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Field Pea Variety Trial Archive

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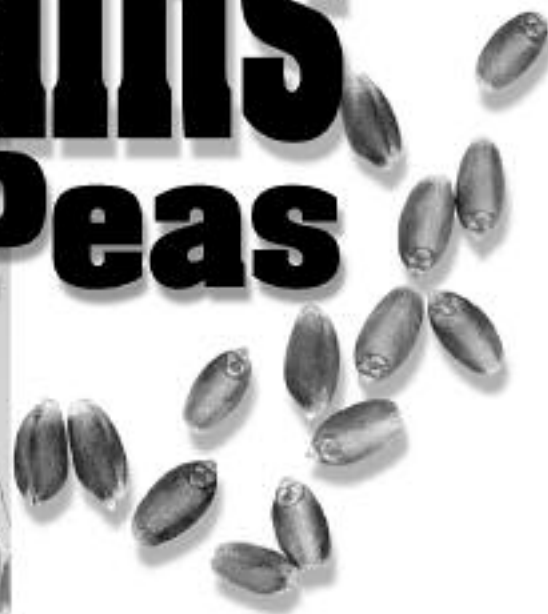
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EC 774
Revised
Annually

Small Grains and Field Peas

2006 Variety Recommendations
(2005 Crop Performance Results)



Spring Wheat
Oats
Barley
Winter Wheat
Field Peas



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

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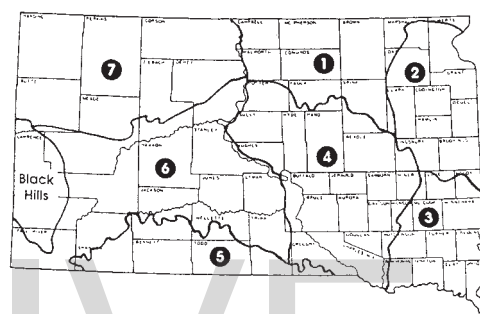
Small Grain Variety Recommendations for 2006

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. 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

<i>Recommended</i>		<i>Acceptable/Promising</i>	
Variety	CAA	Variety	CAA
Briggs @	Statewide	Alsen @	1,2,7
Forge @	Statewide	Norpro @	1,2,7
Granger @	Statewide	Oxen @	Statewide
Knudson @	Statewide	Reeder @	5,6,7
Russ @	Statewide		
Steele-ND @	Statewide		

Crop Adaptation Areas for South Dakota (revised 1992)



OATS

<i>Recommended</i>		<i>Acceptable/Promising</i>	
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 (hull-less)	Statewide
Reeves	Statewide		

BARLEY

<i>Recommended</i>		<i>Acceptable/Promising</i>	
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	Traditional	Statewide
		Valier @ - feed	6,7

American Malting Barley Association approved malting varieties for South Dakota for 2005:

Conlon	Legacy
Drummond	Morex
Excel	Robust
Foster	Tradition
Lacey	

WINTER WHEAT

<i>Recommended</i>		<i>Acceptable/Promising</i>	
Variety	CAA	Variety	CAA
Arapahoe @	1*,3,4*,5,6,7*	Alliance @	3,4*,5,6
Expedition @	1*,4,5,6,7*	Wahoo @	3,4*,5,6
Harding @	1*,2*,4,7		
Jagalene @	5,6,7*		
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.

Small Grains and Field Peas

2005 South Dakota Test Results Variety Traits, and Yield Averages

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Variety selection is a fundamental management 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 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 an important factor; however, a variety with good disease resistance, straw strength, and high grain quality may be more profitable in some cases than a variety with the highest yield.

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 to the various diseases every year and not assume the variety response to given diseases 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. 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 that do not meet the 3-year criterion (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 you 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 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, 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. 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 variety given. 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 Fusarium**. It does, however, indicate that some varieties are more tolerant of the disease 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/A).

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

The location test-trial yield average, high yield average, low yield average, LSD value, and yield value required to qualify for the top-performance group for yield and the test-trial coefficient of variation (CV) value are listed below each location yield column. These statistics are calculated from data that includes both released varieties and newer experimental lines included 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 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 20% 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 20%.**

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 also can 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 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 2005 was the experimental line SD 3687 that yielded 59 bu/A (table 1a). Subtracting 6 bu/A (the rounded-off LSD value) from the highest yield entry of 59 bu/A equals 53 bu/A. All varieties listed in that column yielding more than 53 bushels 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

53 bu/A can also be included in the top-yield group.

Therefore, due to rounding-off of yield average to the nearest bushel, all varieties at Brookings with a 2005 yield average of 53 bu/A are included in the TPG for yield.

As was illustrated in the case of yield, the TPG of varieties for a given performance variable can be determined 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 score 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 or by adding the LSD value from the lowest numerical lodging score value in order to obtain a maximum TPG value.

This is necessary if a maximum yield, bushel weight, and height value or a minimum lodging score value are to be identified for each variable column. For example, at Brookings the TPG value of 53 bu/A for yield in 2005 has already been identified. Likewise, at Brookings the TPG for lodging score can be identified by adding the lodging score LSD of 1 to the lowest numerical lodging score value of 1. The maximum TPG value is $2 (1 + 1 = 2)$. In this case all varieties with a lodging score of 2 or less are in the TPG for lodging performance (table 2a).

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, in the paragraph above, 6 bu/A per acre is the column LSD value and 53 bu/A is the TPG value.

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, a 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 20%) 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-1c, for oats in table 4a-4c, and for barley in table 7a-7c.

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 1 year. Also, the top-yield frequency for field peas was not calculated because there were only four locations.

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 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 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 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; whereas the coleoptile length for the varieties Wahoo, Jagalene, Expedition, Nekota, Arapahoe, Trego~W, Alliance, Millennium, and Wesley are shorter compared to Harding. Note the coleoptile length for Wendy is the shortest of the entries and may exhibit poor emergence if planted as deep as the longer coleoptile varieties like Tandem or Crimson.

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
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 by 25 feet. 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 East and West River locations. East River plots were fertilized with 60 lb/A of 18-46-0 (10.8 lb N and 27.6 lb 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/A of 10-34-0 (6.6 lb nitrogen and 24 lb phosphorus per acre) at seeding. Post-emergence applications of 0.10 oz/A of Ally herbicide 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 per square foot with inoculated seed and received 3 oz/A of Pursuit pre-emergence at West River locations, 2.8 oz/A Spartan plus 4 oz/A Sencor pre-emergence, and .75 pt/A Poast post-emergence at Selby, and 4 oz/A Spartan pre-emergence and 1.5 pt/A Poast post-emergence at South Shore.

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 pure live seeds per square foot compared to rates of 22 pure live seeds per 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 per acre, respectively.

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

Performance trial highlights

General. The agronomic performance of all the small crops in year 2005 was lower than for 2004. Yield averages for this year were generally the results of either low rainfall or poorly distributed rainfall or the result of the many small grain diseases that were important this year.

Wheat was affected by *Fusarium* head blight (scab), stripe rust, leaf rust, and bacterial leaf blight. Oats had no major disease problems, and yield reductions were likely the result of either seasonal moisture distribution or high temperatures during grain fill. Barley was affected to some degree by bacterial blight, and field peas were affected to some degree by either inadequate seasonal moisture or powdery mildew. The winter wheat trial at Selby was abandoned due to poor spring stand, and all the small grain trials at Bison were hailed out a few days before harvest.

Table Comments. Tables 1a-1c, 4a-4b, 5a-5c, 7a-7c, 10a-10c, and 13a-13b are first sorted (high to low) by statewide 3-year and then sorted (high to low) by statewide 2005 yield averages. Likewise, tables 2a-2c, 6a-6b, 8a-8c, 11a-11c, and 14a-14b are sorted (high to low) by statewide 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 the 2005 year average.

You are encouraged to first evaluate variety yield performance by looking at the 3-year averages. Then evaluate how the varieties performed by looking at the 2005 yield averages. In some cases, varieties that were only tested in 2005 produced the highest numerical yields for year 2005. However, remember to look at the same 2005 yield column for varieties tested for 3 years that produced yield averages that were not significantly different from the highest numerical yields. In summary, 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 2005.

HRS wheat (Tables 1a – 2c). The top performing entries for yield for the past 3 years (2003-05) by variety and top yield frequency were Briggs, Granger, Steele-ND, and Knudson at 100%; Norpro at 88%; Walworth, Forge, Ulen, Oxen, and Alsen at 75%, Oklee at 63%, and Dapps at 50% (tables 1b and 1c) of all test locations.

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 2005 were the varieties or experimental lines SD 3868 at 88%; SD 3687 at 75%; SD 3851 and SD3860 at 50%; Briggs, Granger, Steele-

ND, SD 3854, SD 3870, Freyr, and MN 00261-4 at 38% of the test locations.

The top bushel weight entries (based on statewide averages in tables 2b and 2c) included SD 3851 at 61 lb; and Banton, MN 00261-4, Oklee, and Ingot at 60 lb for year 2005.

The check variety Chris (37 inches) tended to be the tallest variety across all locations in 2005 followed by the entries Ingot, SD 3870, Granger, SD 3875, SD 3897, and Dapps at 35 inches tall in 2005 (Tables 2b and 2c) .

The top protein entries on a statewide average included Granite and Dapps at 16.3% protein content.

Oats (Tables 4a – 5c). The top performing entries for yield for the past 3 years (2003-05) by variety and top yield frequency were HiFi, Morton, Jerry, and Don at 100%; and Loyal and Reeves at 86% (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 86% of the test locations during the past 3-year period.

The top-performing entries for yield in 2005 were the varieties or experimental lines SD 020701 at 86%; SD 021021 and SD 011315-15 at 71%; SD 020883 and Morraine at 57%; and HiFi, Jerry, Don, SD 020536, SD 011315-61, SD 96024A-21, and SD 366-36 at 43% of the test locations.

In 2005, on a statewide basis, the hull-less entries Buff, Paul, and Stark at 42, 41, and 39 lb, respectively, had the best bushel weight average or test weight across all locations.

Among the standard hulled entries, Hytest at 37 lb followed by SD 020883, Beach, SD 020536, Reeves, and SD 366-15 at 35 lb were the highest in bushel weight. In contrast the entries Drumlin, Morton, SD 011315-15, and Morraine had the lowest statewide bushel weight average among the standard hulled varieties (tables 5b).

Among the entries tested, SD 366-36 and Morton at 36 inches were the tallest and Buff and SD 020883 were the shortest in height in 2005 (table 5b). In 2005, all entries experienced some degree of lodging with 50% of the plants within a plot exhibiting lodging scores of 3 (lodging at a 45° angle) to 4 (severe lodging) across the state (table 5b).

The hull-less variety Paul and the standard variety Hytest exhibited the highest grain protein levels of 17.7 and 17.3%, respectively (table 5b).

Barley (Tables 7a – 8c). Top performing entries for yield for the past 3 years (2003-05) by variety and top-yield frequency were Eslick at 100%; Haxby at 86%; Excel and Valier at 71%; Lacey at 57%; and Conlon at 43% (table 7b). 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

43% of the test locations during the past 3-year period.

The top-performing entries for yield in 2005 were Eslick, Haxby, and Tradition at 71%; and Lacey at 57% of the test locations. The two-row varieties Haxby, Valier, and Conlon tested 1 to 3 lb higher in bushel weight than the other varieties across locations (tables 8b and 8c). In contrast, the varieties Excel, Stellar-ND, and Legacy exhibited the lowest bushel weight averages across the state (tables 8b and 8c).

Robust, Tradition, Drummond, and Legacy tended to be the tallest varieties across all locations statewide (tables 8b and 8c). As indicated in table 8b and 8c, the lodging scores for Haxby and Conlon were higher than for the other entries tested in 2005.

Grain protein content ranged from only about 14 to 15% on a statewide basis. However, at the East River locations (table 8b) protein ranged 1% from about 12.7 to 13.7%; while at the West River locations (table 8c) protein levels were higher and ranged from about 16.6 to 18.2%.

HRW wheat (Tables 10a – 12). Top performing entries for yield for the past 3 years (2003-05) by variety and statewide yield average (tables 10b and 10c) include the 14 3-year entries with a yield of 51 bu/A or higher. The top-performing entries for yield in 2005 were the varieties or experimental lines that yielded 51 bu/A which included NE01643, Millennium, SD 96240-3-1, SD 97059-2, Hatcher, Wahoo, SD01W064, SD97538, and Overley.

Millennium, SD97059-2, Wahoo, Jerry, Jagalene, SD 97380-2, and SD97W609 tended to exhibit the highest yield averages for both 2005 and the longer 3-year period (2003-2005).

In 2005 and based on statewide averages, bushel weight averages for Tandem, Millennium, NE01643, SD01W064, and Overley tended to be highest while Harry was lowest in bushel weight.

The varieties or experimental lines Jerry, Crimson, Harding, and SD00032 tended to be the tallest while Wendy, NE99533-4, SD97W609, and Hatcher tended to be the shortest entries, based on statewide averages (tables 11b and 11c).

Grain protein content ranged from a low of about 11.5 for Alliance to a high of about 13.7% for SD00032 on a state-wide basis. However, at West River locations (table 11b) the protein levels were higher and ranged from a low of about 11.7 for SD01W064, Hatcher, Alliance, and Harry to a high of about 13.6% or higher for SD00032, Overley,

Crimson, and Jerry. In contrast, at the East River locations (table 8c) protein levels were slightly lower than the statewide averages and ranged from a low of about 10.8% for Alliance to a high of about 13.0% or higher for Wesley, SD00032, and Overley.

Field Pea (Tables 13a – 15c) Top-performing entries for yield for 2005 by variety and test location were SW Salute and Cooper at South Shore; and CDC Mozart, Cooper, SW-Salute, Marquee, SW-Midas, and Stratus at Selby (table 14a). When averaged over both East River locations (table 14a), Cooper and SW-Salute tended to be the best yielding varieties.

Top-performing varieties for yield at West River locations were SD-Admiral, SW-Midas, Eclipse, Cooper, SW-Salute, CDC Mozart, Integra, Tudor, Majoret, CEB4133, Camry, Topeka, Cruiser, and PRO 011-3172 at Wall; and SW-Salute, Tudor, DS-Admiral, Cooper, Marquee, and Stratus at Hayes for year 2005. When averaged over both West River locations (table 13b), DS-Admiral, SW-Salute at 27 bu; Cooper and Tudor at 26 bu; and SW-Midas, Marquee, Eclipse, and Stratus at 24 bu/A tended to be the best yielding varieties. These same varieties tended to be the best yielding varieties on a statewide basis (table 13b).

Twelve varieties exhibited bushel weights of 65 lb or higher at South Shore and 18 varieties at Selby weighed 62 lb or higher to qualify for the top-performance group for bushel weight. Wall was the only West River location with enough bushel weight measurements to calculate a location average. At Wall 18 varieties weighed 60 lb or higher and qualified for the top-performance group for bushel weight.

Protein levels in the grain were determined for the South Shore and Selby locations only. At both locations each of the four plots was sub-sampled for grain. The grain was combined and a composite sample was obtained and measured for protein content. Since only one protein determination was made at each location, the average of both locations is reported. The East River protein levels ranged from a low of about 23.2% for SW-Midas to a high of about 27.2% or higher for Integra and Grande.

Lodging information was only collected for the two West River locations. In general, the forage types like Arvika, Forager, Journey, and 40-10 Magda tended to lodge more than the grain types, as expected. In addition, the grain type variety Topeka tended to lodge more than the other grain type varieties.

Variety Release/Recommendation Committee

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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. 2005 Small grain and field pea seeding dates by crop and location.

Location	Crops				
	HRS Wheat	Oats	Barley	HRW Wheat	Field Pea
Beresford	-	April 6	-	-	
Bison	Abandoned	Abandoned	Abandoned	Abandoned	
Brookings	April 9	April 9	April 9	September 30	
Brown Co.	April 7	April 7	April 7	-	
Pierre-DL	-	-	-	September 17	
Hayes	-	-	-	September 28	April 28
Highmore	-	-	-	September 29	
Kennebec	-	-	-	September 17	
Martin	-	-	-	September 27	
Miller	April 4	April 4	April 4	-	
Oelrichs	-	-	-	September 27	
Platte	-	-	-	September 20	
Ralph	April 14	April 14	April 14	-	
Selby	April 19	April 19	April 19	Abandoned	April 15
South Shore	April 19	April 19	April 19	Abandoned	April 12
Spink Co.	April 1	-	-	-	
Sturgis	-	-	-	September 16	
Tripp Co.	-	-	-	September 20	
Wall	April 6	April 6	April 6	September 17	April 14

Table 1a. Hard red spring yield results - South Dakota East River locations, 2003-2005.

Variety (Hdg.)* - by 3-yr then year 2005 state yield averages	Location Yield Averages (Bu/A) at 13% moist.							
	Brookings		South Shore		Miller		Spink Co.	
	2005	3-Yr	2005	3-Yr	2005	3-Yr	2005	3-Yr
Briggs (0)	50	57+	55	56+	35	42+	65+	66+
Granger (0)	51	56+	57	56+	37	39+	59	63+
Steele-ND (3)	49	56+	57	56+	34	42+	63+	64+
Knudson (2)	47	56+	56	54+	34	39+	62+	66+
Walworth (0)	47	55+	48	48	35	41+	53	58
Forge (-1)	51	54+	47	48	34	41+	49	58
Russ (2)	52	56+	47	49+	36	43+	54	60+
Ulen (2)	40	50+	47	51+	32	38	61	62+
Norpro (3)	45	51+	46	47	32	40+	56	59+
Oxen (2)	41	47	42	47	36	43+	49	59+
Oklee (2)	39	47	56	53+	33	38	59	60+
Reeder (3)	49	52+	37	46	34	41+	47	57
Dapps (2)	45	53+	50	48	31	36	60	59+
Alsen (4)	38	45	48	51+	32	39+	53	60+
Granite (5)	43	50+	38	44	31	37	48	57
Ingot (-1)	45	48+	40	44	33	38	44	50
Chris,CK (3)	38	39	36	38	29	32	42	45
SD 3687	59+	.	60+	.	42+	.	61	.
SD 3868	49	.	62+	.	41+	.	67+	.
SD 3851	51	.	60+	.	38	.	58	.
SD 3854	48	.	57	.	38	.	58	.
ND 800	48	.	56	.	33	.	61	.
SD 3860	54+	.	46	.	41+	.	60	.
SD 3870	40	.	60+	.	37	.	56	.
SD 3879	50	.	53	.	39+	.	60	.
SD 3899	53+	.	58+	.	34	.	56	.
Freyr (1)	46	.	52	.	35	.	62+	.
Glenn (3)	39	.	55	.	31	.	64+	.
SD 3875	48	.	56	.	35	.	57	.
SD 3889	44	.	63+	.	35	.	57	.
MN 00261-4	48	.	54	.	35	.	64+	.
Banton (1)	49	.	50	.	32	.	58	.
SD 3880	48	.	49	.	35	.	57	.
SD 3888	43	.	62+	.	34	.	53	.
Mercury (5)	49	.	48	.	32	.	57	.
Trooper (-1)	48	.	45	.	35	.	59	.
SD 3882	45	.	53	.	33	.	57	.
SD 3897	41	.	54	.	33	.	53	.
SD 3900	50	.	47	.	32	.	52	.
Dandy (5)	46	.	41	.	35	.	51	.
Express	39	.	38	.	34	.	48	.
Test avg. :	46	51	51	49	35	39	56	59
High avg. :	59	57	63	56	42	43	67	66
Low avg. :	38	39	36	38	29	32	42	45
# Lsd (.05) :	6	9	5	7	3	4	5	7
## TPG-value :	53	48	58	49	39	39	62	59
### C.V. :	9	8	7	6	7	7	7	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. A plus sign (+) indicates values within a column that qualify for the top performance group.

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

Table 1b. Hard red spring yield results - South Dakota East River locations, 2003-2005 (Continued).

Variety (Hdg.)* - by 3-yr then year 2005 state yield averages	Location Yield Averages (Bu/A) at				East River Yield Averages (Bu/A)		State Yield Averages (Bu/A)		State Top-Yield Frequency ** (%)	
	Selby		Brown Co.		2005	3-Yr	2005	3-Yr	2005	3-Yr
	2005	3-Yr	2005	3-Yr						
Briggs (0)	43	52+	62+	63+	52	56	46	51	38	100
Granger (0)	45+	51+	60	62+	52	55	47	50	38	100
Steele-ND (3)	43	50+	58	62+	51	55	46	50	38	100
Knudson (2)	39	48+	59	63+	50	54	44	49	25	100
Walworth (0)	38	50+	57	57+	46	52	42	48	13	75
Forge (-1)	38	50+	54	57+	46	51	42	48	25	75
Russ (2)	40	47+	55	58+	47	52	42	48	13	100
Ulen (2)	38	46+	52	59+	45	51	41	47	13	75
Norpro (3)	37	48+	63+	62+	47	51	40	47	13	88
Oxen (2)	35	44+	56	60+	43	50	40	47	25	75
Oklee (2)	41	46+	54	58+	47	50	42	46	13	63
Reeder (3)	30	44+	55	57+	42	50	39	46	13	75
Dapps (2)	35	44+	52	56	46	49	41	45	0	50
Alsen (4)	37	42	51	58+	43	49	39	45	13	75
Granite (5)	34	46+	45	55	40	48	36	45	0	25
Ingot (-1)	33	42	48	52	41	46	38	43	13	25
Chris,CK (3)	26	35	42	43	36	39	32	36	0	0
SD 3687	49+	.	62+	.	56	.	49	.	75	.
SD 3868	47	.	65+	.	55	.	49	.	88	.
SD 3851	45+	.	60	.	52	.	47	.	50	.
SD 3854	40	.	61+	.	50	.	46	.	38	.
ND 800	43	.	63+	.	51	.	45	.	25	.
SD 3860	36	.	57	.	49	.	45	.	50	.
SD 3870	44	.	57	.	49	.	45	.	38	.
SD 3879	38	.	59	.	50	.	45	.	13	.
SD 3899	43	.	59	.	51	.	45	.	25	.
Freyr (1)	37	.	60	.	49	.	45	.	38	.
Glenn (3)	43	.	58	.	48	.	44	.	25	.
SD 3875	39	.	61+	.	49	.	44	.	25	.
SD 3889	43	.	51	.	49	.	44	.	25	.
MN 00261-4	39	.	64+	.	51	.	44	.	38	.
Banton (1)	36	.	57	.	47	.	43	.	25	.
SD 3880	39	.	57	.	48	.	43	.	25	.
SD 3888	41	.	52	.	48	.	43	.	13	.
Mercury (5)	42	.	62+	.	48	.	43	.	13	.
Trooper (-1)	40	.	59	.	48	.	43	.	13	.
SD 3882	39	.	56	.	47	.	42	.	0	.
SD 3897	38	.	52	.	45	.	41	.	0	.
SD 3900	40	.	53	.	46	.	41	.	13	.
Dandy (5)	38	.	49	.	43	.	39	.	0	.
Express	33	.	46	.	40	.	37	.	13	.
Test avg. :	39	46	56	58						
High avg. :	49	52	65	63						
Low avg. :	26	35	42	43						
# Lsd (.05) :	4	8	4	6						
## TPG-value :	45	44	61	57						
### C.V. :	7	7	5	6						

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

** Percentage of test locations where a variety was in the top-yield group.

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

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

Table 1c. Hard red spring wheat yield results - South Dakota West River locations, 2003-3005.

