-65	5	-	-	R	MS	3-MR	No
Glenn	ND-05	5	G	MR	R	R-MR	2-MR	Yes
Reeder	ND-99	5	G	MR	MS	MR	4-MS	Yes
Steele-ND	ND-04	5	G	MR	R	MR	3-MR	Yes
Albany	TS-09	6	G	R	R	MR	3-MR	Yes
Digger	WB-09	6	-	S	MR	MR-MS	4-MS	Pdg
Howard	ND-06	6	G	-	R	R	3-MR	Yes
Faller	ND-07	6	G	-	R	R	2-MR	Yes
Mott	ND-09	6	VG	-	MS	MR	3-MS	Yes
Vantage	WB-07	9	VG	S	MS	R	4-MS	Yes
SD 3997*	SD-	-	-	R-MR	-	-	3-MR	-
SD 4023*	SD-	-	-	R-MR	-	-	3-MR	-

[1] Heading- days later than Brick, the check variety for maturity.
Note that additional table footnotes are explained in Table C.

Table E. Origin, variety traits, and disease reactions for oat entries tested in 2010.

Variety	Origin	Rel Hdg [1]	Ldg Res [8]	Grain Color	Smut [13]	Rust [13]		Red Leaf [13]	PVP Status [14]
						Stem	Crown		
Colt	SD-08	0	-	White	VR	MS	MS	MS	Pdg
Don	IL-85	1	G	White	VR	MS	S	MR	No
Reeves	SD-02	2	G	White	MR	S	MS	MS	No
Shelby427	SD-09	2	G	White	VR	MR	R	MR	Pdg
Buff Hls	SD-02	3	G	Hulless	R	S	MS	MS	No
Streaker Hls	SD-09	3	F-G	Hulless	R	MR	MS	R	Pdg
Jerry	ND-94	5	G	White	MR	MS	S	MS	Yes
Beach	ND-04	7	G	White	R	S	MS	MS	No
Souris	ND-06	7	G	White	VR	MR	R	MR	Yes
HiFi	ND-01	8	G	White	MR	MR	MR	MR	Yes
Rockford	ND-09	8	G	White	R	S	MR	MR	Pdg
Stallion	SD-06	9	G	White	MR	S	MR	MR	Yes
SD 081936	SD-	-	-	-	-	-	-	-	-
SD 081949	SD-	-	-	-	-	-	-	-	-

[1] Heading- days later than Colt, the check variety for maturity.
Note that additional table footnotes are explained in Table C.

Table F. Origin, traits, and disease reactions for winter wheat varieties tested in eastern South Dakota in 2010.

Variety [2]	Rel Hdg [1]	Origin	Ldg Res [8]	Winter Hardy Rtg [8]	End-Use Qlty [10]	Cole-optile Lgth [11]	Wheat Steak Mosaic [13]	Tan-spot [13]	Head Scab Rtg [13]	Stripe	Rust [13] Leaf	Stem	PVP Status [14]
Alice~W	-1	SD-06	G	G	EB	78	MR	MS	3-MR	R-MR	MR	MR	Yes
Wendy~W	-1	SD-04	E	E	GN	67	MS	MR	5-S	MR-MS	MS	MR	Yes
Art	0	AC-08	E	G	-	-	MS	MS	3-MR	R-MR	R	MR	Yes
Expedition	0	SD-02	F	G-E	GB	88	S	S	3-MR	MR-MS	MS	R	Yes
Fuller	0	KS-07	E	P-F	AB	-	MS	MS	3-MR	MR	MR	MS	Yes
Camelot	2	NE-08	G	G	EB	-	MS	MR	5-S	MR-MS	MR	MR	Yes
Hatcher	2	CO-04	G	F-G	GB	89	MS	S	5-S	MR-MS	MS	MS	Yes
Lyman	2	SD-08	F	G	AB	90	MS	MR	2-MR	R-MS	R	R	Yes
Smoky Hill	2	WPB-07	G	F-G	EB	-	S	MR	5-S	R-S	R	MR	Yes
Wesley	2	NE-98	E	G-E	GB	79	S	MR	4-MS	MR	S	R	No
Arapahoe	3	NE-88	F	G-E	GB	83	S	MS	2-MR	R-MS	MR	MR	Yes
Hawken	3	AC-07	E	G	AB	-	MS	MR	4-MS	MR-MS	R	MR	Yes
Jagalene	3	AC-02	E	G	AB	92	MS	MR	5-S	MR	S	MR	Yes
Settler CL	3	NE-08	G	G	AB	-	MS	MR	5-S	MS	MS	MR	Yes
Wahoo	3	NE/WY-01	G	G	AB	91	S	MR	5-S	MR	MS	R	Yes
Millennium	4	NE-99	G	F-G	AB	78	S	MS	5-S	MR	MR	MR	Yes
Overland	4	NE/SD-06	G	E	FB	89	MS	MR	3-MR	R-MR	R	MS	Yes
Striker	4	WB-09	E	E	-	-	-	MR	5-S	MR	MR	MR	Yes
Boomer	5	WB-09	G	E	AB	-	-	MS	5-S	MR-MS	MR	R	Yes
Darrell	5	SD-06	G	G	EB	89	MR	MS	3-MR	MR	MS	R	Yes
Harding	5	SD-99	F-G	E	AB	100	MR	MR	4-MS	MR-MS	MR	MR	Yes
Jerry	5	ND-01	F	E	GB	92	MS	MR	3-MR	MR-MS	MS	R	No
Radiant	5	CAN-05	E	G-E	AB	-	R	MR	2-MR	MR-S	S	S	-
SD051181	-	SD-	-	-	-	-	-	-	.	-	-	-	-
SD05W030	-	SD-	-	-	-	-	-	-	.	-	-	-	-
SD06069	-	SD-	-	-	-	-	-	-	.	-	-	-	-
SD06158	-	SD-	-	-	-	-	-	-	.	-	-	-	-
SD07056	-	SD-	-	-	-	-	-	-	.	-	-	-	-
SD07126	-	SD-	-	-	-	-	-	-	.	-	-	-	-
SD07165	-	SD-	-	-	-	-	-	-	.	-	-	-	-

[1] Heading- days earlier (-) or later than Expedition, the check variety for maturity.
Note that additional table footnotes are explained in Table C.

Performance Trial Highlights

General – The performance of all the small grain crops in year 2010 was variable depending on region. At East River locations, the average yields in 2010 was lower compared to 2009 at Brookings, South Shore, Frankfort, and Warner; but higher compared to 2009 at Miller and Selby. At West River locations, the average yields for 2010 were higher than 2009 for Hayes, Sturgis and Okaton; but lower than 2009 for Bison, Kennebec, Ralph and Wall. Test trial locations and seeding dates are indicated in Table A.

Comments from L. Osborne, Extension Plant Pathologist, South Dakota State University: The 2010 wheat crop was heavily affected by bacterial diseases including leaf streak/black chaff caused by *Xathomonas* spp. and leaf blight caused by *Pseudomonas* spp. The diseases are common and usually not important; however a steady build-up over the past three years along with a highly favorable weather pattern this year led to severe blighting of flag leaves prior to grain maturity. Test weights in many areas were reduced because of the disease. Yields were likely reduced by 10% or more depending on the severity and incidence across a field. No controls are recommended for managing these diseases because they are mainly weather driven. SDSU plant pathologists are evaluating a few bactericidal products such as copper hydroxide against the disease but no results are currently available. We are also collecting data on varietal responses for incorporation into this publication next year. Crop rotation and residue management may have some effect on the disease; however frequent heavy rains and damaging winds are a key to widespread infection. A year or more of normal to dry weather will likely reduce the disease back to normally low levels.

Comments regarding tables – Yield tables are first sorted high to low by 3-yr, 2-yr, and then by 2010 variety yield averages. Likewise, grain protein and bushel weight tables are sorted high to low by 2010 variety averages, while lodging score and plant height tables are sorted low to high by 2010 variety averages. Take care when reading the yield average tables because the entries are first sorted by 3-year, next by 2-year, and last by the 2010 averages. First, evaluate yield performance by looking at the 3-year, then the 2-year, and finally by the 2010 yield averages. In some cases, some varieties first tested in 2010 produced the highest yields for 2010. In other cases, however, the highest 2010 yields may have been produced by varieties that have been tested for either two or three years. **Look at all the values within each yield column.**

Spring Wheat:

East River results–*R.G. Hall Ext. agronomist & Leader, SDSU Crop Testing*

Yields (Tables 1a) – The entries **Faller and Albany** at **100%** and **Traverse** at **80%** were the top-yield frequency entries for the past 3-years (2008–10). These entries exhibited very good yield stability or the ability to adapt to a wide range of production environments by being in the top-performance group for yield at more than 50% of the test locations. The entries **Faller** at **100%**, **Albany** and experimental line **SD 4023** at **83%**, and **Traverse** at **67%** were the top-yield frequency entries for the past 2-years (2009–10). The entries **Faller** at **83%** and **Albany** at **67%** were the top-yield frequency entries for 2010. When evaluating the yield stability or top-yield frequency of a variety, look for shaded values within the yield column for each location. The more shaded values you see for a given variety, the better. If none of the location yield averages for a variety are shaded, the variety was not in the top-yield group at any location.

Grain protein content (Table 1b) – The entries **Vantage** averaged **16.6%**, **Glenn** averaged **16.2%**, **Briggs** and **Brogan** averaged **15.9%**, and **Steele-ND** averaged **15.8%** protein. **Vantage** was in the top protein group at all **six** locations, **Glenn** at **three** locations, **Briggs** and **Brogan** at **two** locations, and **Steele-ND** at **one** location. When evaluating the grain protein content of a variety, look for shaded values within the protein column for each location. The more shaded values you see for a given variety, the better.

Bushel weight (Table 1c) - The top bushel weight entries were the varieties **Breaker** and **Hat Trick** at **58.1 lb**. Nine varieties ranged from **57.9** to **57.1 lb** (**Glenn, Brick, Faller, Howard, Tom, Steele-ND, Albany, Select,** and **Sabin**). When evaluating the grain protein content of a variety, look for shaded values within the bushel weight column for each location. The more shaded values you see for a given variety, the better.

Lodging (Table 1d) – The entries **Vantage** at **1.4**; **Breaker** at **1.7**; **Brogan, Albany,** and **Mott** at **1.8**; **Sampson, Barlow,** and **Reeder** at **1.9**; and **Traverse, Brennan,** and **RB07** at **2.0** had better than average lodging scores (less than 2.1). When evaluating the lodging scores of a variety, look for shaded values within the lodging score column for each location. The more shaded values you see for a given variety, the better.

Height (Table 1e) - The entries **Brennan, Sampson, Sabin,** and **Albany** were the shortest varieties at **31 inches**; **Brogan** and **RB07** at **32 inches**; and **Vantage, Hat Trick,** and **Tom** averaged **33 inches**, or an inch shorter than average (34 inches). The entries Breaker, Digger, and Select at 34 inches were average in height; while **Faller, Briggs, Reeder, Steele-ND,** and **Brick** were an inch taller. The entries **Howard, Barlow, Traverse,** and **Granger** were two inches taller than average; and **Mott** and **Glenn** were three inches taller than average.

West River results–*J.R. Rickertsen, Research Associate, SDSU West River Ag Center*

Yields (Tables 2a) – The entries **Samson, Traverse, Granger,** and **Faller** at **100%**; and **RB07, Albany, Briggs, Sabin, Barlow, Select, Brick,** and **Steele-ND** at **50%** were the top-yield frequency entries for the past 3-years (2008-10). These entries exhibited very good yield stability or the ability to adapt to a wide range of production environments by being in the top-performance group for yield at more than 50% of the test locations. The entries **Traverse** at **100%**; and **Granger, Faller, Albany, Sabin,** and **Select** at **67%** were the top-yield frequency entries for the past 2-years (2009–10). The entries **Samson, Traverse, Granger, Albany,** and **Sabin** at **67%** were the top-yield frequency entries for 2010. When evaluating the yield stability or top-yield frequency of a variety, look for shaded values within the yield column for each location. The more shaded values you see for a given variety, the better. If none of the location yield averages for a variety are shaded, the variety was not in the top-yield group at any location.

Grain protein content (Table 2b) – The entries **Vantage** and experimental line **SD 4181** averaged **15.8%**, **Tom** averaged **15.6%**, **Chris, Sabin,** and **Barlow** averaged **15.5%**, and **Glenn** averaged **15.4%** protein. The West River locations had only one replication of protein samples tested, so statistics to determine top-performance group cannot be done.

Bushel weight (Table 2c) - The top bushel weight entry was the variety **Select** at **59.9 lb**. The six varieties, **Granger, Vantage, Brennan, Breaker, Brick,** and **Barlow**, ranged from **59.1** to **58.1 lb.** When evaluating the grain protein content of a variety, look for shaded values within the bushel weight column for each location. The more shaded values you see for a given variety, the better. Test weights are not reported for Wall because the low yields did not provide enough sample to get an accurate test weight measurement.

Lodging – All varieties were rated as having no lodging at the West River locations, therefore, no performance table is rpresented for this table.

Height (table 2d) – The shortest varieties were 25 to 26 inches tall, the intermediate varieties were 27 to 28 inches tall, and the tallest varieties were 29 inches or taller when averaged across all locations.

Spring oat:

East River results–*R.G. Hall Ext. agronomist & Leader, SDSU Crop Testing*

Yields (Tables 3a) – The entries **Souris** and **Hi Fi** at **75%**; and **Shelby427** and **Beach** at **50%** were the top-yield frequency entries for the past 3-years (2008–10). These entries exhibited very good yield stability or the ability to adapt to a wide range of production environments by being in the top-performance group for yield at more than 50% of the test locations. The entries **Souris** and **Hi Fi** at **100%** and **Rockford** at **80%** were the top-yield frequency entries for the past 2-years (2009–10). The experimental lines **SD 081949** and **SD 081936** at **100%** were the top-yield frequency entries for 2010. At Brookings, South Shore, and Warner none of the released varieties yielded as high as the two experimental lines.

Grain protein content (Table 3b) – The entries **Streaker** and **Buff** averaged **16.5%** and **15.9%** protein, respectively. These two hulless varieties were consistently higher in grain protein across locations compared to the standard-type hulled varieties.

Bushel weight (Table 3c) - The top bushel weight entries across all locations were the hulless varieties **Buff** and **Streaker** at **44.0** and **43.8 lb**, respectively. Among the standard-hulled entries, the heaviest entries were **Shelby427, Colt,** and **Rockford** at **37.7, 37.6,** and **37.3 lb**, respectively.

Lodging (Table 3d) – The entries with the best lodging resistance or lowest lodging scores were **Shelby427, Rockford, SD 081949,** and **Souris** at **2.9**, followed closely by **SD 091936** and **Hi Fi** at **3.0**.

Height (Table 3e) - The entries **Don** and **SD 081936** were the shortest varieties at **35** and **36** inches, respectively. The tallest

entries were **Shelby427** at **41**, **Hi Fi** and **Jerry** at **42**, **Stallion** and **Rockford** at **43**, and **Beach** at **44** inches.

West River results–*J.R. Rickertsen Research Associate, SDSU West River Ag Center*

Yields (Tables 4a) – The entries **Shelby427** at **100%**; and **Souris, HiFi, Beach,** and **Jerry** at **66%** were the top-yield frequency entries for the past 3-years (2008–10). These entries exhibited very good yield stability or the ability to adapt to a wide range of production environments by being in the top-performance group for yield at more than 50% of the test locations. The entries **Shelby427** at **100%**; and **Souris, HiFi, Beach,** and **Rockford** at **66%** were the top-yield frequency entries for the past 2-years (2009–10). The entries **Shelby427** at **100%**; and **Souris, Beach, Stallion, SD 081629,** and **SD 081936** at **66%** were the top-yield frequency entries for 2010.

Grain protein content (Table 4b) – The entries **Streaker** and **Buff** averaged **16.7%** and **16.6%** protein, respectively. These two hulless varieties were consistently higher in grain protein across locations compared to the standard-type hulled varieties. Proteins for the Bison location were not reported due to a large amount of wild oat seed in the samples.

Bushel weight (Table 4c) - The top bushel weight entry across all locations was the hulless variety **Buff** at **40.2 lb**. Among the standard-hulled entries, the heaviest entries were **Shelby427, Reeves, Beach,** and **Rockford** ranging from **37.9** to **35.7 lb**.

Lodging – All varieties were rated as having no lodging at the West River locations, therefore, no performance table is presented for this table.

Height (Table 4d) - The entries **Don, SD 081936,** and **SD 082192** were the shortest varieties at **28** inches. The tallest entries were **Shelby427** and **Hi Fi** at **34** and **Reeves** and **Beach** at **35** inches.

Winter Wheat:

East River results–*R.G. Hall Ext. agronomist & Leader, SDSU Crop Testing*

Yield (Tables 5a) – In 2010, the entries **Expedition, Overland, Smoky Hill, Wendy, Fuller, Lyman, Settler CL, Millennium,** and **Alice~W** appeared in the top-performance group (TPG) for yield at half or more of the locations as indicated by the shaded areas. In the 2-year and 3-year averages, these same varieties appeared to be in the TPG for yield at half or more of the locations, along the varieties **Hawken** and **Wesley**.

At Brookings, the relative ranking of the yield values of varieties in the regular untreated trial were somewhat similar to the variety ranking in the fungicide treated trial. In the untreated trial, there were 17 varieties in the TPG for yield; in the fungicide-treated trial, there were 14 varieties. Among the TPG varieties in each trial, 11 varieties (37% of varieties tested) were common to both trials. The average yield for the regular untreated trial was 59 compared to 82 bu/a in the fungicide treated trial, a difference of 23 bu/a. Thus, the fungicide treatment at Brookings resulted in significantly higher yields compared to the plots not treated with fungicide.

In contrast, at Selby, the varietal response to fungicide treatments was not as clear as at Brookings. First, there was only a 4 bu/a difference in yield between the untreated (84 bu/a) and the fungicide-treated (88 bu/a) plots. Second, 13 varieties (nearly 70%) appeared in the TPG for yield in both trials; whereas nearly 30% of the varieties in the TPG for yield in one trial were not in the TPG for the other trial. The yield results from the untreated and fungicide treated plots from these two locations clearly indicates the yield response of some varieties to fungicide can be similar or quite different, depending on variety and location.

Grain protein content (Table 5b) – The experimental line **SD 07126** at **14.6%** was in the TPG for protein at every location as indicated by the shaded areas. The variety **Harding** at **14.3%** was in the TPG for protein at **76%** of the locations. Other varieties—like **Hawken, Wesley,** and **Boomer**—were in the TPG for protein at **63%, 50%,** and **38%** of the locations, respectively.

Bushel weight (Table 5c) - The top bushel weight entries were **SD05W030, Lyman, Overland, Expedition, Settler CL, SD07056, Millennium, SD051181, Wendy~W, Harding, SD07126,** and **Fuller** were in the TPG for bushel weight at more than half the locations. At Brookings, the relative ranking of the bushel weight values of varieties in the regular untreated trial were somewhat similar to the variety ranking in the fungicide treated trial. The average bushel weight for the regular untreated trial was 54.4 compared to 55.8 lb for the fungicide treated trial, a difference of 1.4 lb.

West River results–*J.R. Rickertsen Research Associate, SDSU West River Ag Center*

Yield (Tables 6a) - The entries **Overland** and **Millennium** at **80%**; and **Lyman, Wahoo, Wesley, Expedition, Darrell,** and **Smoky Hill** at **60%** were the top-yield frequency entries for the past 3-years (2008–10). These entries exhibited very good yield stability or the ability to adapt to a wide range of production environments by being in the top-performance group for yield at more than 50% of the test locations. The entries **Wesley** at **80%**; and **Lyman, Wahoo, Hatcher, Overland, Camelot,** and **Millennium** at **60%** were the top-yield frequency entries for 2010.

Grain protein content (Table 6b) - The entry **Lyman** had the best average protein at **12.2%**, **Art** and **Boomer** averaged **12.1%**, **Harding** and **Wendy** averaged **12.0%**, and **Striker** and **Jerry** averaged **11.9%** protein. The West River locations had only one replication of protein samples tested, so statistics to determine top-performance group cannot be done.

Bushel weight (Table 6c) - The top bushel weight entries were **Millennium** and **Harding** at **100%**, with **Darrell, Wendy, Hawken, Smokey Hill, Settler CL, Jagalene, Striker,** and **Radiant** at **60%** in the TPG for bushel weight at more than half the locations.

Lodging – All varieties were rated as having no lodging at the West River locations, therefore, no performance table is presented for this table.

Height (Table 6d) - The shortest varieties were 28 to 31 inches tall, the intermediate varieties were 32 to 34 inches tall, and the tallest varieties were 38 inches or taller when averaged across all locations.

Table 1a. Spring wheat 2008-2010 yield averages (13% H2O) from six eastern South Dakota locations, sorted by 3-yr, 2-yr, and 2010 variety average.

Variety, Heading [1]	Yield Averages by Location - Bu/a											
	Brookings			South Shore			Frankfort			Warner		
	2010	2-Yr	3-Yr	2010	2-Yr	3-Yr	2010	2-Yr	3-Yr	2010	2-Yr	3-Yr
Faller, 6	63	69	62	68	75	76	52	64	67	71	76	78
Albany, 6	56	64	58	66	72	73	54	69	69	70	76	79
Traverse, 2	53	59	55	68	76	76	43	55	61	65	73	76
Howard, 6	56	60	55	66	72	76	44	53	59	59	66	72
Barlow, 3	53	59	55	71	74	74	39	53	56	57	65	69
Steele-ND, 5	55	57	54	66	71	74	45	52	58	55	64	69
SD 3997, -	59	60	56	63	67	68	44	56	60	65	70	73
RB07, 4	47	53	51	55	59	67	38	53	57	62	67	75
Sabin, 3	53	57	53	60	66	67	42	53	57	59	65	65
Tom, 4	53	55	50	61	66	69	36	52	55	61	66	71
Samson, 4	51	55	49	66	72	72	35	54	56	53	62	67
Granger, 2	56	59	55	64	66	70	37	45	52	57	65	67
Briggs-Ck, 2	48	53	51	60	67	70	34	50	55	59	64	68
Brick, 0	43	50	50	59	65	68	41	54	58	57	61	66
Select, 1	44	52	49	54	62	68	31	50	54	60	66	69
Reeder, 5	51	51	47	70	68	66	35	54	55	52	62	68
Glenn, 5	56	58	52	62	66	68	43	54	56	58	64	66
Brennan, 4	48	52	48	63	67	68	32	48	54	56	61	68
Mott, 6	45	48	45	61	65	65	41	53	55	53	60	65
Chris, 5	34	42	39	40	47	47	31	38	39	41	49	53
SD 4023, -	54	59	.	67	74	.	40	60	.	63	71	.
Breaker, 5	53	56	.	66	71	.	43	56	.	65	70	.
Brogan, 5	45	50	.	48	56	.	36	55	.	52	64	.
Vantage, 9	40	47	.	57	59	.	38	48	.	54	59	.
Digger, 6	48	.	.	67	.	.	36	.	.	57	.	.
Hat Trick, 3	53	.	.	64	.	.	38	.	.	57	.	.
Test avg. :	50	55	52	63	67	69	39	53	57	58	65	69
High avg. :	63	69	62	72	79	76	54	69	69	71	76	79
Low avg. :	34	42	39	40	47	47	28	38	39	41	49	53
[5] LSD (0.05):	5	6	6	5	6	8	6	11	8	4	6	6
[6] TPG-value :	58	63	56	67	73	68	48	58	61	67	70	73
[7] C.V. :	7	7	7	6	7	6	12	9	7	5	4	5

[1] Heading- days later than Brick, the check variety for maturity.
Note- shaded values within a location-year column are in the top yield group.
Note that additional table footnotes are explained in Table C.

Table 1a. Spring wheat 2008-2010 yield averages (13% H2O) from six eastern South Dakota locations, sorted by 3-yr, 2-yr, and 2010 variety average (continued).

Variety, Heading [1]	Yield Averages by Location - Bu/a						Variety Yield Average bu/a			Top Yield Freq. - % [3]		
	Miller			Selby								
	2010	2-Yr	3-Yr	2010	2-Yr	3-Yr	2010	2-Yr	3-Yr	2010	2-Yr	3-Yr
Faller, 6	59	51	.	74	67	59	65	67	68	**83**	**100**	**100**
Albany, 6	62	51	.	80	70	63	65	67	68	**67**	**83**	**100**
Traverse, 2	50	50	.	74	65	58	59	63	65	17	**67**	**80**
Howard, 6	54	48	.	73	65	56	59	61	64	0	33	20
Barlow, 3	46	45	.	72	62	54	56	60	62	17	33	20
Steele-ND, 5	53	48	.	72	64	57	58	59	62	0	33	40
SD 3997, -	50	44	.	69	57	51	58	59	62	17	33	**60**
RB07, 4	49	46	.	73	66	61	54	57	62	0	33	40
Sabin, 3	53	49	.	67	64	58	56	59	60	0	33	20
Tom, 4	49	46	.	72	63	53	55	58	60	0	33	20
Samson, 4	50	44	.	71	63	55	54	58	60	0	33	20
Granger, 2	47	47	.	67	59	52	55	57	59	0	17	20
Briggs-Ck, 2	46	44	.	69	61	53	53	57	59	0	17	20
Brick, 0	49	47	.	71	61	52	53	56	59	0	17	20
Select, 1	43	44	.	73	62	53	51	56	59	0	33	20
Reeder, 5	50	45	.	71	61	52	55	57	58	17	33	0
Glenn, 5	47	45	.	65	57	50	55	57	58	0	17	20
Brennan, 4	46	43	.	71	63	52	53	56	58	0	33	20
Mott, 6	47	37	.	66	59	54	52	54	57	0	0	0
Chris, 5	38	33	.	48	46	40	39	43	44	0	0	0
SD 4023, -	51	47	.	73	66	.	58	63	.	0	**83**	.
Breaker, 5	48	44	.	75	64	.	58	60	.	17	**50**	.
Brogan, 5	40	41	.	67	60	.	48	54	.	0	17	.
Vantage, 9	42	35	.	54	55	.	48	51	.	0	0	.
Digger, 6	58	.	.	75	.	.	57	.	.	33	.	.
Hat Trick, 3	52	.	.	64	.	.	55	.	.		.	.
Test avg. :	48	44	.	69	62	54	54	58	60			
High avg. :	62	51	.	80	70	63	65	67	68			
Low avg. :	36	33	.	48	46	40	39	43	44			
[5] LSD (0.05):	3	10		5	8	6						
[6] TPG-value :	59	41		75	62	57						
[7] C.V. :	5	7		5	6	7						

[1] Heading- days later than Brick, the check variety for maturity. **Bold** top yield freq.-values are 50% or greater.
Note- shaded values within a location-year column are in the top yield group.
Note that additional table footnotes are explained in Table C.

Table 1b. Hard red spring wheat 2010 grain protein averages at six South Dakota eastern locations, sorted high to low by variety average.

Variety, Heading [1]	2010 Protein Averages by Location						Variety Average
	Brookings	S. Shore	Frankfort	Miller	Warner	Selby	
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Vantage, 9	16.1	15.7	17.0	17.3	16.5	17.1	16.6
Glenn, 5	15.8	15.3	16.6	16.4	16.3	16.8	16.2
Chris, 5	15.6	15.6	16.5	17.0	16.0	15.5	16.0
Briggs-Ck, 2	15.7	15.0	16.5	15.9	15.8	16.6	15.9
Brogan, 5	16.0	15.8	16.3	16.4	15.2	15.5	15.9
Steele-ND, 5	15.9	15.1	16.2	16.4	15.9	15.4	15.8
Barlow, 3	15.5	15.2	16.4	16.1	15.7	15.9	15.8
Granger, 2	15.5	15.1	16.3	16.4	15.4	15.7	15.7
Brennan, 4	15.3	15.3	16.2	16.3	15.8	15.5	15.7
Sabin, 3	15.2	15.3	15.8	16.4	15.4	16.1	15.7
SD 3997, -	15.2	15.0	16.3	16.5	15.3	16.0	15.7
RB07, 4	15.4	15.3	16.6	15.7	15.4	15.4	15.6
Select, 1	15.5	15.2	16.1	16.0	14.8	15.8	15.6
Brick, 0	15.6	15.2	15.9	15.8	15.3	15.5	15.5
Howard, 6	15.2	14.9	15.9	16.1	15.5	15.3	15.5
Reeder, 5	14.9	14.9	15.7	16.3	15.2	15.7	15.5
Breaker, 5	15.4	14.4	16.2	16.2	14.8	15.3	15.4
Tom, 4	15.2	14.9	15.4	15.9	15.1	15.5	15.3
Hat Trick, 3	14.8	14.5	16.3	16.3	14.5	15.1	15.2
Samson, 4	14.6	14.7	16.0	15.9	15.1	15.1	15.2
Digger, 6	15.0	14.7	15.7	15.7	14.7	14.9	15.1
Faller, 6	14.8	14.5	15.9	15.4	14.7	15.4	15.1
SD 4023, -	15.3	14.3	15.7	15.5	14.6	15.0	15.0
Mott, 6	14.6	14.6	15.1	16.0	14.5	15.5	15.0
Traverse, 2	14.8	15.1	15.5	15.1	14.6	14.4	14.9
Albany, 6	15.2	14.6	15.1	14.7	13.6	14.7	14.6
Test avg. :	15.3	15	16.1	16	15.2	15.6	15.5
High avg. :	16.1	15.8	17.2	17.3	16.5	17.1	16.6
Low avg. :	14.6	14.3	15.1	14.7	13.6	14.4	14.6
[5] Lsd(.05) :	0.5	0.4	0.5	0.6	0.5	0.8	
[6] TPG-value :	15.7	15.5	16.8	16.8	16.1	16.4	
[7] C.V. :	2	2	2	3	2	4	

[1] Heading- days later than Brick, the check variety for maturity.
Note- shaded values within a location-year column are in the top protein group.
Note that additional table footnotes are explained in Table C.

Table 1c. Hard red spring wheat 2010 bushel weight averages at six eastern South Dakota locations, sorted high to low by variety average.

Variety, Heading [1]	Bushel Weight Averages by Location						Variety Average
	Brookings	S.Shore	Frankfort	Miller	Warner	Selby	
	lb	*lb*	*lb*	*lb*	*lb*	*lb*	*lb*
Breaker, 5	55.3	53.1	60.3	56.7	61.4	62.1	58.1
Hat Trick, 3	53.8	56.3	58.7	59.3	59.9	60.8	58.1
SD 4023, -	56.1	56.8	57.7	56.9	59.5	60.7	57.9
Glenn, 5	53.3	55.1	58.6	57.2	60.1	63.3	57.9
SD 3997, -	54.7	55.1	58.1	57.0	59.9	62.3	57.9
Brick, 0	52.9	55.3	58.9	57.1	60.8	62.0	57.8
Faller, 6	54.0	55.1	57.9	57.4	60.9	61.5	57.8
Howard, 6	54.9	55.5	58.8	57.5	59.6	60.5	57.8
Tom, 4	55.7	54.0	58.2	56.0	60.0	62.0	57.7
Steele-ND, 5	53.2	55.7	58.5	56.8	59.1	62.0	57.5
Albany, 6	53.1	56.1	57.8	57.0	59.9	60.1	57.3
Select, 1	53.4	55.3	55.4	55.2	59.8	63.7	57.1
Sabin, 3	55.5	52.9	58.1	56.3	58.7	61.0	57.1
Briggs-Ck, 2	55.7	54.8	55.0	55.7	59.5	61.6	57.0
Brennan, 4	54.0	56.3	55.9	55.2	57.9	61.3	56.8
Granger, 2	54.8	55.3	55.7	54.8	57.8	62.0	56.7
Barlow, 3	53.5	55.9	56.9	54.5	57.7	61.7	56.7
Mott, 6	52.1	52.7	58.1	56.7	59.0	61.0	56.6
Vantage, 9	51.4	52.7	58.5	55.7	60.1	61.1	56.6
RB07, 4	52.5	53.3	55.9	55.8	59.6	61.7	56.5
Reeder, 5	52.7	54.2	55.8	56.0	56.3	61.5	56.1
Digger, 6	52.5	54.9	55.4	55.8	57.2	60.3	56.0
Brogan, 5	53.8	50.8	56.0	55.1	56.8	61.9	55.7
Samson, 4	51.6	53.1	54.1	54.8	55.4	60.9	55.0
Traverse, 2	52.5	51.0	54.2	54.6	58.2	59.1	54.9
Chris, 5	51.0	52.3	54.7	51.3	56.9	57.9	54.0
Test avg. :	53.4	54.4	56.8	55.7	58.9	61.3	56.7
High avg. :	56.1	56.8	60.3	59.3	61.4	63.7	58.1
Low avg. :	51.0	50.8	53.5	51.3	55.4	57.9	54.0
[5] Lsd(.05) :	1.6	1.6	1.5	1.2	1.6	1.4	
[6] TPG-value :	54.6	55.3	58.9	58.2	59.9	62.3	
[7] C.V. :	2	2	2	2	2	2	

[1] Heading- days later than Brick, the check variety for maturity
Note- shaded values within a location-year column are in the top bushel weight group.
Note that additional table footnotes are explained in Table C.

Table 1d. Hard red spring wheat 2010 lodging score averages at five eastern South Dakota locations, sorted low to high by variety average.

Variety, Heading [1]	Lodging Score Averages by Location - 1= good to 5= poor					Variety Average
	Brookings	S.Shore	Miller	Warner	Selby	
	1 to 5	*1 to 5*	*1 to 5*	*1 to 5*	*1 to 5*	*1 to 5*
Vantage, 9	2.0	1.0	1.3	1.8	1.0	1.4
Breaker, 5	1.7	1.0	2.0	2.5	1.0	1.7
Brogan, 5	1.7	1.0	2.3	2.8	1.0	1.8
Albany, 6	1.7	1.0	2.5	2.8	1.0	1.8
Mott, 6	1.3	1.5	2.3	3.0	1.0	1.8
Samson, 4	2.0	1.0	2.8	2.5	1.0	1.9
Barlow, 3	2.3	1.0	2.5	2.5	1.3	1.9
Reeder, 5	2.3	1.0	2.8	2.5	1.0	1.9
Traverse, 2	2.0	1.0	3.0	2.5	1.3	2.0
Brennan, 4	2.3	1.0	3.0	2.5	1.3	2.0
RB07, 4	2.0	1.0	3.0	3.0	1.0	2.0
Hat Trick, 3	2.0	1.5	3.0	2.8	1.0	2.1
Glenn, 5	2.0	1.5	3.0	2.8	1.0	2.1
Select, 1	2.0	1.5	3.0	2.8	1.0	2.1
Faller, 6	2.0	1.8	2.8	3.0	1.0	2.1
Briggs-Ck, 2	2.0	1.5	3.0	3.0	1.0	2.1
Digger, 6	2.3	1.3	3.0	2.8	1.3	2.1
SD 3997, -	2.0	1.8	3.0	3.0	1.0	2.2
SD 4023, -	2.3	2.0	2.8	3.0	1.0	2.2
Brick, 0	2.0	1.8	3.0	3.0	1.3	2.2
Sabin, 3	2.8	1.8	3.0	3.0	1.0	2.3
Howard, 6	2.8	1.8	3.0	3.0	1.3	2.4
Steele-ND, 5	3.0	2.5	3.0	3.3	1.5	2.7
Granger, 2	2.3	2.5	3.0	3.0	2.5	2.7
Tom, 4	3.0	2.8	3.0	3.5	1.8	2.8
Chris, 5	2.8	3.0	4.0	4.0	2.8	3.3
Test avg. :	2.2	1.5	2.8	2.9	1.2	2.1
High avg. :	3.0	3.0	4.0	4.0	2.8	3.3
Low avg. :	1.3	1.0	1.3	1.8	1.0	1.4
[5] Lsd(.05) :	0.5	0.6	0.4	0.6	0.5	
[6] TPG-value :	1.7	1.5	1.6	2.3	1.4	
[7] C.V. :	15	27	11	14	28	

[1] Heading- days later than Brick, the check variety for maturity.
Note- shaded values within a location-year column are in the top lodging score group.
Note that additional table footnotes are explained in Table C.

Table 1e. Hard red spring wheat 2010 plant height averages at five eastern South Dakota locations, sorted low to high by variety average.

Variety, Heading [1]	Plant Height Averages by Location - inch					Variety Average
	Brookings	S.Shore	Miller	Warner	Selby	
	inch	*inch*	*inch*	*inch*	*inch*	*inch*
Brennan, 4	28	30	32	32	32	31
Samson, 4	29	32	30	33	31	31
Sabin, 3	29	32	32	31	33	31
Albany, 6	30	33	32	32	31	31
SD 4023, -	30	32	32	34	34	32
Brogan, 5	29	31	35	32	35	32
RB07, 4	31	34	31	33	33	32
Vantage, 9	31	33	34	35	31	33
Hat Trick, 3	30	32	33	34	34	33
Tom, 4	30	35	34	34	35	33
Breaker, 5	32	34	33	35	36	34
Digger, 6	33	34	34	35	36	34
Select, 1	32	33	37	35	36	34
Faller, 6	33	36	34	36	35	35
Briggs-Ck, 2	31	34	36	36	37	35
Reeder, 5	32	36	35	36	37	35
Steele-ND, 5	33	35	35	35	37	35
Brick, 0	32	35	35	36	37	35
Howard, 6	33	36	35	37	38	36
Barlow, 3	33	36	35	36	38	36
Traverse, 2	33	34	36	38	39	36
Granger, 2	33	35	38	36	38	36
Mott, 6	34	38	38	37	39	37
Glenn, 5	34	35	39	37	40	37
SD 3997, -	36	37	37	40	41	38
Chris, 5	34	39	38	39	41	38
Test avg. :	32	34	34	35	36	34
High avg. :	37	39	39	40	41	38
Low avg. :	28	30	30	31	31	31
[5] Lsd(.05) :	2	2	2	3	2	
[6] TPG-value :	30	32	32	34	33	
[7] C.V. :	4	4	5	5	4	

[1] Heading- days later than Brick, the check variety for maturity.
Note- shaded values within a location-year column are in the short plant height group.
Note that additional table footnotes are explained in Table C.

Table 2a. Spring wheat 2008-2010 yield averages (13% H2O) from three western South Dakota locations, sorted by 3-yr, 2-yr, and 2010 western averages.

Variety, Heading [1]	Western Yield Averages by Location - Bu/a									Western Average bu/a			Western Top Yield Frequency - % [3]		
	Bison			Ralph			Wall								
	2010	2-Yr	3-Yr	2010	2-Yr	3-Yr	2010	2-Yr	3-Yr	2010	2-Yr	3-Yr	2010	2-Yr	3-Yr
Samson, 4	35	34	33	23	30	.	24	34	39	27	33	36	67	33	100
Traverse, 2	34	33	32	36	44	.	16	33	38	29	36	35	67	100	100
RB07, 4	36	32	33	30	42	.	12	30	35	26	35	34	33	33	50
Granger, 2	33	32	32	35	44	.	10	29	36	26	35	34	67	67	100
Faller, 6	38	33	31	18	38	.	16	31	37	24	34	34	33	67	100
Albany, 6	36	33	32	26	40	.	19	29	35	27	34	33	67	67	50
Briggs-Ck, 2	36	31	30	33	42	.	14	29	35	27	34	33	33	33	50
Sabin, 3	28	25	28	39	48	.	19	33	38	28	35	33	67	67	50
Barlow, 3	38	35	32	33	42	.	15	28	33	29	35	33	33	33	50
Select, 1	32	30	30	35	43	.	12	31	35	26	35	33	33	67	50
SD 3997, -	26	25	27	33	36	.	23	32	38	27	31	32	33	33	50
Brick, 0	32	31	32	29	38	.	8	27	32	23	32	32	0	33	50
Brennan, 4	32	28	28	29	36	.	16	30	35	26	31	32	0	0	0
Steele-ND, 5	30	30	29	31	39	.	16	29	33	26	33	31	0	33	50
Howard, 6	30	28	28	26	37	.	16	30	34	24	32	31	0	0	0
Tom, 4	28	25	25	29	37	.	8	25	34	22	29	29	0	0	0
Mott, 6	35	28	27	25	40	.	20	28	30	27	32	29	33	0	0
Reeder, 5	32	26	26	34	42	.	18	27	31	28	32	28	0	0	0
Glenn, 5	28	29	28	32	38	.	10	25	28	23	31	28	0	0	0
Chris, 5	28	24	24	27	35	.	12	22	27	23	27	25	0	0	0
Breaker, 5	39	35	.	31	42	.	15	28	.	28	35	.	33	33	.
SD 4023, -	30	29	.	34	45	.	18	30	.	27	35	.	0	33	.
ND 808, -	38	35	.	21	36	.	16	30	.	25	34	.	33	33	.
SD 4011, -	33	30	.	31	39	.	13	29	.	26	32	.	33	33	.
SD 4046, -	29	29	.	27	36	.	13	31	.	23	32	.	0	33	.
Vantage, 9	34	29	.	28	35	.	19	27	.	27	30	.	33	0	.
Brogan, 5	36	29	.	19	32	.	17	31	.	24	30	.	33	33	.
SD 4076, -	28	24	.	31	37	.	9	26	.	23	29	.	0	0	.
SD 4189, -	29	.	.	40	.	.	22	.	.	30	.	.	67	.	.
SD 4159, -	27	.	.	37	.	.	16	.	.	27	.	.	33	.	.
MN 05214-3, -	32	.	.	31	.	.	12	.	.	25	.	.	0	.	.
SD 4105, -	29	.	.	29	.	.	16	.	.	24	.	.	0	.	.
Digger, 6	29	.	.	28	.	.	15	.	.	24	.	.	0	.	.
ND 811, -	28	.	.	25	.	.	20	.	.	24	.	.	0	.	.
ND 810, -	30	.	.	31	.	.	10	.	.	24	.	.	0	.	.
SD 4112, -	29	.	.	28	.	.	11	.	.	23	.	.	0	.	.
SD 4181, -	27	.	.	28	.	.	6	.	.	20	.	.	0	.	.
Hat Trick, 3	23	.	.	19	.	.	12	.	.	18	.	.	0	.	.
Test avg. :	26	24	29	29	39		15	29	34	25	33	32			
High avg. :	39	35	33	40	48		24	34	39	30	35	36			
Low avg. :	23	24	24	18	30		6	22	27	18	27	25			
[5] LSD (0.05):	6	5	4	5	4		2	3	3	.	.	.			
[6] TPG-value :	32	30	29	35	44		22	31	36	.	.	.			
[7] C.V. :	13.0	17.9	19.9	11.1	10.2		11.0	9.2	11.1	.	.	.			