Variety (Hdg.)* - by 3-yr then year 2005 state yield averages	Location Yield Averages (Bu/a) at				West River Yield Averages (Bu/A)		State Yield Averages (Bu/A)		State Top-Yield Frequency ** (%)	
	Wall		Ralph		2005	3-Yr	2005	3-Yr	2005	3-Yr
	2005	3-Yr	2005	3-Yr						
Briggs (0)	29+	32+	31	39+	30	36	46	51	38	100
Granger (0)	31+	34+	34+	39+	33	37	47	50	38	100
Steele-ND (3)	29+	33+	32+	40+	31	37	46	50	38	100
Knudson (2)	27+	28+	31	38+	29	33	44	49	25	100
Walworth (0)	28+	34+	30	38+	29	36	42	48	13	75
Forge (-1)	28+	34+	34+	42+	31	38	42	48	25	75
Russ (2)	23	32+	32+	40+	28	36	42	48	13	100
Ulen (2)	27+	31+	30	35	29	33	41	47	13	75
Norpro (3)	15	29+	29	39+	22	34	40	47	13	88
Oxen (2)	28+	34+	32+	38+	30	36	40	47	25	75
Oklee (2)	25	30+	32+	34	29	32	42	46	13	63
Reeder (3)	31+	34+	31	39+	31	37	39	46	13	75
Dapps (2)	25	30+	26	33	26	32	41	45	0	50
Alsen (4)	22	29+	33+	39+	28	34	39	45	13	75
Granite (5)	19	30+	29	37	24	34	36	45	0	25
Ingot (-1)	30+	32+	31	35	31	34	38	43	13	25
Chris,CK (3)	20	28+	23	30	22	29	32	36	0	0
SD 3687	24	.	34+	.	29	.	49	.	75	.
SD 3868	28+	.	35+	.	32	.	49	.	88	.
SD 3851	26+	.	35+	.	31	.	47	.	50	.
SD 3854	31+	.	35+	.	33	.	46	.	38	.
ND 800	24	.	34+	.	29	.	45	.	25	.
SD 3860	32+	.	33+	.	33	.	45	.	50	.
SD 3870	28+	.	34+	.	31	.	45	.	38	.
SD 3879	26+	.	31	.	29	.	45	.	13	.
SD 3899	23	.	31	.	27	.	45	.	25	.
Freyr (1)	28+	.	36+	.	32	.	45	.	38	.
Glenn (3)	28+	.	31	.	30	.	44	.	25	.
SD 3875	27+	.	31	.	29	.	44	.	25	.
SD 3889	24	.	33+	.	29	.	44	.	25	.
MN 00261-4	19	.	32+	.	26	.	44	.	38	.
Banton (1)	28	.	32+	.	30	.	43	.	25	.
SD 3880	29	.	32+	.	31	.	43	.	25	.
SD 3888	25	.	30	.	28	.	43	.	13	.
Mercury (5)	24	.	31	.	28	.	43	.	13	.
Trooper (-1)	22	.	33+	.	28	.	43	.	13	.
SD 3882	24	.	31	.	28	.	42	.	0	.
SD 3897	25	.	30	.	28	.	41	.	0	.
SD 3900	27+	.	27	.	27	.	41	.	13	.
Dandy (5)	21	.	31	.	26	.	39	.	0	.
Express	24	.	35+	.	30	.	37	.	13	.
Test avg. :	26	31	32	37						
High avg. :	32	34	36	42						
Low avg. :	15	28	23	30						
# Lsd (.05) :	6	6	4	4						
## TPG-value :	26	28	32	38						
### C.V. :	16	11	8	11						

** Percentage of test locations where a variety was in the top-yield group.
 # 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. A plus sign (+) indicates values within a column that qualify for the top performance group.
 ### Coef. of variation, a measure of trial experimental error, 15% or less is best.

Table 2a. Hard red spring wheat averages for bushel weight (BW), height (HT), lodging (LDG) and grain protein (PRT)- South Dakota East River locations for 2005.

Variety (Hdg.)* - by state BW average	Location Averages - BW, HT, LDG											
	Brookings			South Shore			Miller			Spink Co.		
	BW lb	HT in	LDG**	BW lb	HT in	LDG**	BW lb	HT in	LDG**	BW lb	HT in	LDG**
SD 3851	61+	35+	4	60+	37+	3	60+	29	2+	60+	30	2+
Banton (1)	59+	36+	2+	56	36+	2+	60+	28	1+	60+	29	1+
MN 00261-4	58	33	2+	56	35	3	61+	29	1+	60+	31	2+
Oklee (2)	59+	33	4	58+	33	3	58	28	1+	60+	29	1+
Ingot (-1)	+	37+	3	57	35	3	59+	29	2+	58	34	2+
Glenn (3)	59+	36+	3	59+	35	3	60+	29	1+	59+	31	1+
SD 3854	59+	34	3	58+	38+	3	60+	32+	2+	58	32	2+
SD 3870	58	36+	4	57	38+	3	59+	32+	2+	58	33	2+
Steele-ND (3)	57	34	3	57	35	3	59+	30	1+	59+	31	1+
Freyr (1)	59+	33	3	56	33	3	58	29	1+	58	32	2+
Granite (5)	60+	31	2+	54	34	1+	60+	28	1+	58	29	1+
Alsen (4)	59+	35+	2+	55	35	3	60+	29	1+	59+	30	1+
ND 800	58	34	2+	55	35	3	58	29	1+	59+	31	1+
Granger (0)	58	38+	3	56	38+	3	58	31+	2+	58	33	2+
SD 3880	58	37+	3	56	35	3	58	28	1+	59+	31	2+
Knudson (2)	59+	32	3	56	35	3	58	26	1+	59+	28	2+
SD 3875	59+	36+	3	57	36+	3	58	32+	2+	58	34	2+
SD 3888	56	38+	3	58+	36+	3	58	30	2+	58	31	2+
Ulen (2)	57	33	3	56	34	3	58	29	2+	59+	31	2+
SD 3879	58	35+	3	56	36+	3	58	31+	2+	59+	31	2+
SD 3889	56	37+	3	57	35	3	58	30	2+	57	31	2+
Briggs (0)	59+	35+	3	56	35	3	55	30	2+	57	31	1+
Dandy (5)	59+	36+	1+	54	37+	2+	58	32+	1+	56	31	1+
SD 3882	59+	35+	3	56	37+	3	58	31+	1+	58	33	1+
SD 3897	58	38+	3	55	36+	3	57	32+	1+	57	33	2+
Mercury (5)	56	29	3	56	33	1+	57	25	1+	58	27	1+
SD 3899	59+	36+	3	55	37+	3	56	30	2+	57	32	2+
SD 3868	58	33	3	57	37+	3	57	31+	2+	57	32	2+
Dapps (2)	57	38+	2	55	36+	2+	59+	31+	1+	57	33	1+
Walworth (0)	58	36+	3	53	34	3	57	30	3	58	32	2+
Forge (-1)	58	37+	3	55	36+	3	59+	30	2+	53	31	2+
SD 3860	58	37+	3	53	37+	3	58	31+	2+	57	32	2+
Trooper (-1)	58	31	1+	54	31	1+	57	26	1+	56	27	1+
Norpro (3)	58	31	2+	52	32	2+	57	28	1+	57	28	1+
SD 3687	57	38+	3	55	36+	3	59+	32+	1+	55	32	2+
Chris,CK (3)	57	38+	3	54	39+	3	56	33+	3	55	37+	3
Reeder (3)	56	33	2+	49	34	2+	58	29	1+	55	31	1+
Russ (2)	57	37+	3	53	35	3	55	32+	1+	55	32	2+
SD 3900	57	35+	4	54	36+	3	56	30	1+	55	31	1+
Oxen (2)	56	31	4	51	33	3	56	27	1+	55	28	2+
Express	57	27	2+	50	33	1+	56	23	1+	55	24	1+
Test avg. :	58	35	3	55	35	3	58	29	1	57	31	2
High avg. :	61	38	4	60	39	3	61	33	3	60	37	3
Low avg. :	56	27	1	49	31	1	55	23	1	53	24	1
# Lsd (.05) :	2	3	1	2	3	1	2	2	1	1	1	1
## TPG-value :	59	35	2	58	36	2	59	31	2	59	36	2
### C.V. :	3	7	22	3	6	16	2	5	26	2	3	25

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

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

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 the variable measured. A plus sign (+) indicates values within a column that qualify for the top performance group.

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

Table 2b. Hard red spring 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 average	Location Averages- BW, HT, LDG						East River Averages - BW, HT, LDG			State Averages - BW, HT, LDG, PRT			
	Selby			Brown Co.			BW lb	HT in	LDG**	BW lb	HT in	LDG**	PRT %
	BW lb	HT in	LDG**	BW lb	HT in	LDG**							
SD 3851	59+	32	2+	63+	34	3	61	33	3	61	33	2	14.4
Banton (1)	60+	31	1+	60	33	1+	59	32	1	60	32	1	15.1
MN 00261-4	57	32	1+	62+	33	2+	59	32	2	60	32	2	15.4
Oklee (2)	58	30	1+	60	33	2+	59	31	2	60	31	2	15.2
Ingot (-1)	58	34	2+	59	38+	3	58	34	2	59	35	2	14.1
Glenn (3)	58	33	1+	59	35	2+	59	33	2	59	33	2	15.4
SD 3854	57	33	2+	60	34	3	59	34	2	59	34	2	13.9
SD 3870	58	35	2+	60	36+	3	58	35	3	59	35	2	15.0
Steele-ND (3)	57	32	2+	60	36+	3	58	33	2	59	33	2	15.4
Freyr (1)	57	31	1+	59	34	2+	58	32	2	59	32	2	14.6
Granite (5)	57	30	1+	58	31	1+	58	30	1	59	30	1	16.3
Alsen (4)	55	31	1+	60	33	2+	58	32	1	59	32	1	15.5
ND 800	57	33	1+	62+	36+	2+	58	33	2	59	33	2	15.2
Granger (0)	57	37	2+	60	37+	3	58	36	2	59	35	2	14.6
SD 3880	58	31	2+	58	34	3	58	33	2	59	33	2	13.7
Knudson (2)	57	28	1+	58	34	3	58	30	2	59	30	2	14.2
SD 3875	57	35	2+	59	35	3	58	35	2	58	35	2	14.7
SD 3888	57	33	1+	59	36+	3	58	34	2	58	34	2	14.4
Ulen (2)	58	31	1+	57	35	3	58	32	2	58	32	2	15.1
SD 3879	57	31	2+	58	35	3	58	33	2	58	33	2	14.3
SD 3889	57	33	1+	60	34	3	58	33	2	58	34	2	14.9
Briggs (0)	58	32	1+	60	34	3	58	33	2	58	33	2	15.0
Dandy (5)	55	32	1+	60	35	2+	57	34	1	58	33	1	14.8
SD 3882	57	34	1+	58	35	2+	58	34	2	58	34	2	14.9
SD 3897	56	36+	2+	59	36+	2+	57	35	2	58	35	2	15.1
Mercury (5)	56	28	1+	60	32	2+	57	29	2	58	29	1	14.5
SD 3899	56	33	2+	59	37+	3	57	34	3	58	34	2	14.9
SD 3868	56	32	2+	58	36+	2+	57	33	2	58	34	2	14.0
Dapps (2)	56	35	1+	57	36+	2+	57	35	2	57	35	1	16.3
Walworth (0)	56	32	2+	59	36+	3	57	33	3	57	33	2	14.4
Forge (-1)	55	34	2+	61+	35	3	57	34	2	57	34	2	14.2
SD 3860	56	36+	1+	58	34	2+	57	34	2	57	34	2	13.2
Trooper (-1)	56	27	1+	59	31	2+	57	29	1	57	29	1	14.2
Norpro (3)	55	30	1+	58	31	1+	56	30	1	57	30	1	14.8
SD 3687	54	34	1+	58	33	3	56	34	2	57	34	2	14.3
Chris,CK (3)	54	39+	2+	57	38+	3	56	37	3	56	37	2	15.1
Reeder (3)	54	31	1+	58	35	2+	55	32	2	56	32	1	14.5
Russ (2)	54	34	1+	57	34	3	55	34	2	56	34	2	14.5
SD 3900	55	32	1+	57	34	2+	56	33	2	56	33	2	14.9
Oxen (2)	54	30	1+	58	34	2+	55	30	2	56	30	2	14.5
Express	54	25	1+	56	29	1+	55	27	1	56	27	1	15.3
Test avg. :	56	32	1	59	34	2							
High avg. :	60	39	2	63	38	3							
Low avg. :	54	25	1	56	29	1							
# Lsd (.05) :	1	3	NS^	2	2	1							
## TPG-value :	59	36	2	61	36	2							
### C.V. :	1	6	27	3	4	19							

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

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

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 the variable measured. A plus

sign (+) indicates values within a column that qualify for the top performance group.

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

^ Values within a column do not differ significantly (.05 level of probability).

Table 2c. Hard red spring wheat averages for bushel weight (BW), height (HT), lodging (LDG), and grain protein (PRT) - South Dakota West River locations for 2005.

Variety (Hdg.)* - by state BW average	Location Averages - BW, HT, LDG						West River Averages - BW, HT, LDG			State Averages - BW, HT, LDG, PRT			
	Wall			Ralph			BW lb	HT in	LDG**	BW lb	HT in	LDG**	PRT %
	BW lb	HT in	LDG**	BW lb	HT in	LDG**							
SD 3851	.	37	1+	65+	32	1+	65	34	1	61	33	2	14.4
Banton (1)	.	34	1+	64+	30	1+	64	32	1	60	32	1	15.1
MN 00261-4	.	31	1+	63+	31	1+	63	31	1	60	32	2	15.4
Oklee (2)	.	33	1+	64+	30	1+	64	31	1	60	31	2	15.2
Ingot (-1)	.	37	1+	65+	35+	1+	65	36	1	59	35	2	14.1
Glenn (3)	.	35	1+	60	33	1+	60	34	1	59	33	2	15.4
SD 3854	.	35	1+	62	34+	1+	62	35	1	59	34	2	13.9
SD 3870	.	37	1+	62	36+	1+	62	37	1	59	35	2	15.0
Steele-ND (3)	.	34	1+	64+	32	1+	64	33	1	59	33	2	15.4
Freyr (1)	.	32	1+	64+	33	1+	64	33	1	59	32	2	14.6
Granite (5)	.	30	1+	64+	30	1+	64	30	1	59	30	1	16.3
Alsen (4)	.	32	1+	63+	31	1+	63	31	1	59	32	1	15.5
ND 800	.	33	1+	62	31	1+	62	32	1	59	33	2	15.2
Granger (0)	.	35	1+	63+	34+	1+	63	35	1	59	35	2	14.6
SD 3880	.	34	1+	63+	33	1+	63	33	1	59	33	2	13.7
Knudson (2)	.	30	1+	64+	28	1+	64	29	1	59	30	2	14.2
SD 3875	.	36	1+	61	34+	1+	61	35	1	58	35	2	14.7
SD 3888	.	38+	1+	62	32	1+	62	35	1	58	34	2	14.4
Ulen (2)	.	33	1+	64+	30	1+	64	32	1	58	32	2	15.1
SD 3879	.	34	1+	62	33	1+	62	34	1	58	33	2	14.3
SD 3889	.	37	1+	61	33	1+	61	35	1	58	34	2	14.9
Briggs (0)	.	37	1+	61	32	1+	61	34	1	58	33	2	15.0
Dandy (5)	.	34	1+	63+	32	1+	63	33	1	58	33	1	14.8
SD 3882	.	35	1+	60	34+	1+	60	35	1	58	34	2	14.9
SD 3897	.	38+	1+	62	35+	1+	62	37	1	58	35	2	15.1
Mercury (5)	.	29	1+	62	27	1+	62	28	1	58	29	1	14.5
SD 3899	.	37	1+	61	34+	1+	61	36	1	58	34	2	14.9
SD 3868	.	36	1+	60	33	1+	60	35	1	58	34	2	14.0
Dapps (2)	.	36	1+	61	35+	1+	61	36	1	57	35	1	16.3
Walworth (0)	.	33	1+	61	31	1+	61	32	1	57	33	2	14.4
Forge (-1)	.	39+	1+	62	33	1+	62	36	1	57	34	2	14.2
SD 3860	.	33	1+	62	36+	1+	62	34	1	57	34	2	13.2
Trooper (-1)	.	29	1+	60	27	1+	60	28	1	57	29	1	14.2
Norpro (3)	.	29	1+	63	29	1+	63	29	1	57	30	1	14.8
SD 3687	.	35	1+	59	34+	1+	59	35	1	57	34	2	14.3
Chris,CK (3)	.	38+	1+	61	36+	1+	61	37	1	56	37	2	15.1
Reeder (3)	.	32	1+	62	30	1+	62	31	1	56	32	1	14.5
Russ (2)	.	35	1+	61	34+	1+	61	34	1	56	34	2	14.5
SD 3900	.	34	1+	58	31	1+	58	33	1	56	33	2	14.9
Oxen (2)	.	32	1+	60	29	1+	60	31	1	56	30	2	14.5
Express	.	28	1+	61	25	1+	61	26	1	56	27	1	15.3
Test avg. :	.	34	1	62	32	1							
High avg. :	.	39	1	65	36	1							
Low avg. :	.	28	1	58	25	1							
# Lsd (.05) :	.	1	0	2	2	0							
## TPG-value :	.	38	1	63	34	1							
### C.V. :	.	3	0	3	4	0							

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

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

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 the variable measured. A plus sign (+) indicates values within a column that qualify for the top performance group.

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

Table 3. Origin, variety traits, and disease reactions for hard red spring wheat entries tested in 2005.

Variety	Origin	Traits		Disease Reactions				PVP** Status
		(Hdg.)*	Ldg# Res	Rust+			Fusarium Head Blight+	
				Stripe	Stem	Leaf		
Forge	SD-97	-1	G	MS	MR	MS	MS~	Yes
Ingot	SD-98	-1	G	MR	R	MS	M~	Yes
Trooper	WPB-04	-1	G	MS	R	MR	MS~	Yes
Briggs	SD-02	0	G	MR	R	MR	M~	Yes
Granger	SD-04	0	G	MR	R	MR	M~	Yes
Walworth	SD-01	0	G	S	R	MS	M~	Yes
Banton	SS-04	1	VG	-	-	MR	-	***
Freyr	AW-05	1	G	R	MR	MR	MR~	Yes
Dapps	ND-03	2	VG	MR	R	MR	MS	Yes
Knudson	AW-01	2	G	MS	R	MR	MS~	Yes
Oklee	MN-03	2	-	R	R	MR	MR	***
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	-
Chris,CK	MN-65	3	P	-	R	MS	S	No
Glenn	ND-05	3	G	MR	R	R	MR~	***
Norpro	AW-00	3	VG	MR	R	MR	MS	Yes
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
Dandy	NSG-99	5	VG	MR	-	S	MS	Yes
Granite	WPB-02	5	G	MS	MS	S	S~	Yes
Mercury	NSG-99	5	VG	-	R	MS	S	Yes
Express	WPB-88	-	G	MR	R	MS	-	Yes
Experimental lines:								
SD 3687	SD-	-	-	-	-	-	-	-
SD 3851	SD-	-	-	-	-	-	-	-
SD 3854	SD-	-	-	-	-	-	-	-
SD 3875	SD-	-	-	-	-	-	-	-
SD 3870	SD-	-	-	-	-	-	-	-
SD 3879	SD-	-	-	-	-	-	-	-
SD 3880	SD-	-	-	-	-	-	-	-
SD 3882	SD-	-	-	-	-	-	-	-
SD 3888	SD-	-	-	-	-	-	-	-
SD 3889	SD-	-	-	-	-	-	-	-
SD 3897	SD-	-	-	-	-	-	-	-
SD 3899	SD-	-	-	-	-	-	-	-
SD 3900	SD-	-	-	-	-	-	-	-
SD 3860	SD-	-	-	-	-	-	-	-
SD 3868	SD-	-	-	-	-	-	-	-
MN 00261-4	MN-	-	-	-	-	-	-	-
ND 800	ND-	-	-	-	-	-	-	-

* 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 - Four South Dakota East River locations, 2003-2005.

Variety (Hdg.)* - by 3-yr then 2005 year state yield averages	Location Yield Averages (BU/A) at 13% moist.							
	Brookings		South Shore		Beresford		Brown Co.	
	2005	3-Yr	2005	3-Yr	2005	3-Yr	2005	3-Yr
HiFi (8)	125+	143+	147+	129+	96	119+	123+	126+
Morton (7)	97	128+	137+	131+	87	114+	108	113+
Jerry (5)	110	125+	89	112+	105+	123+	123+	118+
Loyal (8)	112	135+	114	117+	101	114+	96	110+
Don (1)	121+	122+	100	115+	82	111+	129+	113+
Reeves (2)	108	117	97	110+	87	109+	126+	104+
Hytest (4)	91	110	90	102	60	84	101	92
Buff Hls (3)	87	100	84	96	84	93	96	79
Paul Hls (7)	65	86	84	81	58	65	83	71
SD 021021	124+	.	132	.	120+	.	127+	.
SD 011315-15	126+	.	132	.	94	.	122+	.
SD 020701	116+	.	139+	.	108+	.	130+	.
SD 020883	122+	.	125	.	106+	.	133+	.
SD 020536	110	.	130	.	103+	.	131+	.
Morraine (2)	129+	.	115	.	105+	.	132+	.
SD 011315-61	115+	.	127	.	89	.	120	.
SD 96024A-21	125+	.	120	.	90	.	130+	.
SD 366-36	98	.	125	.	105+	.	116	.
Drumlin (7)	93	.	136+	.	97	.	122+	.
Beach (6)	100	.	119	.	97	.	124+	.
SD 011315-59	99	.	120	.	83	.	109	.
SD 366-15	82	.	117	.	94	.	115	.
Stark Hls (6)	64	.	85	.	78	.	77	.
Test avg.:	105	118	116	110	93	104	116	103
High avg.:	129	143	147	131	120	123	133	126
Low avg.:	64	86	84	81	58	65	77	71
# Lsd (.05):	15	22	13	27	18	18	12	23
## TPG-value:	114	121	134	104	102	105	121	103
### C.V.:	10	7	8	7	14	11	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. A plus sign (+) indicates values within a column that qualify for the top performance group.