[1] Heading- days later than Brick, the check variety for maturity.
Note- shaded values within a location-year column are in the top yield group.
Note that additional table footnotes are explained in Table C.

Table 2b. Hard red spring wheat 2010 grain protein averages at three South Dakota western locations, sorted high to low by western average.

Variety, Heading [1]	2010 Protein Averages			Western Average
	Bison	Ralph	Wall	
	(%)	(%)	(%)	(%)
Vantage, 9	15.8	16.3	15.3	15.8
SD 4181, -	14.7	15.4	17.2	15.8
Tom, 4	14.2	15.4	17.3	15.6
Chris, 5	15.2	15.6	15.8	15.5
Sabin, 3	13.6	16.6	16.2	15.5
Barlow, 3	14.4	16.0	16.0	15.5
Glenn, 5	13.9	15.8	16.4	15.4
SD 4159, -	14.8	15.0	16.1	15.3
MN 05214-3, -	13.5	15.3	16.7	15.2
Breaker, 5	13.8	15.8	15.6	15.1
RB07, 4	13.6	14.4	17.2	15.1
SD 4112, -	13.6	15.1	16.3	15.0
Steele-ND, 5	13.7	15.2	15.8	14.9
Brick, 0	13.1	15.0	16.5	14.9
Reeder, 5	14.4	14.9	15.3	14.9
SD 4011, -	14.0	14.5	16.1	14.9
Howard, 6	13.1	15.4	16.0	14.8
ND 810, -	13.9	14.3	16.3	14.8
Brennan, 4	14.1	14.7	15.6	14.8
Mott, 6	14.0	15.1	15.0	14.7
Brogan, 5	13.8	14.9	15.3	14.7
SD 3997, -	13.7	14.6	15.4	14.6
Briggs-Ck, 2	12.7	14.6	16.2	14.5
Digger, 6	13.8	14.5	15.1	14.5
Hat Trick, 3	12.1	13.0	18.1	14.4
Granger, 2	12.4	14.4	16.2	14.3
Select, 1	13.5	13.3	16.2	14.3
ND 811, -	13.9	13.7	15.4	14.3
SD 4076, -	13.1	13.6	16.3	14.3
Samson, 4	13.3	14.3	15.1	14.2
SD 4105, -	13.1	14.2	15.4	14.2
Traverse, 2	13.9	13.9	14.5	14.1
SD 4023, -	13.1	13.7	15.5	14.1
SD 4046, -	13.1	13.6	15.5	14.1
Faller, 6	12.1	14.6	15.4	14.0
SD 4189, -	14.6	13.7	13.8	14.0
ND 808, -	13.3	13.4	15.3	14.0
Albany, 6	12.9	13.8	14.2	13.6
Test avg. :	13.7	14.7	15.8	14.7
High avg. :	15.8	16.6	18.1	15.8
Low avg. :	12.1	13.0	13.8	13.6

[1] Heading- days later than Brick, the check variety for maturity.
Note- These values were determined from a sub-sample of three plot samples mixed together. Protein differences were not determined because only one sub-sample was analyzed.
Note that additional table footnotes are explained in Table C.

Table 2c. Hard red spring wheat 2010 bushel weight averages at two western South Dakota locations, sorted high to low by western average.

Variety, Heading [1]	Bushel Weight Averages			Western Average
	Bison	Ralph	Wall	
	(lbs)	(lbs)	(lbs)	(lbs)
Select, 1	62.5	57.2	.	59.9
Granger, 2	61.1	57.0	.	59.1
Vantage, 9	61.1	56.8	.	59.0
SD 4076, -	60.1	57.6	.	58.9
Brennan, 4	58.4	59.3	.	58.9
SD 4046, -	59.2	57.7	.	58.5
Breaker, 5	60.1	56.6	.	58.4
Brick, 0	59.4	57.0	.	58.2
SD 4023, -	59.6	56.7	.	58.2
SD 4181, -	59.6	56.7	.	58.2
Barlow, 3	60.6	55.6	.	58.1
SD 4105, -	59.8	56.4	.	58.1
MN 05214-3, -	60.5	55.5	.	58.0
Mott, 6	59.4	56.2	.	57.8
SD 4159, -	58.5	57.0	.	57.8
SD 3997, -	58.3	57.0	.	57.7
Tom, 4	59.2	56.0	.	57.6
Hat Trick, 3	59.6	55.5	.	57.6
SD 4189, -	59.0	56.1	.	57.6
RB07, 4	59.7	55.2	.	57.5
Sabin, 3	58.9	55.6	.	57.3
SD 4011, -	59.6	54.9	.	57.3
Steele-ND, 5	59.0	55.4	.	57.2
Briggs-Ck, 2	58.9	55.4	.	57.2
Brogan, 5	60.1	53.9	.	57.0
Reeder, 5	59.8	54.1	.	57.0
ND 810, -	58.2	55.7	.	57.0
Glenn, 5	60.3	53.5	.	56.9
SD 4112, -	58.7	54.9	.	56.8
Albany, 6	58.7	54.4	.	56.6
Traverse, 2	57.4	55.1	.	56.3
Chris, 5	57.3	55.1	.	56.2
Digger, 6	58.3	53.8	.	56.1
ND 811, -	57.5	52.9	.	55.2
Samson, 4	57.8	52.2	.	55.0
Howard, 6	57.3	52.6	.	55.0
ND 808, -	59.5	50.3	.	54.9
Faller, 6	57.9	48.6	.	53.3
Test avg. :	59.2	54.9	.	57.3
High avg. :	62.5	59.3	.	59.9
Low avg. :	57.3	48.6	.	53.3
[5] Lsd(.05) :	2.1	1.9	.	.
[6] TPG-value :	60.4	57.4	.	.
[7] C.V. :	2.2	3	.	.

[1] Heading- days later than Brick, the check variety for maturity
Note- shaded values within a location-year column are in the top bushel weight group.
Note that additional table footnotes are explained in Table C.

Table 2d. Hard red spring wheat 2010 plant height averages at three western South Dakota locations, sorted low to high by western average.

Variety, Heading [1]	Plant Height Averages			Western Average
	Bison	Ralph	Wall	
	(inch)	(inch)	(inch)	(inch)
Albany, 6	23	27	26	25
Brennan, 4	23	27	26	25
Samson, 4	24	28	25	26
Vantage, 9	25	28	25	26
Hat Trick, 3	23	28	26	26
MN 05214-3, -	24	27	26	26
SD 4076, -	23	29	26	26
Brogan, 5	25	27	26	26
SD 4023, -	24	29	27	26
ND 811, -	23	28	28	26
SD 4159, -	25	28	28	27
RB07, 4	26	29	26	27
Sabin, 3	25	30	26	27
Breaker, 5	27	28	27	27
Reeder, 5	24	28	29	27
SD 4112, -	27	30	26	28
SD 4011, -	26	29	28	28
Tom, 4	25	31	28	28
Digger, 6	26	31	28	28
Faller, 6	26	32	26	28
Glenn, 5	25	31	29	28
ND 808, -	27	31	27	28
Steele-ND, 5	26	31	30	29
SD 4105, -	26	31	30	29
Howard, 6	26	31	30	29
Traverse, 2	27	30	30	29
SD 4181, -	26	32	29	29
Barlow, 3	27	30	31	29
Select, 1	27	32	30	29
SD 4046, -	28	32	29	30
Mott, 6	28	32	29	30
SD 4189, -	27	32	30	30
ND 810, -	28	32	30	30
Granger, 2	28	33	29	30
Brick, 0	28	32	31	30
Briggs-Ck, 2	30	33	30	31
SD 3997, -	28	33	32	31
Chris, 5	33	36	32	34
Test avg. :	25	30	28	28
High avg. :	33	36	32	34
Low avg. :	23	27	25	25
[5] Lsd(.05) :	2	2	2	.
[6] TPG-value :	25	29	27	.
[7] C.V. :	5.8	4.7	4.9	.

[1] Heading- days later than Brick, the check variety for maturity.
Note- shaded values within a location-year column are in the short plant height group.
Note that additional table footnotes are explained in Table C.

Table 3a. Spring oat 2008-2010 yield averages (13% H2O) from five eastern South Dakota locations, sorted by 3-yr, 2-yr, and 2010 variety average.

Variety, Heading [1]	Yield Averages by Location - Bu/a											
	Brookings			South Shore			Miller			Warner		
	2010	2-Yr	3-Yr	2010	2-Yr	3-Yr	2010	2-Yr	3-Yr	2010	2-Yr	3-Yr
Souris, 7	135	151	145	183	195	182	150	149	.	134	149	145
HiFi, 8	138	154	146	176	184	174	137	143	.	141	149	148
Shelby427, 2	119	144	144	162	170	162	117	127	.	125	137	132
Beach, 7	105	131	133	110	142	145	129	129	.	117	124	128
Stallion, 9	102	120	125	125	130	135	109	123	.	125	133	132
Colt, 0	104	106	113	131	135	133	136	133	.	112	119	122
Don, 1	84	102	105	100	114	117	133	129	.	106	115	120
Jerry, 5	90	96	100	99	116	124	108	119	.	105	114	113
Reeves, 2	85	97	104	108	113	117	127	129	.	96	110	113
Buff Hls, 3	80	96	91	101	115	117	106	104	.	101	105	106
Streaker Hls, 3	76	95	94	94	102	105	81	92	.	74	94	96
Rockford, 8	147	166	.	174	185	.	135	139	.	137	147	.
SD 081949, -	163	.	.	197	.	.	153	.	.	162	.	.
SD 081936, -	153	.	.	191	.	.	147	.	.	163	.	.
Test avg. :	120	122	118	150	142	137	131	126	.	129	125	123
High avg. :	163	166	146	197	195	182	153	149	.	163	149	148
Low avg. :	76	95	91	94	102	105	81	92	.	74	94	96
[5] LSD (0.05):	12	22	20	12	24	25	10	20		14	14	12
[6] TPG-value :	152	145	127	186	172	158	144	130		150	136	137
[7] C.V. :	7	7	7	6	6	6	5	6		8	8	9

[1] Heading- days later than Colt, the check variety for maturity.
Note- shaded values within a location-year column are in the top yield group.
Note that additional table footnotes are explained in Table C..

Table 3a. Spring oat 2008-2010 yield averages (13% H2O) from five eastern South Dakota locations, sorted by 3-yr, 2-yr, and 2010 variety average (continued).

Variety, Heading [1]	Yield Averages by Location - Bu/a			Variety Average Bu/a			Top-Yield Frequency % [3]		
	Selby								
	2010	2-Yr	3-Yr	2010	2-Yr	3-Yr	2010	2-Yr	3-Yr
Souris, 7	167	157	.	154	160	157	20	**100**	**75**
HiFi, 8	164	152	.	151	156	156	40	**100**	**75**
Shelby427, 2	162	152	.	137	146	146	0	40	**50**
Beach, 7	180	156	.	128	136	135	20	40	**50**
Stallion, 9	165	149	.	125	131	131	0	20	0
Colt, 0	149	137	.	126	126	123	0	20	0
Don, 1	150	138	.	115	120	114	0	20	0
Jerry, 5	130	120	.	106	113	112	0	0	0
Reeves, 2	154	147	.	114	119	111	0	40	0
Buff Hls, 3	134	120	.	104	108	105	0	0	0
Streaker Hls, 3	117	106	.	88	98	98	0	0	0
Rockford, 8	183	158	.	155	159	.	20	**80**	.
SD 081949, -	189	.	.	173	.	.	**100**	.	.
SD 081936, -	178	.	.	166	.	.	**100**	.	.
Test avg. :	162	141	.	138	131	126			
High avg. :	189	158	.	173	160	157			
Low avg. :	117	106	.	88	98	98			
[5] LSD (0.05):	11	17							
[6] TPG-value :	179	142							
[7] C.V. :	5	6							

[1] Heading- days later than Colt, the check variety for maturity. **Bold** TPG-values are 50% or greater.
Note- shaded values within a location-year column are in the top yield group.
Note that additional table footnotes are explained in Table C.

Table 3b. Spring oat 2010 grain protein averages at five South Dakota eastern locations, sorted high to low by variety average.

Variety, Heading [1]	2010 Protein Average by Location					Variety Average
	Brookings	S.Shore	Miller	Warner	Selby	
	(%)	(%)	(%)	(%)	(%)	(%)
Streaker Hls, 3	15.1	15.4	16.0	17.0	18.9	16.5
Buff Hls, 3	15.8	14.9	15.4	16.1	17.3	15.9
Reeves, 2	14.6	13.4	14.4	15.3	17.5	15.0
Stallion, 9	14.1	14.1	14.0	15.0	16.2	14.7
Colt, 0	13.5	13.5	14.2	14.7	17.2	14.6
Shelby427, 2	14.0	12.5	13.8	14.8	16.6	14.3
Jerry, 5	13.3	13.7	14.3	13.5	16.7	14.3
Rockford, 8	13.2	12.2	13.5	14.9	16.2	14.0
HiFi, 8	13.6	13.2	13.1	14.7	15.4	14.0
Souris, 7	13.7	13.0	13.8	14.3	15.2	14.0
Don, 1	13.3	12.8	13.8	14.5	15.4	14.0
SD 081949, -	13.6	13.5	13.1	14.3	15.1	13.9
SD 081936, -	13.2	13.3	13.1	14.0	15.0	13.7
Beach, 7	12.8	13.6	13.6	13.6	14.6	13.6
Test avg. :	13.8	13.4	13.8	14.7	16.1	14.4
High avg. :	15.8	15.4	16.0	17.0	18.9	16.5
Low avg. :	12.8	12.0	13.1	13.5	14.6	13.6
[5] Lsd(.05) :	0.8	1.4	0.7	0.7	0.8	
[6] TPG-value :	15.1	14.1	15.4	16.4	18.2	
[7] C.V. :	4	7	3	4	3	

[1] Heading- days later than Colt, the check variety for maturity.
Note- shaded values within a location column are in the top protein group.
Note that additional table footnotes are explained in Table C.

Table 3c. Spring oat 2010 bushel weight averages at five South Dakota eastern locations, sorted high to low by variety average.

Variety, Heading [1]	Bushel Weight Average by Location					Variety Averages
	Brookings	S.Shore	Miller	Warner	Selby	
	lb	lb	lb	lb	lb	lb
Buff Hls, 3	42.1	41.9	44.9	44.1	47.0	44.0
Streaker Hls, 3	40.2	42.2	44.2	44.3	47.8	43.8
Shelby427, 2	35.4	38.9	37.0	37.3	40.0	37.7
Colt, 0	34.6	38.3	38.1	37.2	39.9	37.6
Rockford, 8	34.9	36.7	37.6	38.3	38.8	37.3
SD 081936, -	33.8	36.4	37.0	37.4	38.0	36.5
SD 081949, -	34.4	36.9	35.6	36.9	37.9	36.3
Souris, 7	33.6	36.4	36.8	36.4	37.6	36.1
Reeves, 2	32.6	35.0	36.7	36.4	40.0	36.1
HiFi, 8	34.1	36.6	35.1	37.7	37.1	36.1
Jerry, 5	33.9	32.9	36.8	36.2	39.4	35.8
Stallion, 9	31.7	35.4	35.4	36.3	39.0	35.6
Beach, 7	33.0	33.1	36.5	36.0	39.1	35.5
Don, 1	29.8	32.4	36.6	35.2	38.0	34.4
Test avg. :	34.4	36.9	37.4	37.6	39.5	37.1
High avg. :	42.1	42.2	44.9	44.3	47.8	44.0
Low avg. :	29.8	32.4	35.1	35.2	36.2	34.4
[5] Lsd(.05) :	1.3	1.2	1.0	1.0	1.0	
[6] TPG-value :	40.9	41.1	44.0	43.4	46.9	
[7] C.V. :	3	2	2	2	2	

[1] Heading- days later than Colt, the check variety for maturity.
Note- light shaded values within a location column are in the top bushel weight group for all varieties including the hulless varieties.
Note- dark shaded values within a location column are in the top bushel weight group for standard hulled varieties only.
Note that additional table footnotes are explained in Table C.

Table 3d. Spring oat 2010 lodging score averages at five eastern South Dakota locations, sorted low to high by variety average.

Variety, Heading [1]	Lodging Score Averages by Location 1= best to 5= poor					Variety Average
	Brookings	S.Shore	Miller	Warner	Selby	
	1 to 5	*1 to 5*	*1 to 5*	*1 to 5*	*1 to 5*	*1 to 5*
Shelby427, 2	3.0	3.0	3.0	3.0	2.3	2.9
Rockford, 8	3.0	3.0	3.0	3.0	2.3	2.9
SD 081949, -	3.0	3.3	2.8	3.0	2.5	2.9
Souris, 7	2.8	2.8	3.0	3.0	3.0	2.9
SD 081936, -	3.3	3.0	3.0	3.0	2.5	3.0
HiFi, 8	3.0	3.0	3.0	3.3	2.8	3.0
Buff Hls, 3	4.5	4.5	3.0	3.8	2.8	3.7
Beach, 7	4.8	4.3	3.3	4.8	2.5	3.9
Colt, 0	5.0	5.0	3.0	4.3	3.3	4.1
Streaker Hls, 3	4.8	4.3	4.0	4.3	3.5	4.2
Don, 1	5.0	5.0	3.0	4.8	3.0	4.2
Jerry, 5	5.0	5.0	3.0	4.8	3.3	4.2
Reeves, 2	5.0	5.0	3.3	4.8	3.3	4.3
Stallion, 9	4.5	5.0	4.5	4.8	3.8	4.5
Test avg. :	3.8	3.8	3.1	3.7	2.8	3.5
High avg. :	5.0	5.0	4.5	4.8	4.0	4.5
Low avg. :	2.5	2.5	2.8	3.0	2.0	2.7
[5] Lsd(.05) :	0.6	0.5	0.4	0.7	0.7	
[6] TPG-value :	3.0	2.9	3.1	3.6	2.6	
[7] C.V. :	11	10	9	13	18	

[1] Heading- days later than Colt, the check variety for maturity.
Note- shaded values within a location column are in the top lodging score group.
Note that additional table footnotes are explained in Table C.

Table 3e. Spring oat 2010 plant height averages at five eastern South Dakota locations, sorted low to high by variety average.

Variety, Heading [1]	Plant Height Averages by Location - inch					Variety Average
	Brookings	S.Shore	Miller	Warner	Selby	
	inch	inch	inch	inch	inch	inch
Don, 1	37	31	36	36	36	35
SD 081936, -	36	34	38	36	35	36
Colt, 0	40	36	39	38	39	38
Buff Hls, 3	41	37	39	39	38	39
Souris, 7	44	37	39	42	36	40
SD 081949, -	41	37	42	40	39	40
Reeves, 2	42	39	40	41	40	40
Streaker, 3	42	39	40	40	40	40
Shelby427, 2	44	39	42	41	39	41
HiFi, 8	44	39	44	43	39	42
Jerry, 5	47	41	43	44	38	42
Stallion, 9	48	41	43	44	40	43
Rockford, 8	47	40	44	44	41	43
Beach, 7	49	44	43	46	41	44
Test avg. :	42	38	40	40	38	40
High avg. :	49	44	45	46	41	44
Low avg. :	36	31	35	34	32	35
[5] Lsd(.05) :	3	2	2	3	3	
[6] TPG-value :	38	32	36	36	34	
[7] C.V. :	5	4	4	5	6	

[1] Heading- days later than Colt, the check variety for maturity.
Note- light shaded values within a location-year column are in the short plant height group.
Note- dark shaded values within a location-year column are in the tall plant height group.
Note that additional table footnotes are explained in Table C.

Table 4a. Spring oat 2008-2010 yield averages (13% H2O) from three western South Dakota locations, sorted by 3-yr, 2-yr, and 2010 western averages.

Variety, Heading [1]	Western Yield Averages by Location - Bu/a									Western Average Bu/a			Western Top-Yield Frequency % [3]		
	Bison			Okaton			Wall								
	2010	2-Yr	3-Yr	2010	2-Yr	3-Yr	2010	2-Yr	3-Yr	2010	2-Yr	3-Yr	2010	2-Yr	3-Yr
Shelby427, 2	67	62	67	59	56	87	67	80	76	64	66	77	**100**	**100**	**100**
Souris, 7	62	57	67	64	60	94	46	66	68	57	61	76	**66**	**66**	**66**
HiFi, 8	53	57	64	65	59	91	43	64	65	54	60	73	33	**66**	**66**
Beach, 7	57	55	62	59	57	90	13	52	56	43	55	69	**66**	**66**	**66**
Stallion, 9	57	49	57	62	57	92	15	54	55	45	53	68	**66**	33	33
Jerry, 5	40	49	60	57	55	87	16	45	54	37	49	67	0	33	**66**
Colt, 0	46	46	55	60	54	82	34	57	55	46	52	64	33	33	0
Don, 1	44	46	51	57	53	84	35	57	54	45	52	63	0	0	0
Reeves, 2	46	41	44	53	48	76	9	44	46	36	44	55	0	0	0
Buff Hls, 3	26	31	41	43	41	65	27	51	50	32	41	52	0	0	0
Streaker Hls, 3	37	36	40	35	40	58	11	48	45	28	41	48	0	0	0
Rockford, 8	53	54	.	65	63	.	49	73	.	55	63	.	33	**66**	
SD 081629, -	55	.	.	65	.	.	55	.	.	59	.	.	**66**		
SD 081563, -	47	.	.	63	.	.	51	.	.	54	.	.	33		
SD 081936, -	57	.	.	63	.	.	40	.	.	53	.	.	**66**		
SD 081577, -	51	.	.	60	.	.	45	.	.	52	.	.	33		
SD 081949, -	49	.	.	60	.	.	45	.	.	51	.	.	33		
SD 082192, -	43	.	.	64	.	.	45	.	.	51	.	.	33		
SD 081644, -	52	.	.	65	.	.	22	.	.	46	.	.	33		
MN 07210, -	56	.	.	51	.	.	23	.	.	43	.	.	33		
Test avg. :	50	49	55	58	54	82	35	58	57	48	53	65			
High avg. :	67	62	67	65	63	94	67	80	76	64	66	77			
Low avg. :	26	31	40	35	40	58	9	44	45	28	41	48			
[5] LSD (0.05):	13	8	7	6	8	7	7	5	6	.	.	.			
[6] TPG-value :	54	54	60	59	54	87	60	74	71	.	.	.			
[7] C.V. :	18.1	18.1	15.6	7.6	15.7	10.2	14.9	8.9	12.0	.	.	.			

[1] Heading- days later than Colt, the check variety for maturity. **Bold** TPG-values are 50% or greater.
Note- shaded values within a location-year column are in the top yield group.
Note that additional table footnotes are explained in Table C.

Table 4b. Spring oat 2010 grain protein averages at two South Dakota western locations, sorted high to low by western average.

Variety, Heading [1]	2010 Protein Average by Location			Western Average
	Bison	Okaton	Wall	
	(%)	(%)	(%)	(%)
Streaker Hls, 3	.	16.4	17.0	16.7
Buff Hls, 3	.	15.9	17.3	16.6
Jerry, 5	.	14.8	15.4	15.1
Colt, 0	.	13.8	15.5	14.7
SD 082192, -	.	13.5	15.1	14.3
SD 081949, -	.	13.5	14.9	14.2
Souris, 7	.	13.6	14.7	14.2
Beach, 7	.	13.5	14.3	13.9
SD 081629, -	.	13.0	14.8	13.9
Stallion, 9	.	12.9	14.9	13.9
Don, 1	.	13.1	14.4	13.8
SD 081563, -	.	12.8	14.4	13.6
SD 081936, -	.	12.7	14.4	13.6
Reeves, 2	.	12.6	14.3	13.5
SD 081644, -	.	12.8	14.1	13.5
MN 07210, -	.	13.2	13.5	13.4
SD 081577, -	.	12.8	13.8	13.3
Shelby427, 2	.	12.3	13.5	12.9
HiFi, 8	.	12.5	13.2	12.9
Rockford, 8	.	12.1	12.8	12.5
Test avg. :	.	13.4	14.6	14.0
High avg. :	.	16.4	17.3	16.7
Low avg. :	.	12.1	12.8	12.5

[1] Heading- days later than Colt, the check variety for maturity.
Note- These values were determined from a sub-sample of three plot samples mixed together. Protein differences were not determined because only one sub-sample was analyzed.
Note that additional table footnotes are explained in Table C.

Table 4c. Spring oat 2010 bushel weight averages at three South Dakota western locations, sorted high to low by western average.

Variety, Heading [1]	Bushel Weight Average by Location			Western Averages
	Bison	Okaton	Wall	
	(lbs)	(lbs)	(lbs)	(lbs)
Streaker Hls, 3	40.5	42.2	38.0	40.2
Buff Hls, 3	36.3	41.0	37.9	39.4
Shelby427, 2	39.2	38.7	35.7	37.9
SD 082192, -	37.7	38.0	35.8	37.2
SD 081629, -	39.2	38.1	33.4	36.9
SD 081563, -	37.2	37.1	34.7	36.3
Reeves, 2	38.6	37.2	33.1	36.3
Beach, 7	38.7	36.5	32.3	35.8
Rockford, 8	37.0	36.1	34.1	35.7
SD 081936, -	36.0	36.8	32.8	35.2
Colt, 0	37.1	37.0	31.4	35.2
SD 081949, -	36.0	36.8	32.5	35.1
SD 081577, -	35.7	35.9	32.8	34.8
HiFi, 8	36.9	35.2	31.1	34.4
MN 07210, -	36.0	35.1	31.7	34.3
Souris, 7	36.9	35.1	30.8	34.3
SD 081644, -	36.4	37.2	28.7	34.1
Stallion, 9	36.7	36.0	27.7	33.5
Don, 1	35.2	34.0	29.9	33.0
Jerry, 5	35.2	36.3	26.0	32.8
Test avg. :	37.0	37.0	32.2	35.4
High avg. :	40.5	42.2	38.0	40.2
Low avg. :	35.2	34.0	26.9	32.8
[5] Lsd(.05) :	2.8	1.5	1.9	.
[6] TPG-value :	37.7	40.7	36.1	.
[7] C.V. :	5.4	2.8	4.2	.

[1] Heading- days later than Colt, the check variety for maturity.
Note- shaded values within a location column are in the top bushel weight group for all varieties including the hulless varieties.
Note that additional table footnotes are explained in Table C.

Table 4d. Spring oat 2010 plant height averages at three western South Dakota locations, sorted low to high by western average.

Variety, Heading [1]	Plant Height Averages by Location - inch			Western Average
	Bison	Okaton	Wall	
	(inch)	(inch)	(inch)	(inch)
SD 081936, -	27	27	30	28
SD 082192, -	28	27	30	28
Don, 1	28	29	29	28
Souris, 7	28	29	32	30
Buff Hls, 3	29	30	30	30
SD 081577, -	29	30	32	30
Colt, 0	30	30	32	30
SD 081563, -	30	31	31	30
SD 081949, -	31	30	31	31
SD 081629, -	32	30	33	31
SD 081644, -	31	31	34	32
Streaker Hls, 3	32	33	31	32
Stallion, 9	33	34	30	32
Jerry, 5	31	34	33	33
Rockford, 8	31	34	34	33
MN 07210, -	34	32	34	33
Shelby427, 2	33	34	36	34
HiFi, 8	35	33	35	34
Reeves, 2	35	36	34	35
Beach, 7	35	35	36	35
Test avg. :	31	31	32	31
High avg. :	35	36	36	35
Low avg. :	27	27	29	28
[5] Lsd(.05) :	4	2	2	.
[6] TPG-value :	31	29	31	.
[7] C.V. :	6.3	5.2	5.2	.

[1] Heading- days later than Colt, the check variety for maturity.
Note- shaded values within a location-year column are in the short plant height group.
Note that additional table footnotes are explained in Table C.

Table 5a. Winter wheat 2008-2010 yield averages (13% H2O) at eight eastern South Dakota locations, sorted by 3-yr, 2-yr, and 2010 variety averages.

Variety, Heading [1]	Yield Averages by Location - Bu/a												
	Selby* + fungicide	Selby			Onida			Pierre			Platte		
	2010	2010	2-Yr	3-Yr	2010	2-Yr	3-Yr	2010	2-Yr	3-Yr	2010	2-Yr	3-Yr
Expedition, 0	96	91	81	79	56	53	62	63	54	51	65	74	78
Overland, 4	92	79	76	79	61	57	66	60	55	56	64	72	76
Smoky Hill, 2	101	96	86	83	54	52	61	57	52	54	58	69	74
Wendy~W, 1	90	80	78	80	53	50	61	64	56	52	56	67	72
Fuller, 0	93	91	81	80	57	52	61	60	51	51	53	61	64
Lyman, 2	87	89	78	79	55	50	58	56	47	47	66	69	69
Settler CL, 3	93	85	77	72	57	54	59	57	52	47	62	67	69
Millennium, 4	82	83	78	78	53	50	59	61	51	50	63	68	71
Hawken, 3	77	81	77	76	57	53	59	59	50	46	59	65	67
Wesley, 2	85	73	74	73	58	53	62	48	47	48	59	71	71
Darrell, 5	87	81	78	77	53	53	60	51	47	48	56	64	67
Alice~W, 1	93	89	75	74	59	52	61	60	50	49	56	61	64
Hatcher, 2	77	83	76	76	55	53	57	55	46	46	57	61	65
Jagalene, 3	84	81	75	72	58	54	63	50	48	52	54	65	67
Wahoo, 3	86	83	79	75	52	50	56	56	52	49	57	69	68
Arapahoe, 3	85	84	77	76	50	47	56	57	46	45	61	66	66
Harding, 5	83	79	78	76	48	46	54	50	45	47	54	60	61
Jerry, 5	81	79	78	77	49	47	53	44	39	35	47	55	59
Art, 0	90	85	81	.	57	51	.	64	50	.	64	68	.
SD06158, -	94	89	87	.	50	49	.	53	52	.	57	66	.
SD06069, -	90	84	81	.	56	52	.	49	46	.	58	63	.
Striker, 4	91	79	79	.	51	44	.	45	42	.	46	53	.
Radiant, 5	82	65	74	.	50	50	.	38	41	.	37	44	.
SD05W030, -	94	90	.	.	56	.	.	59	.	.	58	.	.
SD07165, -	89	88	.	.	54	.	.	53	.	.	63	.	.
SD051181, -	95	92	.	.	50	.	.	49	.	.	55	.	.
Camelot, 2	92	87	.	.	51	.	.	63	.	.	52	.	.
SD07126, -	86	84	.	.	50	.	.	55	.	.	56	.	.
Boomer, 5	88	89	.	.	50	.	.	45	.	.	48	.	.
SD07056, -	79	78	.	.	41	.	.	48	.	.	56	.	.
Test avg. :	88	84	78	77	53	51	59	54	49	49	57	64	68
High avg. :	101	96	87	83	61	57	66	64	56	56	66	74	78
Low avg. :	77	65	74	72	41	44	53	38	39	35	37	44	59
[5] LSD (0.05):	11	11	NS	NS	6	6	5	7	NS	9	6	8	7
[6] TPG-value :	90	85	74	72	55	51	61	57	39	47	60	66	71
[7] C.V. :	9	10	9	9	8	8	8	9	9	10	8	9	9

[1] Heading- days earlier (-) or later than Expedition, the check variety for maturity.
* Denotes a fungicide treatment - a single 6.5 oz rate of Prosoro at flowering (Feeks stage 10.51) .
Note- shaded values within a location-year column are in the top yield group.
Note that additional table footnotes are explained in Table C.

Table 5a. Winter wheat 2008-2010 yield averages (13% H2O) at eight eastern South Dakota locations, sorted by 3-yr, 2-yr, and 2010 variety averages (continued).

Variety, Heading [1]	Yield Averages by Location - Bu/a							Variety Yield Averages Bu/a		
	Brookings			Brookings* + fungicide			Beresford			
	2010	2-Yr	3-Yr	2010	2-Yr	3-Yr	2010	2010	2-Yr	3-Yr
Expedition, 0	68	69	73	85	85	88	60	73	69	72
Overland, 4	66	65	70	88	80	84	52	70	68	72
Smoky Hill, 2	47	56	69	79	81	86	54	68	66	71
Wendy~W, 1	65	66	71	84	81	84	61	69	66	70
Fuller, 0	64	66	72	80	82	85	53	69	66	69
Lyman, 2	64	66	71	85	83	81	49	69	66	68
Settler CL, 3	69	66	69	88	81	83	58	71	66	67
Millennium, 4	59	60	65	81	77	77	49	66	64	67
Hawken, 3	55	60	69	85	79	83	50	65	64	67
Wesley, 2	63	66	69	84	75	81	45	64	64	67
Darrell, 5	49	60	68	79	76	81	45	63	63	67
Alice~W, 1	52	60	66	72	75	80	53	67	62	66
Hatcher, 2	58	58	66	74	76	80	48	63	62	65
Jagalene, 3	52	51	57	82	75	77	45	63	61	65
Wahoo, 3	62	58	65	74	69	72	54	66	63	64
Arapahoe, 3	57	60	65	80	76	75	48	65	62	64
Harding, 5	56	60	65	69	71	72	43	60	60	63
Jerry, 5	63	63	64	77	75	73	38	60	60	60
Art, 0	60	69	.	86	81	.	60	71	67	.
SD06158, -	53	61	.	82	80	.	54	67	66	.
SD06069, -	52	64	.	79	83	.	48	65	65	.
Striker, 4	63	65	.	82	79	.	55	64	60	.
Radiant, 5	45	52	.	86	81	.	39	55	57	.
SD05W030, -	63	.	.	90	.	.	53	70	.	.
SD07165, -	63	.	.	85	.	.	58	69	.	.
SD051181, -	70	.	.	92	.	.	47	69	.	.
Camelot, 2	56	.	.	75	.	.	51	66	.	.
SD07126, -	61	.	.	86	.	.	49	66	.	.
Boomer, 5	63	.	.	88	.	.	50	65	.	.
SD07056, -	53	.	.	79	.	.	49	60	.	.
Test avg. :	59	62	67	82	78	80	51	66	64	67
High avg. :	70	69	73	92	85	88	61	73	69	72
Low avg. :	45	51	57	69	69	72	38	55	57	60
[5] LSD (0.05):	11	NS	NS	8	NS	9	11			
[6] TPG-value :	59	51	57	84	69	79	50			
[7] C.V. :	14	13	11	7	8	8	15			

[1] Heading- days earlier or later (- or +) than Expedition, the check variety (Ck) for maturity.
* Denotes a foliar fungicide treatment - a single 6.5 oz rate of Prosoro at flowering (Feeks stage 10.51) .
Note that additional table footnotes are explained in Table C.

Table 5b. Winter wheat 2008-2010 grain protein averages (13% H2O) at eight eastern South Dakota locations, sorted high to low by variety averages.

Variety, Heading [1]	Protein Averages by Location								Variety Average
	Selby	Selby* + fungicide	Onida	Pierre	Platte	Brookings	Brookings* + fungicide	Beresford	
	%	%	%	%	%	%	%	%	%
SD07126, -	13.9	14.1	14.2	15.0	15.9	13.8	14.6	15.6	14.6
Harding, 5	13.7	13.5	14.3	15.2	14.9	13.7	14.1	15.0	14.3
Hawken, 3	13.9	14.0	13.8	13.9	15.0	13.4	13.6	15.7	14.2
Wesley, 2	13.7	13.8	14.0	14.2	14.3	13.1	13.8	15.1	14.0
Lyman, 2	14.1	13.3	14.1	14.2	14.1	13.7	13.6	14.8	14.0
Jerry, 5	13.1	13.3	13.9	14.3	14.5	13.5	14.0	14.7	13.9
Art, 0	13.5	13.0	13.7	13.5	15.4	13.0	13.7	15.5	13.9
Boomer, 5	13.1	13.0	14.6	14.8	14.8	13.3	13.1	14.3	13.9
SD06069, -	13.2	13.0	14.1	14.3	14.4	13.6	13.3	14.3	13.8
Arapahoe, 3	13.2	13.2	14.1	14.0	14.4	13.3	13.2	14.3	13.7
Camelot, 2	13.1	13.0	13.7	13.3	15.0	13.1	13.3	14.7	13.6
SD07056, -	12.9	12.9	13.6	14.2	14.4	12.9	13.4	14.6	13.6
Wendy~W, 1	13.6	13.0	13.3	13.5	15.1	12.9	13.0	14.4	13.6
Striker, 4	13.0	13.0	13.7	14.2	14.9	12.9	12.9	14.0	13.6
Fuller, 0	12.9	13.2	13.9	12.9	14.7	12.7	13.4	14.6	13.5
SD06158, -	12.8	12.8	13.9	14.0	14.4	13.3	13.1	14.0	13.5
Wahoo, 3	13.0	12.7	13.7	13.4	14.5	13.0	13.5	14.3	13.5
Jagalene, 3	12.6	13.0	13.4	13.0	14.1	12.5	13.1	14.8	13.3
Alice~W, 1	13.0	12.7	13.5	13.1	14.8	12.9	12.2	14.4	13.3
Smoky Hill, 2	12.5	12.9	13.4	13.2	13.5	12.6	13.0	14.7	13.2
Hatcher, 2	12.4	12.9	12.9	13.2	14.2	13.3	12.7	14.3	13.2
Darrell, 5	12.6	12.9	13.6	13.4	14.1	12.4	13.2	13.7	13.2
SD051181, -	12.5	12.5	13.7	14.7	13.9	12.4	12.2	13.6	13.2
Expedition, 0	12.7	13.2	13.5	12.6	13.9	12.3	13.0	14.0	13.1
Millennium, 4	12.7	12.4	12.5	13.5	13.6	12.9	13.1	14.0	13.1
SD07165, -	12.1	12.1	13.4	13.8	14.2	12.7	12.6	13.7	13.1
Radiant, 5	12.3	12.5	14.4	13.2	13.3	12.2	12.6	13.2	13.0
Overland, 4	12.7	12.8	11.7	13.5	13.2	12.6	12.6	13.4	12.8
Settler CL, 3	12.7	12.4	13.0	12.7	13.4	12.2	12.3	13.5	12.8
SD05W030, -	12.1	12.1	13.4	12.8	13.9	11.4	12.3	13.8	12.7
Test avg. :	13.0	13.0	13.6	13.7	14.3	12.9	13.1	14.4	13.5
High avg. :	14.1	14.1	14.6	15.2	15.9	13.8	14.6	15.7	14.6
Low avg. :	12.1	12.1	11.7	12.6	13.2	11.4	12.2	13.2	12.7
[5] Lsd(.05) :	0.7	0.7	0.9	0.5	0.5	0.6	0.7	0.7	
[6] TPG-value :	13.5	13.5	13.8	14.8	15.5	13.3	14.1	15.1	
[7] C.V. :	4	4	5	3	3	3	4	4	

[1] Heading- days earlier or later (- or +) than Expedition, the check variety (Ck) for maturity.
* Denotes a foliar fungicide treatment - a single 6.5 oz rate of Prosoro at flowering (Feeks stage 10.51).
Note that additional table footnotes are explained in Table C.

Table 5c. Winter wheat 2008-2010 bushel weight averages at eight eastern South Dakota locations, sorted high to low by variety averages.