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

Table 4b. Oat yield results - Two South Dakota East River and one West River locations, 2003-2005 (Continued).

Variety (Hdg.)* - by 3-yr then year 2005 state yield averages	Location Yield Averages (BU/A) at 13% moist.						State Yield Averages (Bu/A)		State Yield Frequency ** (%)	
	Miller		Wall		Selby		2005	3-Yr	2005	3-Yr
	2005	3-Yr	2005	3-Yr	2005	3-Yr				
HiFi (8)	91	86+	27	56+	104	114+	102	110	43	100
Morton (7)	102	89+	41+	57+	103	109+	96	106	29	100
Jerry (5)	97	85+	48+	63+	100	110+	96	105	43	100
Loyal (8)	108+	82+	33	53	101	103+	95	102	14	86
Don (1)	99	80+	45+	58+	101	102+	97	100	43	100
Reeves (2)	85	77+	39+	55+	88	97+	90	96	29	86
Hyttest (4)	77	76+	46+	56+	77	85	77	86	14	29
Buff Hls (3)	56	69+	28	47	77	88	73	82	0	14
Paul Hls (7)	60	59	19	33	66	71	62	67	0	0
SD 021021	102	.	36+	.	116+	.	108	.	71	.
SD 011315-15	113+	.	36+	.	116+	.	106	.	71	.
SD 020701	102	.	39+	.	107+	.	106	.	86	.
SD 020883	92	.	50+	.	98	.	104	.	57	.
SD 020536	100	.	30	.	113	.	102	.	43	.
Morraine (2)	80	.	46+	.	94	.	100	.	57	.
SD 011315-61	104+	.	30	.	105+	.	99	.	43	.
SD 96024A-21	94	.	41+	.	96	.	99	.	43	.
SD 366-36	97	.	40+	.	105+	.	98	.	43	.
Drumlin (7)	100	.	33	.	104	.	98	.	29	.
Beach (6)	96	.	34	.	98	.	95	.	14	.
SD 011315-59	98	.	34	.	100	.	92	.	0	.
SD 366-15	86	.	34	.	105+	.	90	.	14	.
Stark Hls (6)	63	.	15	.	56	.	63	.	0	.
Test avg. :	91	78	36	53	97	98				
High avg. :	113	89	50	63	116	114				
Low avg. :	56	59	15	33	56	71				
# Lsd (.05) :	10	22	14	9	11	18				
## TPG-value :	103	67	36	54	105	96				
### C.V. :	8	10	27	13	8	6				

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

** Percentage of test locations where a variety was in the top-yield group.

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

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

Table 5a. Oat averages for bushel weight (BW), height (HT), lodging (LDG), and grain protein (PRT) - Four South Dakota East River locations for 2005.

Variety (Hdg.)* - by state BW average	Location Averages - BW, HT, LDG											
	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**
Buff Hls (3)	45+	38	3+	42+	41	5	39	41	3+	41+	40	3+
Paul Hls (7)	42	42+	2+	41+	42	5	41+	42	3+	42+	44+	3+
Stark Hls (6)	40	43+	2+	39	43	5	35	45+	3+	41+	43	3+
Hystest (4)	38	43+	3+	37	42	5	34	46+	3+	37	45+	3+
SD 020883	37	41+	3+	37	40	5	32	41	3+	36	37	2+
Beach (6)	38	41+	3+	34	43	5	33	45+	2+	39	45+	3+
SD 020536	38	39	3+	34	41	5	33	43+	3+	38	39	3+
Reeves (2)	37	41+	5	35	42	5	33	42	4	36	41	3+
SD 366-15	37	41+	5	34	44+	5	32	43+	4	38	42	4
SD 021021	37	39	3+	34	42	5	31	39	2+	38	38	3+
SD 366-36	37	44+	5	34	43	5	34	46+	4	37	45+	3+
SD 011315-59	36	41+	3+	33	43	5	29	41	3+	35	41	3+
SD 020701	36	40	4	34	42	5	31	42	3+	38	40	4
Don (1)	35	37	4	33	40	5	33	40	4	34	34	3+
Jerry (5)	35	42+	5	32	43	5	32	42	3+	36	40	3+
SD 96024A-21	36	42+	4	33	43	5	33	42	3+	34	40	3+
Loyal (8)	36	43+	4	32	44+	5	33	44+	3+	36	43	4
HiFi (8)	36	39	2	35	43	5	32	41	3+	37	41	3+
SD 011315-61	36	43+	4	35	43	5	31	42	3+	37	43	4
Drumlin (7)	35	38	3+	33	42	5	30	42	3+	36	39	3+
Morton (7)	34	45+	2+	35	46+	4	30	43+	3+	38	46+	3+
SD 011315-15	36	40	4	31	42	5	30	40	3+	35	40	4
Morraine (2)	35	43+	3+	33	44+	5	30	43+	2+	34	41	3+
Test avg. :	37	41	3	35	42	5	33	42	3	37	41	3
High avg. :	45	45	5	42	46	5	41	46	4	42	46	4
Low avg. :	34	37	2	31	40	4	29	39	2	34	34	2
# Lsd (.05) :	2	4	1	2	2	NS^	1	3	1	1	2	1
## TPG-value :	43	41	3	40	44	.	40	43	3	41	44	3
### C.V. :	3	7	20	4	4	5	3	5	18	2	4	12

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

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

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 the variable measured. A plus sign (+) indicates values within a column that qualify for the top performance group.

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

^ Values within a column do not differ significantly (.05 level of probability).

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

Variety (Hdg.)* - by state BW average	Location Averages - BW, HT, LDG									State Averages - BW, HT, LDG, PRT			
	Miller			Wall			Selby			BW lb	HT in	LDG**	PRT %
	BW lb	HT in	LDG**	BW lb	HT in	LDG**	BW lb	HT in	LDG**				
Buff Hls (3)	45+	34	2+	.	.	.	40+	35	1+	42	32	3	16.4
Paul Hls (7)	41	40+	3+	.	.	.	37	39	1+	41	35	3	17.7
Stark Hls (6)	43	39+	3+	.	.	.	38	40+	1+	39	36	3	16.1
Hytest (4)	40	37	3+	33+	.	.	37	38	3	37	35	3	17.3
SD 020883	38	32	4	32+	.	.	37	33	2+	35	31	3	14.9
Beach (6)	40	37	3+	28	.	.	36	40+	2+	35	35	3	15.1
SD 020536	40	35	5	28	.	.	36	35	4	35	33	4	15.9
Reeves (2)	38	36	4	30	.	.	37	37	3	35	34	4	16.2
SD 366-15	40	37	4	25	.	.	36	38	3	35	35	4	16.5
SD 021021	38	33	4	28	.	.	36	37	2+	34	32	3	16.8
SD 366-36	39	37	4	25	.	.	35	39	3	34	36	4	16.2
SD 011315-59	37	35	3+	.	.	.	34	38	3	34	34	3	15.3
SD 020701	39	35	4	25	.	.	35	37	3	34	33	4	15.4
Don (1)	37	29	3+	31+	.	.	35	30	1+	34	29	3	14.6
Jerry (5)	38	36	3+	29	.	.	36	38	2+	34	34	3	15.5
SD 96024A-21	37	34	4	29	.	.	34	36	4	34	33	4	14.7
Loyal (8)	38	38+	4	26	.	.	33	39	2+	34	35	4	16.3
HiFi (8)	36	36	4	27	.	.	33	37	1+	34	34	3	15.2
SD 011315-61	39	38+	4	24	.	.	34	39	3	34	35	4	14.4
Drumlin (7)	37	35	3+	26	.	.	34	35	2+	33	33	3	15.4
Morton (7)	37	39+	3+	25	.	.	32	42+	3	33	36	3	15.9
SD 011315-15	38	37	4	25	.	.	34	40+	3	33	34	4	14.6
Morraine (2)	36	37	3+	26	.	.	34	37	3	33	34	3	15.1
Test avg. :	39	36	3	27	.	.	35	37	2				
High avg. :	45	40	5	33	.	.	40	42	4				
Low avg. :	36	29	2	24	.	.	32	30	1				
# Lsd (.05) :	1	2	1	2	.	.	1	2	1				
## TPG-value :	44	38	3	31	.	.	39	40	2				
### C.V. :	2	5	16	6	.	.	3	5	24				

* Heading, the relative difference in 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 values in a column must differ to be significantly different.

TPG-value, the minimum value required for the top performance group for the variable measured. A plus sign (+) indicates values within a column that qualify for the top performance group.

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

Table 6. Origin, variety traits, and disease reactions for oat entries tested in 2005.

Variety (Hdg.)*	Origin	Traits			Disease Reactions				PVP** Status
		(Hdg.)*	Ldg Res	Grain Color	Smut+	Rust		Red Leaf+	
						Stem+	Crown		
Don	IL-85	1	Good	White	R	MS	S	MR	No
Reeves	SD-02	2	Good	White	MR	S	MS	MS	No
Morraine	WI-01	2	Good	Yellow	R	MR	R	MS	Yes
Hyttest	SD-86	4	Good	Lt.Crea	MR	MS	S	S	No
Jerry	ND-94	5	Good	White	MS	MS	S	MS	Yes
Morton	ND-01	7	Good	White	R	MR	R	MS	Yes
Drumlin	WI-03	7	Poor	Yellow	R	MR	R	MR	Yes
Beach	ND-04	6	Good	White	R	S	MS	MS	***
Loyal	SD-00	8	Good	White	R	S	MR	S	No
HiFi	ND-01	8	Good	White	MR	R	MR	MS	Yes
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 96024A-21	SD-	-	-	-	-	-	-	-	-
SD 020883	SD-	-	-	-	-	-	-	-	-
SD 011315-15	SD-	-	-	-	-	-	-	-	-
SD 011315-59	SD-	-	-	-	-	-	-	-	-
SD 011315-61	SD-	-	-	-	-	-	-	-	-
SD 020536	SD-	-	-	-	-	-	-	-	-
SD 020701	SD-	-	-	-	-	-	-	-	-
SD 021021	SD-	-	-	-	-	-	-	-	-
SD 366-15	SD-	-	-	-	-	-	-	-	-
SD 366-36	SD-	-	-	-	-	-	-	-	-

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

+ 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 7a. Barley yield results - South Dakota East River locations, 2003-2005.

Variety (Hdg.)* - by 3-yr then year 2005 state yield averages	Location Yield Averages (BU/A) 13% moist.					
	Brookings		South Shore		Miller	
	2005	3-Yr	2005	3-Yr	2005	3-Yr
Eslick (3)	83+	104+	89	96+	63+	68+
Haxby (2)	82+	96+	96+	98+	69+	72+
Lacey (0)	79+	90	91+	90+	50	60
Excel (3)	76+	95+	83	84	54	63
Valier (4)	75	95+	87	91+	50	62
Drummond (2)	75	84	88	87	47	59
Stellar-ND (2)	70	90	88	82	44	55
Conlon (0)	61	70	85	91+	60	60
Robust (3)	68	88	76	78	41	54
Tradition (0)	80+	.	92+	.	55	.
Legacy (3)	69	.	82	.	42	.
Test avg. :	74	90	87	89	52	61
High avg. :	83	104	96	98	69	72
Low avg. :	61	70	76	78	41	54
# Lsd (.05) :	7	11	6	9	7	8
## TPG-value :	76	93	90	89	62	64
### C.V. :	7	10	5	5	9	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 value required for the top performance group for yield. A plus sign (+) indicates values within a column that qualify for the top performance group.

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

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Table 7b. Barley yield results - South Dakota East River locations, 2003-2005 (Continued).

Variety (Hdg.)* - by 3-yr then year 2005 state yield averages	Location Yield Averages (BU/A) 13% moist.				East River Yield Averages (BU/A)		State Yield Averages (BU/A)		State Top-Yield Frequency ** (%)	
	Selby		Brown Co.		2005	3-Yr	2005	3-Yr	2005	3-Yr
	2005	3-Yr	2005	3-Yr						
Eslick (3)	80+	95+	75	87+	78	90	69	80	71	100
Haxby (2)	78+	89+	73	80	80	87	70	77	71	86
Lacey (0)	79+	93+	85+	94+	77	85	66	75	57	57
Excel (3)	74	93+	80+	88+	73	85	64	74	29	71
Valier (4)	67	87+	66	81	69	83	62	74	14	71
Drummond (2)	78+	90+	76	81	73	80	63	70	14	29
Stellar-ND (2)	71	90+	74	85	69	80	60	70	0	29
Conlon (0)	63	78	78+	79	69	76	56	66	33	43
Robust (3)	67	75	66	78	64	75	55	65	0	14
Tradition (0)	75+	.	83+	.	77	.	67	.	71	.
Legacy (3)	71	.	81+	.	69	.	60	.	14	.
Test avg. :	73	88	76	84						
High avg. :	80	95	85	94						
# Lsd (.05) :	5	11	8	8						
## TPG-value :	75	84	77	86						
### C.V. :	5	6	7	7						

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

** Percentage of test locations where a variety was in the top-yield group.

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

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

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Table 7c. Barley yield results - South Dakota West River locations, 2003-2005.

Variety (Hdg.)* - by 3-yr then year 2005 state yield averages	Location Yield Averages (BU/A) 13%				West River Yield Averages (BU/A)		State Yield Averages (BU/A)		State Top-Yield Frequency ** (%)	
	Wall		Ralph		2005	3-Yr	2005	3-Yr	2005	3-Yr
	2005	3-Yr	2005	3-Yr						
Eslick (3)	33+	49+	60+	58+	47	54	69	80	71	100
Haxby (2)	30	51+	59+	50+	45	51	70	77	71	86
Lacey (0)	26	43	55	52+	41	48	66	75	57	57
Excel (3)	25	44+	56	54+	41	49	64	74	29	71
Valier (4)	30	47+	59+	56+	45	52	62	74	14	71
Drummond (2)	25	43	51	48+	38	46	63	70	14	29
Stellar-ND (2)	18	38	53	48+	36	43	60	70	0	29
Conlon (0)	40+	50+	6~	35+	23	43	56	66	33	43
Robust (3)	23	42	47	42+	35	42	55	65	0	14
Tradition (0)	18	.	63+	.	41	.	67	.	71	.
Legacy (3)	21	42	54	56+	38	49	60	.	14	.
Test avg. :	26	45	51	50						
High avg. :	40	51	63	58						
Low avg. :	18	38	6	35						
# Lsd (.05) :	8	7	6	NS^						
## TPG-value :	32	44	57	35						
### C.V. :	21	13	8	11						

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

** Percentage of test locations where a variety was in the top-yield group.

~ All four plots of this variety was partially eaten by raccoons prior to harvest.

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

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

^ Values within a column do not differ significantly (.05 level of probability).

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Table 8a. Barley averages for bushel weight (BW), height (HT), lodging (LDG), and grain protein (PRT) - South Dakota East River locations for 2005.

Variety (Hdg.)* - by state BW average	Location Averages - BW, HT, LDG								
	Brookings			South Shore			Miller		
	BW lb	HT in	LDG**	BW lb	HT in	LDG**	BW lb	HT in	LDG**
Haxby (2)	51+	33	4	51+	33	4	50+	26+	3
Valier (4)	49	31	3	51+	32	4	48+	27+	1+
Conlon (0)	47	33	3	51+	32	5	47	27+	4
Tradition (0)	46	35+	3	49+	35+	5	46	27+	2+
Lacey (0)	48	34+	2+	49+	35	4	44	25+	1+
Eslick (3)	49	30	3	48	32	5	46	25+	2+
Drummond (2)	46	35+	2+	48	35+	4	43	26+	1+
Robust (3)	47	36+	3	49+	37+	4	44	28+	2+
Excel (3)	46	34+	3	47	35+	4	43	26+	1+
Stellar-ND (2)	46	32	1+	47	33	4	42	25+	1+
Legacy (3)	45	35+	3	45	35+	5	41	27+	1+
Test avg. :	47	33	3	49	34	4	45	26	2
High avg. :	51	36	4	51	37	5	50	28	4
Low avg. :	45	30	1	45	32	4	41	25	1
# Lsd (.05) :	1	2	1	2	2	NS^	2	NS^	1
## TPG-value :	50	34	2	49	35	.	48	25	2
### C.V. :	2	5	23	2	5	13	2	9	21

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

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

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 the variable measured. A plus sign (+) indicates values within a column that qualify for the top performance group.

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

^ Values within a column do not differ significantly (.05 level of probability).

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

Variety (Hdg.)* - by state BW average	Location Averages - BW, HT, LDG						East River Averages - BW, HT, LDG, PRT				State Averages - BW, HT, LDG, PRT			
	Selby			Brown Co.			BW lb	HT in	LDG**	PRT %	Buwt	HT in	LDG**	PRT %
	BW lb	HT in	LDG**	BW lb	HT in	LDG**								
Haxby (2)	49+	29+	2+	48+	35+	4	50	31	3	12.8	49	31	3	14.1
Valier (4)	48+	27+	2+	47+	32	3+	49	30	2	13.7	48	30	2	15.0
Conlon (0)	46	26	3+	49+	33+	3+	48	30	3	13.2	47	30	3	14.4
Tradition (0)	47+	29+	2+	46	35+	3+	47	32	3	12.8	46	32	2	14.0
Lacey (0)	48+	28+	2+	46	32	2+	47	31	2	12.8	46	31	2	14.1
Eslick (3)	47+	29+	2+	46	35+	3+	47	30	3	12.7	46	30	2	14.1
Drummond (2)	48+	30+	2+	45	34+	2+	46	32	2	12.9	46	32	2	14.1
Robust (3)	47+	28+	3+	44	35+	3+	46	33	3	13.4	45	33	2	14.3
Excel (3)	47+	28+	3+	44	33+	3+	45	31	3	12.7	44	31	2	14.0
Stellar-ND (2)	46	28+	2+	44	33+	3+	45	30	2	12.7	44	31	2	14.0
Legacy (3)	46	30+	3+	44	34+	3+	44	32	3	12.9	43	32	2	14.4
Test avg. :	47	28	2	46	33	3								
High avg. :	49	30	3	49	35	4								
Low avg. :	46	26	2	44	32	2								
# Lsd (.05) :	2	3	NS^	2	2	1								
## TPG-value :	47	27	3	47	33	3								
### C.V. :	3	7	26	4	4	17								

* Heading, the relative difference in 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.

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 the variable measured. A plus sign (+) indicates values within a column that qualify for the top performance group.

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

^ Values within a column do not differ significantly (.05 level of probability).

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Table 8c. Barley averages for bushel weight (BW), height (HT), lodging (LDG) and grain protein (PRT) - South Dakota West River locations for 2005.

Variety (Hdg.)* - by state BW average	Location Yield Averages - BW, HT, LDG						Western Yield Averages - BW, HT, LDG, PRT				State Yield Averages - BW, HT, LDG, PRT			
	Wall			Ralph			BW lb	HT in	LDG**	PRT %	BW lb	HT in	LDG**	PRT %
	BW lb	HT in	LDG**	BW lb	HT in	LDG**								
Haxby (2)	43+	33	1+	47+	.	1+	45	33	1	17.4	49	31	3	14.1
Valier (4)	42+	30	1+	48+	.	1+	45	30	1	18.2	48	30	2	15.0
Conlon (0)	44+	33	1+	.	.	1+	44	33	1	17.4	47	30	3	14.4
Tradition (0)	41+	35+	1+	47+	.	1+	44	35	1	17.0	46	32	2	14.0
Lacey (0)	41+	33	1+	47+	.	1+	44	33	1	17.2	46	31	2	14.1
Eslick (3)	40+	32	1+	45	.	1+	42	32	1	17.7	46	30	2	14.1
Drummond (2)	42+	36+	1+	46	.	1+	44	36	1	17.0	46	32	2	14.1
Robust (3)	38	36+	1+	46	.	1+	42	36	1	16.6	45	33	2	14.3
Excel (3)	37	33	1+	45	.	1+	41	33	1	17.3	44	31	2	14.0
Stellar-ND (2)	37	35+	1+	45	.	1+	41	35	1	17.3	44	31	2	14.0
Legacy (3)	38	35+	1+	43	.	1+	40	35	1	18.1	43	32	2	14.4
Test avg. :	40	34	1	46	.	1								
High avg. :	44	36	1	48	.	1								
Low avg. :	37	30	1	43	.	1								
# Lsd (.05) :	4	2	0	1	.	0								
## TPG-value :	40	34	1	47	.	1								
### C.V. :	7	5	0	2	.	0								

* Heading, the relative difference in 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.

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 the variable measured. A plus sign (+) indicates values within a column that qualify for the top performance group.

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

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Table 9. Origin, variety traits, and disease reactions for oat entries tested in 2005.

Variety	Origin	Traits				Disease Reactions				PVP** Status
		(Hdg.)*	Ldg # Res	Grain Use	Awn## Texture	Loose Smut+	Stem Rust+	Blot+		
								Spot	Net	
Conlon	ND-96	0	G	Malt	SS	S	S	MS	MR	Yes
Haxby	MT-02	2	F	Feed	R	S	-	-	-	No
Eslick	MT-04	3	F	Feed	R	S	-	-	-	***
Valier	MT-99	4	F	Feed	R	S	-	-	-	Yes
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	***
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

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

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

S= smooth and SS= semi-smooth 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 certified seed.

*** PVP application pending or anticipated.

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Table 10a. Hard Red Winter Wheat yield results - South Dakota West River locations, 2003-2005.

Variety (Hdg.)* - by 3-yr then year 2005 state yield averages	Location Yield Averages (BU/A) at 13% moist.							
	Wall		Hayes		Sturgis		Kennebec	
	2005	3-Yr	2005	3-Yr	2005	3-Yr	2005	3-Yr
Millennium (4)	56+	48+	65	.	33+	36+	65+	.
SD97059-2	51	49+	52	.	28	32+	57	.
Wahoo (3)	54+	50+	60	.	29	34+	58	.
SD97538	53	49+	52	.	31	35+	55	.
SD98102	56+	50+	46	.	30	35+	48	.
Jerry (6)	54+	50+	56	.	24	30+	58	.
Jagalene (3)	47	45+	61	.	28	34+	64+	.
SD97380-2	54+	45+	61	.	30	33+	57	.
Harding (5)	46	47+	56	.	25	30+	52	.
SD97W609	48	44+	64	.	26	31+	57	.
Arapahoe (3)	45	41	61	.	29	31+	52	.
Wesley (2)	43	45+	62	.	27	31+	61+	.
Alliance (2)	52	47+	57	.	28	34+	57	.
Wendy-W (-1)	45	44+	53	.	29	32+	58	.
Tandem (4)	43	45+	67	.	29	32+	61+	.
Trego-W (3)	50	41	57	.	31	35+	55	.
Crimson (5)	46	46+	54	.	26	30+	56	.
Nekota (2)	46	44+	43	.	30	33+	45	.
Expedition (0)	42	43+	67	.	29	32+	60	.
NE01643	51	.	69	.	27	.	70+	.
SD96240-3-1	48	.	66	.	31	.	69+	.
Hatcher (2)	48	.	59	.	36+	.	63+	.
SD01W064	64+	.	56	.	29	.	57	.
Overley (0)	40	.	79+	.	29	.	68+	.
SD01122	44	.	49	.	26	.	55	.
Harry (5)	41	.	54	.	29	.	50	.
SD00032	42	.	66	.	26	.	56	.
NE99533-4	46	.	51	.	33+	.	59	.
SD01104	45	.	50	.	30	.	55	.
SD00W024	42	.	39	.	22	.	45	.
Test avg. :	48	46	58	.	29	33	57	.
High avg. :	64	50	79	.	36	36	70	.
Low avg. :	40	41	39	.	22	30	45	.
# Lsd (.05) :	10	7	8	.	3	NS^	9	.
## TPG-value :	54	43	71	.	33	30	61	.
### C.V. :	15	12	9	.	8	12	11	.

* 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 value required for the top performance group for yield. A plus sign (+) indicates values within a column that qualify for the top performance group.

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

^ Values within a column do not differ significantly (.05 level of probability).

Table 10b. Hard Red Winter Wheat yield results - South Dakota West River locations
(Continued).

Variety (Hdg.)* - by 3-yr then year 2005 state yield averages	Location Yield Averages (BU/A) at 13% moist.						West River Yield Averages (BU/A)		State Yield Averages (BU/A)	
	Martin		Oelrichs		Tripp Co.		2005	3-Yr	2005	3-Yr
	2005	3-Yr	2005	3-Yr	2005	3-Yr				
Millennium (4)	65+	.	48	.	49	51+	54	45	56	56
SD97059-2	59	.	52	.	57+	52+	51	44	54	56
Wahoo (3)	64	.	50	.	49	50+	52	45	53	55
SD97538	59	.	52	.	48	51+	50	45	51	55
SD98102	55	.	50	.	58+	52+	49	46	50	55
Jerry (6)	60	.	55+	.	46	44	50	41	52	54
Jagalene (3)	72+	.	48	.	52+	53+	53	44	52	53
SD97380-2	58	.	52	.	52+	49+	52	42	52	53
Harding (5)	55	.	49	.	52+	48+	48	42	49	53
SD97W609	66+	.	50	.	56+	51+	52	42	51	52
Arapahoe (3)	57	.	46	.	48	47+	48	40	51	51
Wesley (2)	68+	.	41	.	43	42	49	39	50	51
Alliance (2)	60	.	50	.	48	47+	50	43	50	51
Wendy-W (-1)	58	.	47	.	51	50+	49	42	50	51
Tandem (4)	59	.	47	.	48	47+	51	41	50	50
Trego-W (3)	59	.	50	.	52+	51+	51	42	49	50
Crimson (5)	53	.	51	.	48	44	48	40	49	50
Nekota (2)	43	.	46	.	45	47+	43	41	44	50
Expedition (0)	66+	.	50	.	43	43	51	39	50	49
NE01643	67+	.	49	.	51	.	55	.	57	.
SD96240-3-1	71+	.	61+	.	54+	.	57	.	55	.
Hatcher (2)	72+	.	62+	.	50	.	56	.	54	.
SD01W064	63	.	53	.	60+	.	55	.	52	.
Overley (0)	67+	.	41	.	43	.	52	.	51	.
SD01122	55	.	54	.	54+	.	48	.	50	.
Harry (5)	58	.	58+	.	46	.	48	.	48	.
SD00032	62	.	44	.	48	.	49	.	48	.
NE99533-4	61	.	42	.	48	.	49	.	48	.
SD01104	56	.	53	.	48	.	48	.	47	.
SD00W024	43	.	51	.	51	.	42	.	44	.
Test avg. :	60	.	50	.	50	48				
High avg. :	72	.	62	.	60	53				
Low avg. :	43	.	41	.	43	42				
# Lsd (.05) :	7	.	7	.	8	7				
## TPG-value :	65	.	55	.	52	46				
### C.V. :	8	.	10	.	11	10				

* 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 value required for the top performance group for yield. A plus sign (+) indicates values within a column that qualify for the top performance group.

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

Table 10c. Hard Red Winter Wheat yield results - South Dakota East River locations, 2003-2005.

Variety (Hdg.)* - by 3-yr then year 2005 state yield averages	Location Yield Averages (BU/A) 13% moist.								East River Yield		State Yield Averages	
	Brookings		Highmore		Platte		Pierre		2005	3-Yr	2005	3-Yr
	2005	3-Yr	2005	3-Yr	2005	3-Yr	2005	3-Yr				
Millennium (4)	54+	82+	71+	67+	47+	59+	68+	51+	60	65	56	56
SD97059-2	49+	82+	73+	70+	38	54+	74+	54+	59	65	54	56
Wahoo (3)	43	76+	72+	69+	41	56+	64	51+	55	63	53	55
SD97538	39	76+	66	65+	35	54+	67+	53+	52	62	51	55
SD98102	30	68	67	66+	49+	63+	64	51+	53	62	50	55
Jerry (6)	53+	82+	66	67+	40	53	64	49+	56	63	52	54
Jagalene (3)	20	64	62	64+	42	54+	74+	55+	50	59	52	53
SD97380-2	48+	76+	69+	67+	37	52	56	49+	53	61	52	53
Harding (5)	43	75+	66	65+	37	55+	62	49+	52	61	49	53
SD97W609	31	67	68+	64+	33	55+	62	50+	49	59	51	52
Arapahoe (3)	47	70	71+	67+	36	51	66	50+	55	60	51	51
Wesley (2)	35	71	62	63	39	55+	64	49+	50	60	50	51
Alliance (2)	32	62	68+	64+	39	53	64	51+	51	58	50	51
Wendy-W (-1)	38	71	68+	62	26	49	77+	52+	52	59	50	51
Tandem (4)	36	65	64	63	40	51	55	48+	49	57	50	50
Trego-W (3)	20	59	63	61	32	51	66	50+	45	55	49	50
Crimson (5)	33	66	66	60	41	51	62	52+	51	57	49	50
Nekota (2)	26	64	58	60	38	53	59	48+	45	56	44	50
Expedition (0)	35	68	66	60	32	51	64	49+	49	57	50	49
NE01643	53+	.	70+	.	45+	.	75+	.	61	.	57	.
SD96240-3-1	40	.	68+	.	36	.	63	.	52	.	55	.
Hatcher (2)	27	.	72+	.	34	.	68+	.	50	.	54	.
SD01W064	26	.	62	.	42	.	65	.	49	.	52	.
Overley (0)	32	.	60	.	30	.	67+	.	47	.	51	.
SD01122	42	.	67	.	40	.	61	.	53	.	50	.
Harry (5)	32	.	65	.	28	.	64	.	47	.	48	.
SD00032	43	.	51	.	39	.	55	.	47	.	48	.
NE99533-4	24	.	62	.	36	.	69+	.	48	.	48	.
SD01104	32	.	52	.	33	.	59	.	44	.	47	.
SD00W024	37	.	61	.	38	.	56	.	48	.	44	.
Test avg. :	37	71	65	64	37	54	64	51				
High avg. :	54	82	73	70	49	63	77	55				
Low avg. :	20	59	51	60	26	49	55	48				
# Lsd (.05) :	6	10	5	6	6	9	10	NS^				
## TPG-value :	48	72	68	64	43	54	67	48				
### C.V. :	11	12	6	7	12	11	11	14				

* 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 value required for the top performance group for yield. A plus sign (+) indicates values within a column that qualify for the top performance group.

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

^ Values within a column do not differ significantly (.05 level of probability).

Table 11a. Hard Red Winter Wheat averages for bushel weight (BW) and height (HT) - South Dakota West River locations for 2005.

Variety (Hdg.)* - by state BW average	Location Averages- BW, HT							
	Wall		Hayes		Sturgis		Kennebec	
	BW lb	HT in	BW lb	HT in	BW lb	HT in	BW lb	HT in
Tandem (4)	59+	29	63+	.	60	.	61+	.
Millennium (4)	58	25	62+	.	61+	.	62+	.
NE01643	58	28	63+	.	60	.	61+	.
SD01W064	61+	28	61	.	59	.	60+	.
Overley (0)	57	27	64+	.	63+	.	62+	.
Crimson (5)	59+	27	60	.	56	.	60+	.
Harding (5)	57	31	61	.	56	.	60+	.
SD00032	58	29	61	.	59	.	61+	.
Wendy-W (-1)	60+	21	58	.	62+	.	57	.
Jerry (6)	58	31	61	.	58	.	60+	.
Jagalene (3)	60+	25	59	.	61+	.	58	.
SD97W609	58	25	61	.	60	.	58	.
SD98102	59+	27	59	.	59	.	57	.
Expedition (0)	58	25	59	.	60	.	57	.
NE99533-4	59+	25	59	.	59	.	57	.
SD96240-3-1	56	28	59	.	59	.	59	.
SD00W024	58	27	55	.	55	.	59	.
SD97538	58	24	59	.	57	.	57	.
Trego-W (3)	61+	22	58	.	59	.	55	.
SD01122	58	28	58	.	58	.	59	.
Arapahoe (3)	56	27	59	.	60	.	56	.
Hatcher (2)	58	25	59	.	60	.	57	.
SD97380-2	57	26	59	.	59	.	55	.
SD97059-2	57	29	57	.	58	.	57	.
Nekota (2)	59+	26	56	.	61+	.	54	.
Alliance (2)	58	25	57	.	60	.	54	.
SD01104	57	29	55	.	59	.	56	.
Wesley (2)	57	26	57	.	58	.	55	.
Wahoo (3)	56	29	56	.	56	.	53	.
Harry (5)	55	27	54	.	56	.	53	.
Test avg. :	58	27	59	.	59	.	58	.
High avg. :	61	31	64	.	63	.	62	.
Low avg. :	55	21	54	.	55	.	53	.
# Lsd (.05) :	2	.	2	.	2	.	2	.
## TPG-value :	59	.	62	.	61	.	60	.
### C.V. :	2	.	3	.	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 value required for the top performance group for the variable measured. A plus sign (+) indicates values within a column that qualify for the top performance group.

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

Table 11b. Hard Red Winter Wheat averages for bushel weight (BW), height (HT), and grain protein (PRT) - South Dakota West River locations (Continued).

Variety (Hdg.)* - by state BW average	Location Averages- BW and HT						West River Averages - BW, HT, PRT			State Averages - BW, HT, PRT		
	Martin		Oelrichs		Tripp Co.		BW lb	HT in	PRT %	BW lb	HT in	PROT %
	BW lb	HT in	BW lb	HT in	BW lb	HT in						
Tandem (4)	61+	.	62+	.	61+	31	61	30	13.1	60	34	12.9
Millennium (4)	61+	.	61+	.	61+	32	61	29	12.7	60	33	12.6
NE01643	60+	.	61+	.	60	32	60	30	12.6	60	34	12.6
SD01W064	61+	.	63+	.	62+	31	61	30	11.7	60	33	11.7
Overley (0)	61+	.	61+	.	61+	28	61	28	13.6	60	30	13.4
Crimson (5)	59	.	62+	.	62+	35	60	31	13.6	59	35	13.3
Harding (5)	60+	.	62+	.	61+	32	60	32	13.4	59	35	12.9
SD00032	61+	.	60	.	61+	33	60	31	13.9	59	35	13.7
Wendy-W (-1)	60+	.	62+	.	60	27	60	24	13.2	59	28	13.1
Jerry (6)	60+	.	61+	.	59	34	60	33	13.6	59	36	13.4
Jagalene (3)	62+	.	63+	.	63+	29	61	27	12.6	59	30	12.5
SD97W609	60+	.	62+	.	61+	28	60	27	12.6	59	29	12.6
SD98102	60+	.	60	.	62+	31	59	29	13.2	59	33	12.9
Expedition (0)	59	.	61+	.	60	27	59	26	12.8	59	30	12.7
NE99533-4	60+	.	62+	.	61+	26	60	26	13.3	58	28	13.2
SD96240-3-1	59	.	61+	.	60	30	59	29	13.1	58	31	12.9
SD00W024	59	.	63+	.	63+	31	59	29	13	58	34	12.8
SD97538	59	.	61+	.	61+	29	59	27	12.8	58	31	12.6
Trego-W (3)	57	.	62+	.	63+	27	59	25	12.7	58	30	12.6
SD01122	59	.	61+	.	60	31	59	30	13.2	58	34	13.0
Arapahoe (3)	56	.	59	.	60	31	58	29	13.2	58	33	12.9
Hatcher (2)	60+	.	61+	.	61+	28	59	27	11.7	58	29	11.8
SD97380-2	56	.	61+	.	59	27	58	27	12.9	58	32	12.8
SD97059-2	58	.	60	.	59	31	58	30	13	58	35	12.9
Nekota (2)	54	.	61+	.	60	29	58	28	12.4	57	30	12.4
Alliance (2)	56	.	61+	.	60	27	58	26	11.7	57	31	11.5
SD01104	57	.	61+	.	58	34	58	32	12.8	57	34	12.8
Wesley (2)	57	.	60	.	58	27	57	27	13.5	56	30	13.5
Wahoo (3)	55	.	59	.	59	29	56	29	12.8	56	32	12.8
Harry (5)	54	.	59	.	57	30	55	29	11.7	54	31	11.6
Test avg. :	59	.	61	.	60	30						
High avg. :	62	.	63	.	63	35						
Low avg. :	54	.	59	.	57	26						
# Lsd (.05) :	2	.	2	.	2	.						
## TPG-value :	60	.	61	.	61	.						
### C.V. :	2	.	2	.	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 value required for the top performance group for the variable measured. A plus sign (+) indicates values within a column that qualify for the top performance group.

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

Table 11c. Hard Red Winter Wheat averages for bushel weight (BW), height (HT), and grain protein (PRT) - South Dakota East River locations for 2005.

Variety (Hdg.)* - by state BW average	Location Averages- BW and HT								East River Averages - BW, HT, PRT			State Averages - BW, HT, PRT		
	Brookings		Highmore		Platte		Pierre		BW lb	HT in	PRT %	BW lb	HT in	PRT %
	Bw lb	HT in	Bw lb	HT in	Bw lb	HT in	Bw lb	HT in						
Tandem (4)	49	34+	63+	37	61+	.	61+	40	59	37	12.5	60	34	12.9
Millennium (4)	53+	35+	62+	36	61+	.	60	37	59	36	12.3	60	33	12.6
NE01643	52+	34+	61	38	61+	.	61+	40	59	37	12.5	60	34	12.6
SD01W064	46	33+	62+	37	61+	.	61+	38	57	36	11.5	60	33	11.7
Overley (0)	45	29	61	33	59	.	61+	33	57	32	13.1	60	30	13.4
Crimson (5)	49	34+	63+	36	62+	.	62+	42	59	37	12.2	59	35	13.3
Harding (5)	51+	35+	62+	38	61+	.	61+	40	59	38	11.6	59	35	12.9
SD00032	50+	35+	60	40	60	.	61+	40	58	38	13.2	59	35	13.7
Wendy-W (-1)	48	27	62+	31	60	.	62+	32	58	30	12.8	59	28	13.1
Jerry (6)	53+	35+	60	37	60	.	59	43	58	38	13	59	36	13.4
Jagalene (3)	41	29	61	33	60	.	62+	35	56	32	12.3	59	30	12.5
SD97W609	47	27	61	31	58	.	59	33	56	30	12.6	59	29	12.6
SD98102	48	33+	61	35	61+	.	60	37	57	35	12.1	59	33	12.9
Expedition (0)	48	30	62+	34	59	.	60	33	57	32	12.3	59	30	12.7
NE99533-4	43	28	61	30	60	.	60	33	56	30	12.9	58	28	13.2
SD96240-3-1	49	30	61	32	60	.	59	34	57	32	12.2	58	31	12.9
SD00W024	52+	34+	61	37	55	.	60	39	57	37	11.9	58	34	12.8
SD97538	49	33+	60	37	60	.	59	34	57	35	12.3	58	31	12.6
Trego-W (3)	41	29	61	34	61+	.	61+	37	56	33	12.5	58	30	12.6
SD01122	51+	35+	61	36	58	.	58	39	57	37	12.6	58	34	13.0
Arapahoe (3)	52+	32	61	36	59	.	59	38	58	35	12	58	33	12.9
Hatcher (2)	44	29	61	33	58	.	59	32	55	31	12.3	58	29	11.8
SD97380-2	50+	34+	61	37	59	.	59	38	57	36	12.6	58	32	12.8
SD97059-2	51+	34+	60	37	58	.	59	43	57	38	12.5	58	35	12.9
Nekota (2)	43	30	61	33	61+	.	61+	34	56	32	12.5	57	30	12.4
Alliance (2)	45	30	60	36	58	.	58	36	55	34	10.8	57	31	11.5
SD01104	48	33+	56	33	57	.	58	40	55	35	12.7	57	34	12.8
Wesley (2)	45	31	59	31	58	.	57	34	55	32	13.4	56	30	13.5
Wahoo (3)	48	33+	59	35	57	.	57	36	55	35	12.7	56	32	12.8
Harry (5)	43	32	56	34	55	.	56	34	53	33	11.3	54	31	11.6
Test avg. :	48	32	61	35	59	.	60	37						
High avg. :	53	35	63	40	62	.	62	43						
Low avg. :	41	27	56	30	55	.	56	32						
# Lsd (.05) :	3	2	1	.	1	.	1	.						
## TPG-value :	50	33	62	.	61	.	61	.						
### C.V. :	5	4	1	.	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 value required for the top performance group for the variable measured. A plus sign (+) indicates values within a column that qualify for the top performance group.
 ### Coef. of variation, a measure of trial experimental error.

Table 12. Origin, variety traits, and disease reactions for winter wheat entries tested for 2005.

Variety	Origin	(Hdg.)*	Ldg Res	End-use Qlty	Winter Hardy Rtg	Cole-optile Pct##	Wheat Steak Mosaic	Tan-spot	Rust			PVP Status
									Stripe	Leaf	Stem	
Wendy-W	SD-04	-1	E	GN	E	67	MS	R	MR	MS	MR	***
Expedition	SD-02	0	F	EB	G-E	88	S	MS	MS	MS	R	Yes
Overley	KS-03	0	G	GB	F-G	.	MR	MR	.	R	MR	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	AB	G-E	79	S	MR	MR	MS	R	No
Hatcher	CO-04	2	F	EB	.	.	S	.	MR	MR	MR	.
Arapahoe	NE-88	3	F	GB	G-E	83	S	S	MS	MR	MR	Yes
Trego-W	KS-99	3	F-G	EB	F-G	80	S	MS	S	MR	R	Yes
Wahoo	NE/WY-01	3	G	.	G	91	S	.	MR	S	R	Yes
Jagalene	AW-02	3	E	.	G	92	MS	MR	MR	MR	MR	Yes
Millennium	NE-99	4	G	.	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-03	5	F	AB	.	.	S	.	.	MR	MR	.
Jerry	ND-01	6	F	GB	E	92	MS	.	MR	S	R	No
Experimental lines:												
NE99533-4	.	.	.	.	.	.	.	.	.	.	.	.
NE01643	.	.	.	.	.	.	.	.	.	.	.	.
SD00032	.	.	.	.	.	.	.	.	.	.	.	.
SD01104	.	.	.	.	.	.	.	.	.	.	.	.
SD01122	.	.	.	.	.	.	.	.	.	.	.	.
SD96240-3-1	.	.	.	.	.	.	.	.	.	.	.	.
SD97059-2	.	.	.	.	.	.	.	.	.	.	.	.
SD97380-2	.	.	.	.	.	.	.	.	.	.	.	.
SD97538	.	.	.	.	.	.	.	.	.	.	.	.
SD98102	.	.	.	.	.	.	.	.	.	.	.	.
SD97W609	.	.	.	.	.	.	.	.	.	.	.	.
SD00W024	.	.	.	.	.	.	.	.	.	.	.	.
SD01W064	.	.	.	.	.	.	.	.	.	.	.	.

* 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 - South Dakota East River locations, 2005.

Variety (Mat.)* - by state yield average	Location Yield Averages (BU/A) at 13% moist.		East River Yield Averages (BU/A)	State Yield Averages (BU/A)
	South Shore	Selby		
SW Salute \$ (E)	56+	53+	55	41
Cooper \$ (L)	54+	54+	54	40
SW Midas \$ (E)	48	52+	50	38
Tudor \$ (M)	52+	48	50	38
CDC Mozart (M)	47	56+	52	38
Marquee (-)	50	53+	52	38
Eclipse \$ (M)	51+	48	50	37
Stratus \$ (M)	44	52+	48	36
DS-Admiral \$ (E)	40	47	44	35
Integra (E)	43	49	46	35
Majoret \$ (E)	47	45	46	35
SW Circus \$ (E)	44	46	45	33
CEB4133 (-)	45	43	44	33
Cruiser (M)	46	41	44	33
Camry \$ (M)	38	47	43	32
Topeka \$ (E)	41	42	42	32
Grande \$ (M)	46	40	43	30
Carneval \$ (M)	40	40	40	30
AP-18 (-)	40	40	40	29
CDC Montero (M)	36	46	41	29
PRO 011-3172 (-)	34	34	34	28
Arvika (L)	.	29	.	.
Forager (-)	.	36	.	.
Journey (-)	.	33	.	.
40-10 Magda (L)	.	33	.	.
Test avg. :	45	44		
High avg. :	56	56		
Low avg. :	34	29		
# Lsd (.05) :	5	6		
## TPG-value :	51	50		
### C.V. :	8	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.

Bolded and red type indicates revision since initial printing in September 05.

Table 13b. Field pea yield results - South Dakota West River locations, 2005.