Variety, Heading [1]	Bushel Weight Averages by Location								Variety Average
	Selby	Selby* + fungicide	Onida	Pierre	Platte	Brookings	Brookings* + fungicide	Beresford	
	lb	*lb*	*lb*	*lb*	*lb*	*lb*	*lb*	*lb*	*lb*
SD05W030, -	58.9	60.6	57.6	53.1	54.5	51.3	57.3	55.8	56.1
Lyman, 2	59.3	59.1	55.7	51.5	57.2	51.9	57.0	55.3	55.9
Overland, 4	58.0	58.5	54.6	52.6	57.4	53.2	56.1	56.0	55.8
Expedition, 0	59.1	58.7	56.3	51.9	56.2	51.0	56.6	55.7	55.7
Settler CL, 3	59.2	59.0	56.4	50.9	54.9	51.2	57.1	56.4	55.6
SD07056, -	59.7	58.7	55.3	53.5	55.6	49.7	56.0	54.9	55.4
Millennium, 4	59.4	58.4	54.9	53.0	56.0	51.8	54.7	54.7	55.4
SD051181, -	59.7	59.2	54.2	50.4	54.7	52.7	55.9	55.6	55.3
Wendy~W, 1	59.0	58.7	56.5	51.8	52.5	51.6	56.6	55.8	55.3
Harding, 5	60.2	59.9	56.1	51.1	56.2	50.2	53.8	54.9	55.3
SD07126, -	59.5	59.3	54.8	52.0	55.4	48.3	56.5	55.5	55.2
Arapahoe, 3	57.6	58.4	55.3	51.3	54.7	51.5	55.4	55.1	54.9
Jerry, 5	58.6	57.9	54.0	50.6	54.3	53.2	55.7	54.5	54.8
SD06158, -	59.0	59.7	53.9	47.3	54.6	50.3	57.5	56.2	54.8
Art, 0	58.0	58.4	56.0	50.0	53.9	52.3	55.8	53.7	54.8
Darrell, 5	58.0	58.0	54.1	50.5	54.7	52.5	55.4	54.8	54.7
Striker, 4	58.8	59.2	54.3	48.5	53.3	51.6	56.5	55.8	54.7
SD06069, -	59.0	59.3	56.1	48.9	54.0	48.7	56.3	55.5	54.7
Camelot, 2	57.7	57.6	53.5	51.8	53.2	52.5	55.5	53.5	54.4
Alice~W, 1	57.5	58.2	55.7	50.6	53.3	49.6	55.0	54.4	54.3
Fuller, 0	58.5	58.8	55.5	50.0	50.9	51.9	56.1	52.5	54.3
SD07165, -	58.1	58.4	52.9	48.2	51.9	49.0	55.7	55.9	53.8
Hawken, 3	57.3	57.9	57.0	49.7	52.8	48.6	56.6	49.6	53.7
Smoky Hill, 2	58.3	58.6	53.8	49.3	53.7	43.8	57.2	54.1	53.6
Hatcher, 2	58.0	56.3	54.6	50.1	52.7	47.9	54.0	54.7	53.5
Boomer, 5	57.6	56.6	54.2	47.6	52.1	49.1	55.8	54.8	53.5
Wesley, 2	56.5	57.0	55.4	47.2	53.3	46.3	54.4	52.4	52.8
Jagalene, 3	56.3	57.3	55.9	47.2	54.2	43.8	54.9	52.5	52.8
Wahoo, 3	56.3	56.0	53.7	48.8	50.9	49.7	53.0	52.8	52.6
Radiant, 5	55.6	58.2	54.5	46.4	50.9	43.2	54.7	50.6	51.8
Test avg. :	58.3	58.4	55.1	50.2	54.0	49.9	55.8	54.4	54.5
High avg. :	60.2	60.6	57.6	53.5	57.4	53.2	57.5	56.4	56.1
Low avg. :	55.6	56.0	52.9	46.4	50.9	43.2	53.0	49.6	51.8
[5] Lsd(.05) :	1.8	2.1	2.3	1.7	2.4	3.7	2.1	1.0	
[6] TPG-value :	58.5	58.6	55.4	51.9	55.1	49.6	55.5	54.6	
[7] C.V. :	2	3	3	2	3	5	3	2	

[1] Heading- days earlier or later (- or +) than Expedition, the check variety (Ck) for maturity.
* Denotes a foliar fungicide treatment - a single 6.5 oz rate of Prosoro at flowering (Feeks stage 10.51).
Note that additional table footnotes are explained in Table C.

Table 6a. Winter wheat 2008-2010 yield averages (13% H2O) from five western South Dakota locations, sorted by 3-year and 2010 western averages.

Variety, Heading [1]	Western Yield Averages by Location - Bu/a										Western Average		Western Top Yield %	
	Bison		Hayes		Kennebec		Sturgis		Wall					
	2010	3-Yr	2010	3-Yr	2010	3-Yr	2010	3-Yr	2010	3-Yr	2010	3-Yr	2010	3-Yr
Overland, 4	29	37	75	67	28	59	74	59	43	60	50	57	60	100
Wahoo, 3	34	40	76	66	31	60	74	59	38	55	51	56	40	100
Lyman, 2	34	40	78	67	45	64	72	57	31	48	52	55	60	75
Millennium, 4	28	35	75	67	39	62	72	57	40	55	51	55	80	100
Darrell, 5	26	36	76	69	43	61	70	57	38	52	50	55	60	100
Expedition, 0	27	38	79	71	27	55	73	57	46	55	50	55	40	50
SD051181, -	33	37	74	67	34	63	72	55	35	53	50	55	60	100
Wesley, 2	29	36	76	66	41	58	73	58	42	54	52	54	80	100
Smoky Hill, 2	25	34	77	70	38	60	66	53	36	53	48	54	40	75
Hatcher, 2	31	36	72	62	36	51	73	61	51	55	53	53	60	50
Hawken, 3	25	35	78	66	40	57	64	51	45	54	50	52	40	50
Alice, -1	30	34	71	64	32	54	70	55	42	52	49	52	40	50
Settler CL, 3	24	33	78	71	25	53	70	50	41	54	47	52	40	50
Arapahoe, 3	30	34	68	64	36	60	67	53	33	50	47	52	20	25
Wendy, -1	26	40	78	70	25	50	71	50	28	51	45	52	40	25
Harding, 5	20	33	70	64	33	60	62	52	28	49	43	51	0	25
Jerry, 5	26	32	65	60	34	55	65	52	33	50	45	50	0	0
Fuller, 0	23	32	70	64	32	53	69	53	28	48	44	50	0	0
Jagalene, 3	25	32	65	60	34	49	62	51	40	51	45	49	0	0
Camelot, 2	29	.	74	.	32	.	72	.	48	.	51	.	80	.
SD06158, -	33	.	72	.	31	.	70	.	43	.	50	.	40	.
SD07165, -	34	.	72	.	31	.	69	.	42	.	49	.	20	.
SD06069, -	30	.	71	.	35	.	67	.	41	.	49	.	20	.
Art, 0	28	.	72	.	35	.	72	.	30	.	47	.	40	.
SD07126, -	32	.	70	.	31	.	67	.	35	.	47	.	20	.
SD07056, -	31	.	61	.	37	.	70	.	35	.	47	.	60	.
SD05W030, -	31	.	73	.	26	.	68	.	26	.	45	.	40	.
Boomer, 5	31	.	66	.	25	.	60	.	37	.	44	.	20	.
Radiant, 5	28	.	63	.	19	.	67	.	39	.	43	.	20	.
Striker, 4	28	.	68	.	21	.	61	.	36	.	43	.	20	.
Test avg. :	28	36	72	66	32	57	69	55	38	53	48	53		
High avg. :	34	40	79	71	45	64	74	59	51	55	52	57		
Low avg. :	20	32	63	60	21	49	61	51	28	48	43	49		
[5] LSD (0.05):	6	NS	6	5	8	6	4	4	3	3	.	.		
[6] TPG-value :	28	NA	73	66	37	58	70	55	48	52	.	.		
[7] C.V. :	14.2	20.6	5.6	8.4	17.4	12.8	4.3	9.6	6	7.6	.	.		

[1] Heading- days later than Expedition, the check variety for maturity.
Note- shaded values within a location-year column are in the top yield group.
Note that additional table footnotes are explained in Table C.

Table 6b. Hard winter wheat 2010 grain protein averages at five South Dakota western locations, sorted high to low by western average.

Variety, Heading [1]	2010 Protein Averages by Location					Western Average
	Bison	Hayes	Kennebec	Sturgis	Wall	
	(%)	(%)	(%)	(%)	(%)	(%)
Lyman, 2	14.9	13.1	12.6	10.9	12.2	12.7
Wendy, -1	14.8	11.2	12.5	10.6	13.6	12.5
Harding, 5	14.2	12.9	11.2	11.3	12.5	12.4
Art, 0	13.5	12.5	11.0	10.6	14.4	12.4
Striker, 4	13.7	11.8	13.3	10.8	11.7	12.3
Radiant, 5	14.1	12.6	12.6	10.6	11.2	12.2
Jerry, 5	13.7	13.2	12.0	10.7	11.5	12.2
Boomer, 5	12.2	13.3	11.9	11.3	11.8	12.1
Fuller, 0	14.2	11.6	10.9	10.2	13.5	12.1
SD07126, -	12.8	12.6	11.2	11.3	12.4	12.1
Millennium, 4	13.4	12.5	12.1	11.1	10.9	12.0
Arapahoe, 3	13.6	12.5	11.2	10.4	11.9	11.9
Alice, -1	13.2	12.1	11.8	10.8	11.6	11.9
Jagalene, 3	14.5	12.6	11.4	10.1	10.7	11.9
Darrell, 5	13.5	12.1	10.3	11.1	12.0	11.8
Wesley, 2	14.1	11.0	11.7	10.5	11.5	11.8
SD06158, -	13.6	10.9	12.4	11.1	10.6	11.7
Hawken, 3	13.9	12.7	10.9	10.4	10.7	11.7
SD05W030, -	12.7	11.4	11.1	10.1	13.0	11.7
SD051181, -	12.5	11.0	11.5	10.9	11.9	11.6
Smoky Hill, 2	14.4	11.1	10.7	9.5	11.9	11.5
Camelot, 2	12.5	12.6	10.7	10.8	10.8	11.5
Overland, 4	13.0	12.0	12.1	9.8	10.5	11.5
Expedition, 0	13.0	11.7	11.1	10.3	11.0	11.4
SD07056, -	12.5	12.0	10.4	10.5	11.7	11.4
SD06069, -	12.7	10.9	11.6	10.9	10.8	11.4
Settler CL, 3	13.2	10.7	12.1	9.9	11.0	11.4
SD07165, -	12.7	10.8	11.6	10.9	10.7	11.3
Wahoo, 3	13.5	10.4	11.8	9.5	10.9	11.2
Hatcher, 2	12.6	11.6	10.8	10.2	10.3	11.1
Test avg. :	13.4	11.9	11.6	10.6	11.6	11.9
High avg. :	14.9	13.3	13.3	11.3	14.4	12.7
Low avg. :	12.2	10.4	10.3	9.5	10.3	11.1

[1] Heading- days later than Expedition, the check variety for maturity.
Note- These values were determined from a sub-sample of three plot samples mixed together. Protein differences were not determined because only one sub-sample was analyzed.
Note that additional table footnotes are explained in Table C.

Table 6c. Hard winter wheat 2010 bushel weight averages at five western South Dakota locations, sorted high to low by western average.

Variety, Heading [1]	Bushel Weight Averages by Location					Western Average
	Bison	Hayes	Kennebec	Sturgis	Wall	
	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)	(lbs)
Millennium, 4	61.1	59.9	55.0	61.1	61.7	59.8
Harding, 5	60.4	60.3	54.5	61.6	60.2	59.4
SD07056, -	62.0	60.0	54.4	59.9	60.4	59.3
Wesley, 2	59.2	57.0	55.8	61.8	61.3	59.0
Settler CL, 3	61.1	58.5	53.1	61.5	60.8	59.0
Darrell, 5	59.5	59.6	55.1	60.3	60.4	59.0
SD051181, -	58.5	59.5	53.5	61.7	61.5	58.9
SD05W030, -	61.4	60.7	52.5	59.0	60.5	58.8
Wendy, -1	61.9	60.7	51.0	62.1	58.1	58.8
Art, 0	59.5	58.2	54.9	61.7	59.1	58.7
Smoky Hill, 2	59.6	58.6	51.8	61.9	61.5	58.7
Striker, 4	60.2	58.5	52.1	62.1	60.5	58.7
Overland, 4	58.4	59.4	55.2	60.8	59.5	58.7
Hawken, 3	61.4	58.7	53.6	59.0	60.5	58.6
Lyman, 2	60.0	58.9	55.0	60.8	58.5	58.6
Jagalene, 3	60.4	58.7	51.4	60.2	61.5	58.4
SD07126, -	59.7	59.5	50.6	61.2	61.2	58.4
Radiant, 5	61.6	56.4	49.6	61.1	62.7	58.3
Arapahoe, 3	59.4	57.8	52.6	60.7	60.4	58.2
Wahoo, 3	60.0	55.6	52.1	61.9	61.2	58.2
SD06158, -	59.1	59.1	50.7	61.4	60.5	58.2
Hatcher, 2	61.5	58.9	50.1	60.6	59.4	58.1
Jerry, 5	59.0	58.3	52.6	60.6	59.5	58.0
SD06069, -	60.4	59.0	49.2	59.9	60.5	57.8
Alice, -1	59.3	58.4	51.0	60.9	59.3	57.8
Fuller, 0	59.7	58.3	51.2	60.8	58.7	57.7
Camelot, 2	58.2	58.5	51.0	60.6	59.6	57.6
SD07165, -	60.0	56.9	51.0	59.5	60.5	57.6
Expedition, 0	59.0	59.0	49.6	59.9	59.6	57.4
Boomer, 5	57.9	57.4	51.3	60.6	59.4	57.3
Test avg. :	60.0	58.7	52.4	60.8	60.3	58.4
High avg. :	62.0	60.7	55.8	62.1	62.7	60.2
Low avg. :	57.9	55.6	49.2	59.0	58.1	57.3
[5] Lsd(.05) :	2.3	1.4	3.6	1.1	1.8	
[6] TPG-value :	59.7	59.3	52.2	61.0	60.9	
[7] C.V. :	2.7	1.6	4.9	1.3	2.1	

[1] Heading- days later than Expedition, the check variety for maturity
Note- shaded values within a location-year column are in the top bushel weight group.
Note that additional table footnotes are explained in Table C.

Table 6d. Hard winter wheat 2010 plant height averages at five western South Dakota locations, sorted low to high by western average.

Variety, Heading [1]	Plant Height Averages by Location - inch					Western Average
	Bison	Hayes	Kennebec	Sturgis	Wall	
	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)
Wendy, -1	22	30	29	32	27	28
Hawken, 3	24	31	31	33	27	29
Wesley, 2	23	33	32	33	27	30
Alice, -1	24	32	31	33	28	30
Fuller, 0	24	34	30	34	28	30
Settler CL, 3	23	34	32	35	28	30
Hatcher, 2	24	34	32	34	29	31
Striker, 4	23	37	32	33	28	31
Smoky Hill, 2	23	35	33	34	28	31
SD06069, -	23	35	33	33	30	31
Art, 0	26	34	32	35	28	31
SD06158, -	25	34	33	34	32	31
Expedition, 0	25	35	33	36	29	32
Jagalene, 3	23	36	35	36	28	32
SD07165, -	27	37	35	36	29	33
SD051181, -	26	38	34	36	29	33
Boomer, 5	26	39	33	34	31	33
SD05W030, -	26	37	35	37	30	33
Camelot, 2	26	36	34	38	31	33
Overland, 4	26	37	34	37	31	33
Lyman, 2	26	37	35	39	31	33
Wahoo, 3	26	40	36	37	31	34
Darrell, 5	26	39	36	38	34	34
Millennium, 4	26	41	38	39	34	36
Radiant, 5	28	42	36	38	35	36
Arapahoe, 3	28	42	38	38	32	36
SD07126, -	28	41	36	41	33	36
Harding, 5	25	42	39	43	34	37
Jerry, 5	26	43	40	43	36	37
SD07056, -	29	44	39	46	36	39
Test avg. :	25	37	34	36	30	33
High avg. :	29	44	40	46	36	39
Low avg. :	22	30	29	32	27	28
[5] Lsd(.05) :	2	2	2	2	2	
[6] TPG-value :	24	32	31	34	29	
[7] C.V. :	8.5	3.9	5.5	3.0	5.6	

[1] Heading- days later than Expedition, the check variety for maturity.
Note- shaded values within a location-year column are in the short plant height group.
Note that additional table footnotes are explained in Table C.

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PLANT SCIENCE

2011 Winter Wheat Variety Yield Results

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It was an average year for winter wheat production in South Dakota. The crop had many obstacles to overcome to make it to harvest. Some areas suffered from winter kill and spotty stands, and then endured very wet spring conditions. The main problems were the many diseases that attacked the crop throughout the growing season. Wheat viral diseases were prevalent in 2011 including wheat streak mosaic, barley yellow dwarf, and a couple of emergent diseases – high plains virus and triticum mosaic – which are vectored by the wheat curl mite. Wet conditions also favored the development of root/crown rot and poor root growth. Wheat scab (fusarium head blight) was a problem for susceptible varieties such as Wesley, where high levels of vomitoxin in the grain have been reported. Tan spot and septoria were favored by the very wet conditions and along with the bacterial diseases once again being a major occurrence on wheat leaves and heads. There certainly were some yield and/or test weight losses occurring due to disease damaged flag leaves. Harvest was hampered by rainy and humid conditions in July and early August. This made it difficult to get the grain dry enough to harvest and frequent rains on the ripe grain also contributed to lower test weights this year.

Yields from the Crop Performance Testing Program averaged 53 bu/A statewide, ranging from 29 bu/A at McLaughlin to 77 bu/A at Brookings. The results for Bison and South Shore are not reported due to hail at Bison and high yield variation at South Shore. The top performing varieties East River in 2011 were SY Wolf, Overland, Settler CL, SD05118-1, Expedition Millennium and Wesley; while Lyman, Expedition, Settler CL, SY Wolf, Overland, Everest and Millennium did the best in West River. The varieties Expedition, Overland, Settler CL, Wesley, SD05118-1, Millennium and Lyman had the best three-year statewide average yields.

Changes to the variety recommendations include dropping Darrell, Harding, Hatcher and Wendy from the recommendations and moving Art and Settler CL up from the acceptable/promising to the recommend list.

Tables 1, 2 and 3 give the characteristics and performance of winter wheat varieties tested in South Dakota. Use them to select a variety with the agronomic characteristics suitable for your area and production system. When considering yield, look for varieties that have performed well at locations near your farm over the past three years. The Winner and Brookings sites had two trials, one had foliar fungicide applied at flowering and other had no fungicides applied.

Recommended varieties for 2012

Recommended:

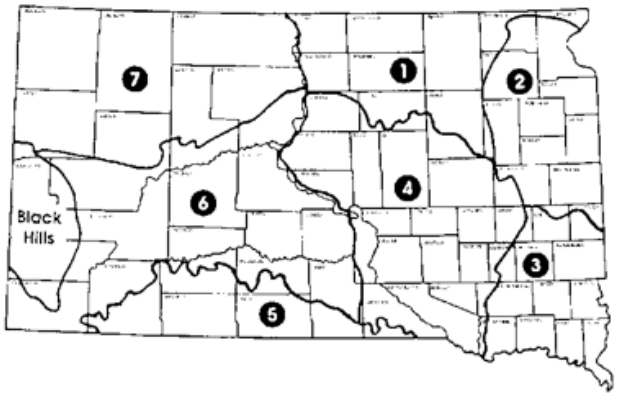
Variety	Crop Adaptation Area
Alice (white) PVP	1 pc,4 pc ,5,6,7 pc
Art PVP	1 pc, 2 pc,3,4 pc
Expedition PVP	1 pc, 2pc, 3, 4pc
Lyman PVP	1 pc, 2 pc,3,4 pc,5,6,7 pc
Millennium* PVP	1 pc,4 pc ,5,6,7 pc
Overland PVP	1pc,3,4pc,5,6,7pc
Settler CL* PVP	5,6,7 pc
Smoky Hill * PVP	5,6,7 pc

Acceptable/Promising:

Variety	Crop Adaptation Area
Hawken* PVP	3,4 pc,5,6
Wesley*	5,6,7 pc

Crop Adaptation Areas for South Dakota

(Revised 1992)



** Varieties susceptible to Fusarium Head Blight (Scab): Harding, Hawken, Millennium, Settler CL, Smoky Hill, Wesley. Varieties moderately resistant to Fusarium Head Blight (scab): Lyman, Art*

PVP U.S. Plant Variety Protection applied for and/or issued; seed sales of these varieties are restricted to classes of certified seed.

pc Plant into protective cover.

Table 1

Hard winter wheat yield results - West River Locations, 2009 – 2011 (bu/A).

Variety	Location Yield Avg. (bu/a at 13% moist.)															West Yield Avg. (bu/a)		State Yield Avg. (bu/a)		West River TYG %	
	Mclaughlin		**Sturgis**		**Wall**		**Hayes**		**Kennebec**		**Martin**		**Winner**								
	2011	3-Yr	2011	3-Yr	2011	3-Yr	2011	3-Yr	2011	3-Yr	2011	3-Yr	Fung*	2011	3-Yr	2011	3-Yr	2011	3-Yr	2011	3-Yr
Alice	26		61	62	65	48	51	56	37	40	57		48	42		48	52	51	55	0	0
Arapahoe	**37**		**72**	**65**	61	47	55	58	41	45	52		53	41		51	54	53	56	25	50
Art	22		58	59	**66**	45	51	57	39	40	51		56	37		46	50	52	58	12	0
Camelot	21		61		**66**		52		39		55		48	38		47		51		12	-
Darrell	29		64	64	53	46	57	**62**	41	48	58		46	39		48	55	50	57	0	50
Everest	28		**67**		68		55		**46**		**67**		**58**	**45**		54		56		62	-
Expedition	35		**68**	**66**	**76**	**54**	**64**	**65**	**52**	47	**68**		52	**44**		58	58	59	62	75	100
Fuller	14		**67**	63	59	41	**59**	58	35	40	66		46	38		48	51	50	55	25	0
Harding	29		61	60	64	48	48	56	42	46	56		45	28		47	52	48	54	0	1
Hawken	15		**66**	61	62	49	**58**	**61**	35	42	64		48	43		49	53	53	57	25	25
Jagalene	18		60	59	60	45	54	55	34	40	54		45	35		45	50	44	52	0	0
Jerry	**42**		65	62	56	48	55	57	29	40	48		48	39		48	52	50	53	12	0
Lyman	**42**		**77**	**69**	64	46	**58**	**62**	**53**	50	65		**66**	**51**		59	56	58	59	75	75
WB Matlock	**40**		62		61		49		34		51		47	41		48		51		12	-
McGill	29		64		62		51		34		60		50	42		49		53		0	-
Millennium	35		**71**	**66**	65	**51**	55	59	**48**	48	57		54	39		53	56	56	59	25	75
Overland	35		**72**	**68**	**73**	**55**	56	60	**49**	45	**68**		49	40		56	57	60	62	50	75
Settler CL	28		**77**	**65**	**74**	**53**	**63**	**65**	**50**	45	64		**58**	41		57	57	58	60	62	100
Smoky Hill	22		50	56	**73**	**51**	57	**61**	**47**	48	61		46	**44**		51	54	54	58	12	75
Wesley	28		**71**	**68**	65	50	57	59	**46**	48	59		51	38		52	56	55	60	25	75
Robidoux	22		60		65		51		35		60		42	39		47		50		0	-
SY Wolf	33		**75**		56		**59**		**49**		**78**		**60**	**44**		56		61		62	-
SD05118-1	**37**		60	63	62	49	**58**	**61**	45	47	66		49	39		52	55	56	59	25	50
Test Average	29		65	63	63	49	55	59	43	45	60		51	40		51	54	53	58		
LSD (0.05) #	5		11	4	10	4	6	4	7	6	11		8	7		--	--	--	--		
TYG value ##	37.0		66	65	66	51	58	61	46	44	67		58	44		--	--	--	--		
C.V. ###	11.3		10.7	8.3	10.7	9.7	8.1	8.9	10.2	16.6	11.1		11.7	11.6		--	--	--	--		

If the difference between two varieties within a column equals or exceeds the LSD value, the difference is significant; if not, the difference is nonsignificant(NS) at the 0.05 level of probability.
#Minimum value required for variety to qualify for the top yield group (TYG).
###A measure of experimental error, 15% or less is best for yield.
* Fung = Trial had foliar fungicide applied
Bolded yields indicates values within a column that qualify for the top yield group (TYG).

Table 2

Hard winter wheat yield results - East River Locations, 2009 - 2011 (bu/A).

Variety	Location Yield Avg. (bu/a at 13% moist.)													East Yield Avg. (bu/a)		State Yield Avg. (bu/a)		East River TYG %	
	Selby		Brookings			Beresford		Platte		Pierre		Onida							
	2011	3-Yr	Fung*	2011	3-Yr	2011	3-Yr	2011	3-Yr	2011	3-Yr	2011	3-Yr	2011	3-Yr	2011	3-Yr	2011	3-Yr
Alice	51	67	72	68	63	49		38	54	68	56	49	51	54	58	51	55	0	0
Arapahoe	53	69	74	71	**64**	47		**44**	59	67	53	48	48	55	58	53	56	16	0
Art	52	**71**	**84**	**82**	**74**	35		51	63	78	59	48	50	58	63	52	58	50	40
Camelot	50		**82**	78		51		41		74		42		56		51		16	-
Darrell	**55**	**71**	67	59	60	43		37	55	76	57	41	49	52	58	50	57	16	20
Everest	51		**87**	**89**		43		**45**		75		50		59		56		50	-
Expedition	**57**	**73**	**81**	78	**72**	46		**51**	67	74	**61**	56	**54**	60	65	59	62	50	100
Fuller	44	69	69	65	**66**	46		40	54	75	59	45	50	52	59	50	55	0	20
Harding	52	70	66	56	59	47		34	51	64	51	40	44	49	55	48	54	0	0
Hawken	**59**	**71**	75	59	59	54		39	56	**83**	**61**	50	52	57	60	53	57	33	40
Jagalene	42	64	68	45	49	33		28	53	75	57	36	48	43	54	44	52	0	0
Jerry	53	70	73	65	63	55		38	50	62	47	42	45	53	55	50	53	16	0
Lyman	**55**	70	67	65	**66**	48		**44**	61	72	55	61	**54**	57	61	58	59	33	20
WB Matlock	**55**		74	69		57		38		62		42		54		51		16	-
McGill	**57**		76	72		47		**51**		68		55		58		53		33	-
Millennium	**60**	**72**	80	73	**64**	44		**47**	61	**84**	**62**	53	51	60	62	56	59	50	40
Overland	**57**	69	**81**	73	**68**	57		**51**	65	**87**	**66**	58	**57**	64	65	60	62	66	80
Settler CL	**55**	70	**85**	78	**70**	50		**44**	59	78	60	60	**56**	61	63	58	60	50	40
Smoky Hill	53	**75**	74	53	55	45		**45**	61	**87**	**64**	60	**55**	57	62	54	58	33	60
Wesley	**57**	68	80	71	**67**	42		**42**	61	**85**	60	55	**54**	59	62	55	60	50	40
Robidoux	46		**89**	71		45		36		70		46		52		50		16	-
SY Wolf	**57**		**88**	**83**		42		**50**		**90**		**73**		66		61		100	-
SD05118-1	**59**	**77**	80	70	**71**	51		**43**	59	**87**	59	52	50	60	63	56	59	50	40
Test Average	53	71	77	70	64	47		42	58	76	58	51	51	56	60	53	58		
LSD (0.05) #	6	6	8	8	7	NS		9	5	9	4	10	4	--	--	--	--		
TPG value ##	54	71	81	81	67	-		42	62	81	61	63	53	--	--	--	--		
C.V. ###	8.5	10.4	7.5	8.4	12.8	17.3		15.4	11.1	8.3	8.8	13.5	9.9	--	--	--	--		

If the difference between two varieties within a column equals or exceeds the LSD value, the difference is significant; if not, the difference is nonsignificant(NS) at the 0.05 level of probability.
#Minimum value required for variety to qualify for the top yield group (TYG).
###A measure of experimental error, 15% or less is best for yield.
* Fung = Trial had foliar fungicide applied
Bolded yields indicates values within a column that qualify for the top yield group (TYG).

Table 3

Origin, agronomic traits and disease reactions for winter wheat entries for 2011.

Variety	Origin (Year) [1]	Relative Heading [2]	Lodging Resist [3]	Test Weight	Protein Percent	Height Inches	End-use Qlty [3]	Winter Hardy Rtg [3]	Wheat Streak Mosaic [4]	Tanspot [4]	Rust [5]			FHB (Scab) Rating [5]	PVP Status**
											Stripe	Leaf	Stem		
Alice ~W	SD (06)	-1	G	53.0	12.4	33	EB	G	MR+	MS+	-	MS	MR	3	Yes
Art	AP (08)	0	E	53.2	12.6	33	-	G	S	MR	R	R	MR	3	Yes
+Everest+	KS (09)	0	E	54.9	12.8	32	AB	G	MS	MS	MR	MR	MS	-	Yes
Expedition	SD (02)	0	F	54.5	12	37	GB	G-E	S	MS	MS	S	R	3	Yes
Fuller	KS (07)	0	E	51.4	12.6	33	AB	P-F	S	MR	MR	R	R	3	Yes
Camelot	NE (08)	2	G	52.1	12.7	36	EB	G	S	-	MR	MR	MR	5	Yes
Lyman	SD (08)	2	F	55.2	12.7	36	AB	G	S	MR	MS	R	R	2	Yes
+McGill+	NE (10)	2	G	51.1	11.8	37	AB	G	S	-	S	MR	MR	-	Yes
+Robidoux+	NE (10)	2	G	50.8	12.1	35	GB	G	-	-	S	MS	MR	-	Yes
Smoky Hill	WB (07)	2	G	52.5	11.5	33	EB	G	S	MR	R	MR	MR	5	Yes
Wesley	NE (99)	2	E	51.9	12.7	32	GB	G-E	S	MR	MR	MR	R	5	No
Arapahoe	NE (88)	3	F	53.0	12.5	38	GB	G-E	S	S	MS	MR	MR	2	Yes
Hawken	AP (07)	3	E	52.0	12.5	31	AB	G	MS	MR	MS	R	MR	4	Yes
Jagalene	AP (01)	3	E	51.2	12.3	33	AB	G	MS	MR	MR	S	MR	5	Yes
+SY Wolf+	AP (10)	3	G	52.7	12	33	-	G	-	MR	MS	MR	-	-	Yes
Settler CL	NE (08)	3	G	53.3	11.4	35	AB	G	S	-	MS	MS	MR	5	Yes
Millennium	NE (00)	4	G	54.1	12.3	37	AB	F-G	S	MS	MR	MR	MR	5	Yes
Overland	NE (06)	4	G	54.1	11.7	37	FB	E	-	-	R	R	MS	3	Yes
+WB Matlock+	WB (10)	4	G	53.7	13.2	38	-	G-E	-	MS	MS	MR	MR	-	Yes
Darrell	SD (06)	5	G	52.4	12.5	36	EB	G	MR	MS	-	S	R	3	Yes
Harding	SD (99)	5	F-G	52.6	13.2	39	AB	E	MR	MR	MS	MR	MR	4	Yes
Jerry	ND (01)	5	F	52.6	12.7	40	GB	E	MS	-	MR	MR	R	3	No

+New variety+ to the 2010 CPT

~ W, Hard white wheat variety.

[1] AP=Agripro, CN=Canada, CO=Colorado, KS=Kansas, NE=Nebraska, ND=North Dakota, SD=South Dakota, WB=WestBred

[2] Heading, the relative difference in days to heading, compared to Expedition.

[3] E= exc., A= acceptable, F= fair, G= good, P= poor; B= baking, N=noodles.

[4] R= resistant, MR= moderately resist., MS= mod. susceptible, S= susc., VS= very susc.

[5] 1= tolerant, 5=susceptible

** Plant variety protection (PVP), title V certification option- sold by variety name only as a class of certified seed.

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2012 annual report

AUGUST 2012

SDSU EXTENSION

Wheat production is greatly affected by variety selection.

Recommendations are based on information from the South Dakota Crop Performance Testing (CPT) Program and regional university Trials. Variety performance depends on genetics and environmental factors like temperature, moisture, plant pests, soil fertility, soil type, and management practices.

2012 Winter Wheat Variety Yield Results

John Rickertsen | SDSU Extension Agronomy Crops Field Specialist, Rapid City
Bill Berzonsky | Plant Breeder, SDSU Winter Wheat Breeding Program, Brookings

Considering the hot and dry conditions throughout much of the 2011-2012 winter wheat growing season, yields were surprisingly good for South Dakota. The main production issue for this year was the dry weather that started with planting last fall and persisted through the winter into early spring. There was some limited loss due to winterkill because of the dry, open winter. In some areas, particularly the southwest, yields were limited by lack of rainfall through out the season. The main disease issues were root and crown rots, with some stripe rust coming in late in the season. Stripe rust was more prevalent on varieties previously exhibiting more resistance to the fungus, likely because of a fungal race change. The quality of the crop was excellent with test weights averaging 60-65 lb/bu and grain protein levels of 12-15% being reported across the state.

Yields from the Crop Performance Testing Program averaged 71 bu/A statewide, ranging from 62 bu/A at Beresford to 85 bu/A at Pierre (Dakota Lakes). The results for Bison, McLaughlin, Hayes and Brookings (no fungicide) locations are not reported due to grasshoppers at Bison, high yield variation at McLaughlin, poor stands at Hayes and harvest issues at Brookings. The top performing varieties East River in 2011 were SY Wolf, Robidoux, Overland and Art; while SY Wolf, Robidoux, Settler CL, Overland, Art and Smoky Hill exhibited top yields in West River. The varieties Overland, Settler CL, Smoky Hill, Millennium, Expedition, Art and Ideal exhibit the highest average three-year, statewide yields.

Changes to the variety recommendations for 2013 include dropping Hawken from the recommendations, adding Ideal to the recommended list and adding SY Wolf to the acceptable/promising list.

Yields are presented in Tables 1 and 2 with variety characteristics listed in Tables 3 and 4. Use them to select a variety with the agronomic characteristics suitable for your area and production system. Consider as much performance information as possible when selecting a variety, and give more weight to information from trials close to home. Also pay close attention to relative performance over many locations and years. This type of performance is an indication of "yield stability. Good yield stability means that, while a variety may or may not exhibit the highest yield at all locations, it exhibits high yield potential at many locations/years. For example, a variety that ranks in the upper 20% at all locations exhibits better yield stability than one that is number one for yield at one location but ranks in the lower 40% at the other locations.

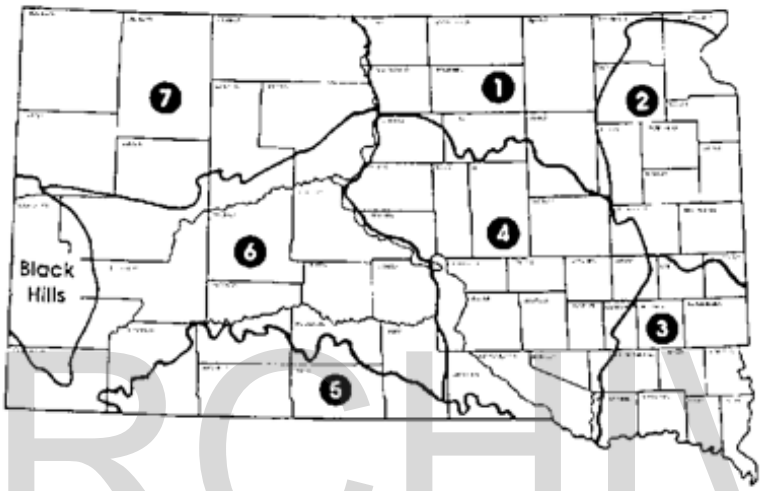
The coefficient of variation (CV) listed at the bottom of each data column, which is often expressed as a percentage of the trait mean, is a relative measure of the amount of variation for that trait. Generally, a CV of 10% or higher indicates a level of trial variability

that is higher than what is normally expected. The higher variability can be caused by various factors, but since these factors are often environmental, for example, reduced plot stands due to winter kill, it is more difficult to distinguish true varietal differences at locations with higher CVs.

Two trials were grown at each of the Brookings, Beresford and Winner sites. One trial was not treated with fungicide, while to the second otherwise identical trial a foliar fungicide was applied at flowering (6 oz/A Presario).

Crop Adaptation Areas for South Dakota

(Revised 1992)



Wheat Variety Recommendations for 2013

RECOMMENDED		ACCEPTABLE/PROMISING	
Variety	CAA	Variety	CAA
Alice (white) PVP	1pc,4pc,5,6,7pc		
Art PVP	1pc,2pc,3,4pc		
Expedition PVP	1pc,2pc,4pc,5,6,7pc		
Ideal PVP	1pc,4pc,5,6,7pc		
Lyman PVP	1pc,2pc,3,4pc,5,6,7pc	SY Wolf PVP	1pc,4pc,5,6pc,7pc
Millennium* PVP	1pc,4pc,5,6,7pc	Wesley*	5,6,7pc
Overland PVP	1pc,3,4pc,5,6,7pc		
Settler CL* PVP	5,6,7pc		
Smoking Hill* PVP	5,6,7pc		

* Varieties susceptible to Fusarium Head Blight (Scab)

pc – Plant into protective cover

PVP – US Plant Variety Protection applied for/or issued, seed sales restricted to classes of certified seed

2012 East River Yields

Variety	Location Yield Average (bu/A at 13% moisture)														East Yield Avg. (bu/A)		East River TYG %	
	Selby		South Shore		Brookings Fung*		Beresford			Platte		Pierre		Onida				
	2012	3-Yr	2012	3-Yr	2012	3-Yr	Fung*	2012	3-Yr	2012	3-Yr	2012	3-Yr	2012	3-Yr	2012	3-Yr	2012	3-Yr
Alice	79	73	82	.	83	76	63	59	54	58	51	81	70	78	62	75	67	17	50
Arapahoe	65	67	56	.	83	79	55	53	50	63	56	77	67	73	57	65	66	17	17
Art	88	75	84	.	87	86	62	61	52	58	58	102	81	74	60	80	74	50	67
Camelot	80	72	77	.	93	83	65	63	55	62	52	85	74	75	56	77	71	33	50
Everest	70		71	.	72		59	55		62		91		79		70		0	
Expediton	78	75	67	.	86	84	60	52	53	66	61	76	71	88	67	70	71	33	67
Fuller	76	70	77	.	69	73	56	49	50	66	53	82	72	76	59	68	66	0	0
Ideal	75	75	63	.	93	88	54	63	54	71	56	71	69	78	60	70	72	33	67
Jagalene	81	68	62	.	87	79	48	51	43	61	48	67	64	74	56	66	64	0	0
Jerry	56	63	61	.	85	78	56	58	51	59	48	63	57	63	51	63	62	17	0
Lyman	73	72	77	.	87	80	62	60	53	66	58	79	69	60	58	73	68	17	
WB-Matlock	68		53	.	80		60	65		57		71		69		66		17	17
McGill	86		78	.	85		59	66		57		95		75		78		33	100
Millennium	85	76	75	.	85	82	68	69	55	55	55	86	77	82	63	78	72	67	67
Overland	79	71	83	.	85	85	73	70	60	66	60	96	81	83	67	81	74	67	
Robidux	93		78	.	96		71	65		55		94		82		83		83	
Settler CL	71	70	72	.	83	85	64	59	56	68	58	85	73	88	68	72	71	33	67
Smoky Hill	87	79	73	.	82	78	65	69	57	59	54	91	78	83	66	78	73	50	83
Wesley	81	70	61	.	77	80	67	62	50	61	54	83	72	87	62	72	68	17	33
SY Wolf	86		85	.	86		69	70		60		103		73		83		67	
WB-Redhawk	82		81	.	81		62	68		65		86		80		76		33	
Test Average	79	72	75	.	84	81	62	62	53	62	55	85	72	77	61	74	69	.	.
LSD (0.05) #	13	6	7	.	13	7	9	7	6	17	7	9	5	10	6	.	.	.	.
TPG value ##	84	73	85	.	83	81	64	63	54	NS	54	94	76	80	62	.	.	.	.
C.V. ###	11.4	11.0	6.7	.	11.1	10.1	10.7	6.7	15.6	19.5	16.1	7.7	8.6	9.3	12.0	.	.	.	.

If the difference between two varieties within a column equals or exceeds the LSD value, the difference is significant; if not, the difference is nonsignificant(NS) at the 0.05 level of probability.

Minimum value required for variety to qualify for the top yield group (TYG).

A measure of experimental error, 15% or less is best for yield.

* Fung = Trial had foliar fungicide applied at flowering.

2012 West River Yields

Variety	Location Yield Average (bu/A at 13% moisture)											West Yield Avg. (bu/A)		State Yield Avg. (bu/A)		West River TYG %	
	Sturgis		Wall		Kennebec		Martin		Winner								
	2012	3-Yr	2012	3-Yr	2012	3-Yr	2012	3-Yr	Fung*	2012	3-Yr	2012	3-Yr	2012	3-Yr	2012	3-Yr
Alice	66	66	66	57	75	48	31	.	82	81	.	67	57	70	62	0	0
Arapahoe	65	68	62	52	68	48	28	.	79	72	.	62	56	64	61	0	0
Art	70	67	72	56	76	50	30	.	86	86	.	70	58	74	65	40	0
Camelot	72	68	71	61	75	49	31	.	80	78	.	68	59	72	63	40	33
Everest	69	.	65	.	74	.	30	.	75	79	.	65	.	68	.	20	.
Expediton	73	71	71	64	76	52	36	.	83	72	.	69	62	70	66	40	100
Fuller	67	68	66	51	69	45	30	.	73	76	.	63	55	66	60	20	0
Ideal	74	68	72	56	84	55	32	.	76	77	.	69	60	70	65	60	33
Jagalene	53	58	62	54	77	48	30	.	69	68	.	60	54	64	58	0	0
Jerry	63	64	64	51	63	42	28	.	63	62	.	57	52	60	56	0	0
Lyman	71	74	74	56	71	56	32	.	83	80	.	68	62	70	64	40	67
WB-Matlock	65	.	70	.	72	.	29	.	77	72	.	64	.	65	.	0	.
McGill	67	.	66	.	83	.	30	.	80	83	.	68	.	72	.	60	.
Millennium	72	72	68	57	79	55	31	.	89	77	.	69	61	73	66	20	67
Overland	69	72	72	63	87	55	28	.	93	81	.	72	63	76	68	60	100
Robidux	72	.	85	.	82	.	33	.	88	87	.	74	.	77	.	80	.
Settler CL	73	73	74	63	81	52	40	.	86	79	.	72	63	73	67	80	100
Smoky Hill	68	62	76	62	81	55	34	.	78	79	.	70	60	73	66	60	67
Wesley	65	70	74	60	71	53	33	.	78	75	.	66	61	70	64	0	67
SY Wolf	68	.	75	.	87	.	36	.	98	87	.	75	.	77	.	80	.
WB-Redhawk	69	.	69	.	74	.	29	.	79	77	.	66	.	71	.	40	.
Test Average	67	68	70	58	76	51	31	.	81	78	.	67	59	71	63	.	.
LSD (0.05) #	7	4	5	4	6	4	4	.	7	11	.	.	.	.	.	.	.
TYG value ##	67	70	80	60	81	52	36	.	91	76	.	.	.	.	.	.	.
C.V. ###	7.4	7.6	5.4	8.9	4.6	11.6	9.1	.	6.5	9.6	.	.	.	.	.	.	.