Variety (Mat.)* - by state yield average	Location Yield Averages (BU/A)		West River Yield Averages (BU/A)	State Yield Averages (BU/A)
	at 13% moist.			
	Wall	Hayes		
SW Salute \$ (E)	32+	21+	27	41
Cooper \$ (L)	32+	19+	26	40
SW Midas \$ (E)	33+	17	25	38
Tudor \$ (M)	31+	21+	26	38
CDC Mozart (M)	32+	16	24	38
Marquee (-)	30+	19+	25	38
Eclipse \$ (M)	33+	17	25	37
Stratus \$ (M)	30+	19+	25	36
DS-Admiral \$ (E)	34+	20+	27	35
Integra (E)	32+	16	24	35
Majoret \$ (E)	31+	16	24	35
SW Circus \$ (E)	27	16	22	33
CEB4133 (-)	31+	14	23	33
Cruiser (M)	30+	14	22	33
Camry \$ (M)	30+	12	21	32
Topeka \$ (E)	30+	15	23	32
Grande \$ (M)	20	13	17	30
Carneval \$ (M)	27	14	21	30
AP-18 (-)	24	13	19	29
CDC Montero (M)	23	12	18	29
PRO 011-3172 (-)	30+	12	21	28
Arvika (L)	21	13	17	.
Forager (-)	24	17	21	.
Journey (-)	21	13	17	.
40-10 Magda (L)	20	12	16	.
Test avg. :	28	16		
High avg. :	34	21		
Low avg. :	20	12		
# Lsd (.05) :	4	3		
## TPG-value :	30	18		
### C.V. :	11	12		

* 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.

Bolded and red type indicates revision since initial printing in September 05.

Table 14a. Field pea averages for bushel weight (BW), height (HT), lodging (LDG), and grain protein (PRT) - South Dakota East River locations.

Variety (Mat.)* - by state BW average	Location Averages - BW, HT, LDG						East River Averages - BW, HT, LDG, PRT				State Averages - BW, HT, LDG		
	South Shore			Selby			BW lb	HT in	LDG**	PRT %	BW lb	HT in	LDG**
	BW lb	HT in	LDG**	BW lb	HT in	LDG**							
Majoret \$ (E)	67+	.	.	63+	.	.	65	.	.	26.8	64	21	2
CDC Mozart (M)	67+	.	.	63+	.	.	65	.	.	24.4	64	20	3
SW Circus \$ (E)	65+	.	.	64+	.	.	65	.	.	24.5	63	20	1
Cruiser (M)	67+	.	.	62+	.	.	64	.	.	26.8	63	22	2
CDC Montero (M)	65+	.	.	64+	.	.	64	.	.	23.6	63	20	3
SW Midas \$ (E)	65+	.	.	64+	.	.	64	.	.	23.2	63	22	1
Topeka \$ (E)	64	.	.	64+	.	.	64	.	.	24.5	63	19	4
Eclipse \$ (M)	65+	.	.	63+	.	.	64	.	.	25.8	63	19	1
AP-18	65+	.	.	62+	.	.	63	.	.	25.7	63	18	1
Marquee	64	.	.	64+	.	.	64	.	.	24.7	63	24	1
SW Salute \$ (E)	65+	.	.	63+	.	.	64	.	.	25.5	63	24	2
CEB4133	65+	.	.	63+	.	.	64	.	.	24.8	63	21	2
Camry \$ (M)	64	.	.	63+	.	.	64	.	.	24.7	63	16	1
Tudor \$ (M)	65+	.	.	62+	.	.	63	.	.	24.9	62	24	1
DS-Admiral \$ (E)	64	.	.	63+	.	.	64	.	.	24.0	62	23	2
PRO 011-3172	64	.	.	61	.	.	62	.	.	24.8	62	21	1
Carneval \$ (M)	64	.	.	61	.	.	63	.	.	24.6	62	19	1
Integra (E)	64	.	.	61	.	.	63	.	.	27.2	62	22	2
Stratus \$ (M)	64	.	.	62+	.	.	63	.	.	26.4	62	18	3
Cooper \$ (L)	63	.	.	63+	.	.	63	.	.	24.8	61	23	1
Grande \$ (M)	65+	.	.	63+	.	.	64	.	.	27.4	.	24	4
Arvika (L)	.	.	.	59	.	.	.	.	.	.	.	34	5
Forager	.	.	.	61	.	.	.	.	.	.	.	36	5
Journey	.	.	.	61	.	.	.	.	.	.	.	36	5
40-10 Magda (L)	.	.	.	59	.	.	.	.	.	.	.	33	5
Test avg. :	65	.	.	62	.	.	.	.	.	.	.	.	.
High avg. :	67	.	.	64	.	.	.	.	.	.	.	.	.
Low avg. :	63	.	.	59	.	.	.	.	.	.	.	.	.
# Lsd (.05) :	2	.	.	2	.	.	.	.	.	.	.	.	.
## TPG-value :	65	.	.	62	.	.	.	.	.	.	.	.	.
### C.V. :	2	.	.	2	.	.	.	.	.	.	.	.	.

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

** Lodging score: 1 = all plants erect, 3 = 50% of plants lodged at 45o-angle, 5 = all plants flat.

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 the variable measured. A plus sign (+) indicates values within a column that qualify for the top performance group.

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

Table 14b. Field pea averages for bushel weight (BW), height (HT), and lodging (LDG) - South Dakota West River locations for 2005.

Variety (Mat.)* - by state BW average	Location Yield Averages - BW, HT, LDG						Western Yield Averages			State Yield Averages -		
	Wall			Hayes			BW, HT, LDG			BW, HT, LDG		
	BW lb	HT in	LDG	BW lb	HT in	LDG	BW lb	HT in	LDG	BW lb	HT in	LDG
Majoret \$ (E)	61+	25	2+	.	18	2+	.	21	2	64	21	2
CDC Mozart (M)	61+	23	3	.	17	3	.	20	3	64	20	3
SW Circus \$ (E)	60+	24	1+	.	17	1+	.	20	1	63	20	1
Cruiser (M)	61+	25	3	.	19	2+	.	22	2	63	22	2
CDC Montero (M)	61+	24	5	.	16	1+	.	20	3	63	20	3
SW Midas \$ (E)	60+	27	1+	.	16	1+	.	22	1	63	22	1
Topeka \$ (E)	60+	24	5	.	14	3	.	19	4	63	19	4
Eclipse \$ (M)	60+	24	1+	.	14	2+	.	19	1	63	19	1
AP-18	61+	21	2+	.	15	1+	.	18	1	63	18	1
Marquee	60+	27	1+	.	21	1+	.	24	1	63	24	1
SW Salute \$ (E)	60+	27	4	62+	21	1+	61	24	2	63	24	2
CEB4133	59	26	3	.	16	2+	.	21	2	63	21	2
Camry \$ (M)	60+	18	1+	.	13	2+	.	16	1	63	16	1
Tudor \$ (M)	60+	28	1+	.	20	1+	.	24	1	62	24	1
DS-Admiral \$ (E)	60+	27	2+	61+	18	1+	60	23	2	62	23	2
PRO 011-3172	61+	25	1+	.	17	2+	.	21	1	62	21	1
Carneval \$ (M)	60+	21	1+	.	17	1+	.	19	1	62	19	1
Integra (E)	60+	25	1+	.	19	2+	.	22	2	62	22	2
Stratus \$ (M)	59	21	4	.	16	3	.	18	3	62	18	3
Cooper \$ (L)	59	26	1+	60	20	1+	59	23	1	61	23	1
Grande \$ (M)	.	25	5	.	23	3	.	24	4	.	24	4
Arvika (L)	.	42+	5	.	27+	5	.	34	5	.	34	5
Forager	59	41+	5	.	31+	5	.	36	5	.	36	5
Journey	59	42+	5	.	31+	5	.	36	5	.	36	5
40-10 Magda (L)	62+	37	5	.	29+	5	.	33	5	.	33	5
Test avg.:	60	27	3	61	19	2						
High avg.:	62	42	5	62	31	5						
Low avg.:	59	18	1	60	13	1						
# Lsd (.05):	2	4	1	1	6	1						
## TPG-value:	60	38	2	61	25	2						
### C.V.:	2	8	28	1	15	21						

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

** Lodging score: 1 = all plants erect, 3 = 50% of plants lodged at 45o-angle, 5 = all plants flat.

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 the variable measured. A plus sign (+) indicates values within a column that qualify for the top performance group.

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

Table 15. Origin, variety traits, and disease reactions for field pea entries tested in 2005.

Variety	Rel.* Mat.	Seed Color	Leaf # type	Vine ## Length	Lodging (1-5) ~	Powdery mildew **	Mycos- phaerella blight **	Fusariu Wilt **	Seed Size
Forage types:									
Arvika	L	Mottled	N	L	5	-	-	-	S
40-10 Magda	L	Mottled	N	VL	5	-	-	-	S
Grain types:									
DS-Admiral \$	E	Yellow	SL	M	3	VG	F	F	M
SW Circus \$	E	Yellow	SL	M	1	P	F	P	M
Integra	E	Yellow	SL	M	1	P	P	F	L
Majoret \$	E	Green	SL	S	1	P	F	P	L
SW Midas \$	E	Yellow	SL	M	1	VG	F	F	M
SW Salute \$	E	Yellow	SL	M	1	VG	F	P	M
Topeka \$	E	Yellow	SL	S	1	VG	F	P	M
Camry \$	M	Green	SL	S	-	VG	F	F	L
Carneval \$	M	Yellow	SL	M	1	F	F	P	M
Cruiser	M	Green	SL	M	1	P	F	P	M
Eclipse \$	M	Yellow	SL	M	1	VG	F	F	L
Grande \$	M	Yellow	N	L	-	P	F	P	M
CDC Montero	M	Green	SL	M	-	VG	F	F	M
CDC Mozart	M	Yellow	SL	S	1	VG	P	F	M
Stratus \$	M	Green	SL	S	1	VG	F	P	L
Tudor \$	M	Yellow	SL	M	-	VG	P	F	L
Cooper \$	L	Green	SL	M	-	VG	F	F	L
Forage experimentals:									
Forager	-	Green	N	L	5	-	-	-	M
Journey	-	Green	N	L	5	-	-	-	S
Grain experimentals:									
AP-18	-	Green	SL	-	-	-	-	-	-
CEB4133	-	Yellow	SL	-	-	-	-	-	-
Marquee	-	Yellow	SL	-	-	-	-	-	-
PRO 011-3172	-	Green	SL	-	-	-	-	-	-

\$ Plant breeders rights (PBR) application is pending or anticipated. Similar to plant variety (PVP) protection.

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

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

Short- S, medium- M, long- L, or very long- VL vine length.

~ 1 = all plants erect, 3 = lodging at 45-degree angle, 5 = all plants flat.

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

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

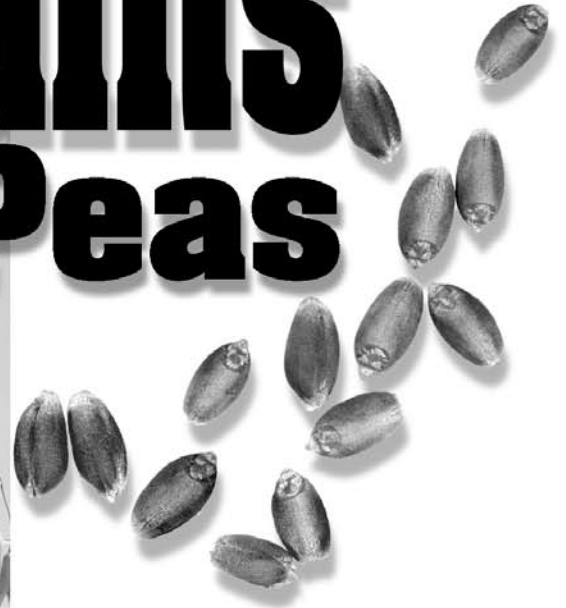


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EC 774
Revised
Annually

Small Grains and Field Peas

**2007 Variety Recommendations
(2006 Crop Performance Results)**



**Spring Wheat
Oats
Barley
Winter Wheat
Field Peas**



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>

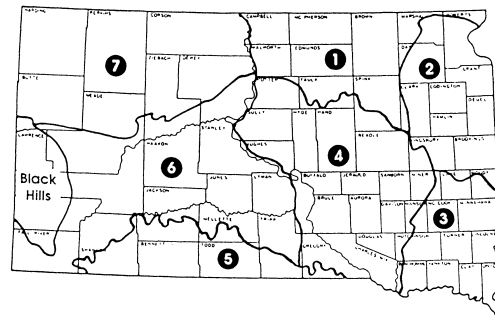
Small Grain Variety Recommendations for 2007

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				Field Pea	HRW Wheat (Fall 2005)
	HRS Wheat	Oats	Barley			
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 **	PRT %
	BW lb	HT in	LDG **	BW lb	HT in	LDG **	BW lb	HT in	LDG **				
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 45°-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 **	PRT %	BW lb	HT in	LDG **	PRT %
	BW lb	HT in	LDG **	BW lb	HT in	LDG **								
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 45°-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 **	PRT %	BW lb	HT in	LDG **	PRT %
	BW lb	HT in	LDG **	BW lb	HT in	LDG **								
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 45°-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
Hyttest (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 **	PRT %	BW lb	HT in	LDG **	PRT %
	BW lb	HT in	LDG **	BW lb	HT in	LDG **	BW lb	HT in	LDG **	BW lb	HT in	LDG **								
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 45°-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 **	PRT %	BW lb	HT in	LDG **	PRT %
	BW lb	HT in	LDG **	BW lb	HT in	LDG **								
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
Hyttest (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 45°-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
Hyttest	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 by variety 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 **	PRT %
	BW lb	HT in	LDG **	BW lb	HT in	LDG **	BW lb	HT in	LDG **				
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 45°-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 **	PRT %	BW lb	HT in	LDG **	PRT %
	BW lb	HT in	LDG **	BW lb	HT in	LDG **								
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 45°-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	PRT %	BW lb	HT in	LDG	PRT %
	BW lb	HT in	LDG								
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 Res	Grain Use	Awn## Texture	Loose Smut	Stem Rust	Blotch+		PVP** Status
								Spot	Net	
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	PRT %	BW lb	HT in	PRT %
	BW lb	HT in	BW lb	HT in	BW lb	HT in	BW lb	HT in	BW lb	HT in						
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	PRT %	BW lb	HT in	PRT %
	BW lb	HT in	BW lb	HT in						
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
				Qty	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**	PRT %	BW lb	HT in	LDG**
	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 45° 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 45° 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	PVPS 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 45° angle, 5 = all flat.

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

2008 Variety Recommendations (2007 Crop Performance Results)

Small Grains and Field Peas

SPRING WHEAT • OATS • BARLEY • WINTER WHEAT • FIELD PEAS



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

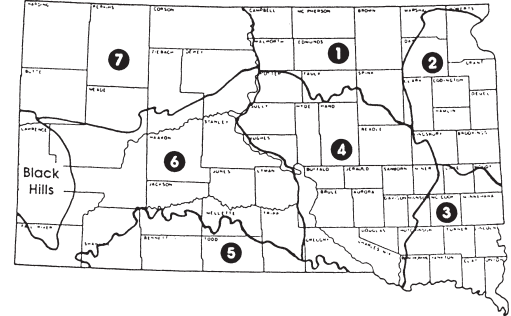
The crop performance trials are available at <http://plantsci.sdstate.edu/varietytrials/vartrial.html>

Small Grain Variety Recommendations for 2008

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:

@ Plant variety protection (PVP) received or anticipated; seed sales are restricted to classes of certified seed.
PVP non-title V status.

Crop Adaptation Areas for South Dakota (revised 1992)



SPRING WHEAT

Recommended		Acceptable/Promising	
Variety	CAA	Variety	CAA
Briggs @	all except 3	Faller @	Statewide
Freyr@	Statewide	Glenn @	Statewide
Granger @	all except 3	RB07	all except 3
Howard	Statewide		
Steele-ND @	all except 3		
Traverse @	Statewide		

OATS

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

BARLEY

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

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

Conlon	Drummond
Legacy	Lacey
Robust	Tradition

WINTER WHEAT

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

+ Exceptional crown rust resistance.

* Plant into protective cover.

A severe infection of leaf rust in 2007 greatly reduced yield.

§ Special licensing agreement is required

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

2007 South Dakota Test Results, Variety Traits, and Yield Averages

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Variety selection is an important management decision in your sound crop production program. This report contains variety recommendations or suggestions, descriptions, and yield data for the spring-seeded small grains spring wheat, oats, and barley; fall seeded 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. Since resistance changes as the disease races change; it is strongly suggested that growers inspect the reaction of a variety to diseases 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. CAAs (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 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 have not met 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 to assure genetic and variety purity.

How to use this information

It is suggested that you use this bulletin as follows for each variety you select:

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 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. Disease resistance ratings continually change; therefore, new information is reported as it becomes available. To evaluate maturity compare the relative heading (Hdg) rating of each variety to the reference variety given. The *Fusarium* head blight tolerance ratings for hard red spring wheat are also given. Note the head blight ratings show **there is presently no variety resistance to *Fusarium* head blight.** They do, however, indicate **some varieties are more tolerant of the disease than other varieties.**

3. **Evaluate each variety 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 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. Yield averages for spring wheat are reported in Tables 1a-c, for oats in Tables 4a-b, for barley in Tables 7a-b, for winter wheat in Tables 10a-b, and for field peas in Tables 13a-b. Averages for agronomic data like bushel weight, protein content levels, and plant height in spring wheat are reported in Table 2, for oats in Table 5, for barley in Table 8, for winter wheat in Table 11, and for field peas in Table 14.

The location test-trial yield average, high yield average, low yield average, least significant difference (LSD) value, yield value required to qualify for the top-performance group for yield, and

the test-trial coefficient of variation (CV) value are listed below each location yield column. In addition, the statewide test trial averages for bushel weight, height, lodging, and grain protein; the high average, the low average, the LSD value required to qualify for the top-performance group, and the test trial CV value for each of these variables are listed below each variable column. These statistics are derived from data that includes both released varieties and the new experimental lines in each test trial. This enables us to compare varieties to experimental lines that may be released in the near future.

Compare yields.

Always compare 1-year yields with other 1-year yields, and 3-year yields with other 3-year yields.

Determine if 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 or other performance variables are not shown if the CV exceeds 15%.

Use LSD values to evaluate yield differences between varieties.

The LSD value indicates if the yield of one variety is really different from another variety. 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.

For example, at Brookings, the variety Traverse averaged 44 bu/acre in 2007 compared to the variety Howard that averaged 39 bu/acre. Did the yield difference between these two varieties differ significantly? Compare the yield difference of 5 bu/acre between the two varieties (44 – 39) to the reported LSD value of 5 bu/acre. Since the yield difference of 5 bu/acre does not exceed the LSD value of 5 bu/acre; the two varieties did not differ significantly in yield at Brookings in 2007. If the yield difference had been 6 bu/acre, then the yield difference between the two varieties would have exceeded 5 bu/acre; and in that case there would have been a significant yield difference between the two varieties.

Use the LSD value to determine the top performance group (TPG) of entries for each location.

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 spring wheat the top yielding entry at Brookings for 2007 was the experimental line SD 3944 that averaged 45 bu/acre (Table 1a). Subtracting 5 bu/acre (the rounded-off LSD value) from the highest yield entry of 45 bu/acre equals 40 bu/acre. Therefore, all varieties listed in that column yielding more than 40 bushels are in the TPG. However, since the LSD values and reported yield averages are rounded off to the nearest whole bushel we can say that 40 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 2007 yield average of 40 bu/acre or higher are in the TPG for yield.

The TPG of varieties for other performance variables like bushel weight, plant height, lodging score, and grain protein can

also be easily identified in each performance table. The TPG value for yield, bushel weight, height, and grain protein content are minimum TPG values because the reported LSD value is subtracted from the highest numerical average within a column where high values are wanted, such as high yield, bushel weight, height, or grain protein content values. In contrast, the TPG value for lodging score is a maximum TPG value because the reported LSD value is added to the lowest numerical average within a column; where low values are wanted, such as low lodging scores.

The TPG values for all variables are reported as “TPG value” at the bottom of each variable column in each table. In addition, all values that qualify for the TPG within a column are identified with the plus (+) symbol.

Sometimes, a 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 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 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 spring wheat are reported in Tables 1b and 1c, for oats in Tables 4b and 4c, and for barley in Tables 7b and 7c.** Top yield frequencies for 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 peas was not calculated because data is limited.

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 percentage of 50% or more exhibits good yield stability while a percentage of 20% or less indicates low yield stability. In small grains a percentage of 50% or higher is generally considered good for 1 year and percentages of 80 to 100% are common for the longer 3-year period. The higher percentages for the 3-year period generally occur because there are two additional years of plot data to average which tends to decrease the yearly variations and makes the percentage for a 3-year period higher than for a current year period. 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 frequency typically adapt to a narrow range of environments. **Look for varieties with top-yield percentages of 50% or higher** if possible, and don't be surprised if the percentage reaches 100% for the longer 3-year period.

An illustrated use of performance tables

How can the information reported in this publication's performance tables be used to your advantage? Let's use the spring

wheat Tables 1a, 2, and 3 to identify some entries that might be of benefit. Say we live near Brookings and want to identify some varieties that we might consider planting in 2008.

First, use Table 1a to examine the 2007 and latest 3-year yield averages at Brookings. In 2007, the best yielding entries at Brookings averaged 40 bu/acre or higher. Identify these entries in Table 1a. These entries included the released varieties Traverse, Granger, Steele-ND, Briggs, and Faller. In addition, an examination of the 3-year yields column indicates the best yielding varieties had to yield 49 bu/acre or higher to be in the TPG for 3-year yields at Brookings. Again, identify these entries in Table 1a. In this case, at Brookings, the TPG for 3-year yields only included the variety Traverse.

Second, use Table 1b to evaluate the yield stability of the various entries for 2007 and for the last 3 years. Look at the far right column of Table 1a [State Top-Yield Freq. (%)]. The 2007 column indicates what percentage of locations a given entry was in the TPG over all the locations tested in 2007. Likewise, the 3-year column indicates what percentage of locations an entry was in the TPG over all locations over the last 3 years. In 2007, Traverse, Howard, and Faller were in the TPG 63% of the time while three experimental lines were in the TPG 88% of the time. For the 3-year period, the variety Traverse was in the top-yield group 100% of the time; while Briggs, Granger, and Steele-ND were in the top-yield group 86% of the time across the seven locations with 3-year yield averages. In our example, Traverse, Briggs, Granger, and Steele-ND were identified as varieties with above average yields and yield stability.

Third, use Table 2 to evaluate each entry's bushel weight, height, lodging, and grain protein performance on a statewide basis. Analysis of the data (far right state average columns) gives us valuable information regarding the performance of each entry.

For example:

Bushel weight. Banton, RB07, Hat Trick, and Kelby (59 lb) were significantly higher than Ada, Alsen, Ulen, Briggs, Granger, and Freyr (58 lb). Varieties differing more than 1 lb in bushel weight were significantly higher or lower in bushel weight.

Height. Chris, the check variety, was the tallest (37 inches) while Kelby and Kuntz were the shortest varieties (30 inches). Varieties differing more than 1 inch in height were significantly higher or lower in height.

Lodging. Entries averaged 1; therefore, there were no significant differences among varieties.

Grain protein content. Glenn (14.6%), Kelby (14.7%), and the check variety Chris (14.6%) were the highest in grain protein. Varieties differing more than 0.6% in grain protein were significantly higher or lower in protein content.

Use of origin, traits, and disease reactions tables

You are encouraged to use the traits and disease reactions tables for spring wheat (Table 3), oats (Table 6), barley (Table 9), winter wheat (Table 12), and field peas (Table 15) every year. These tables contain the most up-to-date information in South Dakota for any changes in traits and the continuous changes in crop disease reactions caused by disease race changes.

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 of Tandem is generally slightly longer than for Harding; whereas the coleoptiles for Alice, Arapahoe, Darrell, Expedition, Jagalene, Millennium, Trego~W, Wahoo, and Wesley are generally shorter compared to Harding. Note the coleoptile for Wendy is the shortest of all entries and may exhibit poor emergence if planted as deep as Tandem that has a longer coleoptile.

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 seed companies and tested by brand name include:

Agri Pro, AP
Alternate Seed Strategies, ASS
Busch Agricultural Resources, Inc., BARI
Farm Pure Seed, FPS
Legume Logic, LL
Meridian Seeds, MS
Pulse USA, PUSA
Seed Strategies, ASS
West bred, LLC., WB

Trial methods

A random complete block design was used in all trials. Plots were harvested with a small plot combine. Plot size differs between the East River and West River locations. East River plots were 5 feet wide and either 12 or 14 feet long compared to West River plots measuring 5 feet wide and 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 the East and West River locations. East River plots were fertilized with a starter application of 55 lb/acre of 37-15-0 (20.3 lb of N and 8.25 lb of phosphorus/acre) down a secondary 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. At Spink County and Selby, 0.33 pt Puma was applied before the 5-leaf stage of wheat and barley. West River plots were fertilized with 6 gal/acre of 10-34-0 (6.6 lb of nitrogen and 24 lb of phosphorus/acre) at seeding. Post-emergence applications of Starane herbicide at 1 pt/acre were made in West River spring wheat, barley, and oats plots except at Ralph where an additional 0.67 pt/acre of Puma was applied. Field pea plots were seeded at 7 pure-live-seeds/ft² (320,000 seeds/acre) with inoculated seed. Chemical weed control consisted of 2 pt/acre of Prowl at Wall and Bison; 0.75 pt/acre of Poast post-emergence at Selby; and 4.5 oz/acre Spartan pre-emergence at South Shore.

Since seed size can vary greatly among varieties, a seed count was conducted on each entry and all seeding rates were adjusted accordingly. In 2007, the spring-seeded small grain trials were seeded at 42 instead of the 28 pure live seeds per square foot used in the past. The fall-seeded winter wheat trial seeding rates remained at 22 pure live seeds per square foot. Spring seeding rates were changed at the request of many growers who indicated they were using higher seeding rates that resulted in **more primary tillers and heads but fewer secondary tiller and heads**. With the higher seeding rates and greater number of primary tillers and heads growers indicated they obtained a shorter flowering period that enabled them to obtain better coverage when applying fungicides to protect the heads from *Fusarium* head blight.

Under good seedbed preparation and favorable conditions these adjusted seeding rates result in seedling densities of about 38 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 1.65 million and 870,000 plants per acre, respectively. If you have a poor seedbed, increase the spring seeding rate to 46 pure-live-seeds per square foot. If planting is delayed until May 1 or later increase the seeding rates to 50 pure-live-seeds per square foot. If you have a poor seedbed, increase the fall-seeded winter wheat seeding rate to 28 pure-live-seeds per square foot. Seeding dates are listed in Table B.

Performance trial highlights

General. The agronomic performance of all the small grain crops in year 2007 was variable but much better than in 2006. In 2007, the small grain crop in South Dakota received more timely rainfall and cooler spring temperatures, which resulted in attained higher yields compared to 2006. In winter wheat, leaf rust became a major production factor in 2007. As the result of a race change, growers are strongly encouraged to examine the disease reactions in Table 12 and note the many changes in the leaf rust disease reaction. Test trial locations and seeding dates 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 2007 yield averages. Likewise, Tables 2, 5, 8, 11, and 14 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 then by the 2007 averages. You are encouraged to first evaluate variety yield performance by looking at the 3-year averages. Then evaluate variety performance by looking at the 2007 yield averages. In some cases, varieties that were only tested in 2007 produced the highest numerical yields for year 2007. 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, however, remember to look at all the values in the 2007 yield column, regardless if they were tested for the current year or for 3 years.

In summary, 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 2007 because they didn't differ significantly in yield.

Spring Wheat

Yields (Tables 1a-c). The top entries for yield for the past 3 years (2005-07) by variety or experimental line and top yield frequency were **Traverse at 100%; SD 3868; Briggs, Granger, and Steele-ND at 86%; and SD 3870, SD 3851, and Freyr at 71%** (Tables 1b-c). 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 71% of the test locations during the past 3-year period. The top yield frequency entries for yield in 2007 included **SD 3942, SD 3943, and SD3944 at 88%; and Traverse, Howard, Faller, and SD 3948 at 63%** of the test locations.

Bushel weight (Table 2). The top bushel weight entries (state averages in Table 2) included ten entries at 59 lb including the varieties **Banton, RB07, Hat Trick, and Kelby**, with a state average of 58 lb. Varieties differing **more than one pound** were significantly higher or lower in bushel weight.

Height (Table 2). The check variety **Chris (37 inches) was the tallest** while **Kelby and Kuntz (30 inches) were the shortest** varieties, with a state average of 33 inches. Varieties **differing more than one inch in height** were significantly higher or lower in height.

Lodging (Table 2). All entries averaged 1; therefore, there were **no significant differences among varieties**.

Grain protein content (Table 2). The varieties **Glenn (14.6%), Kelby (14.7%), and the check variety Chris (14.6%)** were the highest in grain protein. The state average in grain protein content was 13.9%. Entries **differing more than 0.6% (1% rounded-off) in grain protein** were significantly higher or lower in protein content.

Spring oats

Yields (Tables 4a-c). The top entries for yield for the past 3 years (2005-07) by variety or experimental line and top yield frequency were **Stallion, HiFi, Beach, Morton, and Loyal at 100%; Don and Jerry at 75%; and Reeves at 50%** (Tables 4b-c). 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 during the past 3-year period. The top yield frequency entries for yield in 2007 included **SD 041405 at 88%; SD 041451, SD 041445, and SD 030888 at 75%; Stallion and Souris at 63%; and SD 020883-10 at 50%** of the test locations.

Bushel weight (Table 5). The single top bushel weight entry (state averages in Table 5) was the hullless entry **SD 020301-20 at 45 lb** followed by the other hullless variety Buff at 44 lb. Varieties differing **more than one pound** were significantly higher or lower in bushel weight.

Height (Table 5). The variety **Morton at 41 inches** and varieties **Beach, Stallion, and Loyal at 40 inches** were the tallest varieties while the state average was 27 inches. Varieties differing **more than one inch in height** were significantly higher or lower in height.

Lodging (Table 5). The hulled variety Morton and the hullless varieties Buff and Stark at 1 exhibited the best lodging scores. Va-

rieties **differing more than 1 in lodging score** were significantly higher or lower in lodging.

Grain protein content (Table 5). The variety **Hyttest (19.1%)** and experimental line **SD 020301-20 (18.8%)** were the highest in grain protein with a state average of 16.5%. Entries **differing more than 0.8% (1% rounded-off) in grain protein** were significantly higher or lower in protein content.

Spring Barley

Yields (Tables 7a-c). The top entries for yield for the past 3 years (2005-07) by variety or experimental line and top yield frequency were **Eslick at 67%; and Lacey, Drummond, and Conlon at 50%** (Tables 7b-c). 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 during the past 3-year period. The top yield frequency entries for yield in 2007 included Eslick and Pinnacle at 57% of the test locations.

Bushel weight (Table 8). The top bushel weight entries (state averages in Table 8) were **Conlon, Eslick, Tradition, and Rawson at 46 lb** with a state average of 45 lb. Varieties **differing more than one pound** were significantly higher or lower in bushel weight.

Height (Table 8). The varieties **Robust (33 inches); Drummond (32 inches); and Tradition, Rawson, Lacey, Legacy, and Stellar-ND (31 inches)** were the tallest varieties while the state average was 31 inches. Varieties **differing more than 2 inches in height** were significantly higher or lower in height.

Lodging (Table 8). The varieties **Eslick, Tradition, Rawson, Lacey, Pinnacle, and Stellar-ND with lodging scores of 1** had a lower and better lodging score than the four other varieties. Varieties **differing more than 1 in lodging score** were significantly higher or lower in lodging.

Grain protein content (Table 8). The varieties **Conlon (13.6%), Lacey and Robust (13.3%), Drummond and Legacy (13.1%), Eslick (13.0%), and Tradition (12.7%)** were the highest in grain protein with a state average of 12.7%. The variety **Pinnacle (11.0%)** was the lowest in grain protein content. Varieties **differing more than 0.9% (1% rounded-off) in grain protein** were significantly higher or lower in protein content.

Winter Wheat

Yield (Tables 10a-c). The top entries for yield for the past 3 years (2005-07) included all the released varieties with 3-year yield averages (Tables 10b-c) except for one variety at Martin. At the only valid test sites with 3-year averages (Martin, Winner, and Wall) the yield differences were nonsignificant at Winner and Wall, while all the other entries at Martin were significantly higher in yield than Harding. The top entries for yield in 2007 were **Overland and SD 00111-9 at 57, Millennium at 55, Arapahoe at 54, Nu Dakota and Hawken at 51, and Wesley at 50 bu/acre.**

Bushel weight (Table 11). The top bushel weight entries (state averages in Table 11) were **SD 00111-9, Millennium, Overland, and Tandem at 61 lb; and SD01273 at 60 lb** with a state average of 59 lb. Varieties **differing more than one pound** were significantly higher or lower in bushel weight.

Height (Table 8). The varieties **Jerry (36 inches); Harding (35 inches); Tandem and Darrell (34 inches); and Millennium and Arapahoe (33 inches)** were the tallest varieties while the state average was 31 inches. Varieties **differing more than 3 inches in height** were significantly higher or lower in height.

Grain protein content (Table 11). The entries **SD 98W175-1-1 (13.2%); SD00111-9 (13.1%); Harding (12.8%), Hawken (12.7%); and Arapahoe, SD03171, and SD 01058 (12.5%)** were the highest in grain protein with a state average of 12.2%. Entries **differing more than 0.7% (1% rounded-off) in grain protein** were significantly higher or lower in protein content.

Field Peas

Yield (Tables 13a-b). The top entries for yield for 2007 by test location were:

South Shore – **CDC Golden; Eclipse and SW Marquee; Fusion; and CEB 4152 and Cooper** at 70, 65, 64, and 63 bu/acre, respectively, 2007.

Selby – **CEB 1093; Cooper, and CDC Golden** at 64, 62, and 61 bu/acre, respectively, 2007.

Wall – During the 2-year period at Wall, yield differences among the varieties were nonsignificant. The top yielding varieties in 2007 were **CEB 4152; DS Admiral; SW Midas, SW Salute, and Fusion; and Eclipse, CDC Meadow, and K2** at 35, 34, 33, and 32 bu/acre, respectively.

Bison – **CEB 1093 and DS Admiral, and Eclipse and SW Salute** at 29 and 27 bu/acre, respectively, 2007.

Bushel weight (Table 14, average of all locations). The top bushel weight entries (state averages in Table 11) **included ten entries that weighed at 60 lb or higher;** the state bushel weight average was 60 lb. Varieties **differing more than one pound** were significantly higher or lower in bushel weight.

Height (Table 14, average of Wall and Bison). The tallest varieties **included 8 varieties that measured 24 inches or more in height.** The state height average was 24 inches. Varieties **differing more than 3 inches in height** were significantly higher or lower in height.

Lodging (Table 14, average of Wall and Bison). The entries with the lowest lodging score included **nine entries that exhibited a lodging score of 0 or 1.** Varieties **differing more than 1 in lodging score** were significantly higher or lower in lodging.

Grain protein content (Table 14, average of South Shore and Selby). The highest grain protein entry was **Cruiser at 30.5%.** The state average for grain protein was 27.1%. Entries **differing more than 0.6% (1% rounded-off) in grain protein** were significantly higher or lower in protein content.

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				
	Spring Wheat	Oats	Barley	Winter Wheat	Field pea
Yield	3/15*	3/15	3/12		3/15
Bushel weight	3/15	3/15	3/12	3/15	3/15
Height	3/15	3/15	3/12	3/15	3/15
Lodging	WA	WA	WA		WA
Disease reaction	A	A	A	WA	A
Protein	3/15	-	3/12		3/15
Quality data#	2/4	WA	WA	3/15	WA
Unique traits\$	WA	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 2007.

Location	Crop				
	HRS Wheat	Oats	Barley	Field Pea	HRW Wheat (Fall 2006)
Beresford	-	April 18	-	-	-
Bison	April 23	April 23	April 23	April 23	Sept. 19
Brookings	April 18	April 18	April 18		Oct. 1
Brown Co.	April 17	April 17	April 17		-
Pierre-DL	-	-	-		Sept. 26
Hayes	-	-	-	April 12	Sept. 20
Kennebec	-	-	-		Oct. 3
Martin	-	-	-		Sept. 26
Miller	April 18	April 18	April 18		-
Oelrichs	-	-	-		Sept. 21
Okaton	-	April 17	-		
Onida	-	-	-	-	Sept. 26
Platte	-	-	-		Sept. 29
Ralph	April 23	-	April 23		-
Selby	April 24	April 24	April 24	April 24	Sept. 27
South Shore	April 20	April 20	April 20	April 20	Oct. 2
Spink Co.	April 19	-	-		-
Sturgis	-	-	-		Sept. 19
Tripp Co.	-	-	-		Sept. 29
Wall	April 13	April 13	April 13	April 16	Sept. 28

*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. Hard red spring wheat yield results- South Dakota eastern locations, 2005-2007.

Variety (Hdg.)* - by 3-yr then 2007 state yield avg.	Location Yield Avg. (BU/A at 13% moist.)								East Yield Avg. (BU/A)		State Yield Avg. (BU/A)	
	Brookings		South Shore		Miller		Spink Co.		2007	3-Yr	2007	3-Yr
	2007	3-Yr	2007	3-Yr	2007	3-Yr	2007	3-Yr				
Traverse (0)	44+	54+	59	57+	40+	35+	58+	61+	50	53	47	50
Howard (4)	39	46	67+	58+	36	34+	57+	60+	50	50	47	49
SD 3868 (-)	43+	48	60	56+	40+	37+	50	62+	48	52	44	49
Steele-ND (3)	41+	46	64	57+	35	34+	52+	59+	49	50	45	48
Briggs (0)	42+	48	65	56+	38	35+	49	59+	48	50	45	48
Granger (0)	43+	48	57	54+	37	32+	46	57+	46	49	43	47
SD 3870 (-)	43+	46	60	55+	38	38+	46	58+	46	50	43	47
SD 3851 (-)	38	47	60	54+	35	36+	45	55+	43	48	41	46
Freyr (1)	33	42	57	51+	32	32+	47	57+	42	47	41	45
Walworth (0)	39	46	57	48	31	31+	38	52	42	45	41	44
Glenn (3)	31	38	58	52+	31	32+	47	57+	42	46	39	44
Forge (-1)	38	47	57	50	32	33+	34	50	40	45	39	44
Banton (1)	36	44	61	51	33	31+	47	56+	43	45	41	43
Ulen (2)	33	40	57	49	31	29+	42	56+	41	45	39	43
Russ (2)	38	45	58	49	32	33+	41	49	41	45	39	43
Oxen (2)	34	42	50	47	29	31+	36	52	38	44	38	43
Reeder (3)	38	44	55	45	26	31+	30	45	38	43	37	41
Alsen (4)	34	39	50	48	30	29+	37	50	38	43	37	41
Chris,CK (3)	28	35	37	36	24	26+	29	40	29	35	28	34
SD 3944 (-)	45+	.	66+	.	38	.	54+	.	53	.	49	.
SD 3942 (-)	43+	.	65	.	40+	.	52+	.	51	.	48	.
Faller (-)	40+	.	64	.	43+	.	55+	.	50	.	47	.
SD 3943 (-)	43+	.	69+	.	39+	.	54+	.	52	.	47	.
SD 3948 (-)	42+	.	71+	.	36	.	57+	.	51	.	47	.
SD 3965 (-)	44+	.	61	.	37	.	51	.	49	.	46	.
RB07 (2)	35	.	63	.	37	.	50	.	47	.	45	.
SD 3927 (-)	35	.	59	.	35	.	52+	.	45	.	43	.
SD 3956 (-)	39	.	65	.	33	.	44	.	45	.	43	.
Kelby (2)	36	.	61	.	31	.	44	.	44	.	41	.
Exp 06MSP3 (-)	35	.	59	.	34	.	39	.	42	.	41	.
Kuntz (2)	33	.	58	.	35	.	47	.	44	.	40	.
Hat Trick (3)	34	.	53	.	32	.	43	.	41	.	39	.
Ada (1)	34	.	51	.	31	.	43	.	41	.	39	.
Test avg. :	38	44	59	51	34	33	46	54	44	47	42	45
High avg. :	45	54	71	58	43	38	58	62	53	53	49	50
Low avg. :	28	35	37	36	24	26	29	40	29	35	28	34
# LSD (.05) :	5	5	5	7	4	^NS	6	8				
## TPG-value :	40	49	66	51	39	26	52	54				
### C.V. :	9	8	6	7	8	13	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.

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

Table 1b. Hard red spring wheat yield results- South Dakota eastern locations (Continued).

Variety (Hdg.)* - by 3-yr then 2007 state yield 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.		2007	3-Yr	2007	3-Yr	2007	3-Yr
	2007	3-Yr	2007	3-Yr						
Traverse (0)	51+	52+	49	58+	50	53	47	50	63	100
Howard (4)	45	46	53+	58+	50	50	47	49	63	47
SD 3868 (-)	44	48+	50	58+	48	52	44	49	25	86
Steele-ND (3)	47	48+	52	55+	49	50	45	48	38	86
Briggs (0)	45	47+	50	56+	48	50	45	48	25	86
Granger (0)	44	50+	47	54+	46	49	43	47	13	86
SD 3870 (-)	44	46	47	54+	46	50	43	47	13	71
SD 3851 (-)	39	43	43	52+	43	48	41	46	13	71
Freyr (1)	44	45	41	52+	42	47	41	45	13	71
Walworth (0)	41	43	46	52+	42	45	41	44	13	43
Glenn (3)	42	45	40	50	42	46	39	44	0	43
Forge (-1)	39	43	40	48	40	45	39	44	25	29
Banton (1)	37	39	45	49	43	45	41	43	13	43
Ulen (2)	38	42	42	52+	41	45	39	43	0	43
Russ (2)	38	43	38	50	41	45	39	43	0	29
Oxen (2)	34	41	44	50	38	44	38	43	13	29
Reeder (3)	36	40	40	51	38	43	37	41	13	29
Alsen (4)	35	41	39	48	38	43	37	41	13	14
Chris,CK (3)	25	31	31	43	29	35	28	34	0	0
SD 3944 (-)	54+	.	58+	.	53	.	49	.	88	.
SD 3942 (-)	48+	.	56+	.	51	.	48	.	88	.
Faller (-)	52+	.	48	.	50	.	47	.	63	.
SD 3943 (-)	49+	.	56+	.	52	.	47	.	88	.
SD 3948 (-)	44	.	53+	.	51	.	47	.	63	.
SD 3965 (-)	50+	.	50	.	49	.	46	.	38	.
RB07 (2)	49+	.	46	.	47	.	45	.	38	.
SD 3927 (-)	43	.	46	.	45	.	43	.	25	.
SD 3956 (-)	41	.	48	.	45	.	43	.	13	.
Kelby (2)	43	.	46	.	44	.	41	.	13	.
Exp 06MSP3 (-)	48+	.	38	.	42	.	41	.	25	.
Kuntz (2)	43	.	47	.	44	.	40	.	0	.
Hat Trick (3)	44	.	42	.	41	.	39	.	0	.
Ada (1)	47	.	40	.	41	.	39	.	0	.
Test avg. :	43	44	46	52	44	47	42	45		
High avg. :	54	52	58	58	53	53	49	50		
Low avg. :	25	31	31	43	29	35	28	34		
# LSD (.05) :	6	5	5	6						
## TPG-value :	48	47	53	52						
### C.V. :	10	8	8	8						

* 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 1c. Hard red spring wheat yield results- South Dakota western locations, 2005-2007.

Variety (Hdg.)* - by 3-yr then 2007 state yield avg.	Location Yield Avg. (BU/A at 13% moist.)				West Yield Avg. (BU/A)		State Yield Avg. (BU/A)		State Top-Yield Freq. ** (%)	
	Bison		Ralph		2007	3-Yr	2007	3-Yr	2007	3-Yr
	2007	3-Yr	2007	3-Yr						
Traverse (0)	31	.	41+	36+	36	36	47	50	63	100
Howard (4)	34+	.	46+	38+	40	38	47	49	63	47
SD 3868 (-)	30	.	38	36+	34	36	44	49	25	86
Steele-ND (3)	30	.	42+	36+	36	36	45	48	38	86
Briggs (0)	34+	.	38	34+	36	34	45	48	25	86
Granger (0)	30	.	38	35+	34	35	43	47	13	86
SD 3870 (-)	30	.	38	35+	34	35	43	47	13	71
SD 3851 (-)	32+	.	39	37+	36	37	41	46	13	71
Freyr (1)	33+	.	37	36+	35	36	41	45	13	71
Walworth (0)	30	.	42+	35+	36	35	41	44	13	43
Glenn (3)	29	.	33	32	31	32	39	44	0	43
Forge (-1)	32+	.	41+	37+	37	37	39	44	25	29
Banton (1)	32+	.	35	33	34	33	41	43	13	43
Ulen (2)	31	.	34	32	33	32	39	43	0	43
Russ (2)	31	.	37	34+	34	34	39	43	0	29
Oxen (2)	36+	.	39	36+	38	36	38	43	13	29
Reeder (3)	34+	.	33	34+	34	34	37	41	13	29
Alsen (4)	32+	.	36	33	34	33	37	41	13	14
Chris,CK (3)	23	.	25	24	24	24	28	34	0	0
SD 3944 (-)	36+	.	42+	.	39	.	49	.	88	.
SD 3942 (-)	35+	.	41+	.	38	.	48	.	88	.
Faller (-)	30	.	44+	.	37	.	47	.	63	.
SD 3943 (-)	34+	.	34	.	34	.	47	.	88	.
SD 3948 (-)	32+	.	39	.	36	.	47	.	63	.
SD 3965 (-)	33+	.	40	.	37	.	46	.	38	.
RB07 (2)	35+	.	47+	.	41	.	45	.	38	.
SD 3927 (-)	33+	.	38	.	36	.	43	.	25	.
SD 3956 (-)	33+	.	40	.	37	.	43	.	13	.
Kelby (2)	33+	.	35	.	34	.	41	.	13	.
Exp 06MSP3 (-)	31	.	43+	.	37	.	41	.	25	.
Kuntz (2)	30	.	28	.	29	.	40	.	0	.
Hat Trick (3)	28	.	34	.	31	.	39	.	0	.
Ada (1)	28	.	38	.	33	.	39	.	0	.
Test avg.:	32	.	38	34	35	34	42	45		
High avg.:	36	.	47	38	41	38	49	50		
Low avg.:	23	.	25	24	24	24	28	34		
# LSD (.05):	4		6	4						
## TPG-value:	32		41	34						
### C.V.:	8		12	10						

* 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 2. Eastern, western, and state spring wheat averages for bushel wt. (BW), height (HT), lodging (LDG), and grain protein (PRT) in 2007.