If the difference between two varieties within a column equals or exceeds the LSD value, the difference is significant; if not, the difference is nonsignificant(NS) at the 0.05 level of probability.

Minimum value required for variety to qualify for the top yield group (TYG).

A measure of experimental error, 15% or less is best for yield.

* Fung = Trial had foliar fungicide applied at flowering.

Variety+	Origin (Year)[1]	Relative Heading [2]	Lodging Resist[3]	Test Weight	Protein Percent	Height Inches	End-use Quality[3]	Winter Hardy Rating[3]
Alice [Pvp] ~W	SD (06)	-1	G	61.1	13.8	31	EB	G
Art [Pvp]	AP (08)	0	E	61.5	14.1	32	-	G
Everest [Pvp]	KS (09)	0	E	61.9	13.6	30	AB	G
Expedition [Pvp]	SD (02)	0	F	61.1	13.3	33	GB	G-E
Fuller [Pvp]	KS (07)	0	E	61.2	14.1	31	AB	P-F
Camelot [Pvp]	NE (08)	2	G	60.9	13.8	35	EB	G
Lyman [Pvp]	SD (08)	2	F	60.9	14.3	36	AB	G
McGill [Pvp]	NE (10)	2	G	60.1	13.3	37	AB	G
Robidoux [Pvp]	NE (10)	2	G	61.5	13.0	34	GB	G
Smoky Hill [Pvp]	WB (07)	2	G	61.4	13.3	33	EB	G
Wesley	NE (99)	2	E	59.9	13.8	32	GB	G-E
Arapahoe [Pvp]	NE (88)	3	F	59.7	13.7	37	GB	G-E
Jagalene [Pvp]	AP (01)	3	E	60.2	14.1	35	AB	G
SY Wolf [Pvp]	AP (11)	3	E	62.2	13.4	31	AB	G
Settler CL [Pvp]	NE (08)	3	G	61.2	13.1	32	AB	G
+WB Redhawk+ [Pvp]	WB (11)	3	-	61.9	13.7	32	-	-
Millennium [Pvp]	NE (00)	4	G	61.3	13.7	38	AB	F-G
Overland [Pvp]	NE (06)	4	G	61.5	13.2	36	FB	E
WB Matlock [Pvp]	WB (10)	4	G	59.7	14.2	36	-	G-E
+Ideal+ [Pvp]	SD (11)	4	E	61.0	13.6	35	AB	G
Jerry	ND (01)	5	F	59.6	14.3	39	GB	E

+New variety+ to the 2012 CPT

~ W, Hard white wheat variety.

1 AP=Agripro Syngenta, KS=Kansas, NE=Nebraska, ND=North Dakota, SD=South Dakota, WB=WestBred

2 Heading, the relative difference in days to heading, compared to Expedition.

3 E= exc., A= acceptable, F= fair, G= good, P= poor; B= baking, N=noodles.

Variety+	Wheat Streak Mosaic[1]	Tanspot[1]	Rust[1]			FHB (Scab) Rating[1]
			Stripe	Leaf	Stem	
Alice [Pvp] ~W	MS	MS	MS	MS	MR	S
Art [Pvp]	MS	MS	MS	R	R	MR
Everest [Pvp]	MS	MS	MS	MR	MS	MR
Expedition [Pvp]	S	MS	S	S	R	MR
Fuller [Pvp]	S	MR	MR	MR	S	S
Camelot [Pvp]	S	-	MR	MR	MS	S
Lyman [Pvp]	S	MR	MS	R	R	R
McGill [Pvp]	S	-	S	MR	MR	S
Robidoux [Pvp]	S	-	S	MS	MR	S
Smoky Hill [Pvp]	S	MR	S	MS	MS	S
Wesley	S	MR	MR	MR	R	S
Arapahoe [Pvp]	S	S	MS	MR	MR	MR
Jagalene [Pvp]	S	MR	S	S	MS	S
SY Wolf [Pvp]	-	R	MS	R	MR	S
Settler CL [Pvp]	S	-	MS	MR	MR	S
+WB Redhawk+ [Pvp]	-	-	MS	MR	-	-
Millennium [Pvp]	S	MS	MR	MS	MR	S
Overland [Pvp]	MS	MS	MR	MR	MR	MR
WB Matlock [Pvp]	S	MS	MS	MR	MR	S
+Ideal+ [Pvp]	S	MR	MS	MR	MR	S
Jerry	MS	-	MR	MR	R	S

+New variety+ to the 2012 CPT

~ W, Hard white wheat variety.

1 R= resistant, MR= moderately resist., MS= mod. susceptible, S= susc., VS= very susc.

SDSU Extension

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2013 South Dakota Winter Wheat Variety Trial Results

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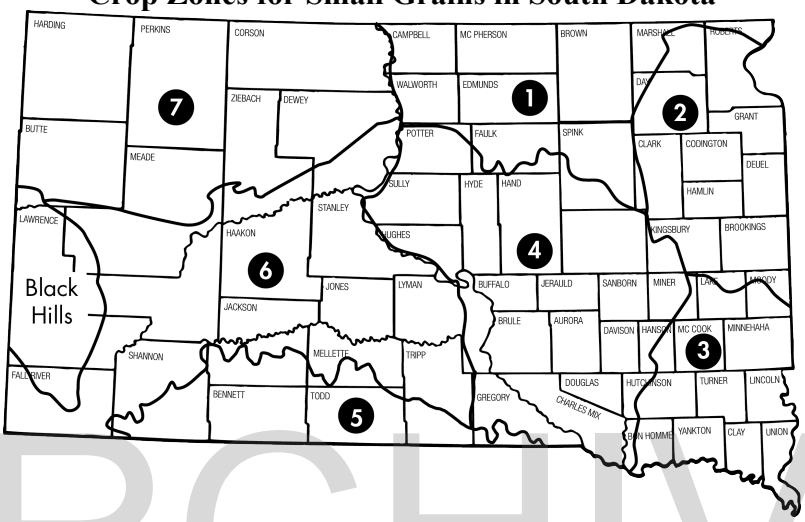
Crop Zones for Small Grains in South Dakota



Recommended/Promising Winter Wheat Varieties for Fall 2013 by Crop Zones†

Zone – 1[pc]	Zone – 2[pc]	Zone – 3	Zone – 4[pc]	Zone – 5	Zone – 6	Zone – 7[pc]
Hard Red Varieties – Recommended						
Art Expedition Ideal‡ Lyman Millennium‡ Overland SY Wolf‡	Art Expedition Ideal Lyman Overland SY Wolf	Art Expedition Ideal Lyman Overland SY Wolf[pc]	Art Expedition Ideal Lyman Millennium Overland SY Wolf	Expedition Ideal Lyman Millennium Overland Settler CL[pc]‡ Smoky Hill[pc]‡ SY Wolf[pc]	Expedition Ideal Lyman Millennium Overland Settler CL[pc] Smoky Hill[pc] SY Wolf[pc]	Expedition Ideal Lyman Millennium Overland Settler CL Smoky Hill SY Wolf
Promising						
-	-	-	-	-	-	-

Hard White Varieties – Recommended						
Alice‡	-	-	Alice	Alice	Alice	Alice
Promising						
-	-	-	-	-	-	-

† Crop Zones (1-7) for small grains (formerly called Crop Adaptation Areas) are based on soil & climate information.
[pc] plant in protective cover to improve winter survival in Crop Zones 1, 2, 4, & 7 and in other zones on designated varieties.
‡ Varieties susceptible to Fusarium Head Blight (Scab) include Alice, Ideal, Millennium, Settler CL, Smoky Hill, and SY Wolf.

Table 1a. 2013 East River Winter Wheat Performance – Average Yield at 13% moisture, Protein, and Test Weight

Variety	Crop Zone – 2 (See Map on Page 1)									Crop Zone – 3		
	Brookings w/Fung.#			Brookings			South Shore			Beresford		
	Yield	Prot. %	Test Wt.	Yield	Prot. %	Test Wt.	Yield	Prot. %	Test Wt.	Yield	Prot. %	Test Wt.
Alice (White)	73	13.6	**60.6**	67	13.4	**58.8**	46	**15.1**	56.3	50	13.9	56.3
Arapahoe	64	15.7	53.9	60	15.1	54.4	**55**	14.5	**59.2**	50	15.1	55.0
Art	54	15.7	57.3	49	**15.9**	55.7	**57**	**15.2**	**58.7**	47	**15.5**	57.9
Camelot	70	14.6	58.0	63	14.6	54.7	**53**	14.2	**59.3**	48	14.7	56.3
WB-Cedar†	63	14.1	**60.2**	56	14.4	58.4	**54**	14.9	**58.6**	**60**	13.9	58.4
Everest	64	14.5	**61.6**	65	14.6	**60.7**	**63**	14.3	**60.7**	**60**	14.4	**61.2**
Expedition	74	14.6	**60.3**	62	13.6	58.5	**58**	14.5	**59.1**	**59**	13.2	60.0
Freeman†	71	14.8	55.9	60	13.8	54.3	**62**	14.5	**59.3**	52	13.8	54.6
Fuller	58	14.8	57.1	47	14.2	54.7	**52**	14.7	**59.6**	35	13.8	55.0
WB-Grainfield†	69	14.1	**60.1**	62	14.1	57.7	50	14.8	57.6	53	13.8	57.0
Ideal	69	14.7	55.6	63	14.7	54.6	**62**	14.2	**60.7**	**60**	14.5	57.6
Jagalene	46	**16.5**	52.7	36	**15.5**	51.7	**55**	14.9	**59.1**	37	13.9	54.0
Jerry	73	15.7	53.1	62	15.0	53.2	**60**	14.4	**60.5**	45	14.9	56.3
LCH08-80†	61	15.2	58.6	36	14.3	51.3	37	**15.6**	56.1	26	13.0	51.0
Lyman	**84**	15.6	**59.9**	**76**	14.8	**60.4**	**56**	**15.0**	**60.0**	**61**	14.1	60.2
WB-Matlock	**78**	15.7	56.0	64	**15.5**	54.4	**55**	14.7	**60.2**	50	14.8	57.9
Millennium	71	14.8	56.4	61	14.6	56.1	**62**	14.4	**60.5**	**59**	13.8	60.1
LCS Mint†	62	14.7	58.5	48	13.6	54.9	**52**	14.5	**59.4**	46	13.0	57.3
Overland	73	15.2	56.0	68	14.2	**59.3**	**61**	14.4	**58.5**	**63**	13.6	59.9
Redfield	75	14.7	57.7	64	14.8	54.9	**63**	14.8	**59.7**	52	14.6	57.0
WB-Redhawk	46	15.1	57.1	43	15.3	56.2	49	**15.1**	**58.8**	51	14.3	59.3
Robidoux	67	14.3	57.2	30	13.4	49.1	45	14.8	57.1	25	12.4	51.0
Settler CL	65	14.5	58.2	59	13.8	58.4	**58**	14.2	**59.9**	58	13.4	58.7
Smoky Hill	63	14.9	56.5	49	15.2	54.3	**58**	**15.0**	**60.1**	52	14.1	57.1
T158†	67	13.2	**61.7**	47	12.8	56.3	**53**	14.4	58.3	54	12.6	56.2
T163†	65	13.9	**60.4**	53	13.4	57.4	**53**	14.3	57.4	54	12.5	55.6
Wesley	61	**16.0**	55.3	52	**15.6**	54.0	**59**	**15.3**	**58.5**	54	14.8	56.3
SY Wolf	71	15.1	55.0	67	15.1	55.1	**58**	14.9	**59.0**	**65**	14.0	59.7
Trial Average	68	14.8	57.4	58	14.5	55.8	57	14.6	59.1	52	14.0	57.2
LSD (0.05)‡	8	0.6	2.5	7	0.5	1.8	11	0.6	2.3	6	0.3	0.9
TPG value§	78	15.9	59.2	69	15.5	58.6	52	15.0	58.5	59	15.2	60.3
C.V.¶	8.2	2.6	3.0	8.9	2.6	2.7	13.8	2.8	2.7	8.7	1.8	1.2

† New entry in 2013, not previously tested
‡ If the difference between two varieties within a column equal or exceeds the LSD value, the difference is significant, if not, the difference is nonsignificant at the 0.05 level of probability.
§ Minimum value required for a variety to quality for the top performance group (TPG)
¶ A measure of experimental error, 15% or less is acceptable.
# Foliar fungicide applied at flowering

Table 1b. 2013 East River Winter Wheat Performance – Average Yield at 13% moisture, Protein, and Test Weight

Variety	Crop Zone – 4			Crop Zones – 2, 3, & 4			
	Pierre			East River Average†			
	Yield	Prot. %	Test Wt.	Yield	TYG%	Prot. %	Test Wt.
Alice (White)	39	14.4	56.3	55	0	14.1	57.6
Arapahoe	35	**14.7**	56.7	53	20	15.0	55.9
Art	34	**15.3**	56.5	48	20	**15.5**	57.2
Camelot	30	**15.3**	56.7	52	20	14.7	56.9
WB-Cedar	42	14.4	55.6	55	40	14.4	58.1
Everest	25	**15.3**	56.9	55	40	14.6	**60.2**
Expedition	36	14.6	57.0	58	40	14.1	59.0
Freeman	42	14.2	53.9	57	20	14.2	55.6
Fuller	28	**15.2**	55.3	44	20	14.5	56.3
WB-Grainfield	**44**	14.2	56.2	55	20	14.2	57.7
Ideal	**46**	14.6	**58.1**	60	**60**	14.5	57.4
Jagalene	16	14.4	56.2	38	20	15.0	54.8
Jerry	**44**	**14.7**	**57.7**	57	40	14.9	56.2
LCH08-80	**44**	14.4	54.9	41	20	14.5	54.3
Lyman	**48**	**14.7**	**57.9**	**65**	**100**	14.9	**59.7**
WB-Matlock	**47**	**14.9**	**58.1**	59	**60**	15.1	57.3
Millennium	**47**	14.0	**58.1**	60	**60**	14.3	58.2
LCS Mint	33	14.6	**58.2**	48	20	14.1	57.6
Overland	**45**	14.6	**57.4**	**62**	**60**	14.8	58.2
Redfield	35	**15.0**	**57.4**	58	20	14.8	57.4
WB-Redhawk	33	**14.8**	56.9	44	0	14.9	57.6
Robidoux	23	14.2	54.0	38	0	13.8	53.6
Settler CL	38	13.9	**57.4**	55	20	13.9	58.5
Smoky Hill	**43**	14.2	56.6	53	40	14.7	56.9
T158	**43**	13.5	56.0	53	40	13.3	57.5
T163	**50**	13.4	54.9	55	40	13.5	57.1
Wesley	31	**15.1**	56.7	52	20	**15.3**	56.2
SY Wolf	42	14.6	55.8	**61**	40	14.7	56.9
Trial Average	38	14.5	56.6	55	-	14.5	57.2
LSD (0.05)‡	8	0.6	1.0	4	-	0.3	1.2
TPG value§	42	14.7	57.2	61	-	15.2	59.1
C.V. ¶	14.4	3.0	1.2	-	-	-	-

† Locations at Onida, Platte, and Selby abandoned due to drought and poor stands.
‡ If the difference between two varieties within a column equal or exceeds the LSD value, the difference is
significant, if not, the difference is nonsignificant at the 0.05 level of probability.
§ Minimum value required for a variety to quality for the top performance group (TPG)
¶ A measure of experimental error, 15% or less is acceptable.

Table 2a. 2013 West River Winter Wheat Performance – Average Yield at 13% moisture, Protein, and Test Weight

Variety	Crop Zone – 6														
	Winner w/Fung.#			Winner			Hayes			Sturgis			Wall		
	Yield	Prot. %	Test Wt.	Yield	Prot. %	Test Wt.	Yield	Prot. %	Test Wt.	Yield	Prot. %	Test Wt.	Yield	Prot. %	Test Wt.
Alice (White)	43	14.6	53.8	43	14.4	53.8	37	16.6	50.8	46	14.1	**56.0**	**60**	13.4	**58.3**
Arapahoe	52	15.1	55.2	51	14.8	54.8	40	16.8	53.9	45	14.4	53.8	57	13.7	55.6
Art	52	**16.0**	55.5	51	**15.3**	**57.0**	39	17.1	54.7	47	14.4	**57.7**	54	13.8	**57.9**
Camelot	51	15.1	55.3	47	14.7	**56.5**	42	17.3	54.2	48	14.4	54.4	58	13.9	54.9
WB-Cedar†	50	15.1	51.9	50	14.3	54.2	40	17.2	52.8	46	13.8	**56.1**	58	13.4	56.4
Everest	46	15.2	**55.9**	45	14.7	**57.0**	37	16.5	54.3	50	13.7	**56.5**	57	13.9	57.2
Expedition	50	14.8	55.0	52	13.9	**56.4**	38	16.7	52.1	45	13.3	54.7	57	14.1	56.6
Freeman†	53	14.3	51.7	51	14.3	51.2	44	15.2	52.5	50	13.2	52.8	**60**	12.0	54.9
Fuller	42	15.2	52.1	43	14.8	52.2	37	17.4	52.2	41	13.9	53.2	51	14.2	56.2
WB-Grainfield†	53	14.7	53.5	49	14.0	55.9	43	17.2	52.4	48	13.7	**55.4**	**65**	14.0	**57.7**
Ideal	**56**	14.4	**56.5**	56	14.3	**56.3**	37	17.5	56.1	**61**	13.2	**56.1**	55	13.7	**57.7**
Jagalene	36	15.0	51.5	28	14.8	51.4	32	17.7	53.2	40	14.1	**56.1**	51	14.0	**58.3**
Jerry	54	15.1	55.0	50	14.8	55.8	34	17.7	**59.1**	44	13.9	55.2	53	13.7	57.4
LCH08-80†	50	14.9	53.3	47	14.1	52.8	41	16.7	55.3	**54**	14.2	**57.0**	56	12.3	57.3
Lyman	**61**	15.4	**56.1**	**65**	14.7	**56.6**	41	17.0	53.8	**58**	13.9	**57.9**	**63**	13.2	**58.2**
WB-Matlock	52	**15.8**	55.6	51	**15.3**	**56.7**	35	17.8	56.4	42	14.7	54.4	50	13.4	**58.2**
Millennium	**60**	14.8	**57.0**	57	14.3	**57.3**	40	16.6	**57.4**	49	14.3	**58.2**	**63**	14.2	**59.7**
LCS Mint†	45	14.4	54.9	47	13.6	**56.4**	41	17.0	56.2	**55**	13.5	**58.1**	58	13.3	**59.3**
Overland	**60**	14.9	**55.7**	58	14.4	**56.8**	37	17.1	56.3	**57**	14.2	**56.6**	**60**	12.9	**58.5**
Redfield	47	15.4	55.2	50	14.6	**56.2**	38	16.5	54.5	**55**	14.4	**55.8**	**63**	13.0	**59.2**
WB-Redhawk	53	15.0	**55.7**	51	14.4	**56.9**	40	17.6	52.0	51	14.6	55.2	**66**	13.0	**59.2**
Robidoux	35	14.8	51.3	34	14.1	51.5	36	17.7	53.3	48	14.3	53.4	56	13.1	54.8
Settler CL	**58**	14.3	**55.8**	51	13.9	**56.6**	40	17.0	51.4	49	13.8	**55.9**	**59**	12.8	55.4
Smoky Hill	52	14.7	55.6	54	14.4	**56.4**	39	16.8	52.3	46	14.1	52.5	57	13.1	57.4
T158†	50	13.8	53.5	44	13.5	54.0	38	16.1	51.7	49	13.2	**55.5**	**60**	11.8	56.9
T163†	51	14.5	51.6	46	13.5	52.6	41	15.5	52.0	42	13.2	54.0	**63**	12.1	57.1
Wesley	52	15.3	53.3	53	**15.1**	55.1	38	17.3	50.9	48	14.7	54.3	55	13.0	55.5
SY Wolf	**56**	14.8	**56.2**	58	14.0	**57.6**	43	15.4	54.3	49	14.4	**56.3**	**68**	12.5	**59.5**
Trial Average	52	14.9	54.5	51	14.4	55.4	39	-	53.8	50	-	55.5	59	-	57.3
LSD (0.05)‡	6	0.5	1.4	6	0.4	1.5	NS	-	2.5	10	-	2.7	9	-	2.2
TPG value§	56	15.5	55.7	59	14.9	56.1	NS	-	56.6	52	-	55.4	59	-	57.5
C.V.¶	7.9	2.2	1.8	8.2	2.2	1.9	14.4	-	3.3	14.1	-	3.5	11.2	-	2.6

† New entry in 2013, not previously tested
‡ If the difference between two varieties within a column equal or exceeds the LSD value, the difference is significant, if not, the difference is nonsignificant at the 0.05 level of probability.
§ Minimum value required for a variety to quality for the top performance group (TPG)
¶ A measure of experimental error, 15% or less is acceptable.
# Foliar fungicide applied at flowering

Table 2b. 2013 West River Winter Wheat Performance – Average Yield at 13% moisture, Protein, and Test Weight

Variety	Crop Zone – 5			Crop Zone – 7						Crop Zones – 5, 6, & 7			
	Martin			Bison			McLaughlin			West River Average†			
	Yield	Prot. %	Test Wt.	Yield	Prot. %	Test Wt.	Yield	Prot. %	Test Wt.	Yield	TYG %	Prot. %	Test Wt.
Alice (White)	41	15.0	**57.1**	49	13.8	**53.5**	32	14.0	51.9	44	14	14.4	54.4
Arapahoe	33	17.3	55.1	49	15.3	50.7	36	13.8	50.2	45	0	15.0	53.7
Art	**43**	16.5	**58.8**	50	14.9	52.3	33	14.7	54.7	46	14	**15.4**	56.1
Camelot	39	16.3	53.9	**55**	14.9	48.1	31	14.1	47.0	46	14	15.0	53.0
WB-Cedar	41	15.3	56.4	**52**	15.1	52.0	35	13.6	**56.3**	46	14	14.6	54.5
Everest	40	15.1	**57.9**	**52**	14.6	51.7	32	14.6	**55.7**	45	14	14.8	55.8
Expedition	**43**	13.9	54.8	50	14.4	50.7	36	13.6	**58.1**	46	14	14.3	54.8
Freeman	39	14.7	52.3	**53**	13.5	49.1	41	13.0	48.9	49	29	13.9	51.7
Fuller	40	14.9	56.3	42	15.5	49.4	33	14.7	52.3	42	0	15.0	52.3
WB-Grainfield	40	15.9	55.7	**57**	14.7	51.3	40	13.9	**57.3**	49	29	14.5	54.9
Ideal	40	15.8	**57.1**	**54**	15.4	51.1	**46**	13.2	52.3	**51**	**57**	14.5	55.4
Jagalene	41	16.6	**58.3**	47	14.7	50.1	33	14.2	50.9	39	0	15.0	53.7
Jerry	41	16.3	**58.1**	45	15.5	51.6	34	13.0	51.1	44	0	14.9	55.4
LCH08-80	**44**	16.0	56.5	**55**	14.7	52.5	33	13.4	52.6	47	43	14.4	54.6
Lyman	40	15.3	55.0	**58**	14.4	52.0	**46**	13.6	54.3	**54**	**86**	14.8	55.5
WB-Matlock	37	16.9	**57.2**	45	15.5	52.5	32	14.2	49.4	43	0	**15.5**	55.1
Millennium	42	15.6	**58.7**	**56**	13.4	**54.5**	**45**	13.3	**57.7**	**52**	**57**	14.4	**57.6**
LCS Mint	**49**	13.9	**60.0**	**57**	14.2	**54.1**	**46**	13.5	**60.1**	**50**	**57**	14.1	**57.4**
Overland	**43**	13.9	**58.2**	**55**	13.6	**54.1**	41	14.0	**56.1**	**51**	**71**	14.4	**56.5**
Redfield	**43**	15.4	**59.2**	**55**	14.7	50.9	**46**	14.2	53.2	**50**	**71**	14.8	55.5
WB-Redhawk	**43**	14.7	**58.1**	**59**	14.7	**53.7**	38	14.1	**54.9**	**50**	43	14.7	55.7
Robidoux	**46**	13.2	**58.1**	46	15.0	47.0	27	12.8	49.8	41	14	14.3	52.4
Settler CL	**45**	13.1	56.4	**56**	14.2	50.7	39	13.1	53.5	**50**	**57**	14.0	54.5
Smoky Hill	38	14.2	**59.6**	**55**	14.4	51.7	39	14.0	51.2	48	14	14.4	54.6
T158	**47**	13.7	**58.7**	**54**	13.6	51.4	37	13.2	54.2	47	43	13.6	54.5
T163	**48**	12.7	**57.7**	**56**	12.8	50.8	38	13.3	**56.7**	48	43	13.6	54.0
Wesley	**43**	14.8	54.7	**52**	15.7	50.5	**45**	14.8	**55.9**	48	43	15.1	53.8
SY Wolf	**49**	14.4	**59.3**	**55**	14.3	50.6	**44**	14.8	**56.3**	**53**	**71**	14.3	56.3
Trial Average	42	-	57.0	53	-	51.3	38	-	53.7	48	-	14.6	54.8
LSD (0.05)‡	7	-	3.3	7	-	1.4	5	-	5.3	4	-	0.3	1.2
TPG value§	43	-	56.7	52	-	53.1	42	-	54.8	50	-	15.2	56.4
C.V.¶	11.9	-	4.1	9.8	-	1.9	9.0	-	7.0	-	-	-	-

† Location at Kennebec was abandoned due to drought and poor stands
‡ If the difference between two varieties within a column equal or exceeds the LSD value, the difference is significant, if not, the difference is nonsignificant at the 0.05 level of probability.
§ Minimum value required for a variety to quality for the top performance group (TPG)
¶ A measure of experimental error, 15% or less is acceptable.

Table 3. 2012-2013 (2-Yr Average) Winter Wheat Variety Yield (bu/ac at 13% moisture)

Variety	East River				West River				
	Crop Zone – 2		Crop Zone – 3	Crop Zone – 4	Crop Zone – 5	Crop Zone – 6			
	Brookings w/Fung.#	South Shore	Beresford	Pierre	Martin	Winner w/Fung.#	Winner	Sturgis	Wall
Alice (White)	**78**	**64**	54	60	36	63	63	56	63
Arapahoe	74	55	52	56	30	65	62	55	59
Art	70	**70**	53	**68**	36	69	**70**	59	63
Camelot	**82**	**65**	54	57	35	65	64	**60**	64
WB-Cedar†	-	-	-	-	-	-	-	-	-
Everest	68	**67**	58	57	35	61	63	59	61
Expedition	**80**	63	56	56	**40**	66	63	59	64
Freeman†	-	-	-	-	-	-	-	-	-
Fuller	63	**65**	41	55	35	57	60	54	59
WB-Grainfield†	-	-	-	-	-	-	-	-	-
Ideal	**81**	62	**62**	59	36	66	**67**	**67**	64
Jagalene	68	59	43	42	36	53	49	46	57
Jerry	**79**	60	51	54	34	59	57	53	59
LCH08-80†	-	-	-	-	-	-	-	-	-
Lyman	**85**	**67**	61	63	36	**72**	**73**	**65**	**68**
WB-Matlock	**79**	54	57	59	33	64	62	53	60
Millennium	**78**	**69**	**64**	**67**	36	**74**	**67**	**61**	**66**
LCS Mint†	-	-	-	-	-	-	-	-	-
Overland	**79**	**72**	**66**	**70**	36	**76**	**71**	**63**	**66**
Redfield	73	**65**	56	60	35	64	62	59	**66**
WB-Redhawk	63	**65**	55	60	36	66	65	60	**67**
Robidoux	**82**	61	43	61	**40**	61	61	60	**70**
Settler CL	74	**65**	59	62	**43**	**72**	66	**61**	**67**
Smoky Hill	72	**65**	60	**67**	36	65	**68**	57	**67**
T158†	-	-	-	-	-	-	-	-	-
T163†	-	-	-	-	-	-	-	-	-
Wesley	69	60	58	57	38	65	65	56	65
SY Wolf	**78**	**71**	**68**	**72**	**42**	**77**	**74**	58	**71**
LSD (0.05)†	8	6	7	8	4	6	7	7	5
TYG value‡	77	64	62	64	39	71	67	60	66

† If the difference between two varieties within a column equal or exceeds the LSD value, the difference is significant, if not, the difference is nonsignificant at the 0.05 level of probability.
‡ Minimum value required for a variety to quality for the top yield group (TYG)
# Foliar fungicide applied at flowering

Table 4. 2011-2013 (3-Yr Average) Winter Wheat Variety Yield (bu/ac at 13% moisture)

Variety	East River		West River			
	Crop Zone – 2	Crop Zone – 4	Crop Zone– 5	Crop Zone – 6		
	Brookings w/Fung.#	Pierre	Martin	Wall	Winner w/Fung.#	Winner
Alice (White)	76	63	44	54	56	56
Arapahoe	74	59	37	51	61	55
Art	75	71	42	55	62	59
Camelot	**82**	63	42	54	59	55
WB-Cedar†	-	-	-	-	-	-
Everest	75	63	45	53	57	57
Expedition	**80**	62	**49**	**57**	62	57
Freeman†	-	-	-	-	-	-
Fuller	65	62	45	51	53	53
WB-Grainfield†	-	-	-	-	-	-
Ideal	**80**	68	46	55	60	58
Jagalene	68	53	42	51	49	44
Jerry	77	56	40	52	55	51
LCH08-80†	-	-	-	-	-	-
Lyman	**79**	66	45	**59**	**70**	**66**
WB-Matlock	77	60	39	52	59	55
Millennium	**79**	**72**	43	55	**68**	58
LCS Mint†	-	-	-	-	-	-
Overland	**80**	**76**	46	55	**67**	**61**
Redfield	76	66	44	**58**	60	55
WB-Redhawk	-	-	-	-	-	-
Robidoux	**84**	63	47	**58**	55	54
Settler CL	77	67	**50**	**57**	**67**	58
Smoky Hill	73	**74**	44	**57**	59	60
T158†	-	-	-	-	-	-
T163†	-	-	-	-	-	-
Wesley	73	67	45	56	61	56
SY Wolf	**82**	**78**	**54**	**61**	**68**	**64**
LSD (0.05)‡	5	7	4	4	6	6
TPG value§	78	72	49	57	64	61

† New entry in 2013 or 2012, 3-yr average not available.
‡ If the difference between two varieties within a column equal or exceeds the LSD value, the difference is significant, if not, the difference is nonsignificant at the 0.05 level of probability.
§ Minimum value required for a variety to quality for the top yield group (TYG)
# Foliar fungicide applied at flowering

Table 5. Winter wheat variety origin, characteristics, and quality.

Variety	Testing and Origin		Agronomic Characteristics				Grain Quality		
	Years Tested in SD Trials	Origin†-Year	Rel.‡ Hdg *days*	Rel.‡ Height *inches*	Lodging Res.§	Winter Hardi-ness§	Test Wt.	Protein %	Baking Quality#
Alice (White)	5+	SD-06	-1	-2	G	G-E	Good	Good	E
Arapahoe	5+	NE-99	2	2	F	G-E	Low	High	G
Art	5	AP-08	1	0	E	F	Good	High	-
Camelot	4	NE-08	0	1	G	G	Low	Good	E
WB-Cedar	1	WB-10	-4	-4	E	G	Good	Good	G
Everest	3	KS-09	-3	-1	E	G	High	Good	A
Expedition	5+	SD-02	**0**	**0**	F-G	E	Good	Good	G
Freeman	1	NE-**13**	-1	0	G	G	Low	Low	A-G
Fuller	5+	KS-07	-2	-1	E	P-F	Low	High	A
WB-Grainfield	1	WB-12	-2	-1	G	G	Good	Good	G
Ideal	5+	SD-11	3	0	E	G-E	Good	Good	A
Jagalene	5+	AP-01	2	-1	E	G	Low	High	A
Jerry[no PVP]	5+	ND-01	5	3	F-G	E	Good	High	G
LCH08-80	1	LCS-**13**	1	-2	E	F-G	Low	Good	F
Lyman	5+	SD-08	1	1	F	G-E	High	High	A
WB Matlock	3	WB-10	3	1	G	E	Good	High	-
Millennium	5+	NE-00	2	2	G	G	High	Good	A
LCS Mint	1	LCS-12	-2	1	G	-	High	Low	E
Overland	5+	NE-06	2	1	G	G-E	High	Low	F
Redfield	5	SD-**13**	3	-1	E	G-E	Good	Good	G
WB Redhawk	2	WB-11	0	0	G	G	Good	High	-
Robidoux	3	NE-10	1	-1	G	G	Low	Low	G
Settler CL	5+	NE-08	0	0	G	F-G	Good	Low	A
Smoky Hill	5+	WB-07	2	-1	G	F-G	Good	Good	E
T158	1	LCS-09	-5	-2	G	-	Good	Low	G
T163	1	LCS-10	-5	-1	G	-	Good	Low	G
Wesley[no PVP]	5+	NE-99	1	-1	E	G	Low	High	G
SY Wolf	3	AP-11	-1	0	E	F-G	Good	Good	A

† AP, AgriPro; KS, Kansas; LCS, Limagrain Cereal Seeds; MN, Minnesota; ND, North Dakota; SD, South Dakota; WB, WestBred and – (Year of Release)
‡ Difference in days to heading compared to **Expedition** (2013 maturity notes from the Brookings). Height compared to **Expedition (30 inches)** in 2013 Statewide
§ Lodging resistance and winter hardiness: E, excellent; G, good; F, fair; P, poor.
# Baking Quality: E, excellent; G, good; A, acceptable; F, fair.

Table 6. Winter wheat variety disease ratings.

Variety	Disease Ratings§					
	Stripe Rust	Stem Rust	Leaf Rust	Tan Spot	Wheat Streak Mosaic	FHB (Scab)
Alice (White)	MS	MR	MS	MS	MS	S
Arapahoe	MS	MR	MR	S	S	MR
Art	MS	R	R	MS	MS	MR
Camelot	MR-R	MS	MR	-	S	S
WB-Cedar	MR	MR	MS-MR	MS	MS	-
Everest	MS	MS	MR	MS	MS	MR
Expedition	S	R	S	MS	S	MR
Freeman	MS	MS-MR	MS-MR	-	-	MS
Fuller	S	S	MR	MR	MS	S
WB-Grainfield	MR	-	MR	-	-	-
Ideal	MS	MR	MR	MR	S	MS
Jagalene	S	MS	S	MR	MS	S
Jerry	MR	R	MR	-	MS	S
LCH08-80	MS	MR	MS	MR	-	S
Lyman	MS	R	R	MR	S	R
WB Matlock	MS	MR	MR	MS	S	S
Millennium	MR	MR	MS	MS	S	S
LCS Mint	MR	-	MS	-	-	-
Overland	MR	MR	MR	MS	MS	MR
Redfield	MR	MR	MS-MR	-	S	MR
WB Redhawk	MS	-	MR	-	-	-
Robidux	MR	S	MS	S	S	S
Settler CL	MS	MR	MS-MR	-	MS	S
Smoky Hill	S	MS	MR	MR	S	VS
T158	R	-	MS	MS	MS-MR	S
T163	MR	-	MS	MR	MR	S
Wesley	MR	R	MS-MR	MR	S	S
SY Wolf	MR	MR	R	R	MR	S

§ Disease ratings: R, resistant; MR, moderately resistant; MS, moderately susceptible; S, susceptible; VS, very susceptible.

2014 South Dakota Winter Wheat Variety Trial Results

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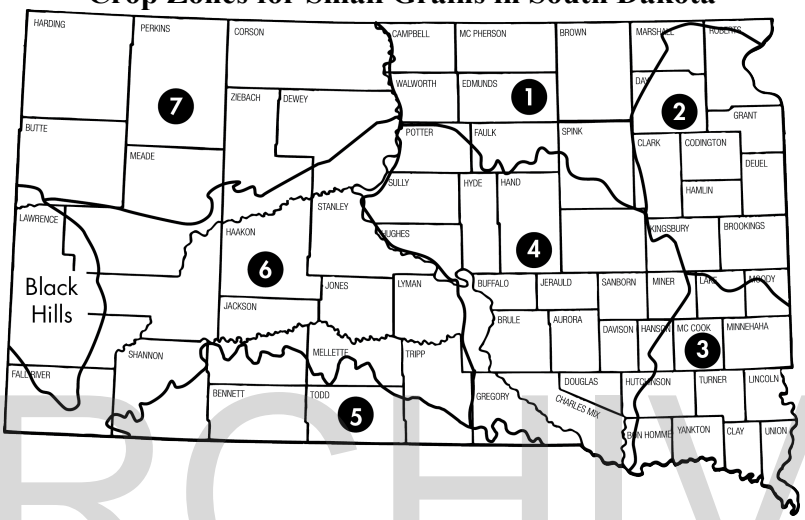
Crop Zones for Small Grains in South Dakota



Recommended/Promising Winter Wheat Varieties for Fall 2013 by Crop Zones†

Zone – 1[pc]	Zone – 2[pc]	Zone – 3	Zone – 4[pc]	Zone – 5	Zone – 6	Zone – 7[pc]
Hard Red Varieties – Recommended						
Expedition Ideal‡ Lyman Millennium‡ Overland Redfield Settler CL‡ SY Wolf‡	Expedition Ideal Lyman Overland Redfield Settler CL SY Wolf	Expedition Ideal Lyman Overland Redfield Settler CL[pc] SY Wolf[pc]	Expedition Ideal Lyman Millennium Overland Redfield Settler CL SY Wolf	Ideal Lyman Millennium Overland Redfield SY Wolf[pc]	Ideal Lyman Millennium Overland Redfield SY Wolf[pc]	Ideal Lyman Millennium Overland Redfield SY Wolf
Promising						
Freeman WB Grainfield WB Matlock‡	Freeman WB Grainfield WB Matlock	Freeman WB Grainfield WB Matlock	Freeman WB Grainfield WB Matlock	LCS Mint	LCS Mint	LCS Mint

† Crop Zones (1-7) for small grains are based on soil & climate information.
[pc] plant in protective cover to improve winter survival in Crop Zones 1, 2, 4, & 7 and in other zones on designated varieties.
‡ Varieties susceptible to Fusarium Head Blight (Scab) include Ideal, WB Matlock, Millennium, Settler CL, and SY Wolf.

Table 1a. 2014 East River Winter Wheat Performance - Average Yield (bu/ac at 13% moisture), Protein (%), and Test Weight (lbs/bu).

Variety	Crop Zone - 2						Crop Zone - 3		
	Brookings w/Fung.#			Brookings			Beresford		
	Yield	Protein	Test Wt.	Yield	Protein	Test Wt.	Yield	Protein	Test Wt.
1863†	**72**	12.0	**59.6**	**62**	12.1	**59.6**	53	14.0	**60.0**
Alice (White)	61	13.2	58.9	47	**13.6**	55.2	41	14.9	**59.9**
Arapahoe	60	12.8	58.2	51	13.0	57.1	52	14.6	57.9
Brawl CL Plus†	52	13.4	58.4	44	**14.0**	53.9	45	14.9	57.5
Byrd†	56	12.4	58.3	51	12.5	54.5	49	13.4	58.0
WB Cedar	49	13.1	58.1	50	12.9	55.6	47	14.9	56.7
Decade†	55	**14.5**	56.8	56	**13.6**	55.8	58	15.0	56.4
Denali†	60	12.0	57.1	49	12.6	54.3	53	12.7	**59.2**
Everest	58	13.1	**60.5**	56	13.1	**59.8**	46	15.1	56.9
Expedition	58	12.8	**61.9**	49	12.8	**58.0**	50	14.7	57.8
Freeman	**72**	12.8	57.8	**65**	12.8	57.6	**63**	13.9	**58.9**
WB Grainfield	**64**	12.8	58.7	**63**	12.7	**58.3**	58	14.9	**58.8**
Ideal	**68**	12.7	58.2	58	12.6	55.6	**68**	13.7	57.9
Jagalene-Check	63	13.5	56.8	50	**13.9**	52.6	51	13.9	**59.7**
Jerry	**65**	12.8	58.1	50	13.0	57.5	**60**	14.6	**59.6**
Lyman	**67**	13.0	**62.3**	60	12.9	**60.5**	58	15.4	58.1
WB Matlock	**73**	13.0	**60.8**	54	**13.6**	**58.8**	**67**	14.5	**59.6**
Millenium	63	12.7	58.8	49	13.1	57.5	56	14.8	56.0
LCS Mint	**65**	13.0	57.8	**62**	12.7	57.6	50	14.0	58.4
Overland	**69**	12.8	**59.9**	58	12.6	**59.1**	**63**	14.6	**58.5**
Redfield	61	12.9	59.0	54	13.4	57.3	**60**	14.0	58.4
WB Redhawk	45	**14.1**	53.6	47	**14.0**	54.5	35	**16.3**	56.0
Robidoux	49	13.6	53.9	38	**14.2**	50.2	46	13.5	56.1
Settler CL	54	13.0	58.9	50	13.1	57.5	48	13.9	57.5
T158	57	12.6	57.9	49	12.8	54.1	35	14.0	58.2
Wesley	61	**14.1**	57.3	60	13.4	**58.2**	50	14.8	58.2
SY-Wolf	**71**	13.5	58.4	**67**	13.5	**57.8**	**62**	14.7	56.7
Trial Average	60	13.0	58.1	53	13.1	56.5	54	14.4	57.8
LSD (0.05)*	9	0.8	2.7	6	0.6	2.8	8	0.3	1.5
TPG value§	64	13.7	59.6	61	13.6	57.7	60	16.0	58.5
C.V. ¶	10.5	4.3	3.3	8.5	3.3	3.6	10.3	1.7	1.9

† New entry in 2014, not previously tested.