Variety (Hdg.)* - by state BW avg.	East Avg. - BW, HT, LDG, PRT				West Avg. - BW, HT, LDG, PRT				State Avg. - BW, HT, LDG, PRT			
	BW lb	HT in	LDG	PRT %	BW lb	HT in	LDG	PRT %	BW lb	HT in	LDG	PRT %
SD 3956(-)	59	33	1	13.8	59	33	1	.	59+	33	1	13.8
Banton (1)	59	33	1	14.4	59	33	1	.	59+	33	1	14.4
SD 3927(-)	59	33	1	13.8	60	33	1	.	59+	33	1	13.8
SD 3944(-)	58	33	1	13.7	60	33	1	.	59+	33	1	13.7
SD 3948(-)	59	34	1	14.1	58	34	1	.	59+	34	1	14.1
RB07 (2)	58	32	1	14.4	60	32	1	.	59+	32	1	14.4
Hat Trick (3)	59	32	1	13.9	59	31	1	.	59+	32	1	13.9
Kelby (2)	58	30	1	14.7	61	30	1	.	59+	30	1	14.7+
SD 3851(-)	59	34	1	13.8	56	35	1	.	59+	34	1	13.8
Ada (1)	58	32	1	13.9	58	31	1	.	58	32	1	13.9
Alsen (4)	58	32	1	14.5	58	32	1	.	58	32	1	14.5
Ulen (2)	58	33	1	14.3	58	34	1	.	58	33	1	14.3
Briggs (0)	58	33	1	14.2	57	33	1	.	58	33	1	14.2
Granger (0)	57	35	1	13.7	59	35	1	.	58	35	1	13.7
SD 3870(-)	58	36	1	13.9	58	36	1	.	58	36	1	13.9
SD 3965(-)	57	35	1	13.4	59	34	1	.	58	35	1	13.4
Freyr (1)	57	32	1	14.1	59	32	1	.	58	32	1	14.1
Exp 06MSP3(-)	57	30	1	15.2	60	30	1	.	57	30	1	15.2+
Kuntz (2)	57	30	1	13.7	59	31	1	.	57	30	1	13.7
Howard (4)	58	34	1	14.3	55	33	1	.	57	34	1	14.3
SD 3943(-)	58	33	1	13.3	54	33	1	.	57	33	1	13.3
Glenn (3)	58	33	1	14.9	54	35	1	.	57	33	1	14.9+
SD 3942(-)	58	31	1	12.8	54	33	1	.	57	32	1	12.8
Forge (-1)	57	34	1	13.0	55	34	1	.	57	34	1	13.0
Steele-ND (3)	58	34	1	14.5	54	34	1	.	57	34	1	14.5
Walworth (0)	57	33	1	13.9	57	33	1	.	57	33	1	13.9
Russ (2)	56	34	1	13.9	57	33	1	.	57	34	1	13.9
Faller (-)	57	33	1	13.7	54	31	1	.	56	33	1	13.7
SD 3868(-)	57	34	1	13.2	55	36	1	.	56	34	1	13.2
Reeder (3)	57	33	1	13.3	55	32	1	.	56	32	1	13.3
Traverse (0)	56	34	1	13.4	56	34	1	.	56	34	1	13.4
Chris,CK (3)	55	37	2	14.6	57	37	1	.	56	37+	1	14.6+
Oxen (2)	55	32	1	13.4	58	31	1	.	56	31	1	13.4
Test avg. :	58	33	1	13.9	57	33	1	.	58	33	1	13.9
High avg. :	59	37	2	15.2	61	37	1	.	59	37	1	15.2
Low avg. :	55	30	1	12.8	54	30	1	.	56	30	1	12.8
# LSD (.05) :									1	1		0.6
## TPG-value :									59	37	1	14.6
### C.V. :									4	6	18	4.0

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

** Lodging score: 0= all plants erect, 3= 50% of plants lodged at 45°-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.

Table 3. Origin, traits, and disease reactions for hard red spring wheat varieties tested in 2007.

Variety	Origin	Rel Hdg*	Ldg Res #	Rust Stripe	Rust Stem	Rust Leaf	Fusarium Head Blight	PVP** Status
Forge	SD-97	-1	G	MS+	MR+	MS+	MS+~	Yes
Briggs	SD-02	0	G	MR	R	MR	M~	Yes
Granger	SD-04	0	G	MR	R	MR	M~	Yes
Traverse	SD-06	0	G	MR	R	MR	MR~	Yes
Walworth	SD-01	0	G	S	R	MS	M~	Yes
Ada	MN-06	1	G	-	R	R	MS~	Yes
Banton	TSS-04	1	VG	-	R	MR	M~	Yes
Freyr	AW-05	1	G	R	MR	MR	MR~	Yes
Kelby	AW-06	2	VG	-	MR	R	MR	Yes
Kuntz	AW-07	2	VG	MS	MR	MR	MS~	Yes
Oxen	SD-96	2	G	MR	R	S	MS~	Yes
RB07	MN-07	2	G	MS	MR	MR	MS	-
Russ	SD-95	2	G	MR	R	MS	MS~	Yes
Ulen	MN-04	2	G	-	R	MR	MS	Yes
Chris, CK	MN-65	3	P	-	R	MS	S	No
Glenn	ND-05	3	G	MR	R	R	MR~	Yes
Hat Trick	TSS-07	3	G	MR	MR	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
Faller	ND-07	-	-	-	-	-	-	***Pdg
SD 3851	SD-	-	-	-	-	-	-	-
SD 3868	SD-	-	-	-	-	-	-	-
SD 3870	SD-	-	-	-	-	-	-	-
SD 3927	SD-	-	-	-	-	-	-	-
SD 3942	SD-	-	-	-	-	-	-	-
SD 3943	SD-	-	-	-	-	-	-	-
SD 3944	SD-	-	-	-	-	-	-	-
SD 3948	SD-	-	-	-	-	-	-	-
SD 3956	SD-	-	-	-	-	-	-	-
SD 3965	SD-	-	-	-	-	-	-	-
Exp 06MSP3	TSS-	-	-	-	-	-	-	-

** 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 grainyield and quality.

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

*** PVP application pending.

Table 4a. Oat yield results - South Dakota East River locations, 2005-2007.

Variety (Hdg.)* - by 3-yr then 2007 state yield avg.	Location Yield Avg. (BU/A at 13% moist.)								East Yield Avg. (BU/A)		State Yield Avg. (BU/A)	
	Brookings		South Shore		Beresford		Miller		2007	3-Yr	2007	3-Yr
	2007	3-Yr	2007	3-Yr	2007	3-Yr	2007	3-Yr				
Hulled types:												
Stallion (8)	123+	119+	141+	129+	133+	126+	115+	.	128	122	113	122
HiFi (8)	115	123+	134	131+	102	112+	107+	.	116	122	104	122
Beach (6)	124+	117+	139+	125+	122	114+	97	.	121	118	107	118
Morton (7)	114	110+	137	129+	113	111+	103	.	117	115	105	115
Loyal (8)	115	117+	130	119+	108	113+	106+	.	114	113	100	113
Don (1)	112	112+	130	114+	113	99	104	.	118	106	107	106
Jerry (5)	117	113+	119	107	112	107+	94	.	110	106	100	106
Reeves (2)	107	105+	133	112	119	101	99	.	115	103	103	103
Hyttest (4)	84	89	91	94	65	70	80	.	78	84	74	84
SD 041405 (-)	119	.	149+	.	131+	.	119+	.	130	.	119	.
SD 041451 (-)	119	.	148+	.	125+	.	109+	.	127	.	115	.
SD 041445 (-)	130+	.	139+	.	128+	.	116+	.	127	.	114	.
Souris (6)	123+	.	141+	.	117	.	105+	.	124	.	112	.
SD 030888 (-)	127+	.	146+	.	125+	.	108+	.	125	.	112	.
SD 020883-10 (-)	109	.	148+	.	127+	.	110+	.	121	.	110	.
SD 020883-29 (-)	115	.	136	.	122	.	112+	.	120	.	109	.
SD 020883-11 (-)	111	.	146+	.	124+	.	99	.	120	.	109	.
SD 020883-17 (-)	117	.	142+	.	115	.	103	.	119	.	108	.
SD 041117 (-)	113	.	144+	.	121	.	104	.	119	.	108	.
Hulless types:												
Buff Hls (3)	78	84	97	91	93	85	71	.	81	84	76	84
SD 020301-20 (-)	86	.	116	.	91	.	84	.	93	.	84	.
Test avg.:	109	104	131	112	112	100	100	.	113	104	102	104
High avg.:	130	123	149	131	133	126	119	.	130	122	119	122
Low avg.:	39	60	77	77	63	63	60	.	53	67	49	67
# LSD (.05):	8	18	11	18	10	23	14					
## TPG-value:	122	105	138	113	123	103	105					
### C.V.:	5	8	6	8	7	11	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 East River locations (Continued).

Variety (Hdg.)* - by 3-yr then 2007 state yield 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.		2007	3-Yr	2007	3-Yr	2007	3-Yr
	2007	3-Yr	2007	3-Yr						
Hulled types:										
Stallion (8)	124	.	133+	115+	128	122	113	122	63	100
HiFi (8)	113	.	127+	121+	116	122	104	122	25	100
Beach (6)	119	.	123+	116+	121	118	107	118	38	100
Morton (7)	114	.	119	108+	117	115	105	115	0	100
Loyal (8)	109	.	113	102+	114	113	100	113	13	100
Don (1)	128	.	118	100+	118	106	107	106	0	75
Jerry (5)	109	.	111	95+	110	106	100	106	0	75
Reeves (2)	124	.	105	93+	115	103	103	103	0	50
Hytest (4)	66	.	79	84	78	84	74	84	0	0
SD 041405 (-)	134+	.	130+	.	130	.	119	.	88	
SD 041451 (-)	140+	.	121	.	127	.	115	.	75	
SD 041445 (-)	118	.	128+	.	127	.	114	.	75	
Souris (6)	126	.	132+	.	124	.	112	.	63	
SD 030888 (-)	123	.	122+	.	125	.	112	.	75	
SD 020883-10 (-)	120	.	113	.	121	.	110	.	50	
SD 020883-29 (-)	116	.	118	.	120	.	109	.	38	
SD 020883-11 (-)	122	.	115	.	120	.	109	.	38	
SD 020883-17 (-)	122	.	114	.	119	.	108	.	25	
SD 041117 (-)	121	.	113	.	119	.	108	.	25	
Hulless types:										
Buff Hls (3)	67	.	78	74	81	84	76	84	0	
SD 020301-20 (-)	80	.	101	.	93	.	84	.	0	
Test avg.:	110	.	112	98	113	104	102	104		
High avg.:	140	.	133	121	130	122	119	122		
Low avg.:	21	.	55	67	53	67	49	67		
# LSD (.05):	11		11	29						
## TPG-value:	129		122	92						
### C.V.:	7		7	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 4c. Oat yield results - South Dakota West River locations, 2005-2007.

Variety (Hdg.)* - by 3-yr then 2007 state yield avg.	Location Yield Avg. (BU/A at 13% moist.)				West Yield Avg. (BU/A)		State Yield Avg. (BU/A)		State Top-Yield Freq.** (%)	
	Bison		Okaton		2007	3-Yr	2007	3-Yr	2007	3-Yr
	2007	3-Yr	2007	3-Yr						
Hulled types:										
Stallion (8)	67	.	70	.	69	.	113	122	63	100
HiFi (8)	56	.	78	.	67	.	104	122	25	100
Beach (6)	60	.	72	.	66	.	107	118	38	100
Morton (7)	63	.	75	.	69	.	105	115	0	100
Loyal (8)	60	.	58	.	59	.	100	113	13	100
Don (1)	68	.	80	.	74	.	107	106	0	75
Jerry (5)	65	.	75	.	70	.	100	106	0	75
Reeves (2)	67	.	70	.	69	.	103	103	0	50
Hystest (4)	63	.	65	.	64	.	74	84	0	0
SD 041405 (-)	78+	.	88+	.	83	.	119	.	88	
SD 041451 (-)	76+	.	84+	.	80	.	115	.	75	
SD 041445 (-)	68	.	85+	.	77	.	114	.	75	
Souris (6)	64	.	90+	.	77	.	112	.	63	
SD 030888 (-)	61	.	84+	.	73	.	112	.	75	
SD 020883-10 (-)	72	.	83+	.	78	.	110	.	50	
SD 020883-29 (-)	73+	.	83+	.	78	.	109	.	38	
SD 020883-11 (-)	72	.	83+	.	78	.	109	.	38	
SD 020883-17 (-)	71	.	82+	.	77	.	108	.	25	
SD 041117 (-)	67	.	83+	.	75	.	108	.	25	
Hulless types:										
Buff Hls (3)	51	.	74	.	63	.	76	84	0	
SD 020301-20 (-)	54	.	60	.	57	.	84	.	0	
Test avg. :	64	.	76	.	70	.	102	104		
High avg. :	78	.	90	.	83	.	119	122		
Low avg. :	33	.	44	.	39	.	49	67		
# LSD (.05) :	5		9							
## TPG-value :	73		81							
### C.V. :	6		9							

* 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 5. Eastern, western, and state oat averages for bushel weight (BW), height (HT), lodging (LDG), and grain protein (PRT) in 2007.

Variety (Hdg.)* - by state BW avg.	East Avg. - BW, HT, LDG, PRT				West Avg. - BW, HT, LDG, PRT				State Avg. - BW, HT, LDG, PRT			
	BW lb	HT in	LDG	PRT %	BW lb	HT in	LDG	PRT %	BW lb	HT in	LDG	PRT %
Hulled types:												
SD 020883-29 (-)	40	36	3	16.9	39	34	1	.	39	36	2	16.9
SD 020883-11 (-)	40	36	2	16.8	39	34	1	.	39	35	2	16.8
SD 020883-10 (-)	40	37	2	16.3	38	35	1	.	39	36	2	16.3
SD 041451 (-)	40	40	3	15.8	38	35	1	.	39	38	2	15.8
Hyttest (4)	39	40	2	19.1	39	37	1	.	39	39	2	19.1+
SD 020883-17 (-)	39	37	3	16.5	38	34	1	.	39	36	2	16.5
Reeves (2)	39	40	3	18.0	38	37	1	.	39	39	2	18.0
SD 041445 (-)	40	40	2	15.6	35	35	1	.	39	39	2	15.6
SD 041117 (-)	39	36	2	16.4	37	34	1	.	38	35	2	16.4
Beach (6)	39	42	2	14.7	35	36	1	.	38	40+	2	14.7
SD 041405 (-)	38	35	3	15.0	37	32	1	.	38	34	2	15.0
Jerry (5)	38	39	2	16.0	36	36	1	.	38	38	2	16.0
SD 030888 (-)	38	34	2	15.4	35	31	1	.	38	33	2	15.4
Stallion (8)	39	42	2	16.6	33	36	1	.	37	40+	2	16.6
Don (1)	37	34	3	15.3	36	32	1	.	37	33	2	15.3
Souris (6)	37	36	2	15.6	35	31	1	.	37	34	2	15.6
Loyal (8)	37	41	2	17.0	34	36	1	.	36	40+	2	17.0
Morton (7)	37	42	2	15.8	34	37	1	.	36	41+	1+	15.8
HiFi (8)	37	39	2	15.4	31	35	1	.	35	38	2	15.4
Hulless types:												
Buff Hls (3)	45	36	2	17.9	38	32	1	.	44	35	1+	17.9
SD 020301-20 (-)	46	39	2	18.8	41	34	1	.	45+	38	2	18.8+
Test avg.:	39	38	2	16.5	36	34	1	.	39	37	2	16.5
High avg.:	46	42	3	19.1	41	37	1	.	45	41	2	19.1
Low avg.:	37	34	2	14.7	31	31	1	.	35	33	1	14.7
# LSD (.05):									1	1	1	0.8
## TPG-value:									44	40	1	18.3
### C.V.:									5	6	27	4

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

** Lodging score: 0= all plants erect, 3= 50% of plants lodged at 45°-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.

Table 6. Origin, variety traits, and disease reactions for oat entries tested in 2007.

Variety	Origin	Rel Hdg*	Ldg Res	Grain Color	Smut	Rust Stem	Rust Crown	Red Leaf	PVP** Status
Hulled types:									
Don	IL-85	1	Good	White	R+	MS+	S+	MR+	No
Reeves	SD-02	2	Fair	White	MR	S	MS	MS	No
Hytest	SD-86	4	Good	Lt.Cream	MR	MS	S	S	No
Jerry	ND-94	5	Good	White	MS	MS	S	MS	Yes
Beach	ND-04	6	Good	White	R	S	MS	MS	Pdg
Souris	ND-06	6	VGood	White	MR	MS	R	MS	Yes
Morton	ND-01	7	Good	White	R	MS	MS	MS	Yes
HiFi	ND-01	8	Good	White	MR	R	MR	MS	Yes
Loyal	SD-00	8	Fair	White	R	S	MS	S	No
Stallion	SD-06	8	Fair	White	MS	S	MR	MR	***Pdg
SD 020883-29	SD-	-	-	-	-	-	-	-	-
SD 020883-10	SD-	-	-	-	-	-	-	-	-
SD 020883-11	SD-	-	-	-	-	-	-	-	-
SD 020883-17	SD-	-	-	-	-	-	-	-	-
SD 030888	SD-	-	-	-	-	-	-	-	-
SD 041117	SD-	-	-	-	-	-	-	-	-
SD 041405	SD-	-	-	-	-	-	-	-	-
SD 041445	SD-	-	-	-	-	-	-	-	-
SD 041451	SD-	-	-	-	-	-	-	-	-
Hulless types:									
Buff Hls	SD-02	3	Good	Hulless	R	S	MS	MR	No
SD 020301-20	SD-	-	-	-	-	-	-	-	-

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

+ 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.

Table 7a. Barley yield results - South Dakota East River locations, 2005-2007.

Variety (Hdg.)* - by 3-yr then 2007 state yield avg.	Location Yield Avg. (BU/A at 13% moist.)						East Yield Avg. (BU/A)		State Yield Avg. (BU/A)	
	Brookings		South Shore		Miller		2007	3-Yr	2007	3-Yr
	2007	3-Yr	2007	3-Yr	2007	3-Yr				
Eslick (3)	59+	79+	76	81+	64+	61+	62	74	60	71
Lacey (0)	65+	74+	80	83+	52	51	63	69	59	66
Tradition (0)	54	66+	85+	84+	55	49	62	67	60	65
Drummond (2)	51	65+	86+	84+	59	47	63	67	59	64
Legacy (3)	66+	71+	73	76	53	45	59	64	55	61
Conlon (0)	60+	61+	88+	85+	62	58+	60	65	58	60
Stellar-ND (2)	58	68+	74	77	57	46	60	64	57	60
Robust (3)	57	64+	72	73	54	43	57	60	53	56
Pinnacle (3)	65+	.	88+	.	71+	.	70	.	63	.
Rawson (2)	64+	.	90+	.	63	.	67	.	60	.
Test avg. :	61	69	81	80	60	50	63	66	59	63
High avg. :	66	79	90	85	71	61	70	74	63	71
Low avg. :	51	61	72	73	52	43	57	60	53	56
# LSD (.05) :	7	NS^	6	6	7	8				
## TPG-value :	59	61	84	79	64	53				
### C.V. :	8	8	5	6	8	8				

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

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.

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

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

Variety (Hdg.)* - by 3-yr then 2007 state yield 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.		2007	3-Yr	2007	3-Yr	2007	3-Yr
	2007	3-Yr	2007	3-Yr						
Eslick (3)	76+	84+	36	64+	62	74	60	71	57	67
Lacey (0)	74+	75+	43	64+	63	69	59	66	29	50
Tradition (0)	72+	73	46+	64+	62	67	60	65	43	33
Drummond (2)	77+	76+	44	63+	63	67	59	64	29	50
Legacy (3)	64	69	41	60+	59	64	55	61	14	17
Conlon (0)	58	63	33	59+	60	65	58	60	43	50
Stellar-ND (2)	73+	69	39	59+	60	64	57	60	14	17
Robust (3)	64	61	39	57+	57	60	53	56	0	17
Pinnacle (3)	71	.	53+	.	70	.	63	.	57	
Rawson (2)	68	.	49+	.	67	.	60	.	43	
Test avg. :	71	71	44	61	63	66	59	63		
High avg. :	81	84	53	64	70	74	63	71		
Low avg. :	58	61	33	57	57	60	53	56		
# LSD (.05) :	9	10	8	NS^						
## TPG-value :	72	74	45	57						
### C.V. :	9	8	12	9						

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

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.

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

Table 7c. Barley yield results - South Dakota West River locations, 2005-2007.