Foliar fungicide applied at flowering.

* If the difference between two varieties within a column equals or exceeds the LSD value, the difference is significant, if not, the difference is insignificant at the 0.05 level of probability.

§ Minimum value required for a variety to qualify for the top yield group (TYG).

¶ A measure of experimental error, 15% or less is acceptable.

Table 1b. 2014 East River Winter Wheat Performance - Average Yield (bu/ac at 13% moisture), Protein (%), and Test Weight (lbs/bu).

Variety	Crop Zone - 4						Crop Zones - 2, 3, & 4			
	Onida			Pierre			East River Average‡			
	Yield	Protein	Test Wt.	Yield	Protein	Test Wt.	Yield	TYG%	Protein	Test Wt.
1863†	**96**	12.9	**61.9**	81	13.3	**61.9**	72	**60**	12.9	**60.6**
Alice (White)	82	13.2	60.2	78	13.5	**61.3**	62	0	13.7	58.7
Arapahoe	80	13.8	59.3	78	**14.3**	60.6	64	0	13.7	58.5
Brawl CL Plus†	72	13.9	61.0	74	13.6	**61.6**	57	0	13.9	58.6
Byrd†	85	12.7	60.6	87	12.5	**61.4**	66	0	12.7	58.2
WB Cedar	86	13.4	61.3	78	13.1	61.0	62	0	13.5	58.5
Decade†	**98**	**14.8**	59.1	85	**14.7**	**61.6**	70	20	**14.5**	58.5
Denali†	87	12.7	**61.5**	**97**	12.0	**63.1**	69	20	12.4	58.6
Everest	87	13.9	**62.9**	73	14.0	**61.6**	64	0	13.8	**60.5**
Expedition	86	13.2	61.3	71	14.1	**61.7**	63	0	13.5	**60.3**
Freeman	**96**	13.5	59.5	85	13.5	60.2	**76**	**80**	13.3	58.6
WB Grainfield	94	13.3	60.3	83	14.0	**62.1**	73	40	13.5	59.6
Ideal	**104**	13.5	**61.5**	**96**	13.3	**62.8**	**79**	**80**	13.2	59.5
Jagalene-Check	85	13.6	60.3	77	13.7	**62.7**	65	0	13.7	58.4
Jerry	79	14.0	59.2	78	13.6	**61.8**	67	40	13.6	59.0
Lyman	**97**	13.9	**61.8**	82	**14.5**	**61.8**	73	40	13.9	**61.3**
WB Matlock	87	13.9	60.9	83	13.8	**62.1**	73	40	13.8	**60.4**
Millenium	89	13.3	60.4	82	14.1	**61.9**	68	0	13.5	59.0
LCS Mint	**95**	13.6	61.1	82	13.8	**63.2**	71	**60**	13.4	59.5
Overland	89	13.6	60.2	81	14.1	**61.6**	72	40	13.5	59.8
Redfield	**97**	13.6	60.9	89	13.5	**61.3**	72	20	13.5	59.4
WB Redhawk	89	**14.8**	60.2	72	**14.8**	59.6	58	0	**14.8**	56.7
Robidoux	75	13.2	57.6	81	12.9	60.6	58	0	13.5	55.6
Settler CL	93	13.3	59.3	79	13.4	**61.4**	65	0	13.3	58.9
T158	88	12.6	59.9	76	12.5	60.6	61	0	12.9	58.1
Wesley	93	**14.8**	60.6	82	**14.7**	60.3	69	0	14.3	58.9
SY-Wolf	**103**	13.9	61.3	**91**	14.0	**61.5**	**79**	**100**	13.9	59.1
Trial Average	88	13.6	60.2	82	13.6	61.4	67	-	13.6	58.8
LSD (0.05)*	9	0.5	1.4	7	0.6	2.1	4	-	0.4	1.1
TPG value§	95	14.3	61.5	90	14.2	61.1	75	-	14.4	60.2
C.V. ¶	7.0	2.4	1.7	6.2	3.2	2.4	-	-	-	-

‡ Locations at Platte, Selby,and South Shore were abandoned due to wind damage, winterkill, and volunteer oats competition, respectively.

† New entry in 2014, not previously tested.

* If the difference between two varieties within a column equals or exceeds the LSD value, the difference is significant, if not, the difference is insignificant at the 0.05 level of probability.

§ Minimum value required for a variety to qualify for the top yield group (TYG).

¶ A measure of experimental error, 15% or less is acceptable.

Table 2a. 2014 West River Winter Wheat Performance - Average Yield (bu/ac at 13% moisture), Protein (%), and Test Weight (lbs/bu).

Variety	Crop Zone - 6												
	Kennebec			Sturgis		Wall		Winner			Winner w/Fung.#		
	Yield	Test Wt.	Protein	Yield	Test Wt.	Yield	Test Wt.	Yield	Protein	Test Wt.	Yield	Protein	Test Wt.
1863†	76	**61.7**	12.9	44	60.0	47	**60.3**	67	11.8	**61.3**	64	11.6	**61.0**
Alice (White)	80	**62.7**	13.1	44	59.8	43	56.1	63	12.2	60.6	58	11.8	60.2
Arapahoe	82	**61.3**	13.7	44	58.8	52	**59.0**	64	12.4	60.0	66	12.3	59.4
Brawl CL Plus†	67	**62.0**	**14.1**	46	59.8	42	**60.5**	61	12.5	60.4	54	12.1	59.6
Byrd†	90	**62.0**	12.3	48	60.5	44	**60.0**	67	11.4	60.2	63	11.1	60.2
WB-Cedar	79	**61.5**	13.3	43	58.6	37	56.4	67	12.2	59.9	55	12.1	59.3
Decade†	**99**	**62.5**	13.7	51	59.5	**64**	**58.9**	**79**	**13.2**	60.5	**75**	**13.3**	59.3
Denali†	**95**	**62.5**	11.6	**57**	60.1	53	**59.7**	71	11.6	60.7	69	11.5	59.1
Everest	83	**62.7**	**14.5**	44	60.0	36	55.8	63	12.3	**62.7**	62	12.1	**62.2**
Expedition	87	**63.2**	13.4	48	60.0	40	**59.1**	69	11.8	60.4	62	11.7	60.0
Freeman	**95**	**60.9**	13.1	47	58.6	57	**59.6**	**74**	12.5	58.7	67	12.1	58.1
WB-Grainfield	84	**61.6**	13.0	47	59.7	49	**59.9**	**78**	12.4	59.1	65	12.3	58.8
Ideal	**104**	**62.1**	12.3	**55**	60.0	**64**	**62.3**	**79**	12.1	**61.3**	**77**	12.0	**61.1**
Jagalene-Check	86	**62.8**	12.6	48	**61.2**	52	57.4	**75**	12.2	**61.3**	65	12.5	59.8
Jerry	89	**61.8**	13.1	45	59.3	46	**61.2**	59	**12.7**	60.4	57	12.4	59.9
Lyman	89	**62.8**	**14.9**	51	60.2	55	**62.0**	**73**	12.4	**61.7**	**72**	11.8	**61.5**
WB-Matlock	91	**63.4**	12.7	50	60.1	48	**60.7**	64	**13.3**	60.8	63	12.5	**61.5**
Millenium	91	**62.8**	13.4	48	60.5	52	**59.3**	69	11.5	**62.3**	67	11.6	**62.3**
LCS Mint	90	**63.3**	13.2	**56**	**61.6**	48	56.1	**76**	12.1	**61.8**	**74**	12.1	60.2
Overland	91	**62.2**	13.2	46	58.8	44	**60.0**	**75**	11.3	**61.9**	67	11.5	**61.5**
Redfield	86	**62.2**	12.6	48	60.2	55	**58.9**	71	**12.8**	60.4	70	12.2	**61.2**
WB-Redhawk	69	**59.7**	**15.1**	45	60.0	37	55.3	60	**13.0**	**61.4**	56	**12.7**	59.5
Robidoux	88	**61.3**	12.3	49	59.9	46	55.6	56	12.6	57.0	55	12.0	59.0
Settler CL	89	**61.6**	13.4	**53**	60.3	46	**59.7**	66	12.1	59.3	67	11.6	59.9
T158	84	**61.8**	12.7	47	59.9	40	56.9	63	11.7	59.7	59	11.5	58.3
Wesley	89	**62.0**	**14.4**	46	58.2	50	**59.1**	**72**	**13.2**	59.9	**74**	**12.8**	60.0
SY-Wolf	**93**	57.8	**14.4**	**54**	60.0	53	55.9	**80**	12.5	**61.5**	**79**	12.2	60.1
Trial Average	87	61.4	13.3	48	59.7	49	58.5	69	12.3	60.5	65	12.0	60.0
LSD (0.05)*	12	5.3	1.0	5	1.4	7	3.5	8	0.6	1.5	8	0.6	1.7
TPG value§	92	58.1	14.1	52	60.8	58	58.8	72	12.7	61.2	71	12.7	60.6
C.V. ¶	9.7	6.1	5.5	12.4	2.0	18.6	5.6	8.2	3.3	1.7	9.0	3.5	1.9

† New entry in 2014, not previously tested.

Foliar fungicide applied at flowering.

* If the difference between two varieties within a column equals or exceeds the LSD value, the difference is significant, if not, the difference is insignificant at the 0.05 level of probability.

§ Minimum value required for a variety to qualify for the top yield group (TYG).

¶ A measure of experimental error, 15% or less is acceptable.

Table 2b. 2014 West River Winter Wheat Performance - Average Yield (bu/ac at 13% moisture), Protein (%), and Test Weight (lbs/bu).

Variety	Crop Zone - 5		Crop Zone 7				Crop Zones - 5, 6, & 7			
	Martin		Bison		McLaughlin		West River Average‡			
	Yield	Test Wt.	Yield	Test Wt.	Yield	Test Wt.	Yield	TYG%	Protein	Test Wt.
1863†	46	**62.4**	30	54.8	40	55.4	55	0	11.3	**60.6**
Alice (White)	43	60.1	29	54.1	**54**	**58.6**	55	14	12.4	**59.7**
Arapahoe	39	59.9	30	51.4	49	54.4	56	0	12.9	58.8
Brawl CL Plus†	35	**61.3**	30	55.6	35	54.7	48	0	13.0	**59.7**
Byrd†	43	**61.2**	28	54.6	39	54.0	56	0	11.6	**59.7**
WB-Cedar	40	**60.4**	28	51.8	35	52.7	51	0	12.5	58.6
Decade†	**53**	**60.9**	38	55.9	46	52.2	**67**	**71**	13.4	59.4
Denali†	**51**	**62.5**	**39**	54.7	43	52.0	**63**	43	11.5	**59.8**
Everest	41	**62.4**	29	51.4	40	55.7	53	0	13.0	**60.2**
Expedition	43	57.9	32	55.3	46	**56.1**	56	0	12.4	**59.5**
Freeman	**54**	58.9	34	53.3	47	54.7	**64**	43	12.5	58.6
WB-Grainfield	42	**61.1**	27	55.0	42	53.9	59	14	12.5	59.4
Ideal	**53**	**60.6**	**39**	54.7	**61**	**56.0**	**71**	**100**	12.0	**60.6**
Jagalene-Check	43	**61.6**	30	55.1	42	51.4	60	14	12.5	**59.9**
Jerry	**50**	**60.7**	30	53.3	**54**	**56.7**	57	29	12.7	**60.2**
Lyman	**50**	**62.1**	**40**	56.3	**56**	54.0	**64**	**57**	13.2	**61.2**
WB-Matlock	**50**	**60.7**	36	55.3	**55**	**57.1**	60	29	12.8	**60.7**
Millenium	**59**	60.3	37	52.8	**52**	**57.1**	**63**	29	12.3	**60.6**
LCS Mint	**55**	**60.4**	36	55.4	45	54.0	**64**	**57**	12.4	**59.8**
Overland	**58**	**60.5**	38	55.9	**52**	**56.8**	**62**	43	12.1	**60.2**
Redfield	**57**	**63.5**	34	54.3	**51**	55.9	**63**	29	12.4	**60.1**
WB-Redhawk	42	59.4	27	52.6	24	52.1	49	0	13.3	58.4
Robidoux	**48**	**60.6**	26	53.0	36	52.8	54	14	12.1	58.0
Settler CL	**50**	59.9	**41**	53.2	42	53.3	59	29	12.2	59.1
T158	40	**60.6**	29	53.9	42	52.4	54	0	11.8	58.5
Wesley	**51**	**60.8**	35	53.3	43	52.1	61	43	13.3	58.9
SY-Wolf	47	**61.0**	**44**	53.7	**57**	53.7	**66**	**71**	12.9	58.6
Trial Average	47	60.4	34	54	49	54.6	59	-	12.5	59.4
LSD (0.05)*	11	2.7	5	NS	10	2.6	9	-	-	1.7
TPG value§	48	60.8	39	NA	51	56.0	62	-	-	59.5
C.V. ¶	21.4	3.7	21.5	6.1	18.6	4.1	-	-	-	-

‡ Location at Hayes was abandoned due to winterkill. The Bison location is excluded due to late harvest.

† New entry in 2014, not previously tested.

* If the difference between two varieties within a column equals or exceeds the LSD value, the difference is significant, if not, the difference is insignificant at the 0.05 level of probability.

§ Minimum value required for a variety to qualify for the top yield group (TYG).

¶A measure of experimental error, 15% or less is acceptable.

Table 3. 2013-2014 (2-Yr Average) Winter wheat Variety Yield (bu/ac @ 13% moisture).

	East River				West River					
	Crop Zone - 2		Crop Zone - 3	Crop Zone - 4	Crop Zone - 5	Crop Zone - 6				Crop Zone - 7
Variety	Brookings	Brookings w/Fung.#	Beresford	Pierre	Martin	Sturgis	Wall	Winner	Winner w/Fung.#	McLaughlin
1863†	-	-	-	-	-	-	-	-	-	-
Alice (White)	57	67	46	58	41	45	52	53	51	42
Arapahoe	55	62	51	57	36	45	**54**	58	59	42
Brawl CL Plus†	-	-	-	-	-	-	-	-	-	-
Byrd†	-	-	-	-	-	-	-	-	-	-
WB Cedar	53	56	53	60	40	45	47	59	53	35
Decade†	-	-	-	-	-	-	-	-	-	-
Denali†	-	-	-	-	-	-	-	-	-	-
Everest	60	61	53	49	41	47	46	54	54	36
Expedition	55	66	54	53	43	47	48	60	56	41
Freeman	62	**71**	58	63	**46**	48	**58**	**63**	60	44
WB Grainfield	**63**	67	55	63	41	47	**57**	**63**	59	41
Ideal	60	68	**64**	**71**	**47**	**58**	**60**	**67**	**66**	**53**
Jagalene-Check	43	55	44	47	42	44	52	52	51	37
Jerry	56	69	52	61	**45**	45	50	55	57	42
Lyman	**68**	**76**	**60**	65	**45**	**55**	**59**	**69**	**66**	**51**
WB-Matlock	59	**75**	58	65	43	46	49	58	58	42
Millenium	55	67	57	64	**51**	49	**58**	**63**	**63**	**48**
LCS Mint	55	63	48	58	**52**	**55**	**53**	61	59	**46**
Overland	**63**	**71**	**63**	63	**51**	**52**	52	**66**	**63**	**47**
Redfield	59	68	56	62	**50**	**51**	**59**	61	59	**48**
WB Redhawk	46	45	43	52	43	48	51	56	54	33
Robidoux	34	58	34	53	**47**	48	51	45	45	31
Settler CL	54	59	53	59	**48**	**51**	**53**	59	**63**	41
T158	48	62	45	60	**44**	48	50	54	54	-
Wesley	56	62	52	57	**47**	47	**53**	**62**	**63**	43
SY-Wolf	**67**	**71**	**64**	**66**	**48**	**51**	**60**	**69**	**68**	**51**
LSD (0.05)*	5	6	5	5	8	7	7	7	6	7
TYG value§	63	70	59	66	44	51	53	62	62	46

† New entry in 2014, 2-yr average not available.

Foliar fungicide applied at flowering.

* If the difference between two varieties within a column equals or exceeds the LSD value, the difference is significant, if not, the difference is insignificant at the 0.05 level of probability.

§ Minimum value required for a variety to qualify for the top yield group (TYG).

Table 4. 2012-2014 (3-Yr Average) Winter wheat Variety Yield (bu/ac @ 13% moisture).

	East River			West River					
	Crop Zone - 2	Crop Zone - 3	Crop Zone - 4	Crop Zone - 5	Crop Zone - 6				Crop Zone - 7
Variety	Brookings w/Fung.#	Beresford	Pierre	Martin	Sturgis	Wall	Winner	Winner w/Fung.#	McLaughlin
1863†	-	-	-	-	-	-	-	-	-
Alice (White)	72	50	66	38	52	56	63	61	35
Arapahoe	69	52	63	33	51	57	63	65	37
Brawl CL Plus†	-	-	-	-	-	-	-	-	-
Byrd†	-	-	-	-	-	-	-	-	-
WB Cedar†	-	-	-	-	-	-	-	-	-
Decade†	-	-	-	-	-	-	-	-	-
Denali†	-	-	-	-	-	-	-	-	-
Everest	65	54	63	37	54	53	63	61	35
Expedition	72	53	61	**41**	55	56	65	65	34
Freeman†	-	-	-	-	-	-	-	-	-
WB Grainfield†	-	-	-	-	-	-	-	-	-
Ideal	**77**	**63**	71	**42**	**63**	**64**	**71**	70	**47**
Jagalene-Check	65	46	54	38	47	55	58	57	33
Jerry	**74**	54	62	**40**	51	54	58	58	**46**
Lyman	**79**	60	70	**40**	**60**	**64**	**73**	**72**	**42**
WB-Matlock†	**77**	60	67	38	52	56	63	64	**44**
Millenium	72	61	72	**44**	57	**61**	68	**72**	**44**
LCS Mint†	-	-	-	-	-	-	-	-	-
Overland	**76**	**65**	**74**	**43**	57	59	**72**	**73**	39
Redfield	69	57	69	**42**	56	**62**	65	66	**48**
WB Redhawk†	57	50	64	38	55	57	63	63	30
Robidoux	71	45	66	**42**	56	**62**	60	59	31
Settler CL	67	55	67	**45**	**58**	**60**	66	71	33
T158†	-	-	-	-	-	-	-	-	-
Wesley	66	55	66	**42**	53	**60**	67	68	36
SY-Wolf	**76**	**66**	**78**	**44**	57	**65**	**76**	**78**	**45**
LSD (0.05)*	6	4	5	6	5	6	6	6	8
TYG value §	73	62	73	39	58	58	70	72	40

† New entry in 2013 or 2014, 3-yr average not available.

Foliar fungicide applied at flowering.

* If the difference between two varieties within a column equals or exceeds the LSD value, the difference is significant, if not, the difference is insignificant at the 0.05 level of probability.

§ Minimum value required for a variety to qualify for the top yield group (TYG).

Table 5. List of 2014 winter wheat varieties being tested in 17 SDSU trials and their origin, characteristics, and grain quality.

Variety	Testing and Origin		Agronomic Characteristics				Grain Quality		
	Years Tested in SD Trials	Origin†-Year	Rel.‡ Hdg *days*	Rel.‡ Height *inches*	Lodging Res.§	Winter Hardi-ness§	Test Wt.	Protein %	Baking Quality#
1863	new	KS-12	0	1	(G)¶	(G)	High	Low	(G)
Alice (White)	5+	SD-06	-1	-2	G	G-E	Good	Good	E
Arapahoe	5+	NE-99	2	2	F	G-E	Low	High	G
Brawl CL Plus	new	CO-11	-1	-1	(G)	-	Good	Good	(E)
Byrd	new	CO-11	-1	1	(F)	-	Good	Low	(E)
WB-Cedar	2	WB-10	-4	-4	E	G	Good	Good	A
Decade	new	MT/ND-10	4	4	(E)	(E)	Good	High	(A)
Denali	new	CO-11	3	3	(G)	-	Good	Low	(A)
Everest	4	KS-09	-3	-1	E	G	High	Good	A
Expedition	5+	SD-02	**0**	**0**	F-G	E	Good	Good	G
Freeman	2	NE-**13**	-1	0	G	G	Low	Low	A-G
WB-Grainfield	2	WB-12	-2	-1	G	G	Good	Good	G
Ideal	5+	SD-11	3	0	E	G-E	Good	Good	A
Jagalene-Check	5+	AP-01	2	-1	E	G	Low	High	A
Jerry$_{no\ PVP}$	5+	ND-01	5	3	F-G	E	Good	High	G
Lyman	5+	SD-08	1	1	F	G-E	High	High	A
WB Matlock	4	WB-10	3	1	G	E	Good	High	G
Millennium	5+	NE-00	2	2	G	G	High	Good	F
LCS Mint	2	LCS-12	-2	1	G	G	High	Low	E
Overland	5+	NE-06	2	1	G	G-E	High	Low	F
WB Redhawk	3	WB-11	0	0	G	G	Good	High	G
Robidoux	4	NE-10	1	-1	G	G	Low	Low	G
Redfield	5+	SD-**13**	3	-1	E	G-E	Good	Good	G
Settler CL	5+	NE-08	0	0	G	F-G	Good	Low	A
T158	2	LCS-09	-5	-2	G	G	Good	Low	G
Wesley$_{no\ PVP}$	5+	NE-99	1	-1	E	G	Low	High	G
SY Wolf	4	AP-11	-1	0	E	F-G	Good	Good	A

† AP, AgriPro; CO, Colorado; KS, Kansas; LCS, Limagrain Cereal Seeds; MT, Montana; ND, North Dakota; SD, South Dakota; WB, WestBred and – (Year of Release).

‡ Difference in days to heading compared to **Expedition** (2013 maturity notes from the Brookings). Height compared to **Expedition (30 inches)** in 2013 Statewide.

§ Lodging resistance and winter hardiness: E, excellent; G, good; F, fair; P, poor.

Baking Quality: E, excellent; G, good; A, acceptable; F, fair.

¶ Estimated ratings (X), based on other state trials and information provided by entity that submitted the variety.

Table 6. Winter wheat variety disease ratings.

Variety	Disease Ratings§					
	Stripe Rust	Stem Rust	Leaf Rust	Leaf Spot¶	Wheat Streak Mosaic	FHB (Scab)
1863†	-	-	-	MS	-	-
Alice (White)	MS	MR	MS	S	MS	S
Arapahoe	MS	MR	MR	S	S	MR
Brawl CL Plus†	-	-	-	S	-	-
Byrd†	-	-	-	S	-	-
WB Cedar	MR	MR	MS-MR	S	MS	-
Decade†	-	-	-	MR	-	-
Denali†	-	-	-	S	-	-
Everest	MS	MS	MR	S	MS	MR
Expedition	S	R	S	S	S	MR
Freeman	MS	MS-MR	MS-MR	S	-	MS
WB Grainfield	MR	-	MR	MR	-	-
Ideal	MS	MR	MR	MS	S	MS
Jagalene-Check	S	MS	S	MS	MS	S
Jerry	MR	R	MR	S	MS	S
Lyman	MS	R	R	MS	S	R
WB-Matlock	MS	MR	MR	MS	S	S
Millenium	MR	MR	MS	S	S	S
LCS Mint	MR	-	MS	MS	-	-
Overland	MR	MR	MR	S	MS	MR
Redfield	MR	MR	MS-MR	MS	S	MR
WB Redhawk	MS	-	MR	MS	-	-
Robidoux	MR	S	MS	S	S	S
Settler CL	MS	MR	MS-MR	S	MS	S
T158	R	-	MS	S	MS-MR	S
Wesley	MR	R	MS-MR	S	S	S
SY-Wolf	MR	MR	R	MS	MR	S

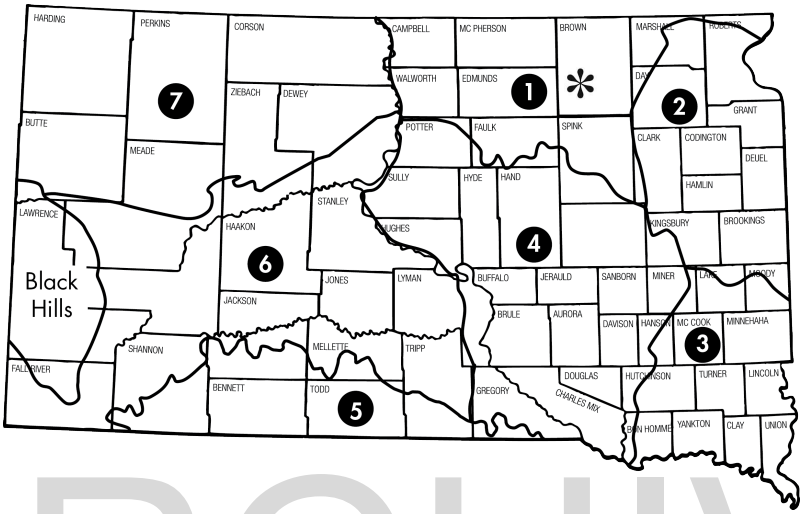
† New entry in 2014

§ Disease ratings: R, resistant; MR, moderately resistant; MS, moderately susceptible; S, susceptible, VS, very susceptible. Only Leaf Spot ratings were taken in 2014.

¶ No distinction was made between Tan Spot and Leaf Spot.

2015 South Dakota Winter Wheat Variety Trial Results

Jonathan Kleinjan | Crop Performance Testing Director, Brookings
Chris Graham | SDSU Extension Agronomist, Rapid City
Bruce Swan | Ag Research Manager, Rapid City
Kevin Kirby | CPT Ag Research Manager, Brookings
Steve Kalsbeck | Winter Wheat Breeding Project Research Associate, Brookings



Recommended Winter Wheat Varieties for Fall 2015 by Crop Zone†

Zone - 1[pc]	Zone - 2[pc]	Zone - 3	Zone - 4[pc]	Zone - 5	Zone - 6	Zone - 7[pc]
Ideal‡	Ideal‡	Ideal‡	Ideal‡	Ideal‡	Ideal‡	Ideal‡
Lyman	Lyman	Lyman	Lyman	Redfield	Lyman	Lyman
Redfield	Expedition	Redfield	Redfield	Freeman‡	Redfield	Redfield
Freeman‡	Freeman‡	Freeman‡	Freeman‡	Millenium‡	Freeman‡	Freeman‡
WB-Matlock‡	Overland	WB-Grainfield	WB-Grainfield	LCS Mint	LCS Mint	WB-Grainfield
Overland	SY Wolf‡	WB-Matlock‡	Millenium‡	Overland	SY Wolf‡	Millenium‡
SY Wolf‡		Overland	Overland	SY Wolf‡		LCS Mint
		SY Wolf‡	SY Wolf‡			Overland
						SY Wolf‡

Promising

	WB-Matlock‡	Decade Denali		Denali	Decade Denali	

* Multi-year averages are not available for this zone, however it is suggested to select a variety that appears frequently in the recommended list across all zones for the state or neighboring zones.

† Crop Zones for small grains are base on soil & climate information.

[pc] plant in protective cover to improve winter survival in Crop Zones 1, 2, 4, & 7 and in other zones when planting varieties with (Fair) or lower winterhardiness ratings

‡ Variety is susceptible or moderately susceptible to Fusarium Head Blight (Scab).

2015 South Dakota Winter Wheat Variety Trial Results

iGrow® A Service of SDSU Extension

Table 1a. 2015 East River Winter Wheat Performance - Yield (13% moisture), Test Weight (harvest moisture), and Protein (13% moisture).

Variety	Crop Zone - 1			Crop Zone - 2					
	Selby			Brookings			Brookings w/Fung.#		
	Yield	Test Wt.	Protein	Yield	Test Wt.	Protein	Yield	Test Wt.	Protein
Alice (White)	82	59.4	13.4	38	55.9	12.3	46	60.9	11.2
Antero (White)†	77	56.7	13.7	**44**	56.4	11.2	**60**	61.8	10.1
Brawl CL Plus	74	58.9	**14.7**	26	54.3	**13.3**	37	60.4	**12.4**
Byrd	64	56.8	13.5	32	55.1	11.5	46	60.4	10.7
LCS Compass†	79	**61.0**	14.4	38	58.1	12.0	49	**62.5**	11.5
Decade	65	54.4	**15.3**	39	55.2	11.3	50	60.5	11.0
Denali	71	57.3	12.8	41	55.8	11.0	**59**	**62.0**	9.7
AC Emerson†	80	**60.4**	**14.6**	**50**	**59.8**	11.6	47	61.7	11.7
Expedition	82	59.1	12.7	36	58.0	11.4	42	61.3	11.5
Freeman	**87**	56.7	13.4	**47**	57.0	10.6	48	59.9	10.5
WB-Grainfield	86	58.9	14.3	37	55.8	11.8	50	61.0	11.0
Ideal	83	59.2	13.2	43	57.6	11.3	51	61.4	10.3
LCH13NEDH-7-45†	**87**	58.0	14.1	42	54.9	10.8	**54**	60.8	10.5
Lyman	**89**	**61.5**	**14.5**	**47**	**59.9**	11.9	**53**	**62.4**	11.5
WB-Matlock	**89**	**60.9**	13.3	39	57.5	12.1	**59**	61.6	11.2
Millennium	86	**60.1**	13.9	40	58.5	11.1	50	61.2	10.4
LCS Mint	67	58.6	13.5	40	56.9	10.7	**53**	**62.9**	11.0
SY Monument†	77	56.3	13.8	38	53.9	12.1	**58**	59.9	10.4
NE10589†	75	57.0	13.4	38	55.0	11.6	52	60.9	10.8
Overland	**89**	**60.0**	13.4	**45**	58.4	11.1	**55**	61.4	10.2
Redfield	**87**	59.0	13.9	40	56.4	11.5	**57**	61.8	10.8
T158	78	57.9	13.9	29	54.1	11.9	45	60.7	11.3
WB4059CLP†	-	-	-	23	51.3	**13.6**	28	58.6	**13.0**
WB4614†	59	54.6	**15.2**	28	52.6	12.4	**56**	60.4	11.0
Wesley	75	56.3	**15.0**	40	55.7	12.4	47	59.2	12.0
SY Wolf	80	58.4	**14.5**	**47**	58.4	11.1	**53**	61.3	10.6
Trial Average	80	58.4	14.0	38	56.4	11.6	49	60.9	11.1
LSD(0.05)‡	9	1.6	0.8	7	0.9	0.7	8	1.0	0.9
TPG value§	86	59.9	14.5	43	59.0	12.9	52	61.9	12.1
CV(%)¶	8.1	2.0	4.2	12.7	1.2	4.3	11.6	1.2	5.4

Foliar fungicide applied at flowering.

† New entry in 2015, not previously tested.

‡ Yield, test weight, or protein value required (≥LSD) to determine if varieties are statistically different than one another, § minimum value required to be in the top performance group (TPG) of varieties **(in boldface)**, ¶ Coefficient of Variation (C.V.) is a measure of the variability of the experimental error, 15% or less is acceptable.

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2015 South Dakota Winter Wheat Variety Trial Results

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Table 1b. 2015 East River Winter Wheat Performance, continued - Yield (13% moisture), Test Weight (harvest moisture), and Protein (13% moisture).

Variety	Crop Zone - 3			Crop Zone - 4			Crop Zones 1,2,3, & 4			
	Beresford			Onida			East River Average*			
	Yield	Test Wt.	Protein	Yield	Test Wt.	Protein	Yield	TPG%	Test Wt.	Protein
Alice (White)	82	58.9	**13.0**	57	57.1	**13.3**	61	0	58.4	12.7
Antero (White)†	86	**60.1**	**12.5**	**70**	59.0	12.4	**67**	40	58.8	12.0
Brawl CL Plus	91	**60.9**	**13.0**	57	58.3	**13.4**	57	0	58.6	**13.3**
Byrd	89	**60.5**	12.0	56	57.4	11.8	57	0	58.0	11.9
LCS Compass†	**102**	**59.5**	11.5	50	**59.2**	12.8	64	20	60.1	12.4
Decade	88	**59.8**	**12.6**	55	54.7	12.9	59	0	57.0	12.6
Denali	**99**	59.4	12.1	55	57.7	12.3	65	20	58.5	11.6
AC Emerson†	88	59.2	**12.5**	63	57.9	**13.5**	**66**	20	59.8	12.8
Expedition	**99**	**61.2**	**12.2**	50	57.5	12.4	61	20	59.4	12.0
Freeman	90	59.2	12.1	58	55.3	12.6	**66**	40	57.7	11.9
WB-Grainfield	86	**61.3**	**12.8**	65	57.4	13.1	65	0	58.9	12.6
Ideal	91	58.8	**12.3**	55	55.8	12.4	64	0	58.5	11.9
LCH13NEDH-7-45†	87	58.0	**12.6**	**71**	56.7	12.7	**68**	60	57.7	12.1
Lyman	85	**60.4**	**12.4**	66	**60.0**	12.6	**68**	60	**60.8**	12.6
WB-Matlock	80	59.3	**12.8**	55	58.6	**13.6**	64	20	59.5	12.6
Millenium	88	59.2	11.9	61	58.8	12.5	65	0	59.4	12.0
LCS Mint	88	**60.9**	**12.3**	60	58.8	12.0	61	20	59.6	11.9
SY Monument†	92	**60.4**	12.1	66	55.1	13.0	**66**	20	57.1	12.2
NE10589†	89	**59.7**	**12.6**	62	57.5	12.7	62	0	58.3	12.3
Overland	82	**59.7**	**12.2**	64	58.4	12.2	**67**	60	59.5	11.8
Redfield	89	58.8	**12.4**	63	57.6	**13.5**	**67**	40	58.7	12.4
T158	**99**	**60.6**	11.5	57	57.8	12.4	62	20	58.2	12.2
WB4059CLP†	85	**59.8**	**12.7**	32	52.2	**13.7**	46	0	57.3	**13.3**
WB4614†	86	**60.0**	**12.6**	54	56.1	**13.9**	56	20	56.7	13.0
Wesley	86	**59.7**	11.8	47	53.6	**13.8**	59	0	56.9	13.0
SY Wolf	89	**60.2**	**12.5**	**69**	58.8	**13.6**	**68**	40	59.4	12.5
Trial Average	89	59.8	12.4	60	57.5	12.9	62	-	58.5	12.4
LSD(0.05)‡	9	1.8	0.8	6	1.0	0.6	4	-	0.6	0.4
TPG value§	93	59.5	12.2	67	59.0	13.3	66	-	60.2	12.9
CV(%)¶	8.8	2.7	5.6	6.9	1.2	3.3	9.6	-	1.7	4.5

† New entry in 2015, not previously tested.

‡ Yield, test weight, or protein value required (≥LSD) to determine if varieties are statistically different than one another, § minimum value required to be in the top performance group (TPG) of varieties **(in boldface)**, ¶ Coefficient of Variation (C.V.) is a measure of the variability of the experimental error, 15% or less is acceptable.

* Locations at Pierre, Platte, and South Shore were abandoned due to winterkill.

2015 South Dakota Winter Wheat Variety Trial Results

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Table 2a. 2015 West River Winter Wheat Performance - Yield (13% moisture), Test Weight (harvest moisture), and Protein (13% moisture).

Variety	Crop Zone - 5			Crop Zone - 6								
	Martin			Hayes			Kennebec			Sturgis		
	Yield	Test Wt.	Protein	Yield	Test Wt.	Protein	Yield	Test Wt.	Protein	Yield	Test Wt.	Protein
Alice (White)	43	49.7	12.3	78	56.0	12.9	52	50.0	12.4	69	**58.6**	11.0
Antero (White)†	48	48.6	11.7	68	**57.9**	11.7	49	48.4	12.5	**85**	**57.9**	9.6
Brawl CL Plus	43	48.2	**13.0**	67	56.1	**13.2**	40	45.2	**13.2**	63	57.6	**11.6**
Byrd	46	52.0	11.0	69	56.3	12.0	39	45.3	12.3	68	**57.9**	9.7
LCS Compass†	51	**52.9**	12.0	70	57.1	12.7	40	47.8	12.7	60	57.6	**11.5**
Decade	37	46.0	12.0	**84**	**57.7**	12.9	40	41.8	**12.8**	71	55.5	10.6
Denali	**59**	**53.0**	11.5	81	57.1	12.4	44	47.3	12.2	75	57.6	9.6
AC Emerson†	45	50.2	12.3	66	54.5	**13.5**	54	**50.6**	**13.2**	69	56.2	**11.7**
Expedition	50	**53.6**	11.4	71	55.8	**13.1**	49	48.1	12.1	63	56.5	10.6
Freeman	**56**	**52.8**	10.9	78	55.0	12.5	50	45.8	12.3	80	**58.2**	10.2
WB-Grainfield	48	49.1	11.9	79	56.7	12.8	63	**52.6**	12.5	**82**	**58.9**	10.6
Ideal	51	51.2	11.5	78	56.8	12.8	43	45.0	12.7	72	56.4	10.0
LCH13NEDH-7-45†	44	48.5	11.6	**94**	56.6	12.0	61	49.1	12.2	76	**57.9**	10.0
Lyman	45	**54.0**	**12.9**	69	55.9	**13.1**	55	49.6	12.1	63	**58.4**	**11.7**
WB-Matlock	36	47.9	**12.5**	73	55.4	**13.0**	45	46.3	**12.8**	61	56.6	11.0
Millennium	47	**53.8**	11.3	72	**57.6**	12.8	57	50.2	11.7	68	**58.1**	**11.3**
LCS Mint	46	49.4	11.5	79	55.7	12.6	52	49.2	12.4	**87**	57.5	10.2
SY Monument†	45	47.7	12.0	**84**	56.5	**13.0**	58	**51.1**	**12.8**	**82**	57.1	10.7
NE10589†	50	50.7	11.5	**92**	55.9	12.0	63	**50.8**	11.9	73	**58.1**	10.9
Overland	47	52.2	11.6	73	**57.6**	12.7	54	49.2	11.8	72	**58.1**	10.6
Redfield	45	48.3	12.2	80	**57.5**	12.7	58	**50.5**	12.6	74	57.8	10.8
T158	44	49.9	12.3	73	55.9	12.5	46	49.2	12.7	70	57.7	**11.3**
WB4059CLP†	33	43.6	12.4	65	53.3	**13.6**	12	36.1	12.5	57	53.3	**11.7**
WB4614†	44	48.2	12.0	71	55.7	**13.3**	49	46.8	**13.5**	**86**	57.1	10.0
Wesley	43	51.3	12.5	74	54.6	12.8	44	44.5	12.3	68	55.8	**11.4**
SY Wolf	**56**	51.6	12.1	80	56.6	12.4	**75**	**50.8**	**13.0**	76	57.5	10.8
Trial Average	48	50.7	11.9	75	56.0	12.8	53	48.5	12.5	73	57.4	10.7
LSD(0.05)‡	6	2.1	0.5	11	1.6	0.6	11	2.7	0.7	6	1.5	0.5
TPG value§	55	52.5	12.5	83	56.3	13.0	67	50.3	12.8	80	57.9	11.2
CV(%)¶	11.8	4.3	3.1	13.7	2.9	3.9	14.7	4.0	4.1	6.2	1.9	3.6

† New entry in 2015, not previously tested.

‡ Yield, test weight, or protein value required (≥LSD) to determine if varieties are statistically different than one another, § minimum value required to be in the top performance group (TPG) of varieties **(in boldface)**, ¶ Coefficient of Variation (C.V.) is a measure of the variability of the experimental error, 15% or less is acceptable.

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2015 South Dakota Winter Wheat Variety Trial Results

Table 2b. 2015 West River Winter Wheat Performance, continued - Yield (13% moisture), Test Weight (harvest moisture), and Protein (13% moisture).

Variety	Crop Zone - 6								
	Wall			Winner			Winner w/Fung.#		
	Yield	Test Wt.	Protein	Yield	Test Wt.	Protein	Yield	Test Wt.	Protein
Alice (White)	61	**58.6**	10.7	56	59.0	13.4	55	59.8	13.5
Antero (White)†	81	**58.5**	9.3	**79**	**61.8**	11.5	**83**	**62.6**	11.0
Brawl CL Plus	65	57.2	**11.7**	57	**60.9**	13.5	58	60.9	13.5
Byrd	74	**58.6**	9.8	60	**60.7**	12.2	**81**	**62.8**	11.0
LCS Compass†	62	**58.8**	10.6	52	**60.6**	13.1	59	61.7	12.7
Decade	76	55.9	10.1	53	58.2	13.2	63	58.5	12.9
Denali	**90**	**59.3**	9.6	52	57.8	12.1	64	60.2	12.1
AC Emerson†	67	55.3	**11.1**	35	55.5	**15.0**	39	57.7	**15.5**
Expedition	74	**59.3**	10.2	51	59.4	13.6	62	60.6	13.0
Freeman	66	56.5	10.1	62	57.9	12.6	70	59.9	11.8
WB-Grainfield	74	**59.2**	10.3	47	59.4	**14.5**	70	61.8	11.5
Ideal	77	55.5	9.5	64	**59.9**	12.7	70	60.9	12.2
LCH13NEDH-7-45†	72	57.1	9.7	65	**59.7**	13.4	74	61.4	12.0
Lyman	64	57.6	**11.3**	63	**61.3**	14.0	69	**62.5**	13.2
WB-Matlock	61	57.0	10.7	47	58.6	13.6	59	60.1	13.1
Millennium	63	57.8	10.5	64	**60.1**	13.3	62	60.9	12.9
LCS Mint	77	**58.6**	9.3	62	**61.2**	12.5	62	**62.4**	11.9
SY Monument†	**87**	56.8	10.3	67	59.5	13.3	63	60.2	11.8
NE10589†	63	**58.1**	10.1	63	**60.9**	12.2	71	61.0	11.7
Overland	68	**58.4**	10.4	60	59.7	13.1	70	60.6	12.5
Redfield	**83**	**58.9**	10.0	58	**60.2**	13.8	66	60.5	12.4
T158	67	56.2	10.5	60	**61.3**	12.3	65	61.1	12.0
WB4059CLP†	55	55.0	10.6	26	53.8	**14.1**	41	57.3	14.1
WB4614†	81	57.6	10.5	50	57.1	13.8	66	59.4	12.7
Wesley	66	**58.2**	10.2	49	56.4	**14.2**	53	57.6	13.8
SY Wolf	67	55.4	10.2	**71**	**61.1**	13.4	64	61.5	12.4
Trial Average	71	57.5	10.3	58	59.4	13.3	63	60.5	12.6
LSD(0.05)‡	7	1.4	0.8	9	2.1	1.0	6	0.8	0.6
TPG value§	83	57.9	10.9	70	59.7	14.0	76	62.0	14.9
CV(%)¶	10.4	2.5	5.2	9.7	2.2	4.7	6.0	0.7	3.1

Foliar fungicide applied at flowering.

† New entry in 2015, not previously tested.

‡ Yield, test weight, or protein value required (≥LSD) to determine if varieties are statistically different than one another, § minimum value required to be in the top performance group (TPG) of varieties **(in boldface)**, ¶ Coefficient of Variation (C.V.) is a measure of the variability of the experimental error, 15% or less is acceptable.

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2015 South Dakota Winter Wheat Variety Trial Results

Table 2c. 2015 West River Winter Wheat Performance, continued - Yield (13% moisture), Test Weight (harvest moisture), and Protein (13% moisture).

Variety	Crop Zone - 7						Crop Zones - 5, 6 & 7			
	Bison			McLaughlin			West River Average			
	Yield	Test wt	Protein	Yield	Test wt	Protein	Yield	TPG%	Test Wt.	Protein
Alice (White)	44	52.6	12.7	37	49.9	**13.8**	55	0	54.9	12.5
Antero (White)†	51	53.5	11.1	41	47.7	12.8	**65**	33	55.0	11.2
Brawl CL Plus	**55**	**54.1**	12.5	31	46.3	**13.8**	53	11	54.2	**12.9**
Byrd	**59**	**54.7**	10.9	28	49.3	13.1	58	22	55.4	11.3
LCS Compass†	41	**54.3**	12.3	41	**54.3**	**13.9**	53	0	56.2	12.4
Decade	**52**	50.7	12.3	35	49.5	**13.7**	57	11	52.3	12.3
Denali	**62**	51.6	11.6	36	48.7	13.2	**63**	33	54.7	11.6
AC Emerson†	50	**54.5**	**13.8**	**53**	**57.3**	**13.5**	53	11	54.7	**13.3**
Expedition	49	53.0	11.7	36	46.8	**13.4**	56	0	54.9	12.1
Freeman	**55**	51.5	11.9	43	51.9	13.3	**62**	22	54.6	11.7
WB-Grainfield	**57**	**54.7**	11.8	46	**53.2**	**13.4**	**63**	22	56.1	12.1
Ideal	**54**	53.2	11.9	39	50.2	12.5	61	11	54.2	11.7
LCH13NEDH-7-45†	41	52.6	12.6	**52**	**53.4**	13.0	**64**	22	55.2	11.8
Lyman	49	**56.4**	12.7	48	**53.8**	**13.6**	58	0	**56.8**	12.7
WB-Matlock	28	51.3	**13.1**	42	**53.3**	**13.9**	50	0	54.1	12.7
Millennium	40	**54.7**	12.5	48	**57.0**	12.8	58	0	56.6	12.1
LCS Mint	49	52.2	12.5	41	51.1	13.1	**62**	11	55.3	11.8
SY Monument†	**54**	51.1	12.3	**49**	48.8	13.2	**65**	56	54.3	12.1
NE10589†	47	52.5	12.2	41	52.7	**13.8**	**63**	11	55.8	11.8
Overland	**53**	53.8	12.3	43	**53.1**	12.9	60	11	55.6	12.0
Redfield	50	52.2	12.4	38	50.8	**13.6**	61	11	54.9	12.3
T158	**59**	53.6	11.6	45	47.9	13.1	59	11	54.8	12.0
WB4059CLP†	39	46.0	**12.9**	28	45.7	**14.0**	40	0	49.3	**12.9**
WB4614†	46	51.0	12.5	30	47.2	**13.7**	58	11	53.3	12.4
Wesley	**61**	49.3	12.4	34	48.4	**13.6**	55	11	52.9	12.6
SY Wolf	**53**	50.0	12.6	**55**	51.2	13.1	**66**	56	55.1	12.2
Trial Average	49	53.0	12.3	42	51.0	13.4	59	-	54.6	12.2
LSD(0.05)‡	10	2.4	1.0	8	4.1	0.6	4	-	0.9	0.4
TPG value§	52	54.0	12.8	49	53.0	13.4	62	-	57.0	12.9
CV(%)¶	20.3	3.2	5.3	13.7	5.9	3.0	12.1	-	3.3	4.1

† New entry in 2015, not previously tested.

‡ Yield, test weight, or protein value required (≥LSD) to determine if varieties are statistically different than one another, § minimum value required to be in the top performance group (TPG) of varieties **(in boldface)**, ¶ Coefficient of Variation (C.V.) is a measure of the variability of the experimental error, 15% or less is acceptable.

2015 South Dakota Winter Wheat Variety Trial Results

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Table 3. 2013-2015 (2 and 3-year averages) East River Yield (bu/ac @ 13% moisture) Performance - sorted by overall 3-year yield.

Variety	Crop Zone - 2				Crop Zone - 3		Crop Zone - 4		Crop Zones 2 ,3, & 4	
	Brookings		Brookings w/Fung.#		Beresford		Onida	Pierre	East River Average	
	2 year	3 year	2 year	3 year	2 year	3 year	2 year	2 year*	2 year	3 year
SY Wolf	**57**	**60**	**62**	65	**76**	**72**	**86**	**66**	**72**	**69**
Lyman	**72**	**68**	**54**	61	60	**68**	**81**	65	**70**	**69**
Ideal	50	54	60	63	**79**	**73**	80	**71**	**71**	**68**
Overland	**52**	**57**	**62**	**66**	**72**	**69**	76	63	**69**	**67**
Freeman	**56**	**57**	60	64	**76**	**68**	77	63	**70**	**66**
WB-Matlock	47	52	**66**	**70**	**73**	65	71	65	**68**	**66**
Redfield	47	52	59	64	**74**	67	80	62	**69**	**65**
WB-Grainfield	50	54	57	61	**72**	65	80	63	**68**	65
Millennium	45	50	56	61	71	67	75	64	66	64
Expedition	43	49	50	58	**74**	**69**	68	53	63	60
LCS Mint	51	50	59	60	68	61	77	58	66	60
Alice (White)	42	50	54	60	61	57	69	58	62	60
Wesley	50	51	54	56	68	63	70	57	65	59
T158	39	42	51	57	67	63	72	60	62	58
Denali	45	-	59	-	**76**	-	71	-	**67**	-
Decade	**73**	-	47	-	52	-	76	-	65	
Byrd	69	-	41	-	51	-	70	-	63	-
Brawl CL Plus	35	-	44	-	69	-	64	-	59	-
AC Emerson†	-	-	-	-	-	-	-	-	-	-
Antero (White)†	-	-	-	-	-	-	-	-	-	-
LCH13NEDH-7-45†	-	-	-	-	-	-	-	-	-	-
LCS Compass†	-	-	-	-	-	-	-	-	-	-
NE10589†	-	-	-	-	-	-	-	-	-	-
SY Monument†	-	-	-	-	-	-	-	-	-	-
WB4059CLP†	-	-	-	-	-	-	-	-	-	-
WB4614†	-	-	-	-	-	-	-	-	-	-
Trial Average	46	53	55	62	70	65	74	59	65	63
LSD(0.05)‡	5	4	5	4	7	5	5	5	5	4
TPG value§	52	57	61	66	72	68	81	66	67	65

Foliar fungicide applied at flowering.

* Pierre 2-year data is from 2013 and 2014.

† New entry in 2015, not previously tested.

‡ Yield value required (≥LSD) to determine if varieties are statistically different than one another, § minimum value required to be in the top performance group (TPG) of varieties **(in boldface)**.

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2015 South Dakota Winter Wheat Variety Trial Results

Table 4a. 2013-2015 (2 and 3-year averages) West River Yield (bu/ac @ 13% moisture) Performance - sorted by overall 3-year yield.

Variety	Crop Zone - 5		Crop Zone - 6						Crop Zones 5, 6, & 7	
	Martin		Kennebec	Hayes	Sturgis		Wall		West River Average	
	2 year	3 year	2 year	2 year*	2 year	3 year	2 year	3 year	2 year	3 year
SY Wolf	**51**	**50**	**84**	**62**	**65**	**60**	60	**63**	**66**	**61**
Ideal	**52**	**48**	74	58	64	**63**	**71**	**66**	**65**	**60**
Lyman	47	45	72	55	57	58	60	61	**61**	**58**
LCS Mint	**51**	**50**	71	**60**	**71**	**66**	63	61	**62**	**57**
Freeman	**55**	**49**	72	**61**	64	59	61	61	**62**	**57**
Overland	**52**	**49**	73	55	59	59	56	57	**61**	**57**
Redfield	**51**	**48**	72	**59**	61	59	**69**	**67**	**62**	**57**
Millennium	**53**	**50**	74	56	58	55	57	59	**60**	**57**
WB-Grainfield	45	43	73	**61**	64	59	62	**63**	**60**	56
Wesley	47	46	67	56	57	54	58	57	58	54
T158	42	44	65	56	58	55	53	56	56	52
Expedition	46	45	68	55	56	52	57	57	56	52
Alice (White)	43	43	66	57	56	53	52	55	55	51
WB-Matlock	43	41	68	54	56	51	54	53	55	50
Denali	**56**	-	70	-	**66**	-	**72**	-	**63**	-
Decade	45	-	69	-	61	-	**70**	-	**62**	-
Byrd	44	-	65	-	58	-	59	-	57	-
Brawl CL Plus	39	-	53	-	55	-	54	-	51	-
AC Emerson†	-	-	-	-	-	-	-	-	-	-
Antero (White)†	-	-	-	-	-	-	-	-	-	-
LCH13NEDH-7-45†	-	-	-	-	-	-	-	-	-	-
LCS Compass†	-	-	-	-	-	-	-	-	-	-
NE10589†	-	-	-	-	-	-	-	-	-	-
SY Monument†	-	-	-	-	-	-	-	-	-	-
WB4059CLP†	-	-	-	-	-	-	-	-	-	-
WB4614†	-	-	-	-	-	-	-	-	-	-
Trial Average	48	46	71	57	61	58	61	60	58	56
LSD(0.05)‡	7	3	8	6	6	6	6	5	7	4
TPG value§	49	47	76	59	65	60	66	62	59	57

* Hayes 2-year data is from 2013 and 2015.

† New entry in 2015, not previously tested.

‡ Yield value required (≥LSD) to determine if varieties are statistically different than one another, § minimum value required to be in the top performance group (TPG) of varieties **(in boldface)**.

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2015 South Dakota Winter Wheat Variety Trial Results

Table 4b. 2013-2015 (2 and 3-year averages) West River Yield (bu/ac @ 13% moisture) Performance, continued - sorted by overall 3 year yield.

Variety	Crop Zone - 6				Crop Zone - 7				Crop Zones 5, 6, & 7	
	Winner		Winner w/Fung.#		Bison		McLaughlin		West River Average	
	2 year	3 year	2 year	3 year	2 year	3 year	2 year	3 year	2 year	3 year
SY Wolf	**75**	**69**	**71**	**66**	**48**	**51**	**56**	**52**	**66**	**61**
Ideal	**71**	**66**	**73**	**67**	**46**	**49**	**50**	**49**	**65**	**60**
Lyman	68	**67**	**70**	**67**	**45**	**49**	**52**	**50**	**61**	**58**
LCS Mint	69	62	**68**	60	42	**47**	42	43	**62**	**57**
Freeman	68	63	**69**	**64**	**45**	**47**	45	43	**62**	**57**
Overland	68	64	**69**	**66**	**45**	**49**	48	46	**61**	**57**
Redfield	64	60	**68**	61	42	**46**	44	45	**62**	**57**
Millennium	66	63	64	**63**	38	44	**50**	**48**	**60**	**57**
WB-Grainfield	63	58	67	**63**	42	**47**	44	42	**60**	56
Wesley	61	58	64	60	**48**	**49**	38	40	58	54
T158	61	55	62	58	44	**47**	44	41	56	52
Expedition	60	57	62	58	41	43	41	39	56	52
Alice (White)	59	54	56	52	37	41	45	41	55	51
WB-Matlock	56	54	61	58	32	37	48	43	55	50
Denali	61	-	66	-	**50**	-	40	-	**63**	-
Decade	66	-	**69**	-	**45**	-	41	-	**62**	-
Byrd	63	-	**72**	-	44	-	33	-	57	-
Brawl CL Plus	58	-	56	-	43	-	33	-	51	-
AC Emerson†	-	-	-	-	-	-	-	-	-	-
Antero (White)†	-	-	-	-	-	-	-	-	-	-
LCH13NEDH-7-45†	-	-	-	-	-	-	-	-	-	-
LCS Compass†	-	-	-	-	-	-	-	-	-	-
NE10589†	-	-	-	-	-	-	-	-	-	-
SY Monument†	-	-	-	-	-	-	-	-	-	-
WB4059CLP†	-	-	-	-	-	-	-	-	-	-
WB4614†	-	-	-	-	-	-	-	-	-	-
Trial Average	66	62	66	62	42	45	45	45	58	56
LSD(0.05)‡	5	4	5	4	5	6	6	4	7	4
TPG value§	70	65	68	63	45	45	50	48	59	57

Foliar fungicide applied at flowering.

† New entry in 2015, not previously tested.

‡ Yield value required (≥LSD) to determine if varieties are statistically different than one another, § minimum value required to be in the top performance group (TPG) of varieties **(in boldface)**.

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2015 South Dakota Winter Wheat Variety Trial Results

Table 5. List of winter wheat varieties being tested in 2015 along with origin, agronomic, and grain quality characteristics.

Variety	Testing and Origin		Agronomic Characteristics				Grain Quality		
	Years Tested in SD Trials	Origin†-Year	Rel.‡ Hdg days	Rel.‡ Hght inches	Lodging Res.§	Winter Hardi-ness§	2015 Test Wt.	2015 Protein %	Baking Quality#
Alice (White)	5+	SD-06	0	-2	G	G	Good	Good	E
Antero (White)	new	PG-12	0	2	F-G	G	Good	Low	*(G)¶*
Brawl CL Plus	2	PG-11	0	-1	G	F	Adequate	High	*(E)*
Byrd	2	PG-11	1	-1	P	*(G)*	Good	Low	*(E)*
LCS Compass	new	LCS-15	-1	1	F	G	High	Good	*(E)*
Decade	2	MT/ND-10	2	1	G	G	Low	Good	*(A)*
Denali	2	PG-11	2	-3	G	G	Good	Low	*(A)*
AC Emerson	new	MS-15	4	-1	G	G	Adequate	High	*(G)*
Expedition	5+	SD-02	0	0	F-G	G	Good	Adequate	G
Freeman	3	NE-13	2	-2	F	F	Adequate	Low	A-G
WB-Grainfield	3	WB-12	1	2	F	F	Good	Good	G
Ideal	5+	SD-11	4	1	F-G	G-E	Adequate	Low	A
LCH13NEDH-7-45	new	LCS-exp	1	0	F-G	G-E	Adequate	Adequate	-
Lyman	5+	SD-08	1	0	F-G	G-E	High	Good	A
WB-Matlock	5+	WB-10	2	1	F-G	G	Adequate	Good	G
Millennium	5+	NE-00	1	2	F-G	G	Good	Adequate	A
LCS Mint	3	LCS-12	1	0	F	G	Good	Low	*(G)*
SY-Monument†	new	AP-14	1	2	F-G	G-E	Adequate	Adequate	*(G)*
NE10589†	new	NE-exp	1	3	G	G	Good	Adequate	*(G)*
Overland	5+	NE-06	3	2	F-G	G-E	Good	Adequate	F
Redfield	5+	SD-13	3	-3	G	G	Good	Good	G
T158	3	LCS-09	1	-3	G	G	Adequate	Adequate	G
WB4059CLP	new	WB-13	1	-2	G	G	Low	High	*(G)*
WB4614	new	WB-14	4	4	F	G	Low	Good	-
Wesley[no PVP]	5+	NE-99	2	-1	G	G	Low	Good	G
SY-Wolf	5+	AP-11	0	1	G	G	Good	Good	A

† AP, AgriPro; LCS, Limagrain Cereal Seeds; MS, Meridian Seeds; MT, Montana; NE, Nebraska; ND, North Dakota; PG, PlainsGold; SD, South Dakota; WB, WestBred; and – (Year of Release).

‡ Difference in days to heading compared to **Expedition** (2015 maturity notes from the Brookings location). Height compared to Expedition (33 inches) at the Beresford location.

§ Lodging resistance and winter hardiness: E, excellent; G, good; F, fair; P, poor.

Baking Quality: E, excellent; G, good; A, acceptable; F, fair.

¶ Estimated ratings *(X),* based on information provided by entity that submitted the variety.

2015 South Dakota Winter Wheat Variety Trial Results

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Table 6. Winter wheat variety disease ratings.

Variety	Disease Ratings‡					
	2015 Stripe Rust	Stem Rust	2015 Leaf Rust	2015 Leaf Spot	WSMV	FHB
Alice (White)	MS	MR	MS	MS-S	MS	S
Antero (White)†	*(R)¶*	*(MR)*	*(S)*	MS-S	*(MS)*	-
Brawl CL Plus	*(MS)*	*(R)*	*(R)*	S	*(MS)*	-
Byrd	MR	*(MS)*	*(MS)*	S	*(MS)*	-
LCS Compass†	MR MS	*(R)*	MS-MR	S	*(S)*	*(R)*
Decade	MS	*(R)*	MR	*(MR)*	-	-
Denali	S	*(MS)*	MS-S	S	*(MS)*	-
AC Emerson†	*(R)*	*(R)*	MS	S	-	*(R)*
Expedition	MS	R	MS-S	MS-S	S	MR
Freeman	MR	MR	MS-S	S	S	MS
WB-Grainfield	MR	MR	MR	S	MR	MR
Ideal	S	MR	MR-MS	S	S	MS
LCH13NEDH-7-45†	MR	-	MR	MS	*(S)*	-
Lyman	MR	R	MR ?	S	S	MR
WB-Matlock	MS	*(MR)*	MS	MS-S	*(S)*	*(S)*
Millennium	MR	MR	MR-MS	MS-S	S	S
LCS Mint	MR	MS	MS-S	S	MR	-
SY-Monument†	MR	*(R)*	MR	S	*(R)*	-
NE10589†	MR	*(MR)*	MS-S	S	-	-
Overland	MR	MR	MR	S	MS	MR
Redfield	MR	MR	MS-MR	MS-S	S	MR
T158	MR	MS	MR	S	MS	S
WB4059CLP†	S	-	S	MR-MS	-	*(S)*
WB4614†	MR	-	MS	MS-S	*(S)*	-
Wesley[no PVP]	MR	R	MS	S	S	S
SY-Wolf	MR MS	MR	MR	MS	MR	S

† new entry in 2015

‡ Disease ratings: R, resistant; MR, moderately resistant; MS, moderately susceptible; S, susceptible.

¶ Estimated rankings based on information provided by the entity that submitted the variety.

2016 South Dakota Winter Wheat Variety Trial Results

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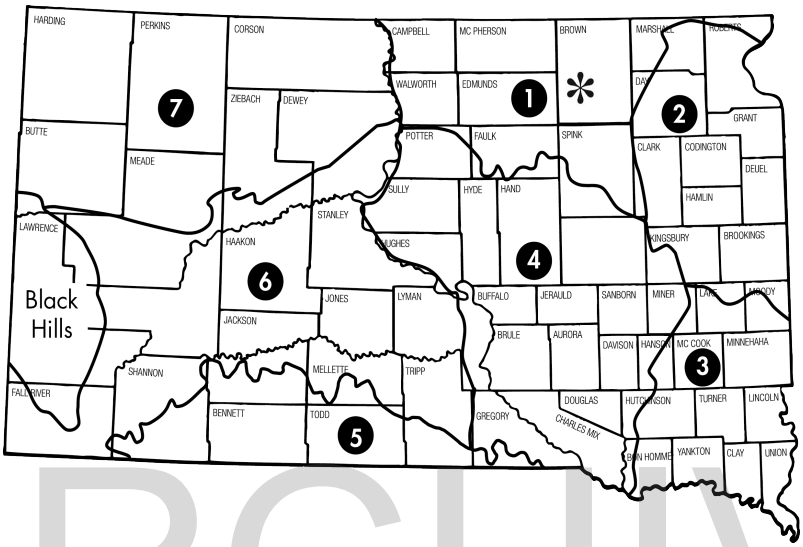

Recommended Winter Wheat Varieties for Fall 2016 by Crop Zone†

Zone - 1[pc]	Zone - 2[pc]	Zone - 3	Zone - 4[pc]	Zone - 5	Zone - 6	Zone - 7[pc]
Oahe	Ideal‡	Ideal‡	Redfield	Redfield	Ideal‡	Ideal‡
Redfield	Denali	Oahe	Denali	Oahe	Oahe	Lyman
Denali	Freeman‡	Denali	Freeman‡	Denali	Denali	Denali
Freeman‡	LCS Mint‡	Freeman‡	LCS Mint‡	Freeman‡	Freeman‡	LCS Mint‡
LCS Mint‡	Overland	SY Wolf‡	SY Wolf‡	LCS Mint‡	LCS Mint‡	SY Wolf‡
SY Wolf‡	SY Wolf‡	WB Grainfield‡	WB Grainfield‡	Overland	SY Wolf‡	WB Grainfield‡
WB Grainfield‡						

Promising

Antero‡ (white)	Antero‡ (white)	Antero‡ (white)	Antero‡ (white)	Antero‡ (white)	Antero‡ (white)	Antero‡ (white)
SY Monument	SY Monument	LCS Compass	SY Monument	SY Monument	SY Monument	SY Monument
					Ruth‡	

* Multi-year averages are not available for this zone, however it is suggested to select a variety that appears frequently in the recommended list across all zones for the state or neighboring zones.

† Crop Zones for small grains are base on soil & climate information. Recommended varieties are in the top 1/3 of the trial over 3 years for each zone. Promising varieities are those in the top 1/3 of the trial over 2 years.

[pc] plant in protective cover to improve winter survival in Crop Zones 1, 2, 4, & 7 and in other zones when planting varieties with (Fair) or lower winterhardiness ratings

‡ Variety is susceptible or moderately susceptible to Fusarium Head Blight (Scab).

Table 1. List of 2016 winter wheat testing locations and soil/cultural characteristics.

Location	Testing location characteristics				
	Cooperator	GPS coordinates	Soil Type	Previous crop	Tillage system
East River Locations (8)					
Beresford	Southeast Research Farm	43.043002° -96.901634°	Egan-Clarno-Trent complex, 0-2% slopes	Oats	No-till
Brookings	SDSU Foundation Seed	44.428208° -96.795120°	Kranzburg-Brookings silty clay loams, 0-2% slopes	Sp Wht	Min-till
Brookings - w/fungicide	SDSU Foundation Seed	44.128208° -96.795120°	Kranzburg-Brookings silty clay loams, 0-2% slopes	Sp Wht	Min-till
Onida	Tom Young	44.702751° -100.385525°	Agar silt loam, 0-2% slopes	Sp Wht	No-till
Pierre	Dakota Lakes	44.293688° -99.997029°	Millboro silty clay loam, 0-2% slopes	Flax	No-till
Platte (Geddes)	Curt Sybesma	43.265087° -98.663588°	Highmore-Walke silt loams, 0-2% slopes	Soybeans	No-till
Selby	Mark Stiegelmeyer	45.441954° -100.059511°	Highmore silt loam, cool, 2-6% slopes	Lentils	No-till
South Shore	Northeast Research Farm	45.105893° -97.101744°	Kranzburg-Brookings silty clay loams, 0-2% slopes	Oats	No-till
West River Locations (9)					
Bison	Brad Seidel	45.529722° -102.401111°	Felor-Yegen loams, 2-6% slopes	Sp Wht	No-till
Hayes	RDO	44.497778° -100.720556°	Opal-Chantier clays, 2-6% slopes	W Wht	No-till
Kennebec (Vivian)	Larson's c/o Logan Ruman	44.006389° -100.194722°	Millboro silty clay, 3-6% slopes	Sp Wht	No-till
Martin	Mary Kay and Carl Novotny	43.187778° -101.656667°	Mobridge silt loam, 0-3% slopes	Millet	No-till
Faith (Dupree)	Bryant Schauer	45.055833° -101.731389°	Daglum-Rhoades loams, 2-6% slopes	Fallow	No-till
Sturgis	Dave Wilson	44.503333° -103.481389°	Nunn clay loams, 0-2% slopes	W Wht	No-till
Wall	Dale Patterson	44.095833° -102.338056°	Santana loam, 0-2% slopes	Fallow	No-till
Winner	Jorgenson Land & Cattle	43.500591° -99.912924°	Millboro silty clay, 0-3% slopes	Oats	No-till
Winner - intensive	Jorgenson Land & Cattle	43.500591° -99.912924°	Millboro silty clay, 0-3% slopes	Oats	No-till

2016 South Dakota Winter Wheat Variety Trial Results

Table 2. Agronomic practices for 2016 winter wheat trial locations.

Location	Agronomic practices					
	Planting date	Starter applied	Other Fertilizer applied	Herbicide applied	Fungicide applied	Harvest date
East River Locations (8)						
Beresford	09/16/15	90# 30-10-10	300# 46-0-0 4/11/16	1.7 pt Wolverine	none	7/14/16
Brookings	09/14/15	45# 30-10-10	225# 46-0-0 4/11/16	1.5 pt Brox M Ultra	none	7/13/16
Brookings - w/fungicide	09/14/15	45# 30-10-10	225# 46-0-0 4/11/16	1.5 pt Brox M Ultra	5 oz Prosaro (heading)	7/13/16
Onida	09/11/15	10 gals 10-34-0	250# 46-0-0 3/13/16	1 pt GoldSky	none	7/12/16
Pierre	09/12/15	10 gals 10-34-0	50 gal 28-0-0 streambar 4/8/16	0.9 pt Bromac Adv. + Harmony	none	7/11/16
Platte (Geddes)	10/06/15	90# 30-10-10	220# 46-0-0 4/4/16	none	none	7/14/16
Selby	09/11/15	10 gals 10-34-0	250# 46-0-0 3/13/16	none	none	7/28/16
South Shore	09/15/15	90# 30-10-10	300# 46-0-0 4/6/16	none	none	7/18/16
West River Locations (9)						
Bison	9/21/15	6 gal 10-25-0-5.5Zn	35 gal 28-0-0 mid-row band	none	none	8/1/16
Hayes	09/23/15	6 gal 10-25-0-5.5Zn	35 gal 28-0-0 mid-row band	8 oz Olympus (fall) 16 oz Goldsky	2 oz Bumper (flag lf) 4 oz Triazol (heading)	7/14/16
Kennebec (Vivian)	09/23/15	6 gal 10-25-0-5.5Zn	35 gal 28-0-0 mid-row band	5 oz Barrage	6 oz Avaris (flag lf & heading)	7/21/16
Martin	09/22/15	6 gal 10-25-0-5.5Zn	35 gal 28-0-0 mid-row band	none	none	7/22/16
Faith (Dupree)	09/25/15	6 gal 10-25-0-5.5Zn	35 gal 28-0-0 mid-row band	16 oz Goldsky	4 oz Stratego (heading)	7/25/16
Sturgis	09/28/15	6 gal 10-25-0-5.5Zn	35 gal 28-0-0 mid-row band	16 oz Goldsky	4 oz Stratego (heading)	7/11/16
Wall	09/25/15	6 gal 10-25-0-5.5Zn	35 gal 28-0-0 mid-row band	3.5 oz Power Flex (fall applied)	none	7/15/16
Winner†	10/12/15	10 gals 10-34-0	250# 46-0-0 3/13/16	1.5 pt Maestro	none	7/14/16
Winner - intensive†	10/12/15	4 gals 7-25-5 + 0.5 gal inFuze	250# 46-0-0 3/13/16	13.5 oz Starane Flex	none‡	7/14/16

‡ Plots at both Winner trials were missing one row, i.e., there were 6 rows instead of 7.

†Due to extremely wet conditions, the cooperator was not able to apply fungicide.

2016 South Dakota Winter Wheat Variety Trial Results

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Table 3a. 2016 East River Winter Wheat Performance - Yield (13% moisture), Test Weight (harvest moisture), and Protein (13% moisture). Varieties yielding in the upper 1/3 of each trial location are denoted by gray shading.

Variety	Crop Zone - 1			Crop Zone - 2					
	Selby			Brookings			Brookings w/fung.#		
	Yield	Test Wt.	Protein	Yield	Test Wt.	Protein	Yield	Test Wt.	Protein
Alice (White)	111.0	59.4	12.7	57.6	58.2	12.3	52.3	58.1	12.9
Antero (White)	111.0	60.8	10.6	73.9	59.8	11.9	81.3	60.2	12.2
Avery†	92.0	59.0	11.0	68.8	59.5	12.2	72.2	60.4	11.6
Brawl CL Plus	109.6	59.7	12.2	57.1	56.9	13.8	65.4	57.9	13.7
Byrd	97.1	59.5	11.0	66.9	58.5	12.1	68.0	59.4	12.2
LCS Compass	83.4	61.0	11.9	55.2	58.5	12.6	58.9	60.0	12.0
Cowboy†	97.2	59.2	11.2	68.4	57.6	11.6	71.6	58.8	12.0
Decade	87.4	58.3	11.5	57.7	58.9	12.1	66.0	59.8	12.2
Denali	95.3	60.2	11.1	75.9	58.7	10.9	80.5	60.0	11.7
AC Emerson	84.2	60.2	13.5	55.7	59.4	12.9	56.8	60.3	12.3
Expedition	77.6	59.0	12.0	62.4	58.1	12.3	61.1	59.0	11.9
Freeman	105.5	57.4	12.4	73.3	57.6	12.0	67.1	57.8	12.4
WB-Grainfield	110.7	59.1	12.1	78.1	58.7	12.4	73.1	60.2	12.6
Ideal	85.8	59.2	12.0	68.8	59.0	11.8	69.9	58.7	11.3
Lyman	92.4	60.0	12.7	70.8	59.2	13.0	65.2	59.4	12.6
LCS Mint	112.9	61.6	11.8	69.4	60.9	12.1	73.7	60.9	12.0
SY Monument	110.9	59.7	12.2	79.1	58.0	11.9	79.1	58.8	11.9
Oahe	110.7	60.9	11.8	70.8	59.2	12.2	75.9	59.4	12.2
Overland	107.6	59.7	12.4	62.9	58.9	12.3	68.1	59.6	12.5
PSB13NEDH-7-140†	118.9	61.3	12.9	70.1	60.0	12.9	64.0	59.3	13.5
Redfield	111.2	60.4	12.0	69.0	59.5	11.9	71.3	59.7	12.4
Ruth	115.4	60.0	11.8	70.4	59.9	12.7	72.0	60.1	12.6
SY Sunrise†	121.8	60.7	11.6	67.7	58.2	12.5	73.3	59.5	12.7
WB4059-CLP	87.5	59.3	12.3	62.7	50.8	11.4	53.4	53.1	13.1
WB4614	88.9	60.5	11.8	74.1	58.4	12.7	80.4	59.2	12.2
Wesley	100.7	58.1	11.6	65.7	58.2	12.6	67.0	59.4	12.7
SY Wolf	110.0	61.1	11.5	82.9	58.2	12.4	76.7	59.4	12.7
Trial Average	102.4	59.9	11.9	67.8	58.5	12.3	68.2	59.2	12.4
LSD(0.05)‡	10.4	0.8	1.0	7.3	1.3	0.9	6.1	1.4	1.2
CV(%)§	7.3	0.9	5.9	7.7	1.5	5	6.5	1.8	6.7

Foliar fungicide applied at flowering.

† New entry in 2016, not previously tested.

‡ Yield, test weight, or protein value required (≥LSD) to determine if varieties are statistically different than one another, § Coefficient of Variation (C.V.) is a measure of the variability of the experimental error, 15% or less is acceptable.

2016 South Dakota Winter Wheat Variety Trial Results

Table 3b. 2016 East River Winter Wheat Performance, continued - Yield (13% moisture), Test Weight (harvest moisture), and Protein (13% moisture). Varieties yielding in the upper 1/3 of each trial location are denoted by gray shading.

Variety	Crop Zone - 2			Crop Zone - 3			Crop Zone - 4		
	South Shore			Beresford			Dakota Lakes		
	Yield	Test Wt.	Protein	Yield	Test Wt.	Protein	Yield	Test Wt.	Protein
Alice (White)	73.2	55.9	14.0	65.8	55.7	12.5	63.7	55.2	14.5
Antero (White)	79.1	55.4	13.7	74.8	56.7	11.7	66.2	53.9	14.6
Avery†	77.6	55.6	13.4	73.3	55.9	12.3	53.6	53.3	14.6
Brawl CL Plus	78.6	57.3	13.5	72.4	58.7	12.3	64.1	53.7	15.4
Byrd	69.3	55.0	13.6	73.4	56.9	11.6	69.0	54.0	14.2
LCS Compass	72.8	56.7	14.4	68.6	59.8	12.3	57.9	53.8	15.0
Cowboy†	70.9	54.9	13.5	73.6	54.5	12.2	60.0	50.4	14.7
Decade	56.0	53.9	14.7	52.1	55.6	12.3	55.6	53.5	15.2
Denali	75.5	55.8	14.1	68.9	55.7	12.6	61.8	51.7	15.4
AC Emerson	52.7	54.9	15.1	43.0	51.3	12.5	51.5	55.7	14.9
Expedition	67.5	55.6	14.5	59.7	55.4	12.0	58.4	52.6	15.1
Freeman	65.3	52.0	14.4	75.0	56.0	11.9	63.5	51.5	15.6
WB-Grainfield	69.2	53.6	14.1	77.3	58.0	12.0	59.1	52.7	15.5
Ideal	75.2	56.1	14.4	60.7	56.0	12.5	56.4	53.4	14.7
Lyman	69.5	56.1	14.0	58.3	55.7	12.3	63.2	54.5	14.8
LCS Mint	76.8	57.4	13.7	71.7	58.5	11.6	67.6	54.7	15.0
SY Monument	77.0	54.4	14.0	63.5	53.2	12.0	67.1	50.3	14.3
Oahe	69.9	57.8	14.0	61.3	56.7	12.0	63.9	57.3	14.8
Overland	73.1	57.7	13.8	61.6	57.1	11.9	63.6	55.6	14.3
PSB13NEDH-7-140†	72.9	57.1	14.6	63.9	57.9	12.6	64.2	56.0	15.7
Redfield	66.5	54.8	15.0	61.8	55.7	12.7	65.2	55.4	15.1
Ruth	66.9	54.5	14.5	74.4	57.8	12.1	64.2	54.7	14.9
SY Sunrise†	79.9	55.5	13.9	72.5	56.6	11.9	70.8	54.3	14.5
WB4059-CLP	66.5	50.7	14.7	67.8	53.1	12.8	55.4	46.2	15.0
WB4614	64.6	55.4	14.5	55.0	52.7	12.2	65.9	53.0	14.6
Wesley	68.5	53.8	15.1	70.6	55.6	12.5	59.1	49.8	15.8
SY Wolf	68.9	54.4	14.4	74.0	54.8	12.3	69.5	53.6	14.3
Trial Average	69.2	55.1	14.2	66.0	55.9	12.2	61.8	53.4	15.0
LSD(0.05)‡	6.0	1.3	0.8	6.4	1.4	0.9	9.9	2.4	1.2
CV(%)§	6.1	1.6	4.2	6.9	1.8	5.1	11.5	3.4	5.8

† New entry in 2016, not previously tested.

‡ Yield, test weight, or protein value required (≥LSD) to determine if varieties are statistically different than one another, § Coefficient of Variation (C.V.) is a measure of the variability of the experimental error, 15% or less is acceptable.

2016 South Dakota Winter Wheat Variety Trial Results

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Table 3c. 2016 East River Winter Wheat Performance, continued - Yield (13% moisture), Test Weight (harvest moisture), and Protein (13% moisture). Varieties yielding in the upper 1/3 of each trial location are denoted by gray shading.

Variety	Crop Zone - 4						Crop Zones 1, 2, 3, & 4			
	Geddes			Onida			East River Average			
	Yield	Test Wt	Protein	Yield	Test Wt	Protein	Top 1/3%	Yield	Test Wt	Protein
Alice (White)	100	59.8	13.1	62.7	55.5	15.7	50	73.2	57.2	13.4
Antero (White)	99	57.4	12.3	64.4	53.7	14.8	88	81.1	57.2	12.7
Avery†	99	58.2	11.7	61.5	53.0	14.7	38	74.6	56.9	12.7
Brawl CL Plus	99	60.5	12.8	63.5	54.3	15.6	50	76.2	57.4	13.6
Byrd	106	58.8	12.0	67.6	54.4	14.5	50	77.0	57.1	12.6
LCS Compass	100	60.6	12.9	58.5	56.0	15.4	0	69.3	58.3	13.3
Cowboy†	102	59.0	12.0	56.1	51.7	15.6	25	74.8	55.7	12.8
Decade	99	60.6	13.0	47.3	54.4	15.5	0	65.0	56.9	13.3
Denali	106	59.4	12.3	69.4	53.4	15.4	63	79.0	56.9	12.9
AC Emerson	75	59.3	13.6	48.6	55.0	16.7	0	58.3	57.0	13.9
Expedition	103	60.5	12.8	62.2	53.7	16.1	13	68.8	56.7	13.3
Freeman	107	58.2	12.7	62.4	51.2	16.2	50	77.2	55.2	13.4
WB-Grainfield	103	59.8	12.4	58.3	54.5	15.8	63	78.5	57.1	13.4
Ideal	99	61.2	12.9	50.1	53.2	16.6	13	70.5	57.1	13.2
Lyman	98	59.6	13.4	54.6	55.6	16.4	13	71.3	57.5	13.6
LCS Mint	100	59.3	12.4	69.0	54.2	15.1	75	80.0	58.4	13.0
SY Monument	99	56.9	12.4	61.4	52.0	15.4	63	79.6	55.4	13.0
Oahe	97	61.4	12.3	51.5	55.4	16.2	38	75.0	58.5	13.2
Overland	96	60.7	12.8	59.2	56.2	15.2	13	73.9	58.2	13.1
PSB13NEDH-7-140†	102	62.4	13.4	60.4	57.0	15.9	50	76.9	58.9	13.9
Redfield	96	60.6	12.8	63.8	56.3	15.3	38	75.4	57.8	13.4
Ruth	108	60.7	12.8	60.1	55.3	15.6	75	78.8	57.9	13.4
SY Sunrise†	109	60.5	12.3	68.7	56.0	15.4	88	82.9	57.7	13.1
WB4059-CLP	88	55.9	13.6	50.8	38.5	16.0	0	66.4	50.9	13.9
WB4614	89	57.5	12.9	49.6	51.3	16.5	38	70.7	56.0	13.4
Wesley	96	58.2	12.5	56.1	53.0	16.4	0	72.9	55.8	13.6
SY Wolf	105	60.6	12.7	58.2	52.7	15.9	75	80.5	56.9	13.3
Trial Average	98.4	59.7	12.7	59.5	53.8	15.7	-	74.1	57	13.3
LSD(0.05)‡	4.8	1.4	0.6	8.9	4.9	1.5	-	5.6	1.2	0.4
CV(%)§	3.5	1.6	3.6	10.6	6.5	5.5	-	7.5	2.8	5.6

† New entry in 2016, not previously tested.

‡ Yield, test weight, or protein value required (≥LSD) to determine if varieties are statistically different than one another, § Coefficient of Variation (C.V.) is a measure of the variability of the experimental error, 15% or less is acceptable.

2016 South Dakota Winter Wheat Variety Trial Results

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Table 4a. 2016 West River Winter Wheat Performance - Yield (13% moisture), Test Weight (harvest moisture), and Protein (13% moisture). Varieties yielding in the upper 1/3 of each trial location are denoted by gray shading.

Variety	Crop Zone - 5			Crop Zone - 6								
	Martin			Hayes			Kennebec			Sturgis		
	Yield	Test Wt.	Protein	Yield	Test Wt.	Protein	Yield	Test Wt.	Protein	Yield	Test Wt.	Protein
Alice (White)	77.2	58.9	13.0	56.1	54.9	15.0	53.9	58.0	10.7	60.6	61.7	9.6
Antero (White)	94.7	60.1	12.7	45.6	49.5	14.7	-	-	-	72.7	60.9	8.6
Avery†	87.0	60.0	11.0	47.8	52.4	15.2	64.3	58.6	9.1	71.5	60.5	8.2
Brawl CL Plus	76.9	60.3	13.0	51.2	50.2	16.3	52.1	59.1	10.7	64.8	63.1	9.4
Byrd	84.0	52.6	12.6	47.0	51.8	14.9	59.4	59.0	8.7	69.8	60.2	9.0
LCS Compass	75.0	60.7	13.1	42.4	52.6	15.9	47.3	58.4	9.6	57.0	61.9	10.2
Cowboy†	84.6	58.3	12.8	42.7	49.1	15.7	60.4	56.1	8.8	68.1	59.9	8.9
Decade	81.8	59.5	12.5	39.3	54.0	16.1	54.0	59.8	10.2	59.1	61.9	10.2
Denali	82.8	59.8	12.1	45.8	51.9	15.6	59.2	59.0	8.9	62.7	62.1	9.2
AC Emerson	66.1	60.0	12.5	37.2	55.9	16.5	46.0	59.9	10.9	49.2	62.4	10.9
Expedition	64.7	58.2	12.2	48.2	49.4	16.1	53.8	58.9	10.0	62.7	61.0	9.1
Freeman	86.6	58.3	12.1	42.6	47.6	16.1	57.2	56.3	9.1	65.9	59.4	9.0
WB-Grainfield	95.1	61.0	12.2	46.1	50.1	16.9	61.2	57.6	10.9	68.2	60.8	9.4
Ideal	79.8	59.7	11.6	38.6	53.6	16.7	58.1	58.5	9.6	60.5	62.3	9.3
Lyman	77.2	59.6	13.2	47.6	52.5	16.5	51.2	58.7	9.9	61.5	61.0	9.4
LCS Mint	91.4	60.4	12.8	43.8	55.9	15.5	61.6	59.3	9.3	67.0	62.8	9.2
SY Monument	92.2	59.8	12.4	43.7	50.4	15.8	61.8	56.0	9.3	61.2	59.4	8.8
Oahe	86.7	62.2	12.4	39.9	53.9	15.9	51.1	59.8	9.4	68.6	62.1	9.3
Overland	87.9	61.0	11.8	46.6	54.5	16.6	53.1	58.6	9.5	66.0	61.1	8.8
PSB13NEDH-7-140†	90.0	61.6	12.3	47.4	56.0	16.9	54.4	59.6	9.8	59.4	62.6	10.2
Redfield	85.1	61.1	12.2	44.8	53.0	16.6	52.5	59.5	9.8	62.7	61.7	9.8
Ruth	83.8	60.4	12.8	48.1	52.5	16.3	54.9	59.3	9.7	64.0	62.7	9.2
SY Sunrise†	80.2	61.0	12.7	46.8	51.5	15.5	52.7	57.9	10.3	63.0	61.7	9.5
WB4059-CLP	75.4	54.5	12.3	45.3	45.7	15.7	46.7	55.9	11.0	66.8	52.1	9.2
WB4614	86.3	59.9	12.3	40.3	52.0	16.6	57.0	59.2	9.3	69.3	61.5	9.2
Wesley	75.1	58.8	13.7	43.7	48.8	16.6	51.6	58.3	10.2	64.7	60.9	10.0
SY Wolf	81.1	59.3	12.8	44.7	52.0	16.7	56.3	58.4	9.7	66.2	61.9	9.1
Trial Average	81.7	59.6	12.6	44.5	51.9	16.0	54.4	58.5	9.8	63.4	61.0	9.4
LSD(0.05)‡	12.1	4.0	1.1	6.9	2.5	0.8	7.0	2.1	0.6	6.4	1.3	0.5
CV(%)§	9.8	4.7	6.3	11.1	3.5	2.4	7.0	1.7	3.5	7.1	1.5	2.4

† New entry in 2016, not previously tested.

‡ Yield, test weight, or protein value required (≥LSD) to determine if varieties are statistically different than one another, § Coefficient of Variation (C.V.) is a measure of the variability of the experimental error, 15% or less is acceptable.

Table 4b. 2016 West River Winter Wheat Performance, continued - Yield (13% moisture), Test Weight (harvest moisture), and Protein (13% moisture). Varieties yielding in the upper 1/3 of each trial location are denoted by gray shading.

Variety	Crop Zone - 6								
	Wall			Winner			Winner intensive		
	Yield	Test Wt.	Protein	Yield	Test Wt.	Protein	Yield	Test Wt.	Protein
Alice (White)	55.8	55.5	9.3	76.2	56.0	13.2	79.8	58.0	12.9
Antero (White)	65.6	56.9	9.1	82.3	55.8	11.9	81.9	58.2	11.7
Avery†	69.0	56.4	9.5	75.2	55.4	12.2	69.3	56.8	12.5
Brawl CL Plus	56.4	58.1	9.6	77.1	56.7	13.3	75.0	57.7	13.4
Byrd	67.0	55.7	8.5	72.6	54.7	12.9	70.2	55.8	13.0
LCS Compass	53.7	57.4	9.3	72.6	58.6	12.2	68.9	59.6	13.0
Cowboy†	75.0	54.6	8.9	77.9	54.8	12.1	72.8	58.0	12.0
Decade	56.8	55.9	9.2	67.1	58.6	12.6	60.9	59.1	13.0
Denali	72.7	56.5	8.8	76.4	56.6	12.7	78.8	59.4	11.9
AC Emerson	52.6	54.8	9.3	62.3	59.5	13.4	59.1	60.2	13.7
Expedition	55.4	56.7	9.0	71.6	54.7	12.9	67.0	58.1	12.6
Freeman	66.0	55.2	9.4	81.0	54.0	12.7	70.0	54.9	13.1
WB-Grainfield	58.7	57.1	9.5	81.6	54.4	12.3	76.4	57.3	12.3
Ideal	66.1	56.7	9.8	74.0	58.3	12.6	67.8	59.4	12.7
Lyman	60.3	55.2	8.6	76.5	57.5	12.6	78.3	59.5	12.5
LCS Mint	66.4	57.8	8.9	88.8	57.7	11.9	88.6	61.0	12.5
SY Monument	72.2	55.2	8.9	82.7	55.2	12.5	79.6	56.3	12.5
Oahe	63.9	58.6	9.7	70.0	59.3	12.8	71.6	60.3	12.9
Overland	65.2	54.9	8.7	79.6	58.9	12.0	74.8	59.9	12.2
PSB13NEDH-7-140†	62.9	57.1	9.3	79.5	60.4	12.6	68.8	61.5	13.3
Redfield	63.1	56.1	9.2	71.1	57.5	14.1	69.0	59.4	13.7
Ruth	60.7	57.6	10.1	79.9	56.7	13.5	78.1	58.1	12.7
SY Sunrise†	65.1	57.5	9.7	81.2	56.9	12.9	76.4	58.1	13.0
WB4059-CLP	57.9	52.4	9.7	65.7	53.6	13.7	64.6	55.3	13.9
WB4614	72.9	55.6	9.1	64.0	56.4	12.8	71.1	60.6	12.7
Wesley	56.9	54.7	9.8	75.5	56.5	12.9	77.0	57.7	13.0
SY Wolf	62.4	55.5	10.1	83.8	57.4	12.4	69.0	60.3	12.2
Trial Average	61.8	56.1	9.3	74.5	56.7	12.8	72.0	58.5	12.8
LSD(0.05)‡	6.7	1.3	0.8	7.8	2.1	1.1	9.6	1.5	0.9
CV(%)§	7.8	1.7	4.1	7.5	2.6	6.0	9.4	1.9	5.0

† New entry in 2016, not previously tested.

‡ Yield, test weight, or protein value required (≥LSD) to determine if varieties are statistically different than one another, § Coefficient of Variation (C.V.) is a measure of the variability of the experimental error, 15% or less is acceptable.

2016 South Dakota Winter Wheat Variety Trial Results

Table 4c. 2016 West River Winter Wheat Performance, continued - Yield (13% moisture), Test Weight (harvest moisture), and Protein (13% moisture). Varieties yielding in the upper 1/3 of each trial location are denoted by gray shading.

Variety	Crop Zone - 7						Crop Zones 5, 6, & 7			
	Bison			Faith			West River Average			
	Yield	Test Wt	Protein	Yield	Test Wt	Protein	Top 1/3%	Yield	Test Wt	Protein
Alice (White)	34.2	58.3	12.4	85.2	60.8	10.9	22	65.6	58.0	12.0
Antero (White)	48.8	57.3	11.1	108.0	61.4	8.9	78	74.9	57.5	11.1
Avery†	40.6	55.4	12.6	82.3	60.2	9.9	56	67.8	57.1	11.2
Brawl CL Plus	41.9	57.8	12.4	91.5	61.6	10.5	44	66.8	58.2	12.2
Byrd	41.4	56.1	12.5	85.3	61.7	8.7	56	67.1	56.1	11.4
LCS Compass	36.4	57.0	13.2	82.6	62.6	10.1	0	61.1	58.8	12.0
Cowboy†	35.7	54.5	13.0	86.6	60.7	10.2	44	67.9	56.2	11.5
Decade	36.7	58.2	13.4	79.4	62.7	9.2	0	60.1	58.7	11.8
Denali	41.2	55.5	12.6	88.0	61.9	10.3	56	68.6	58.0	11.5
AC Emerson	29.1	57.9	15.0	74.7	62.2	11.1	0	53.8	59.1	12.5
Expedition	36.4	56.6	13.0	88.1	60.9	10.3	11	61.7	56.9	11.8
Freeman	33.1	54.7	12.4	84.4	58.5	10.1	44	66.2	55.3	11.8
WB-Grainfield	41.1	56.5	12.7	92.1	60.2	10.0	89	69.9	57.2	11.8
Ideal	40.1	57.5	13.1	80.8	62.1	9.9	22	63.5	58.7	11.8
Lyman	37.6	56.5	13.9	78.9	61.0	10.7	22	64.7	57.9	11.9
LCS Mint	48.7	58.1	11.9	92.2	62.3	10.3	89	73.3	59.5	11.6
SY Monument	39.6	56.2	11.3	94.3	59.7	10.4	67	70.7	56.5	11.6
Oahe	45.0	58.2	12.3	65.5	62.0	9.7	33	63.9	59.6	11.8
Overland	30.6	58.2	12.5	82.4	60.9	10.6	56	66.6	58.7	11.5
PSB13NEDH-7-140†	41.4	58.4	13.0	78.9	62.2	10.9	44	66.0	60.0	12.2
Redfield	38.3	57.8	13.3	77.4	61.4	10.0	0	63.9	58.5	12.2
Ruth	35.4	58.0	11.7	75.2	60.4	10.6	33	65.6	58.3	12.2
SY Sunrise†	39.8	57.6	11.1	91.6	61.7	10.5	44	68.0	58.2	12.0
WB4059-CLP	40.8	51.2	12.1	84.2	57.8	10.6	11	62.6	52.8	12.1
WB4614	44.7	57.2	13.6	92.9	61.7	10.8	67	67.7	58.1	11.9
Wesley	45.6	55.5	12.9	87.9	60.7	9.8	33	65.8	56.7	12.3
SY Wolf	43.9	55.5	12.5	86.1	61.4	10.2	44	67.1	57.9	11.9
Trial Average	38.3	56.8	12.7	83.8	61	10.2	-	65.0	57.7	12.0
LSD(0.05)‡	8.5	1.9	1.2	12.9	1.8	1.6	-	3.2	0.8	0.5
CV(%)§	15.9	2.3	7.0	11.1	2.1	11.3	-	9.9	2.8	6.5

† New entry in 2016, not previously tested.

‡ Yield, test weight, or protein value required (≥LSD) to determine if varieties are statistically different than one another, § Coefficient of Variation (C.V.) is a measure of the variability of the experimental error, 15% or less is acceptable.

2016 South Dakota Winter Wheat Variety Trial Results

Table 5. 2014-2016 (2 and 3-year averages) East River Yield (bu/ac @ 13% moisture) Performance - sorted by overall 3-year yield. Varieties yielding in the upper 1/3 for each trial location are denoted by gray shading.

Variety	Zone - 1	Crop Zone - 2				Crop Zone - 3		Crop Zone - 4		Crop Zones 1-4	
	Selby	Brookings		Brookings-fung.		Beresford		Onida		East River Ave.	
	2 year	2 year	3 year	2 year	3 year	2 year	3 year	2 year	3 year	2 year	3 year
SY Wolf	95.6	64.6	65.4	64.5	66.8	81.7	75.2	63.6	76.6	75.4	78.1
Oahe	98.6	59.1	61.4	66.4	68.0	73.3	71.4	62.1	71.3	73.5	75.8
Freeman	96.7	60.1	61.7	57.2	62.1	82.2	75.8	60.1	72.0	72.8	75.5
WB-Grainfield	99.2	57.3	59.3	61.2	62.2	81.4	73.4	61.8	72.7	72.9	74.5
Redfield	99.3	54.3	54.0	64.0	62.9	74.8	69.5	63.5	74.5	72.4	73.8
Denali	83.7	58.5	55.2	69.6	66.4	83.8	73.5	62.4	70.4	73.5	73.6
LCS Mint	90.7	54.4	56.8	62.9	63.6	79.2	69.3	64.5	74.6	72.2	73.4
Ideal	84.5	55.7	56.2	60.5	63.1	75.3	72.6	52.5	69.8	68.8	73.3
Overland	98.9	54.0	55.4	61.5	64.0	71.6	68.4	61.3	70.6	71.7	73.3
Lyman	91.1	58.6	59.2	58.7	61.6	71.7	67.1	60.3	72.5	70.8	72.9
Wesley	88.8	52.8	55.1	57.0	58.2	78.5	69.0	51.5	65.3	67.4	69.6
Byrd	81.3	49.1	49.7	56.7	56.5	81.1	70.7	61.9	69.4	68.9	69.4
Alice	96.8	47.5	47.3	48.9	53.0	73.3	62.4	59.9	67.1	68.5	67.7
Decade	76.9	48.0	50.5	57.8	56.9	69.8	65.7	51.0	66.7	63.3	67.0
Expedition	80.2	49.0	49.1	51.3	53.5	78.8	68.9	56.0	66.0	66.5	66.7
Brawl CL Plus	92.8	41.6	42.3	50.9	51.2	81.9	70.0	60.1	64.1	68.3	66.3
Antero	94.4	58.5	-	70.5	-	80.5	-	67.0	-	75.6	-
SY Monument	94.7	58.5	-	68.1	-	77.3	-	63.5	-	74.1	-
Ruth	95.8	54.2	-	61.5	-	78.3	-	60.9	-	71.8	-
LCS Compass	81.9	46.6	-	54.0	-	85.3	-	54.4	-	67.8	-
WB4614	73.9	50.8	-	67.7	-	70.0	-	51.6	-	64.9	-
AC Emerson	82.5	52.6	-	51.7	-	65.3	-	55.9	-	62.5	-
WB4059CLP	84.0	42.6	-	40.7	-	75.9	-	41.4	-	59.4	-
Avery†	-	-	-	-	-	-	-	-	-	-	-
Cowboy†	-	-	-	-	-	-	-	-	-	-	-
PSB13NEDH-7-140†	-	-	-	-	-	-	-	-	-	-	-
SY Sunrise†	-	-	-	-	-	-	-	-	-	-	-
Trial Average	90.9	53.2	54.5	58.4	60.0	76.6	68.3	59.3	70.2	69.2	69.8
LSD(0.05)‡	7.0	5.0	3.9	4.9	4.1	6.9	4.7	6.1	4.1	8.6	6.0

† New entry in 2016, not previously tested.

‡ Yield value required (≥LSD) to determine if varieties are statistically different than one another.

2016 South Dakota Winter Wheat Variety Trial Results

Table 6a. 2014-2016 (2 and 3-year averages) West River Yield (bu/ac @ 13% moisture) Performance - sorted by overall 3-year yield. Varieties yielding in the upper 1/3 for each trial location are denoted by gray shading.

Variety	Crop Zone - 5		Crop Zone - 6						
	Martin		Hayes	Kennebec		Sturgis		Wall	
	2 year	3 year	2 year	2 year	3 year	2 year	3 year	2 year	3 year
SY Wolf	68.4	61.1	62.5	65.9	75.1	71.3	65.6	64.8	60.9
LCS Mint	68.8	64.4	61.5	56.8	67.6	76.8	69.9	71.9	63.9
Denali	71.9	65.0	63.5	51.5	66.0	68.7	64.8	81.4	72.0
Ideal	65.4	61.1	58.4	50.5	68.5	66.4	62.7	71.7	69.2
Oahe	71.7	64.2	58.0	58.2	67.8	72.1	65.2	69.2	66.1
Freeman	71.0	65.3	60.4	53.6	67.4	73.0	64.4	66.0	62.8
WB-Grainfield	71.7	61.9	62.6	62.3	69.3	74.9	65.5	66.6	60.6
Overland	67.2	64.2	59.9	53.7	66.2	69.2	61.6	66.3	59.0
Redfield	65.0	62.1	62.6	55.2	65.5	68.1	61.5	73.3	67.2
Lyman	61.1	57.3	58.3	53.2	65.2	62.5	58.6	62.1	59.8
Decade	59.5	57.3	61.4	46.8	64.1	65.1	60.5	66.5	65.7
Wesley	59.2	56.5	58.7	47.9	61.7	66.5	59.5	61.4	57.7
Byrd	65.1	57.7	58.1	49.4	63.1	69.0	62.2	70.3	61.6
Alice	60.3	54.7	67.3	53.3	62.2	64.8	57.7	58.6	53.5
Expidition	57.2	52.5	59.5	51.4	63.1	62.7	57.8	64.8	56.5
Brawl CL Plus	59.8	51.4	59.4	45.9	53.0	64.1	58.0	60.9	54.7
Antero	71.5	-	57.1	48.5	-	79.1	-	73.2	-
SY Monument	68.7	-	64.0	60.1	-	71.6	-	79.5	-
Ruth	66.9	-	70.2	59.0	-	68.5	-	61.9	-
WB4614	64.6	-	55.8	53.1	-	77.9	-	77.2	-
LCS Compass	63.2	-	56.3	43.3	-	58.7	-	58.0	-
AC Emerson	55.7	-	51.6	50.1	-	59.2	-	59.7	-
WB4059CLP	54.4	-	54.9	29.3	-	61.8	-	56.3	-
Avery†	-	-	-	-	-	-	-	-	-
Cowboy†	-	-	-	-	-	-	-	-	-
PSB13NEDH-7-140†	-	-	-	-	-	-	-	-	-
SY Sunrise†	-	-	-	-	-	-	-	-	-
Trial Average	64.9	59.8	59.4	53.4	67.4	68.3	62.1	66.5	61.7
LSD(0.05)‡	7.1	6.2	8.2	9.1	6.3	4.4	3.3	6.3	5.1

† New entry in 2016, not previously tested.

‡ Yield value required (≥LSD) to determine if varieties are statistically different than one another.

Table 6b. 2014-2016 (2 and 3-year averages) West River Yield (bu/ac @ 13% moisture) Performance, continued - sorted by overall 3-year yield. Varieties yielding in the upper 1/3 for each trial location are denoted by gray shading.

Variety	Crop Zone - 6				Crop Zone - 7				Crop Zones 5-7	
	Winner		Winner intensive		Bison		Faith*		West River Ave.	
	2 year	3 year	2 year	3 year	2 year	3 year	2 year	3 year	2 year	3 year
SY Wolf	77.2	77.9	66.4	70.6	48.4	48.3	70.7	66.3	66.2	65.8
LCS Mint	75.1	75.2	75.3	74.9	48.9	44.5	66.9	58.5	66.9	65.0
Denali	63.8	66.1	71.4	70.1	51.7	47.4	62.2	55.9	65.1	63.9
Ideal	68.6	72.0	68.7	71.4	47.0	44.4	59.7	60.3	61.8	63.7
Oahe	67.2	69.8	70.6	69.2	51.9	46.2	56.7	54.2	63.9	62.9
Freeman	71.5	72.4	70.1	69.1	44.3	40.8	63.5	57.9	63.7	62.8
WB-Grainfield	64.9	69.2	73.1	70.3	49.2	41.8	69.2	59.8	66.0	62.6
Overland	69.6	71.5	72.6	70.6	41.7	41.5	62.9	59.3	62.6	62.0
Redfield	64.4	66.6	67.6	68.4	44.1	41.2	57.5	55.2	62.0	61.6
Lyman	69.8	70.9	73.6	72.9	43.4	42.4	63.4	61.0	60.8	61.4
Decade	60.0	66.2	61.8	66.0	44.6	42.4	57.3	53.7	58.1	60.2
Wesley	63.1	65.9	65.2	68.0	53.1	47.9	60.7	54.5	59.5	59.5
Byrd	66.0	66.4	75.4	71.1	50.4	42.9	56.4	50.5	62.2	59.4
Alice	66.0	64.7	67.3	64.1	39.4	35.5	61.0	58.6	59.8	57.7
Expedition	61.9	64.1	64.5	63.7	42.9	39.4	62.0	56.7	58.6	57.3
Brawl CL Plus	66.7	64.3	66.7	62.5	48.6	42.3	61.2	52.4	59.3	55.6
Antero	80.6	-	82.2	-	50.1	-	74.3	-	68.5	-
SY Monument	74.5	-	71.2	-	46.6	-	71.8	-	67.5	-
Ruth	71.4	-	74.7	-	40.8	-	58.1	-	63.5	-
WB4614	56.9	-	68.4	-	45.1	-	61.5	-	62.3	-
LCS Compass	62.9	-	64.0	-	38.6	-	61.7	-	56.3	-
AC Emerson	48.5	-	49.2	-	39.4	-	63.7	-	53.0	-
WB4059CLP	45.6	-	52.8	-	40.3	-	56.3	-	50.2	-
Avery†	-	-	-	-	-	-	-	-	-	-
Cowboy†	-	-	-	-	-	-	-	-	-	-
PSB13NEDH-7-140†	-	-	-	-	-	-	-	-	-	-
SY Sunrise†	-	-	-	-	-	-	-	-	-	-
Trial Average	67.2	69.9	68.4	69.0	44.6	42.5	62.5	58.0	61.7	61.1
LSD(0.05)‡	5.8	4.6	6.4	4.5	8.9	6.1	7.7	6.1	8.2	6.3

*Faith multiyear averages include data from McLaughlin in 2014 and 2015.

† New entry in 2016, not previously tested.

‡ Yield value required (≥LSD) to determine if varieties are statistically different than one another.

Table 7. List of winter wheat varieties being tested in 2015 along with origin, agronomic, and grain quality characteristics.

Variety	Testing and Origin		Agronomic Characteristics				Grain Quality		
	Years tested in SD trials	Origin†-Year	Rel.‡ Hdg days	Rel.‡ Height inches	Lodging Score§	Winter Hardiness¶	2016 Test Wt.	2016 Protein %	Baking Quality#
Alice (White)	5+	SD-06	3	-2	1.8	G	Good	Good	E
Antero (White)	2	PG-12	0	0	2.1	G	Good	Low	*(G)††*
Avery	new	PG-15	3	0	2.5	-	Average	Low	-
Brawl CL Plus	3	PG-11	1	0	1.5	F	Good	Good	*(E)*
Byrd	3	PG-11	2	-1	2.2	*(G)*	Average	Low	*(E)*
LCS Compass	2	LCS-15	0	0	2.1	G	High	Average	*(E)*
Cowboy	new	WY-12	5	-2	2.1	(G)	Low	Average	*(A)*
Decade	3	MT/ND-10	7	-1	1.5	G	Good	Average	*(A)*
Denali	3	CO-11	4	0	1.5	G	Good	Average	*(A)*
AC Emerson	2	MS-15	8	-1	1.2	G	Good	High	*(G)*
Expedition	5+	SD-02	**0**	**0**	2.0	G	Average	Average	G
Freeman	4	NE-13	2	-2	2.4	F	Low	Average	A-G
WB-Grainfield	4	WB-12	1	0	1.9	F	Average	Average	G
Ideal	5+	SD-11	6	0	1.9	G-E	Good	Average	A
Lyman	5+	SD-08	3	0	2.4	G-E	Good	Good	A
LCS Mint	4	LCS-12	1	0	1.9	G	High	Average	*(G)*
SY Monument	2	AP-14	5	-1	1.8	G-E	Low	Average	*(G)*
Oahe	4	SD-16	4	3	2.0	G-E	High	Average	A
Overland	5+	NE-06	4	2	1.9	G-E	High	Good	*(A)*
PSB13NEDH-7-140	new	LCS-exp	6	2	1.2	(G)	High	Good	*(A)*
Redfield	5+	SD-13	5	-1	1.5	G	Good	Good	G
Ruth	2	NE-16	3	0	1.5	G	Good	Good	*(G)*
SY Sunrise	new	AP-15	4	-3	1.5	(E)	Good	Average	-
WB4059-CLP	2	WB-13	3	-4	1.3	G	Very Low	Good	*(G)*
WB4614	2	WB-14	7	-2	1.3	G	Average	Good	-
Wesley[no PVP]	5+	NE-99	3	-2	1.4	G	Low	Good	G
SY Wolf	5+	AP-11	4	-1	1.3	G	Good	Average	A

† AP, AgriPro; LCS, Limagrain Cereal Seeds; MS, Meridian Seeds; MT, Montana; NE, Nebraska (Husker Brand Genetics); ND, North Dakota; PG, PlainsGold; SD, South Dakota; WB, WestBred; WY, Wyoming; and – (Year of Release).

‡ Difference in days to heading compared to **Expedition** (2016 from Brookings and South Shore). Height compared to **Expedition** (34 **inches**) statewide.

§ Lodging score: 1, perfectly standing; to 5, completely flat.

¶ Winter hardiness: E, excellent; G, good; F, fair; P, poor.

Baking quality: E, excellent; G, good; A, acceptable; P, Poor. Note: SDSU does not typically do baking quality analysis.

†† Estimated ratings *(X),* based on information provided by entity that submitted the variety.

Table 8. Winter wheat variety disease ratings.

Variety	Disease Ratings‡					
	2016 Stripe Rust	Stem Rust	Leaf Rust	Leaf Spot	WSMV	2016 FHB (Scab)
Alice (White)	MS-S	MR	MS	MS-S	MS	MS
Antero (White)	MR	*(MR)¶*	*(S)*	MS-S	*(MS)*	S
Avery†	S	-	-	-	-	MS
Brawl CL Plus	MS-S	*(R)*	*(R)*	S	*(MS)*	MR
Byrd	S	*(MS)*	*(MS)*	S	*(MS)*	MS
LCS Compass	S	*(R)*	MS-MR	S	*(S)*	MR
Cowboy†	S	*(MS)*	*(MS-S)*	-	*(MS)*	S
Decade	S	*(R)*	MR	*(MR)*	-	MR
Denali	S	*(MS)*	MS-S	S	*(MS)*	MR
AC Emerson	MR-MS	*(R)*	MS	S	-	MS
Expedition	S	R	MS-S	MS-S	S	MR
Freeman	S	MR	MS-S	S	S	MS
WB-Grainfield	MR-MS	MR	MR	S	MR	S
Ideal	S	MR	MR-MS	S	S	MS
Lyman	S	R	MR ?	S	S	MR
LCS Mint	MS-S	MS	MS-S	S	MR	S
SY Monument	MR-R	*(R)*	MR	S	*(R)*	MR
Oahe	MR-MS	MS	MR	MS	MR	MR
Overland	S	MR	MR	S	MS	MR
PSB13NEDH-7-140†	MS-S	-	*(MR-MS)*	-	-	MR
Redfield	S	MR	MS-MR	MS-S	S	MR
Ruth	MS-S	*(MR)*	MS-S	S	*(S)*	MS
SY Sunrise†	MR-R	-	-	-	-	MR
WB4059-CLP	S	-	S	MR-MS	-	S
WB4614	MS	-	MS	MS-S	*(S)*	S
Wesley[no PVP]	S	R	MS	S	S	S
SY Wolf	S	MR	MR	MS	MR	S

† new entry in 2016

‡ Disease ratings: R, resistant; MR, moderately resistant; MS, moderately susceptible; S, susceptible.

¶ Estimated rankings based on information provided by the entity that submitted the variety.

2017 South Dakota Winter Wheat Variety Trial Results

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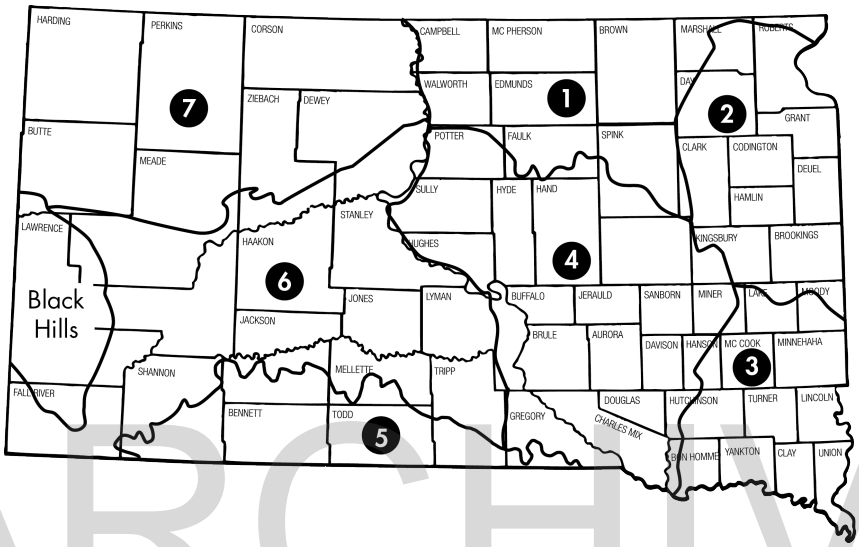

Recommended Winter Wheat Varieties for Fall 2017 by Crop Zone†

Zone - 1[pc]	Zone - 2[pc]	Zone - 3	Zone - 4[pc]	Zone - 5	Zone - 6	Zone - 7[pc]
Oahe	Oahe	Antero‡ (white)	Redfield	Oahe	Antero‡ (white)	Antero‡ (white)
Redfield	Antero‡ (white)	LCS Compass	Antero‡ (white)	Antero‡ (white)	Denali	WB Grainfield‡
Antero‡ (white)	Denali	Denali	Denali	Denali	WB Grainfield‡	LCS Mint‡
WB Grainfield‡	WB Grainfield‡	Freeman‡	SY Monument	Freeman‡	LCS Mint‡	SY Monument
Overland	LCS Mint‡	WB Grainfield‡	Ruth‡	SY Monument	SY Monument	Overland
SY Wolf‡	SY Monument	LCS Mint‡	SY Wolf‡	SY Wolf‡	Ruth‡	Wesley
	SY Wolf‡	SY Wolf‡			SY Wolf‡	SY Wolf‡

Promising

SY Sunrise	SY Sunrise	Avery‡	Avery‡	Avery‡	Avery‡	Ideal
	WB4614‡	Ruth	SY Sunrise	Cowboy‡	Cowboy‡	WB4614‡
		SY Sunrise		Ruth‡	Overland	
				Overland		

† Crop Zones for small grains are base on soil & climate information. Recommended varieties are in the top 1/3 of the trial over 3 years for each zone. Promising varieities are those in the top 1/3 of the trial over 2 years.

[pc] plant in protective cover to improve winter survival in Crop Zones 1, 2, 4, & 7 and in other zones when planting varieties with (Fair) or lower winterhardiness ratings

‡ Variety is susceptible or moderately susceptible to Fusarium Head Blight (Scab).

2017 South Dakota Winter Wheat Variety Trial Results

Table 1. List of 2017 winter wheat testing locations and soil/cultural characteristics.

Location	Testing location characteristics				
	Cooperator	GPS coordinates	Soil Type	Previous crop	Tillage system
East River Locations (8)					
Beresford	Southeast Research Farm	43.045210° -96.901664°	Egan-Clarno-Trent complex, 0-2 % slopes	Oats	No-till
Brookings	SDSU Foundation Seed	44.412416° -96.786848°	Kranzburg-Brookings silty clay loams, 0-2% slopes	Sp Wht	Min-till
Brookings - w/fungicide	SDSU Foundation Seed	44.412416° -96.786848°	Kranzburg-Brookings silty clay loams, 0-2% slopes	Sp Wht	Min-till
Onida	Tom Young	44.702751° -100.385525°	Agar silt loam, 0-2% slopes	Sp Wht	No-till
Pierre	Dakota Lakes	44.290081° -99.991518°	Dorna silt loam	Field peas	No-till
Platte (Geddes)	Curt Sybesma	43.361279° -98.705844	Highmore silt loam, 2-6% slopes	Soybeans	No-till
Selby	Mark Stiegelmeyer	45.440388° -100.080770°	Highmore silt loam, cool, 0-2% slopes	Lentils	No-till
South Shore	Northeast Research Farm	45.106144° -97.098665	Kranzburg-Brookings silty clay loams, 0-2% slopes	Oats	No-till
West River Locations (9)					
Bison	Brad Seidel	45.516389° -102.395000°	Morton loam, 2-6% slopes	Sp Wht	No-till
Faith (Dupree)	Bryant Schauer	44.970000° -101.905556	Rhoades-Daglum complex, 0-6% slopes	W Wht	No-till
Hayes	RDO	44.497778° -100.802222°	Opal-Chantier clays, 6-9% slopes	Sp Wht	No-till
Kennebec (Vivian)	Larson's c/o Logan Ruman	44.007500° -100.308056°	Promise Clay, 3-6% slopes	Millet	No-till
Martin	Mary Kay and Carl Novotny	43.214722° -101.601389	Redfield-Keith silt loams, 0-2% slopes	Fallow	No-till
Sturgis	Dave Wilson	44.503333° -103.481389°	Nunn Clay loams 0-2% slopes	W Wht	No-till
Wall	Dale Patterson	44.0813889° -102.308333°	Blackpipe silty clay loam, 0-2% slopes	Fallow	No-till
Winner	Jorgenson Land & Cattle	43.552242° -99.902533°	Millboro silty clay, 3-6% slopes	Oats	No-till
Winner - intensive	Jorgenson Land & Cattle	43.552242° -99.902533°	Millboro silty clay, 3-6% slopes	Oats	No-till

Table 2. Agronomic practices for 2017 winter wheat trial locations.

Location	Agronomic practices					
	Planting date	Starter applied	Other Fertilizer applied	Herbicide applied	Fungicide applied	Harvest date
East River Locations (8)						
Beresford	09/21/16	90# 30-10-10	350# urea 60# AMS	1 pt Bronate, 4 oz Tilt	14 oz Caramba	7/19/17
Brookings	09/20/16	90# 30-10-10	160# urea	none	none	7/25/17
Brookings - w/fungicide	09/20/16	90# 30-10-10	160# urea	none	8 oz Prosaro (heading)	7/25/17
Onida	09/16/16	10 gpa 10-34-0	30 gpa 28-0-0	1 pt GoldSky	none	7/11/17
Pierre	09/15/16	10 gpa 10-34-0	20 gpa 24-0-0-8	0.9 pt Bronate	none	7/14/17
Platte (Geddes)	10/13/16	90# 30-10-10	270# urea 50# AMS	1 pt Widematch, 8 oz 2,4-D, 4 oz Tilt	4 oz Monsoon	7/18/17
Selby	09/18/16	10 gpa 10-34-0	250# urea/AMS	2 pt Hat Trick	none	7/26/17
South Shore	09/09/16	90# 30-10-10	300# urea 100# MAP	1 pt Bronate	none	7/24/17
West River Locations (9)						
Bison	9/29/16	6 gal 10-25-0-5.5Zn	35 gal 28-0-0 mid-row band	none	none	7/17/17
Faith (Dupree)	09/28/16	6 gal 10-25-0-5.5Zn	35 gal 28-0-0 mid-row band	1 pt GoldSky	10 oz Stratego	7/18/17
Hayes	09/19/16	6 gal 10-25-0-5.5Zn	35 gal 28-0-0 mid-row band	location was hailed out on 6/22/17		
Kennebec (Vivian)	09/20/16	6 gal 10-25-0-5.5Zn	35 gal 28-0-0 mid-row band	none	none	7/10/17
Martin	09/21/16	6 gal 10-25-0-5.5Zn	35 gal 28-0-0 mid-row band	1.3 pt Widematch, 4 oz 2,4-D	none	8/4/17
Sturgis	09/22/16	6 gal 10-25-0-5.5Zn	35 gal 28-0-0 mid-row band	none	none	7/11/17
Wall	09/27/16	6 gal 10-25-0-5.5Zn	35 gal 28-0-0 mid-row band	6 oz Barrage, 0.05 oz Ally	2 oz Tilt	7/13/17
Winner	09/14/16	10 gals 10-34-0	200# urea	2.2 pt Maestro Advanced	none	7/19/17
Winner - intensive	09/14/16	4 gals 7-25-5 + 0.5 gal inFuze	200# urea	2.2 pt Maestro Advanced	none	7/19/17

2017 South Dakota Winter Wheat Variety Trial Results

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Table 3a. 2017 East River Winter Wheat Performance - Yield (13% moisture), Test Weight (harvest moisture), and Protein (13% moisture). Varieties yielding in the upper 1/3 of each trial location are denoted by gray shading.

Variety	Crop Zone - 1			Crop Zone - 2					
	Selby			Brookings			Brookings w/fung.#		
	Yield	Test Wt.	Protein	Yield	Test Wt.	Protein	Yield	Test Wt.	Protein
Alice (white)	45.7	60.1	14.7	82.2	58.9	13.6	77.5	59.2	13.0
Antero (white)	52.5	60.7	13.7	101.8	58.7	11.4	101.1	60.7	10.6
Avery	54.7	61.2	12.9	77.9	59.3	11.5	64.9	59.1	11.0
LCS Compass	43.3	60.6	15.4	58.4	58.1	13.0	58.8	59.3	12.5
Cowboy	49.4	59.6	13.9	75.8	59.3	11.4	76.1	59.5	10.5
Denali	50.6	61.1	13.7	82.3	58.7	11.3	81.5	60.0	10.6
Expedition	50.9	61.2	14.5	62.3	57.8	11.8	51.0	55.5	11.9
Freeman	43.8	59.6	13.6	81.1	56.6	12.2	89.6	59.3	11.2
WB-Grainfield	41.0	60.9	14.1	81.3	58.7	12.8	86.7	59.9	12.0
Ideal	53.3	60.0	14.3	63.9	57.9	11.6	61.3	58.3	11.3
Keldin†	47.3	59.9	14.5	88.7	59.0	12.1	95.4	60.5	11.5
Langin†	49.4	60.9	12.6	90.9	59.1	11.9	86.3	59.9	11.5
Long Branch†	49.4	60.8	13.0	98.1	58.0	11.9	97.2	59.6	12.0
Lyman	43.3	60.3	15.6	78.1	59.3	13.1	74.7	58.7	12.9
LCS Mint	45.0	61.4	14.2	83.4	58.6	12.1	79.1	60.1	11.7
SY Monument	46.8	59.8	13.6	88.8	57.7	11.8	81.1	59.4	12.2
Oahe	47.3	60.5	14.5	85.5	58.8	11.9	80.1	60.7	11.5
Overland	51.3	60.3	14.4	78.9	58.0	12.4	66.7	59.9	11.7
PSB13NEDH-7-140	41.4	60.0	16.1	80.8	59.0	13.0	89.3	60.6	11.6
PSB13NEDH-7-45†	47.5	60.8	14.2	77.2	59.3	12.4	83.3	61.1	11.0
Redfield	45.6	60.6	15.2	75.9	58.9	13.6	76.1	61.2	13.0
Ruth	46.8	60.3	14.4	82.0	58.0	12.7	74.3	58.8	12.3
SY Sunrise	53.9	61.1	13.7	78.0	57.0	13.1	80.0	60.1	12.2
Sunshine†	54.8	61.3	13.4	81.6	59.2	12.6	72.7	60.3	12.4
SY 517 CL2†	50.3	61.7	14.1	69.5	60.0	13.2	74.9	61.5	12.2
Thompson	50.5	59.7	14.4	71.4	58.7	12.5	75.9	59.0	12.1
WB4614	52.5	60.5	14.4	89.1	59.8	13.0	78.2	60.3	12.2
WB4721†	44.6	62.3	15.1	78.2	59.7	13.7	73.1	61.2	12.9
Wesley	44.4	59.6	14.9	78.0	57.9	13.5	67.4	58.3	11.9
SY Wolf	59.5	61.1	14.1	83.2	59.7	13.0	80.2	59.9	12.4
Trial Average	47.7	60.3	14.3	80.1	58.7	12.5	77.7	59.8	11.9
LSD(0.05)‡	10.6	0.8	0.9	6.5	1.3	0.4	7.3	1.6	0.8
CV(%)§	13.6	0.9	4.3	5.7	1.6	2.4	6.7	1.9	5.0

Foliar fungicide applied at flowering.

† New entry in 2017, not previously tested.

‡ Yield, test weight, or protein value required (≥LSD) to determine if varieties are statistically different than one another, § Coefficient of Variation (C.V.) is a measure of the variability of the experimental error, 15% or less is acceptable.

2017 South Dakota Winter Wheat Variety Trial Results

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Table 3b. 2017 East River Winter Wheat Performance, continued - Yield (13% moisture), Test Weight (harvest moisture), and Protein (13% moisture). Varieties yielding in the upper 1/3 of each trial location are denoted by gray shading.

Variety	Crop Zone - 2			Crop Zone - 3			Crop Zone - 4		
	South Shore			Beresford			Geddes		
	Yield	Test Wt.	Protein	Yield	Test Wt.	Protein	Yield	Test Wt.	Protein
Alice (white)	59.3	58.9	14.2	77.2	56.7	13.4	68.1	58.5	14.0
Antero (white)	77.3	59.8	12.7	84.3	58.1	11.6	83.8	60.6	11.4
Avery	49.3	57.6	12.5	87.4	58.7	11.1	84.2	59.9	12.0
LCS Compass	42.8	57.7	14.4	78.4	60.8	12.9	69.9	60.1	13.4
Cowboy	53.0	58.3	12.7	81.4	58.3	11.5	78.9	59.5	11.7
Denali	50.9	58.0	13.3	89.5	60.1	11.5	80.4	61.3	11.7
Expedition	32.2	57.5	14.0	79.7	56.9	12.6	72.6	60.7	13.3
Freeman	68.7	58.1	13.0	92.7	58.7	11.6	70.2	58.0	12.2
WB-Grainfield	74.4	59.7	14.2	91.7	59.9	12.0	74.9	60.0	12.5
Ideal	32.9	57.6	12.9	75.6	59.9	11.9	82.7	59.6	12.9
Keldin†	75.1	58.6	13.6	85.1	57.9	11.6	77.9	59.2	13.4
Langin†	73.1	57.7	13.1	89.1	57.3	11.7	72.4	58.2	12.0
Long Branch†	81.2	58.9	13.2	85.0	56.8	12.2	82.5	58.4	12.1
Lyman	47.1	57.0	15.6	57.7	57.7	13.6	69.1	58.5	14.0
LCS Mint	66.1	58.3	13.1	88.4	59.6	11.7	79.2	61.2	13.3
SY Monument	79.4	58.2	13.6	86.7	58.1	12.3	79.0	58.6	12.2
Oahe	68.0	59.8	15.1	76.3	60.9	12.2	76.1	61.0	12.7
Overland	56.0	58.7	14.1	73.2	59.0	12.3	82.1	59.1	12.5
PSB13NEDH-7-140	67.7	58.5	15.3	79.6	61.1	12.5	71.9	60.4	13.7
PSB13NEDH-7-45†	65.2	58.8	13.6	87.9	61.0	11.2	82.5	60.2	12.3
Redfield	62.9	57.9	13.8	81.5	59.3	12.5	79.4	59.5	13.7
Ruth	71.2	59.1	13.6	86.1	58.7	12.6	83.1	59.2	13.0
SY Sunrise	71.8	58.9	14.2	93.1	60.0	11.7	78.6	59.4	12.5
Sunshine†	55.1	57.2	13.4	81.9	56.5	11.9	79.6	59.6	12.5
SY 517 CL2†	59.5	59.3	13.6	84.9	59.9	11.6	76.5	60.6	13.4
Thompson	51.8	57.5	14.5	73.0	59.2	12.6	78.0	58.4	13.7
WB4614	62.0	57.2	14.1	77.4	57.9	12.4	81.1	57.7	13.8
WB4721†	69.4	60.0	15.3	86.3	60.3	12.5	81.3	61.2	13.7
Wesley	51.0	56.8	14.3	81.7	60.2	12.3	76.0	59.3	14.1
SY Wolf	78.5	59.4	14.6	84.6	58.1	13.2	81.8	59.8	13.5
Trial Average	62.1	58.3	13.9	80.8	58.9	12.2	76.7	59.3	12.9
LSD(0.05)‡	4.4	1.1	0.5	6.1	1.2	0.8	7.2	1.1	0.9
CV(%)§	5.2	1.4	2.4	5.4	1.5	4.3	6.7	1.3	5.0

† New entry in 2017, not previously tested.

‡ Yield, test weight, or protein value required (≥LSD) to determine if varieties are statistically different than one another, § Coefficient of Variation (C.V.) is a measure of the variability of the experimental error, 15% or less is acceptable.

2017 South Dakota Winter Wheat Variety Trial Results

Table 3c. 2017 East River Winter Wheat Performance, continued - Yield (13% moisture), Test Weight (harvest moisture), and Protein (13% moisture). Varieties yielding in the upper 1/3 of each trial location are denoted by gray shading.

Variety	Crop Zone - 4						Crop Zones 1, 2, 3, & 4			
	Onida			Pierre			East River Average			
	Yield	Test Wt	Protein	Yield	Test Wt	Protein	Top 1/3%	Yield	Test Wt	Protein
Alice (white)	48.3	59.8	12.4	38.7	62.0	14.7	0	61.6	59.1	13.8
Antero (white)	65.1	61.2	12.1	44.2	63.9	12.7	75	75.2	60.3	12.1
Avery	60.2	61.5	11.1	60.7	63.5	12.2	63	66.6	59.9	11.8
LCS Compass	39.2	59.9	13.3	39.3	63.5	14.4	0	53.4	59.9	13.7
Cowboy	34.3	59.2	13.3	55.5	62.9	12.5	13	62.9	59.5	12.2
Denali	56.2	62.1	12.1	60.4	64.5	12.2	88	67.9	60.6	12.1
Expedition	49.5	60.5	12.4	54.5	63.3	14.5	25	55.6	59.0	13.2
Freeman	45.7	58.2	12.2	52.8	61.5	13.2	25	67.4	58.5	12.5
WB-Grainfield	55.3	59.1	12.4	42.2	62.7	13.1	50	67.5	60.0	12.9
Ideal	56.5	60.2	12.4	62.2	62.7	14.4	50	59.7	59.5	12.8
Keldin†	57.3	61.0	12.9	51.2	61.4	14.2	63	71.2	59.6	13.0
Langin†	68.0	60.7	10.7	60.1	63.6	12.5	75	72.3	59.6	12.1
Long Branch†	57.6	59.1	11.8	64.9	62.8	12.1	75	75.9	59.2	12.4
Lyman	48.0	60.3	13.0	48.4	62.7	14.8	0	57.5	59.2	14.1
LCS Mint	51.6	62.9	11.3	39.3	64.0	13.0	25	65.9	60.7	12.6
SY Monument	42.4	59.3	11.7	54.3	62.3	12.5	38	69.8	59.1	12.5
Oahe	49.2	61.5	12.0	53.8	63.1	12.9	13	66.6	60.7	12.9
Overland	49.3	60.9	13.6	52.3	62.3	13.9	25	63.3	59.7	13.2
PSB13NEDH-7-140	45.7	61.4	13.5	52.5	62.8	14.4	13	65.5	60.4	13.7
PSB13NEDH-7-45†	43.6	58.3	13.7	58.0	63.2	13.0	50	67.7	60.2	13.2
Redfield	46.9	60.3	13.7	55.5	62.4	14.1	13	65.1	60.0	13.0
Ruth	54.7	60.1	12.9	47.4	63.0	13.8	50	67.9	59.7	12.7
SY Sunrise	55.2	62.6	12.5	58.7	63.5	13.4	63	71.0	60.3	13.3
Sunshine†	58.1	59.7	12.4	42.3	62.8	13.0	25	65.4	59.5	13.8
SY 517 CL2†	42.1	59.2	13.3	35.2	63.2	14.3	13	61.2	60.6	13.7
Thompson	54.3	60.6	13.7	55.3	62.5	14.2	38	62.8	59.4	13.5
WB4614	47.4	60.2	12.9	35.7	62.3	13.8	25	65.0	59.5	13.1
WB4721†	45.0	61.2	13.1	51.7	64.5	14.4	38	65.7	61.2	13.7
Wesley	40.0	57.7	13.4	48.6	61.3	14.7	0	60.4	58.7	12.7
SY Wolf	47.3	61.0	13.6	44.8	63.7	13.5	50	69.5	60.3	13.5
Trial Average	49.5	60.2	12.7	50.4	62.8	13.6	-	65.3	59.7	13.0
LSD(0.05)‡	14.8	2.0	1.2	9.7	0.8	0.8	-	3.0	0.5	0.3
CV(%)§	18.4	2.0	5.7	13.9	0.9	3.9	-	9.0	1.5	4.5

† New entry in 2017, not previously tested.

‡ Yield, test weight, or protein value required (≥LSD) to determine if varieties are statistically different than one another, § Coefficient of Variation (C.V.) is a measure of the variability of the experimental error, 15% or less is acceptable.

2017 South Dakota Winter Wheat Variety Trial Results

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Table 4a. 2017 West River Winter Wheat Performance - Yield (13% moisture), Test Weight (harvest moisture), and Protein (13% moisture). Varieties yielding in the upper 1/3 of each trial location are denoted by gray shading.

Variety	Crop Zone - 5			Crop Zone - 6					
	Martin			Sturgis			Vivian		
	Yield	Test Wt.	Protein	Yield	Test Wt.	Protein	Yield	Test Wt.	Protein
Alice (white)	36.2	56.7	14.9	32.3	60.9	14.5	63.6	61.3	14.7
Antero (white)	50.9	58.7	12.6	43.2	62.7	11.9	62.4	63.1	12.0
Avery	44.5	57.9	12.0	46.5	62.2	11.6	54.6	62.9	11.7
LCS Compass	37.1	57.5	13.9	31.5	61.6	14.1	48.0	62.2	14.1
Cowboy	46.6	56.5	12.5	39.9	61.6	11.8	60.7	62.3	12.2
Denali	49.0	59.2	12.2	44.2	61.9	12.1	73.2	63.4	12.1
Expedition	36.2	57.3	13.2	34.2	62.3	12.9	60.2	62.6	13.9
Freeman	41.7	57.2	12.8	37.2	60.7	13.0	63.5	61.5	13.2
WB-Grainfield	34.9	57.0	13.8	41.7	62.1	13.2	62.7	63.1	12.8
Ideal	37.0	56.9	12.9	40.2	61.3	13.2	55.9	62.9	12.8
Keldin†	43.5	55.7	13.7	30.0	60.4	14.2	76.1	62.5	13.2
Langin†	36.8	58.4	13.3	41.0	61.7	12.7	63.0	62.7	12.4
Long Branch†	39.7	56.3	13.6	37.2	60.6	13.4	61.2	62.4	12.2
Lyman	32.7	56.5	14.5	39.0	61.4	14.4	57.2	62.0	14.1
LCS Mint	38.8	57.3	12.9	31.1	62.1	13.2	50.8	64.3	12.6
SY Monument	48.6	58.1	13.0	36.4	60.7	12.4	65.5	62.2	12.7
Oahe	40.2	56.9	13.4	35.9	62.2	13.7	57.3	62.6	13.9
Overland	46.5	58.2	13.2	39.2	61.6	13.2	61.4	61.9	14.1
PSB13NEDH-7-140	43.0	57.9	14.3	42.2	61.2	13.9	57.8	61.8	14.7
PSB13NEDH-7-45†	42.9	58.0	13.4	40.0	62.2	13.1	51.3	62.8	13.3
Redfield	41.0	56.3	13.6	34.1	61.0	14.4	50.0	62.2	14.2
Ruth	48.0	58.2	13.2	38.4	62.0	13.5	59.3	62.8	13.5
SY Sunrise	30.4	57.9	14.2	35.0	62.2	14.2	61.4	63.3	13.7
Sunshine†	44.8	58.6	13.0	47.7	61.0	12.8	67.1	63.1	12.0
SY 517 CL2†	35.5	58.3	14.7	34.6	62.0	14.0	55.4	63.1	13.6
Thompson	41.2	59.0	13.3	33.9	61.3	13.9	55.7	62.1	13.0
WB4614	43.1	58.0	12.8	44.6	61.9	13.0	52.6	62.7	12.0
WB4721†	41.5	59.6	14.5	32.6	62.8	14.7	41.9	63.8	14.2
Wesley	48.6	56.1	13.9	33.3	60.1	14.5	58.9	61.3	13.9
SY Wolf	48.2	57.4	13.4	40.0	61.6	13.4	58.0	63.5	13.3
Trial Average	41.8	57.4	13.4	37.9	61.3	13.4	58.1	62.4	13.3
LSD(0.05)‡	9.6	2.2	0.8	8.2	1.2	1.0	18.8	0.5	0.8
CV(%)§	16.5	2.8	3.8	15.5	1.4	5.3	23.1	0.6	9.7

† New entry in 2017, not previously tested.

‡ Yield, test weight, or protein value required (≥LSD) to determine if varieties are statistically different than one another, § Coefficient of Variation (C.V.) is a measure of the variability of the experimental error, 15% or less is acceptable.

2017 South Dakota Winter Wheat Variety Trial Results

Table 4b. 2017 West River Winter Wheat Performance, continued - Yield (13% moisture), Test Weight (harvest moisture), and Protein (13% moisture). Varieties yielding in the upper 1/3 of each trial location are denoted by gray shading.

Variety	Crop Zone - 6								
	Wall			Winner			Winner intensive		
	Yield	Test Wt.	Protein	Yield	Test Wt.	Protein	Yield	Test Wt.	Protein
Alice (white)	41.2	62.0	13.9	39.2	59.5	14.2	42.9	57.7	15.3
Antero (white)	62.2	63.0	11.8	57.4	61.3	12.0	48.9	60.0	13.3
Avery	49.1	62.3	11.8	54.3	61.4	11.5	61.2	59.8	13.5
LCS Compass	42.9	62.4	14.1	39.9	61.1	14.0	39.4	59.1	15.1
Cowboy	51.0	61.3	12.1	45.6	58.9	11.8	46.1	57.3	13.8
Denali	52.4	62.7	11.7	48.3	59.6	12.6	52.9	58.5	13.4
Expedition	53.6	62.8	13.2	37.8	60.2	14.7	42.1	59.2	15.1
Freeman	54.8	60.6	12.6	44.8	58.8	13.2	42.6	57.0	14.3
WB-Grainfield	40.8	63.0	13.8	41.6	60.0	13.2	55.5	59.1	14.4
Ideal	65.2	62.2	12.7	41.3	59.3	14.2	45.0	58.8	14.7
Keldin†	57.2	61.5	12.5	49.2	60.8	12.1	45.5	59.1	14.0
Langin†	70.0	62.4	11.8	53.9	61.3	11.8	54.2	59.7	12.8
Long Branch†	54.1	62.3	11.8	50.3	60.3	12.2	53.7	58.6	13.6
Lyman	50.3	61.8	12.9	29.7	60.0	14.1	40.7	59.0	15.3
LCS Mint	52.5	64.0	12.4	49.6	62.9	12.1	55.4	61.3	13.7
SY Monument	52.4	61.9	11.8	51.2	58.1	13.0	51.9	56.8	14.2
Oahe	47.2	62.8	12.5	45.3	61.3	12.5	48.8	59.5	14.1
Overland	58.7	62.4	12.5	44.0	60.4	13.8	46.5	59.4	13.9
PSB13NEDH-7-140	54.2	62.3	13.2	42.6	59.9	14.4	51.4	59.8	14.9
PSB13NEDH-7-45†	55.1	61.7	12.9	48.6	60.4	13.0	46.2	58.8	14.6
Redfield	40.5	62.1	12.5	46.2	59.7	13.9	47.9	58.6	15.0
Ruth	59.7	62.6	12.6	40.8	60.2	13.8	45.8	59.8	13.8
SY Sunrise	44.9	63.2	13.8	48.0	61.2	13.8	44.5	59.9	15.2
Sunshine†	60.5	63.2	12.6	44.4	61.1	13.6	43.8	59.1	15.2
SY 517 CL2†	45.7	63.3	13.1	37.6	61.9	13.7	44.7	60.7	15.0
Thompson	58.3	61.7	12.3	46.0	60.3	12.8	44.5	58.5	14.5
WB4614	47.2	61.4	11.9	40.5	60.7	12.6	46.2	59.3	14.5
WB4721†	46.0	64.4	13.1	38.4	62.8	14.8	43.6	60.8	15.3
Wesley	53.3	62.0	13.0	34.2	58.2	14.6	37.0	57.6	15.6
SY Wolf	57.4	63.3	12.6	49.6	60.7	12.5	43.4	59.6	13.9
Trial Average	52.4	62.2	12.6	43.9	60.2	13.2	47.6	59.0	14.3
LSD(0.05)‡	14.3	0.6	0.8	10.5	1.0	1.2	8.7	1.4	1.1
CV(%)§	19.5	0.7	4.5	17.0	1.2	6.4	13.0	1.7	5.3

† New entry in 2017, not previously tested.

‡ Yield, test weight, or protein value required (≥LSD) to determine if varieties are statistically different than one another, § Coefficient of Variation (C.V.) is a measure of the variability of the experimental error, 15% or less is acceptable.

2017 South Dakota Winter Wheat Variety Trial Results

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Table 4c. 2017 West River Winter Wheat Performance, continued - Yield (13% moisture), Test Weight (harvest moisture), and Protein (13% moisture). Varieties yielding in the upper 1/3 of each trial location are denoted by gray shading.

Variety	Crop Zone - 7						Crop Zones 5, 6, & 7			
	Bison			Faith			West River Average			
	Yield	Test Wt	Protein	Yield	Test Wt	Protein	Top 1/3%	Yield	Test Wt	Protein
Alice (white)	8.2	59.8	15.0	32.2	59.3	14.3	25	37.0	59.6	14.6
Antero (white)	10.2	60.4	14.2	31.6	60.7	15.2	75	45.8	61.2	12.9
Avery	13.8	60.0	13.8	29.8	60.0	15.5	50	44.2	60.8	12.7
LCS Compass	10.2	60.0	14.5	27.5	60.1	15.6	0	34.5	60.5	14.4
Cowboy	9.7	57.7	14.5	18.4	60.8	15.2	13	39.7	59.5	13.0
Denali	16.1	60.6	13.5	22.0	60.6	15.9	75	44.8	60.8	12.9
Expedition	14.4	61.1	13.9	26.3	60.5	15.8	13	38.1	60.7	14.1
Freeman	9.6	59.5	14.6	27.1	58.9	15.3	13	40.2	59.3	13.6
WB-Grainfield	14.8	60.4	13.8	36.7	59.1	15.5	63	41.1	60.5	13.8
Ideal	17.8	61.1	14.3	36.2	59.0	15.7	50	42.3	60.2	13.8
Keldin†	9.0	56.0	14.6	23.0	59.9	15.5	38	41.7	59.5	13.7
Langin†	11.0	59.3	14.0	28.3	60.2	14.4	63	44.8	60.7	12.9
Long Branch†	14.3	59.6	13.5	27.5	59.4	14.9	38	42.2	59.9	13.1
Lyman	9.9	60.7	15.4	29.0	59.6	16.1	0	36.1	60.1	14.6
LCS Mint	9.2	56.2	14.7	30.3	61.4	14.6	25	39.7	61.2	13.3
SY Monument	15.6	61.2	13.0	26.8	58.3	14.3	63	43.5	59.6	13.0
Oahe	10.7	61.9	14.3	27.9	60.8	14.3	0	39.1	61.0	13.6
Overland	14.6	62.0	14.6	33.9	60.5	14.0	57	43.1	60.8	13.7
PSB13NEDH-7-140	14.5	59.9	15.2	32.6	60.9	14.6	50	42.3	60.5	14.4
PSB13NEDH-7-45†	11.1	60.7	14.5	27.2	59.1	14.3	38	40.3	60.4	13.6
Redfield	11.1	61.0	14.9	25.9	59.3	15.4	13	37.1	60.0	14.2
Ruth	9.6	60.5	14.4	23.6	60.0	15.6	25	40.6	60.8	13.8
SY Sunrise	13.2	61.8	13.7	25.0	61.0	14.3	25	37.8	61.3	14.1
Sunshine†	12.5	60.7	13.7	31.5	60.2	14.7	50	44.0	60.9	13.4
SY 517 CL2†	17.9	62.0	14.5	32.5	61.6	14.9	25	38.0	61.6	14.2
Thompson	12.7	60.4	15.2	28.5	59.1	15.7	13	40.1	60.3	13.8
WB4614	14.4	60.8	14.5	27.3	60.1	14.7	25	39.5	60.6	13.2
WB4721†	7.3	62.5	15.1	27.9	61.4	15.1	0	34.9	62.2	14.6
Wesley	17.0	61.7	14.9	30.8	58.9	15.6	25	39.1	59.5	14.5
SY Wolf	13.3	61.7	13.8	32.2	61.1	14.6	63	42.7	61.1	13.4
Trial Average	12.4	60.2	14.4	28.9	59.7	15.1	-	40.3	60.3	13.7
LSD(0.05)‡	5.8	2.9	0.7	11.0	1.4	1.9	-	4.0	0.6	0.4
CV(%)§	33.7	3.4	3.5	27.4	1.7	9.1	-	20.3	1.9	5.7

† New entry in 2017, not previously tested.

‡ Yield, test weight, or protein value required (≥LSD) to determine if varieties are statistically different than one another, § Coefficient of Variation (C.V.) is a measure of the variability of the experimental error, 15% or less is acceptable.

2017 South Dakota Winter Wheat Variety Trial Results

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Table 5a. 2015-2017 (2 and 3-year averages) East River Yield (bu/ac @ 13% moisture) Performance - sorted by overall 3-year yield. Varieties yielding in the upper 1/3 for each trial location are denoted by gray shading.

Variety	Crop Zone - 1		Crop Zone - 2				
	Selby		Brookings		Brookings w/fung.		South Shore
	2 year	3 year	2 year	3 year	2 year	3 year	2 year
Antero	82.6	80.6	87.3	72.7	91.3	81.0	78.0
SY Wolf	85.2	83.6	81.3	69.8	79.7	70.7	73.5
SY Monument	79.7	78.7	79.8	66.0	83.7	75.0	78.0
Denali	73.6	72.8	78.5	66.1	81.2	73.8	63.0
WB-Grainfield	77.1	79.9	82.2	67.1	77.0	67.9	71.6
Freeman	75.5	79.2	81.2	69.9	73.9	65.2	66.8
Oahe	79.7	81.5	75.2	66.1	80.5	72.8	68.8
Ruth	81.7	79.5	72.1	60.9	76.8	68.4	68.9
LCS Mint	79.7	75.5	74.1	62.6	78.3	69.7	71.2
Redfield	78.6	81.4	72.3	61.5	73.4	68.0	64.5
Overland	80.2	83.0	64.6	58.2	73.3	67.3	64.3
Thompson	81.4	79.1	71.1	60.4	68.2	62.1	57.9
Alice	79.1	79.9	67.4	57.5	67.0	60.0	66.0
Lyman	68.2	75.1	72.6	64.0	71.5	65.2	58.1
Ideal	70.1	74.2	64.8	57.5	66.7	61.6	53.9
WB4614	70.8	66.8	75.9	59.9	84.5	74.8	63.1
Wesley	73.4	74.0	66.3	57.6	72.3	64.0	59.5
Expedition	65.0	70.5	56.5	49.6	61.5	54.9	49.6
LCS Compass	64.3	69.2	56.8	50.7	58.5	55.5	57.6
SY Sunrise	88.6	-	73.6	-	75.4	-	75.6
PSB13NEDH-7-140	80.6	-	79.5	-	72.2	-	70.1
Avery	74.3	-	66.7	-	74.8	-	63.2
Cowboy	74.1	-	72.0	-	73.5	-	61.7
Keldin†	-	-	-	-	-	-	-
Langin†	-	-	-	-	-	-	-
Long Branch†	-	-	-	-	-	-	-
PSB13NEDH-7-45†	-	-	-	-	-	-	-
Sunshine†	-	-	-	-	-	-	-
SY 517 CL2†	-	-	-	-	-	-	-
WB4721†	-	-	-	-	-	-	-
Trial Average	78.3	78.4	72.6	61.8	74.4	66.9	65.2
LSD(0.05)‡	7.4	5.9	5.2	4.1	4.2	3.8	3.9

† New entry in 2017, not previously tested.

‡ Yield value required (≥LSD) to determine if varieties are statistically different than one another.

Table 5b. 2015-2017 (2 and 3-year averages) East River Yield (bu/ac @ 13% moisture) Performance, continued - sorted by overall 3-year yield. Varieties yielding in the upper 1/3 for each trial location are denoted by gray shading.

Variety	Crop Zone - 3		Crop Zone - 4				Crop Zones 1-4	
	Beresford		Geddes	Onida		Pierre	East River Ave.	
	2 year	3 year	2 year	2 year	3 year	2 year	2 year	3 year
Antero	79.3	81.8	91.3	60.5	63.6	55.2	78.2	75.5
SY Wolf	79.1	82.6	93.1	50.8	56.9	57.1	75.0	73.2
SY Monument	74.9	80.4	88.7	51.8	56.4	60.7	74.7	72.5
Denali	79.0	85.7	93.1	58.5	57.5	61.1	73.5	71.4
WB-Grainfield	84.3	84.8	88.5	53.1	57.1	50.7	73.0	71.0
Freeman	83.6	85.7	88.1	51.4	53.5	58.5	72.4	70.7
Oahe	68.6	74.3	86.1	48.5	56.6	58.9	70.8	70.5
Ruth	80.0	80.8	95.4	56.1	57.9	55.8	73.3	70.5
LCS Mint	79.9	82.3	89.1	58.1	58.7	53.4	73.0	70.1
Redfield	71.4	77.0	87.5	54.2	57.2	60.4	70.3	69.5
Overland	67.2	72.2	88.7	52.4	56.1	57.9	68.6	68.2
Thompson	66.3	76.4	85.5	55.6	58.9	59.3	68.2	67.4
Alice	71.3	74.6	83.9	53.3	54.6	51.2	67.4	65.8
Lyman	57.9	67.0	83.1	48.0	54.0	55.8	64.4	65.3
Ideal	68.0	75.4	90.4	48.1	50.4	59.3	65.2	65.0
WB4614	66.0	72.5	84.7	46.8	49.1	50.8	67.8	65.0
Wesley	76.0	79.5	85.8	46.0	46.3	53.8	66.6	64.8
Expedition	69.5	79.1	87.3	52.1	51.3	56.4	62.3	62.0
LCS Compass	73.3	82.9	84.4	47.4	48.4	48.6	61.4	62.0
SY Sunrise	82.6	-	93.6	61.2	-	64.7	76.9	-
PSB13NEDH-7-140	71.5	-	86.6	50.7	-	58.4	71.2	-
Avery	80.1	-	91.3	57.6	-	57.2	70.7	-
Cowboy	77.3	-	90.0	44.5	-	**57.7**	68.9	-
Keldin†	-	-	-	-	-	-	-	-
Langin†	-	-	-	-	-	-	-	-
Long Branch†	-	-	-	-	-	-	-	-
PSB13NEDH-7-45†	-	-	-	-	-	-	-	-
Sunshine†	-	-	-	-	-	-	-	-
SY 517 CL2†	-	-	-	-	-	-	-	-
WB4721†	-	-	-	-	-	-	-	-
Trial Average	74.2	77.7	88.0	52.6	55.2	56.5	70.2	68.3
LSD(0.05)‡	4.4	4.9	4.2	7.3	5.3	7.1	2	4.5

† New entry in 2017, not previously tested.

‡ Yield value required (≥LSD) to determine if varieties are statistically different than one another.

2017 South Dakota Winter Wheat Variety Trial Results

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Table 6a. 2015-2017 (2 and 3-year averages) West River Yield (bu/ac @ 13% moisture) Performance - sorted by overall 3-year yield. Varieties yielding in the upper 1/3 for each trial location are denoted by gray shading.

Variety	Crop Zone - 5		Crop Zone - 6						
	Martin		Hayes	Sturgis		Vivian		Wall	
	2 year	3 year	3 year*	2 year	3 year	2 year	3 year	2 year	3 year
Antero	72.8	64.6	57.2	58.0	67.1	62.4	55.1	63.9	69.5
SY Monument	70.4	62.0	64.0	48.8	59.9	63.6	61.8	62.3	70.4
SY Wolf	64.6	61.7	62.5	53.1	60.9	57.3	63.3	59.9	62.3
Denali	65.9	64.3	63.6	53.5	60.5	66.2	58.8	62.6	71.8
WB-Grainfield	65.0	59.4	62.6	55.0	63.8	61.6	62.2	49.7	58.0
LCS Mint	65.0	58.7	61.5	49.1	61.6	55.9	54.6	59.4	65.4
Overland	67.2	60.3	59.9	52.6	59.2	57.2	56.2	61.9	63.8
Ruth	65.9	60.6	70.2	51.2	58.4	57.1	58.9	60.2	61.1
Freeman	64.1	61.3	60.4	51.6	61.1	60.4	56.9	60.4	62.3
Oahe	63.4	61.2	58.0	52.3	60.0	54.2	57.9	55.5	61.9
Ideal	58.4	55.9	58.4	50.3	57.7	57.0	52.3	65.6	69.5
WB4614	64.7	57.4	55.8	56.9	66.9	54.9	53.0	60.1	67.2
Thompson	60.7	60.7	61.1	46.8	56.6	54.2	57.8	56.8	59.4
Redfield	63.0	57.0	62.6	48.4	56.8	51.2	53.5	51.8	62.3
Wesley	61.8	55.7	58.7	49.0	55.4	55.3	51.6	55.1	58.7
Lyman	55.0	51.6	58.3	50.2	54.6	54.1	54.5	55.3	58.1
Alice	56.7	52.3	67.4	46.4	53.9	58.7	56.7	48.5	52.8
Expedition	50.5	50.2	59.5	48.4	53.2	57.0	54.4	54.5	61.1
LCS Compass	56.1	54.5	56.3	44.2	49.6	48.0	45.1	48.3	53.0
Avery	65.7	-	-	59.0	-	59.5	-	59.1	-
PSB13NEDH-7-140	66.5	-	-	50.8	-	56.1	-	58.6	-
Cowboy	65.6	-	-	54.0	-	60.5	-	63.0	-
SY Sunrise	55.3	-	-	49.0	-	**57.2**	-	55.0	-
Keldin†	-	-	-	-	-	-	-	-	-
Langin†	-	-	-	-	-	-	-	-	-
Long Branch†	-	-	-	-	-	-	-	-	-
PSB13NEDH-7-45†	-	-	-	-	-	-	-	-	-
Sunshine†	-	-	-	-	-	-	-	-	-
SY 517 CL2†	-	-	-	-	-	-	-	-	-
WB4721†	-	-	-	-	-	-	-	-	-
Trial Average	62.2	58.1	60.3	51.2	58.9	57.5	56.1	57.4	62.3
LSD(0.05)‡	7.3	5.7	8.5	5.1	3.8	10.2	8.9	8.1	6.6

*Hayes 3 year average includes only two years from 2015-2016.

† New entry in 2017, not previously tested.

‡ Yield value required (≥LSD) to determine if varieties are statistically different than one another.

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Table 6b. 2015-2017 (2 and 3-year averages) West River Yield (bu/ac @ 13% moisture) Performance, continued - sorted by overall 3-year yield. Varieties yielding in the upper 1/3 for each trial location are denoted by gray shading.

Variety	Crop Zone - 6				Crop Zone - 7				Crop Zones 5-7	
	Winner		Winner intensive		Bison		Faith*		West River Ave.	
	2 year	3 year	2 year	3 year	2 year	3 year	2 year	3 year	2 year	3 year
Antero	69.8	72.8	65.4	71.1	29.5	36.8	69.8	60.0	59.5	61.2
SY Monument	67.0	66.7	65.7	64.7	27.6	36.3	60.5	56.8	56.3	59.5
SY Wolf	66.7	68.0	56.2	58.7	28.6	36.8	59.1	57.8	54.0	58.4
Denali	62.4	58.5	65.9	65.2	28.7	39.8	55.0	48.8	55.8	58.1
WB-Grainfield	61.7	57.1	65.9	67.3	28.0	37.8	64.4	58.3	54.7	57.8
LCS Mint	69.2	66.6	72.0	68.7	29.0	35.8	61.3	54.6	55.6	57.7
Overland	61.8	61.3	60.6	63.9	27.5	36.1	58.2	53.3	54.4	56.4
Ruth	60.3	61.4	61.9	65.0	22.5	30.5	49.4	46.6	52.3	55.8
Freeman	62.9	62.8	56.3	61.0	21.3	32.6	55.8	51.4	52.4	55.7
Oahe	57.6	59.8	60.2	63.3	27.8	38.2	46.7	47.1	50.5	55.5
Ideal	57.6	59.4	56.4	60.8	28.9	37.3	58.5	51.8	52.2	55.1
WB4614	52.3	51.4	58.6	61.0	29.5	34.9	60.1	50.1	52.7	54.5
Thompson	56.6	60.0	54.7	58.3	22.9	32.8	51.9	49.9	49.3	54.3
Redfield	58.7	58.3	58.5	61.0	24.7	33.2	51.6	47.0	49.6	53.7
Wesley	54.8	53.3	57.0	55.8	31.3	41.1	59.4	50.8	51.5	52.7
Lyman	52.9	56.4	59.5	62.6	23.7	32.2	54.0	51.9	49.5	52.6
Alice	57.7	57.0	61.4	59.2	21.2	28.8	58.7	51.4	50.5	52.3
Expedition	54.7	53.8	54.6	57.0	25.4	33.2	57.2	50.1	49.2	51.7
LCS Compass	56.2	55.1	54.2	55.8	23.3	29.2	55.0	50.3	46.9	49.1
Avery	64.7	-	65.3	-	27.2	-	56.1	-	55.4	-
PSB13NEDH-7-140	61.0	-	60.1	-	28.0	-	55.8	-	53.2	-
Cowboy	61.7	-	59.4	-	22.7	-	52.5	-	53.1	-
SY Sunrise	64.6	-	60.5	-	26.5	-	58.3	-	51.9	-
Keldin†	-	-	-	-	-	-	-	-	-	-
Langin†	-	-	-	-	-	-	-	-	-	-
Long Branch†	-	-	-	-	-	-	-	-	-	-
PSB13NEDH-7-45†	-	-	-	-	-	-	-	-	-	-
Sunshine†	-	-	-	-	-	-	-	-	-	-
SY 517 CL2†	-	-	-	-	-	-	-	-	-	-
WB4721†	-	-	-	-	-	-	-	-	-	-
Trial Average	60.4	60.1	60.2	61.6	25.8	33.8	56.9	52.1	53.3	55.8
LSD(0.05)‡	6.7	5.6	6.3	5.1	4.4	5.8	8.4	6.2	4.1	4.0

*Faith 3 year average includes data from McLaughlin in 2015.

† New entry in 2017, not previously tested.

‡ Yield value required (≥LSD) to determine if varieties are statistically different than one another.

2017 South Dakota Winter Wheat Variety Trial Results

Table 7. List of winter wheat varieties tested in 2017 along with origin, agronomic, and grain quality characteristics.

Variety	Testing and Origin		Agronomic Characteristics				Grain Quality		
	Years tested in SD trials	Origin†-Year	Rel.‡ Hdg days	Rel.‡ Height inches	Lodging Score§	Winter Hardi-ness¶	2017 Test Wt.	2017 Protein %	Baking Quality#
Alice (white)	5+	SD-06	1	-2	2.1	G	Low	Good	E
Antero (white)	3	PG-12	1	0	2.6	G	Good	Low	*(G)††*
Avery	2	PG-15	1	0	3.4	-	Avg.	Low	*(G)*
LCS Compass	3	LCS-14	0	2	2.5	G	Avg.	Good	*(E)*
Cowboy	2	WY-12	4	0	3.5	*(G)*	Avg.	Low	*(A)*
Denali	4	PG-11	4	1	2.3	G	Good	Low	*(A)*
Expedition	5+	SD-02	**0**	**0**	2.4	G	Low	Avg.	G
Freeman	5+	NE-13	-1	-1	2.1	F	Low	Avg.	A-G
WB-Grainfield	5+	WB-12	-2	1	2.3	F	Avg.	Avg.	G
Ideal	5+	SD-11	5	-2	3.5	G-E	Avg.	Avg.	A
Keldin†	new	WB-13	5	-2	1.8	*(E)*	Avg.	Avg.	-
Langin†	new	PG-16	-1	-3	2.6	*(E)*	Avg.	Low	*(G)*
Long Branch†	new	DG-16	-1	1	2.9	*(E)*	Avg.	Low	-
Lyman	5+	SD-08	1	1	2.6	G-E	Avg.	Good	A
LCS Mint	5+	LCS-12	1	1	2.0	G	Good	Avg.	*(G)*
SY Monument	3	AP-15	3	-2	1.9	G-E	Low	Avg.	*(G)*
Oahe	5+	SD-16	2	4	2.0	G-E	Good	Avg.	A
Overland	5+	NE-07	2	2	1.9	G-E	Avg.	Avg.	*(A)*
PSB13NEDH-7-140	2	LCS-exp	3	2	1.3	*(G)*	Good	Good	*(A)*
PSB13NEDH-7-45†	new	LCS-exp	1	-1	1.6	*(G)*	Avg.	Avg.	*(A)*
Redfield	5+	SD-13	4	-1	1.9	G	Avg.	Good	G
Ruth	3	NE-15	1	1	1.8	G	Avg.	Avg.	*(G)*
SY Sunrise	2	AP-16	2	-3	2.0	*(E)*	Good	Avg.	*(G)*
Sunshine†	new	PG-14	-1	-3	2.0	-	Avg.	Avg.	*(G)*
SY 517 CL2†	new	AP-17	0	-3	2.0	*(G)*	Good	Avg.	*(A)*
Thompson	3	SD-17	3	2	2.0	G	Avg.	Avg.	A
WB4614	3	WB-14	5	-3	1.5	G	Avg.	Avg.	-
WB4721†	new	WB-15	-1	-2	1.8	*(G)*	Good	Good	-
Wesley	5+	NE-99	1	-2	2.6	G	Low	Good	G
SY Wolf	5+	AP-11	1	-3	1.1	G	Good	Avg.	A

† AP, AgriPro; DG, Dyna-Gro Seed; LCS, Limagrain Cereal Seeds; NE, Nebraska (Husker Brand Genetics); PG, PlainsGold; SD, South Dakota; WB, WestBred; WY, Wyoming; and – (Year of Release).

‡ Difference in days to heading compared to **Expedition** (2017 from Brookings - **Julian date 150**). Height compared to **Expedition** (2017 in Brookings and Beresford - **39 inches**).

§ Lodging score: 1, perfectly standing; to 5, completely flat; ¶ Winter hardiness: E, excellent; G, good; F, fair; P, poor.

Baking quality: E, excellent; G, good; A, acceptable; P, Poor. Note: SDSU does not typically do baking quality analysis.

†† Estimated ratings *(X),* based on information provided by entity that submitted the variety.

2017 South Dakota Winter Wheat Variety Trial Results

Table 8. Winter wheat variety disease ratings.

Variety	Disease Ratings‡						
	2016# Stripe Rust	Stem Rust	2017 Leaf Rust	2017 Tan Spot	2017 SNB*	WSMV	2016# FHB (Scab)
Alice (white)	MS-S	MR	MS	MS	R	MS	MS
Antero (white)	MR	*(MR)¶*	MR-R	MR	MR	*(MS)*	S
Avery	S	*(S)*	MR-R	MR	R	*(R)*	MS
LCS Compass	S	*(R)*	MR-R	MS	MR	*(S)*	MR
Cowboy	S	*(MR)*	MS	S	MR	*(S)*	S
Denali	S	*(MS)*	MR-R	MS	S	*(MS)*	MR
Expedition	S	R	MS	MS	S	S	MR
Freeman	S	MR	MS	MS	MR	S	MS
WB-Grainfield	MR-MS	MR	R	MR	MR	MR	S
Ideal	S	MR	MR-R	MS	MS	S	MS
Keldin†	*(MR)*	-	MR	MR	MR	-	*(MS)*
Langin†	*(MR)*	*(S)*	MR	MR	R	*(MS)*	-
Long Branch†	*(MR)*	*(MR)*	R	MS	R	-	*(S)*
Lyman	S	R	MR	MR	MR	S	MR
LCS Mint	MS-S	MS	MR	MR	R	MR	S
SY Monument	MR-R	*(R)*	R	MR	MR	*(MS)*	MR
Oahe	MR	MR-MS	MR	MS	MR	MR	MR
Overland	S	MR	MR	MS	MS	MS	MR
PSB13NEDH-7-140	MS-S	-	MR	MS	R	-	MR
PSB13NEDH-7-45†	*(MS)*	-	R	MR	MR	-	-
Redfield	MR-MS	MR	MS	MR	MR	S	MR
Ruth	MS-S	*(MR)*	MS	MS	R	*(S)*	MS
SY Sunrise	MR-R	*(R)*	R	MS	MR	*(MR-MS)*	MR
Sunshine†	*(MS)*	*(MR)*	MR	MR	MR	*(MS)*	*(S)*
SY 517 CL2†	*(MR-MS)*	*(R)*	R	R	MR	-	*(MR-MS)*
Thompson	MR-MS	MR-MS	R	S	N/A	MS	MR
WB4614	MS	-	R	MR	MR	*(S)*	S
WB4721†	*(MR)*	-	MR	MS	MS	*(MR)*	*(S)*
Wesley	S	R	MS	MR	MR	S	S
SY Wolf	S	MR	R	MR	MR	MR	S

‡ Disease ratings: R, resistant; MR, moderately resistant; MS, moderately susceptible; S, susceptible.

Conditions in the 2017 SDSU disease nursery were not favorable for pathogen development, thus 2016 results are reported.

*Septoria/Stagonospora nodorum blotch

¶ Estimated rankings based on information provided by the entity that submitted the variety.

† new entry in 2017