Variety (Hdg.)* - by 3-yr then 2007 state yield avg.	Location Yield Avg. (BU/A at 13% moist.)				West Yield Avg. (BU/A)		State Yield Avg. (BU/A)		State Top-Yield Freq. ** (%)	
	Bison		Ralph		2007	3-Yr	2007	3-Yr	2007	3-Yr
	2007	3-Yr	2007	3-Yr						
Eslick (3)	45+	.	67+	54+	56	54	60	71	57	67
Lacey (0)	47+	.	54	50+	51	50	59	66	29	50
Tradition (0)	51+	.	58	51+	55	51	60	65	43	33
Drummond (2)	47+	.	49	46+	48	46	59	64	29	50
Legacy (3)	43+	.	48	44+	46	44	55	61	14	17
Conlon (0)	46+	.	60+	33+	53	33	58	60	43	50
Stellar-ND (2)	46+	.	52	43+	49	43	57	60	14	17
Robust (3)	40+	.	43	37+	42	37	53	56	0	17
Pinnacle (3)	46+	.	48	.	47	.	63	.	57	
Rawson (2)	49+	.	38	.	44	.	60	.	43	
Test avg. :	46	.	52	45	49	45	59	63		
High avg. :	51	.	67	54	56	54	63	71		
Low avg. :	40	.	38	33	42	33	53	56		
# LSD (.05) :	NS		8	NS^						
## TPG-value :	40		59	33						
### C.V. :	9		11	13						

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

LSD, the amount two values in a column 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.

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

Table 8. Eastern, western, and state barley averages for bushel weight (BW), height (HT), lodging (LDG), and grain protein (PRT) in 2007.

Variety (Hdg.)* - by state BW avg.	East Avg. - BW, HT, LDG, PRT				West Avg. - BW, HT, LDG, PRT				State Avg. - BW, HT, LDG, PRT			
	BW lb	HT in	LDG	PRT %	BW lb	HT in	LDG	PRT %	BW lb	HT in	LDG	PRT %
Conlon (0)	47	28	2	13.6	.	30	1	.	46+	29	2	13.6+
Eslick (3)	47	26	1	13.0	44	31	1	.	46+	27	1+	13.0 +
Tradition (0)	46	31	2	12.7	46	32	1	.	46+	31+	1+	12.7+
Rawson (2)	46	31	1	12.3	45	31	1	.	46+	31+	1+	12.3
Lacey (0)	45	31	2	13.3	45	33	1	.	45	31+	1+	13.3+
Robust (3)	45	32	2	13.3	45	34	1	.	45	33+	2	13.3+
Pinnacle (3)	45	30	1	11.0	43	29	1	.	45	30	1+	11.0
Drummond (2)	45	32	2	13.1	44	33	1	.	44	32+	2	13.1+
Legacy (3)	45	32	2	13.1	41	29	1	.	44	31+	2	13.1+
Stellar-ND (2)	44	31	2	12.2	42	32	1	.	43	31+	1+	12.2
Test avg. :	45	30	2	12.7	44	32	1	.	45	31	1	12.7
High avg. :	47	32	2	13.6	46	34	1	.	46	33	2	13.6
Low avg. :	44	26	1	11.0	41	29	1	.	43	27	1	11.0
# LSD(.05) :									1	2	1	0.9
## TPG-value :									46	31	1	12.7
### C.V. :									4	10	23	6

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

** Lodging score: 0= all plants erect, 3= 50% of plants lodged at 45°-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.

Table 9. Origin, traits, and disease reactions for barley varieties tested in 2007.

Variety	Origin	Rel Hdg*	Ldg Res #	Grain Use	Awn ## Texture	Loose Smut	Stem Rust	Blotch		PVP** Status
								Spot	Net	
Two-row types:										
Conlon	ND-96	0	G	Malt	SS	S+	S+	M+	MR+	Yes
Rawson	ND-05	2	F	Feed	SR	S	S	R	MS	No
Pinnacle	ND-07	3	-	*	S	-	-	-	-	***Pdg
Eslick	MT-04	3	F	Feed	R	S	S	MS	-	-
Six-row types:										
Lacey	MN-00	0	G	Malt	S	S	S	M	S	Yes
Tradition	BARI-03	0	F	Malt	S	MS	MS	M	S	Yes
Stellar-ND	ND-05	2	G	Feed	SS	S	S	M	MS	Yes
Drummond	ND-00	2	VG	Malt	SS	S	S	R	MS	Yes
Excel	MN-90	3	VG	Malt	S	S	S	M	S	Yes
Robust	MN-83	3	G	Malt	S	S	S	M	S	Yes
Legacy	BARI-00	3	G	Malt	S	MS	MR	M	MR	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, 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- sold by variety name only as a class of certified seed.

*** PVP application pending.

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Table 10a. Winter wheat yield results - South Dakota western locations, 2005-2007.

Variety (Hdg.)* - by 3-yr then 2007 state yield avg.	Location Yield Avg. (BU/A at 13% moist.)								West Yield Avg. (BU/A)		State Yield Avg. (BU/A)	
	Wall		Bison		Hayes		Sturgis		2007	3-Yr	2007	3-Yr
	2007	3-Yr	2007	3-Yr	2007	3-Yr	2007	3-Yr				
Overland (4)	47	48+	58+	.	52	.	33+	30	51	44	57	48
Millennium (4)	44	48+	52	.	52	.	34+	33+	49	43	55	47
Arapahoe (3)	51+	46+	48	.	52	.	29	29	48	42	54	46
Wahoo (3)	45	49+	52	.	56+	.	33+	33+	47	44	51	46
Wesley (2)	54+	47+	57+	.	52	.	31	31	50	43	50	45
Wendy~W (-)	55+	49+	56+	.	54+	.	30	30	47	43	49	45
SD96240-3-1 (-)	44	46+	49	.	52	.	33+	31	45	43	47	45
Hatcher (2)	61+	49+	55	.	50	.	35+	36+	47	45	45	45
Trego~W (3)	52+	47+	57+	.	52	.	33+	33+	48	44	50	44
Expedition (0)	51+	46+	52	.	55+	.	30	31	46	42	49	44
Harding (5)	40	43+	44	.	55+	.	31	29	46	40	52	43
Jerry (5)	40	46+	37	.	48	.	32+	28	40	39	46	43
Alice~W (-)	50+	48+	55	.	46	.	30	30	43	43	45	43
Darrell (5)	46	48+	49	.	53+	.	30	32+	42	42	43	43
SD01W064 (-)	44	52+	46	.	48	.	31	30	40	44	42	43
Tandem (4)	48	45+	52	.	58+	.	30	31	46	41	48	42
Overley (0)	45	44+	54	.	51	.	23	27	45	40	46	42
Jagalene (3)	48	46+	51	.	49	.	29	31	36	41	36	40
SD00111-9 (-)	48	.	53	.	55+	.	31	.	51	.	57	.
SD01273 (-)	54+	.	47	.	54+	.	30	.	48	.	52	.
NuDakota~W (3)	56+	.	61+	.	52	.	29	.	49	.	51	.
Hawken (3)	56+	.	59+	.	53+	.	32+	.	49	.	51	.
SD01058 (-)	46	.	52	.	52	.	32+	.	46	.	49	.
NI04420 (-)	46	.	50	.	49	.	29	.	44	.	46	.
SD98W175-1-1 (-)	48	.	51	.	46	.	31	.	43	.	46	.
SD98W175-1 (-)	44	.	51	.	47	.	32+	.	44	.	46	.
SD03171 (-)	45	.	49	.	45	.	28	.	42	.	45	.
Ripper (2)	48	.	52	.	52	.	32+	.	42	.	43	.
Danby~W (3)	40	.	56+	.	55+	.	31	.	43	.	43	.
Test avg. :	48	47	52	.	52	.	31	31	45	42	48	44
High avg. :	61	52	61	.	58	.	35	36	51	45	57	48
Low avg. :	40	43	37	.	45	.	23	27	36	39	36	40
# LSD (.05) :	11	NS^	5	.	5	.	3	4				
## TPG-value :	50	43	56	.	53	.	32	32				
### C.V. :	13	14	7	.	7	.	6	9				

* 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.

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

Table 10b. Winter wheat yield results - South Dakota western locations, 2005-2007 (Continued).

Variety (Hdg.)* - by 3-yr then 2007 state yield avg.	Location Yield Avg. (BU/A at 13% moist.)								West Yield Avg. (BU/A)		State Yield Avg. (BU/A)	
	Martin		Platte		Kennebec		Winner		2007	3-Yr	2007	3-Yr
	2007	3-Yr	2007	3-Yr	2007	3-Yr	2007	3-Yr				
Overland (4)	38	50+	69+	.	55	.	53+	48+	51	44	57	48
Millennium (4)	36	47+	70+	.	54	.	51+	45+	49	43	55	47
Arapahoe (3)	40+	47+	62	.	54	.	51+	46+	48	42	54	46
Wahoo (3)	39	49+	55	.	47	.	45	44+	47	44	51	46
Wesley (2)	44+	53+	66+	.	51	.	45	41+	50	43	50	45
Wendy~W (-)	37	47+	52	.	42	.	48+	46+	47	43	49	45
SD96240-3-1 (-)	35	49+	55	.	50	.	40	45+	45	43	47	45
Hatcher (2)	35	52+	54	.	47	.	35	41+	47	45	45	45
Trego~W (3)	39	50+	52	.	50	.	47	46+	48	44	50	44
Expedition (0)	32	47+	57	.	43	.	44	42+	46	42	49	44
Harding (5)	35	43	69+	.	50	.	45	45+	46	40	52	43
Jerry (5)	32	45+	54	.	41	.	37	38+	40	39	46	43
Alice~W (-)	33	49+	52	.	37	.	42	46+	43	43	45	43
Darrell (5)	32	45+	50	.	38	.	35	44+	42	42	43	43
SD01W064 (-)	31	46+	46	.	37	.	40	47+	40	44	42	43
Tandem (4)	34	45+	55	.	46	.	43	43+	46	41	48	42
Overley (0)	38	49+	61	.	46	.	45	40+	45	40	46	42
Jagalene (3)	25	46+	33	.	29	.	27	40+	36	41	36	40
SD00111-9 (-)	41+	.	70+	.	63+	.	47	.	51	.	57	.
SD01273 (-)	39	.	62	.	55	.	46	.	48	.	52	.
NuDakota~W (3)	36	.	61	.	46	.	48+	.	49	.	51	.
Hawken (3)	35	.	61	.	50	.	42	.	49	.	51	.
SD01058 (-)	36	.	60	.	43	.	44	.	46	.	49	.
NI04420 (-)	37	.	53	.	44	.	46	.	44	.	46	.
SD98W175-1-1 (-)	35	.	53	.	42	.	40	.	43	.	46	.
SD98W175-1 (-)	34	.	56	.	41	.	44	.	44	.	46	.
SD03171 (-)	32	.	50	.	41	.	42	.	42	.	45	.
Ripper (2)	32	.	44	.	40	.	36	.	42	.	43	.
Danby~W (3)	31	.	50	.	42	.	35	.	43	.	43	.
Test avg. :	35	48	56	.	46	.	43	44	45	42	48	44
High avg. :	44	53	70	.	63	.	53	48	51	45	57	48
Low avg. :	25	43	33	.	29	.	27	38	36	39	36	40
# LSD (.05) :	4	8	6	.	4	.	5	NS^				
## TPG-value :	40	45	64	.	59	.	48	38				
### C.V. :	8	10	8	.	6	.	8	9				

* 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.

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

Table 10c. Winter wheat yield results - South Dakota eastern locations, 2005-2007.

Variety (Hdg.)* - by 3-yr then 2007 state yield avg.	Location Yield Avg. (BU/A at 13% moist.)										East Yield Avg. (BU/A)		State Yield Avg. (BU/A)	
	Brookings		South Shore		Selby		Onida		Pierre		2007	3-Yr	2007	3-Yr
	2007	3-Yr	2007	3-Yr	2007	3-Yr	2007	3-Yr	2007	3-Yr				
Overland (4)	60+	64	74+	.	76+	.	62+	.	67+	.	68	64	57	48
Millennium (4)	57+	62	72+	.	69	.	61+	.	63+	.	64	62	55	47
Arapahoe (3)	57+	61	66	.	65	.	60+	.	61	.	62	61	54	46
Wahoo (3)	49	55	55	.	63	.	60+	.	63+	.	58	55	51	46
Wesley (2)	45	51	42	.	52	.	59+	.	55	.	51	51	50	45
Wendy~W (-)	46	52	43	.	57	.	57	.	62	.	53	52	49	45
SD96240-3-1 (-)	41	52	49	.	51	.	59+	.	54	.	51	52	47	45
Hatcher (2)	40	46	47	.	32	.	54	.	46	.	44	46	45	45
Trego~W (3)	43	43	54	.	61	.	55	.	59	.	54	43	50	44
Expedition (0)	46	53	45	.	66	.	52	.	60	.	54	53	49	44
Harding (5)	50	53	62	.	68	.	61+	.	61	.	60	53	52	43
Jerry (5)	50	59	57	.	64	.	55	.	51	.	55	59	46	43
Alice~W (-)	38	44	41	.	50	.	55	.	57	.	48	44	45	43
Darrell (5)	37	47	43	.	46	.	56	.	48	.	46	47	43	43
SD01W064 (-)	33	41	43	.	50	.	51	.	51	.	46	41	42	43
Tandem (4)	43	48	54	.	53	.	56	.	54	.	52	48	48	42
Overley (0)	47	51	40	.	42	.	50	.	59	.	48	51	46	42
Jagalene (3)	31	38	26	.	31	.	42	.	42	.	34	38	36	40
SD00111-9 (-)	63+	.	75+	.	79+	.	58+	.	61	.	67	.	57	.
SD01273 (-)	57+	.	54	.	61	.	61+	.	57	.	58	.	52	.
NuDakota~W (3)	44	.	57	.	55	.	61+	.	53	.	54	.	51	.
Hawken (3)	51	.	61	.	48	.	62+	.	56	.	56	.	51	.
SD01058 (-)	50	.	54	.	55	.	57	.	54	.	54	.	49	.
NI04420 (-)	41	.	43	.	49	.	52	.	57	.	48	.	46	.
SD98W175-1-1 (-)	44	.	55	.	46	.	55	.	56	.	51	.	46	.
SD98W175-1 (-)	44	.	45	.	53	.	55	.	57	.	51	.	46	.
SD03171 (-)	42	.	45	.	58	.	53	.	53	.	50	.	45	.
Ripper (2)	35	.	44	.	43	.	49	.	53	.	45	.	43	.
Danby~W (3)	40	.	47	.	41	.	50	.	46	.	45	.	43	.
Test avg. :	46	51	51	.	55	.	56	.	56	.	53	51	48	44
High avg. :	63	64	75	.	79	.	62	.	67	.	68	64	57	48
Low avg. :	31	38	26	.	31	.	42	.	42	.	34	38	36	40
# LSD (.05) :	6		5		6		4		4					
## TPG-value :	57		70		73		58		63					
### C.V. :	10		7		8		5		5					

* 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 11. Eastern, western, and state spring wheat averages for bushel wt. (BW), height (HT), lodging (LDG), and grain protein (PRT) in 2007.

Variety (Hdg.)* - by state BW avg.	West Avg. - BW, HT, PRT			East Avg. - BW, HT, PRT			State Avg. - BW, HT, PRT		
	BW lb	HT in	PRT %	BW lb	HT in	PRT %	BW lb	HT in	PRT %
SD00111-9 (-)	60	29	12.8	62	33	13.4	61+	31	13.1+
Millennium (4)	61	30	11.8	61	35	12.0	61+	33+	11.9
Overland (4)	60	29	11.6	61	32	11.7	61+	31	11.7
Tandem (4)	61	35	12.3	61	34	12.3	61+	34+	12.3
SD01273 (-)	60	30	11.4	60	32	11.6	60+	31	11.5
Overley (0)	61	32	12.2	58	29	12.4	59	30	12.3
Harding (5)	59	34	12.6	59	36	12.9	59	35+	12.8+
Arapahoe (3)	59	31	12.1	59	34	12.8	59	33+	12.5+
SD03171 (-)	59	29	12.6	59	30	12.4	59	30	12.5+
Trego~W (3)	60	27	11.7	59	29	11.3	59	28	11.4
Wendy~W (-)	60	25	12.1	58	28	12.3	59	27	12.2
NI04420 (-)	60	30	12.0	58	31	12.0	59	30	12.0
SD01W064 (-)	60	31	11.6	58	33	11.7	59	32	11.7
Expedition (0)	59	31	11.7	59	28	11.9	59	29	11.8
SD98W175-1-1 (-)	60	31	12.9	57	31	13.5	59	31	13.2+
Hawken (3)	59	26	12.2	58	30	13.1	59	28	12.7+
SD98W175-1 (-)	59	31	12.3	58	33	12.6	59	32	12.4
SD01058 (-)	59	32	12.4	57	33	12.7	58	32	12.5+
Danby~W (3)	59	27	11.5	57	31	11.7	58	30	11.6
Jerry (5)	58	35	12.9	59	36	12.7	58	36+	12.8
Wesley (2)	58	31	12.1	57	28	12.2	58	29	12.2
Alice~W (-)	59	27	12.3	56	28	12.1	58	27	12.2
Darrell (5)	58	34	12.0	57	34	12.6	58	34+	12.3
Hatcher (2)	59	30	10.8	56	30	11.0	58	30	10.9
Jagalene (3)	59	29	11.5	55	30	11.8	57	29	11.7
SD96240-3-1 (-)	58	28	12.1	57	31	12.1	57	30	12.1
Wahoo (3)	57	32	11.6	57	31	12.1	57	31	11.9
NuDakota~W (3)	57	27	12.3	55	29	12.4	56	28	12.4
Ripper (2)	56	31	12.3	54	31	12.6	55	31	12.5+
Test avg. :	59	30	12.1	58	31	12.3	59	31	12.2
High avg. :	61	35	12.9	62	36	13.5	61	36	13.2
Low avg. :	56	25	10.8	54	28	11.0	55	27	10.9
# LSD (.05) :							1	3	0.7
## TPG-value :							60	33	12.5
### C.V. :							3	7	4

* 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, traits, and disease reactions for winter wheat varieties tested in 2007.

Variety	Rel Hdg *	Ldg Res	End-use Qlty #	Winter Hardy Rtg #	Coleoptile Pct ##	Wheat Steak Mosaic	Tanspot	Rust			PVP ** Status
								Stripe	Leaf	Stem	
Alice ~W	-1	G	EB	G	78	MR+	MS+	-	S+	MR+	***Pdg
Wendy ~W	-1	E	GN	E	67	MS	R	MR	MS	MR	Yes
Expedition	0	F	GB	G-E	88	S	MS	MS	MS	R	Yes
Overley	0	E	EB	P	89	MR	MR	R	S	R	Yes
Hatcher	2	G	GB	F-G	89	S	-	MS	S	MR	Yes
Ripper	2	G	GB	F	-	-	-	-	S	-	Pdg
Wesley	2	E	GB	G-E	79	S	MR	MR	MR	R	No
Arapahoe	3	F	GB	G-E	83	S	S	MS	MR	MR	Yes
Hawken	3	E	-	-	-	MS	MR	MR	R	MR	-
Jagalene	3	E	AB	G	92	MS	MR	MR	VS	MR	Yes
Danby ~W	3	G	EB	F	-	-	-	R	S	-	Yes
NuDakota ~W	3	E	AB	G-E	-	-	-	-	MS	-	Yes
Trego~W	3	F-G	AB	F-G	80	S	MS	S	S	R	Yes
Wahoo	3	G	-	G	91	S	-	MR	MR	R	Yes
Millennium	4	G	AB	F-G	78	S	MS	MR	MR	MR	Yes
Overland	4	G	AB	E	89	-	-	R	R	R	Pdg
Tandem	4	F-G	EB	G	12	S	S	MR	S	MR	Yes
Darrell	5	G	EB	G	89	MR	MS	-	S	R	Pdg
Harding	5	F-G	AB	E	0	MR	MR	MS	MR	MR	Yes
Jerry	5	F	GB	E	92	MS	-	MR	MR	R	No
NI04420	-	-	-	-	-	-	-	-	-	-	-
SD00111-9	-	-	-	-	-	-	-	-	-	-	-
SD01058	-	-	-	-	-	-	-	-	-	-	-
SD01273	-	-	-	-	-	-	-	-	-	-	-
SD03171	-	-	-	-	-	-	-	-	-	-	-
SD96240-3-1	-	-	-	-	-	-	-	-	-	-	-
SD01W064	-	-	-	-	-	-	-	-	-	-	-
SD98W175-1	-	-	-	-	-	-	-	-	-	-	-
SD98W175-1-1	-	-	-	-	-	-	-	-	-	-	-

* 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.

++ Leaf rust reactions scale: 1= Good to 9= Poor.

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

*** PVP application pending.

Table 13a. Field pea yield results at two east South Dakota locations for 2007.

Variety (Mat.)* - by 2007 state yield avg.	Location Yield Avg. (Bu/A) 13% moist.				East Yield Avg. (Bu/A)		State Yield Avg. (Bu/A)	
	South Shore		Selby		2007	2-Yr	2007	2-Yr
	2007	2-Yr	2007	2-Yr				
CEB 4152 (E)	63+	.	59	.	61	.	47	.
CDC Golden (M)	70+	.	61+	.	66	.	46	.
Eclipse (M)	65+	.	59	.	62	.	46	.
SW Midas (E)	61	.	59	.	60	.	45	.
SW Salute (E)	62	.	57	.	60	.	45	.
SW Marquee (E)	65+	.	57	.	61	.	45	.
Cooper (L)	63+	.	62+	.	63	.	44	.
Fusion (M)	64+	.	52	.	58	.	43	.
CDC Meadow (E)	55	.	57	.	56	.	43	.
DS Admiral (E)	59	.	51	.	55	.	43	.
CEB 1093 (L)	56	.	64+	.	60	.	43	.
SW Capri (E)	41	.	58	.	50	.	39	.
SW Circus (E)	41	.	55	.	48	.	38	.
CDC Sage (M)	53	.	53	.	53	.	38	.
K2 (E)	35	.	52	.	44	.	36	.
CDC Striker (M)	38	.	52	.	45	.	36	.
Cruiser (M)	31	.	52	.	42	.	34	.
Test avg.:	54	.	56	.	56	.	42	.
High avg.:	70	.	64	.	66	.	47	.
Low avg.:	31	.	51	.	42	.	34	.
# LSD (.05):	7		4					
## TPG-value:	63		60					
### C.V.:	9		5					

* 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, 2006-2007.

Variety (Mat.)* - by 2007 state yield avg.	Location Yield Avg. (Bu/A) 13% moist.				West Yield Avg. (Bu/A)		State Yield Avg. (Bu/A)	
	Wall		Bison		2007	2-Yr	2007	2-Yr
	2007	2-Yr	2007	2-Yr				
CEB 4152 (E)	35+	.	29+	.	32	.	47	.
CDC Golden (M)	27	.	26	.	27	.	46	.
Eclipse (M)	32+	30+	27+	.	30	30	46	.
SW Midas (E)	33+	31+	26	.	30	31	45	.
SW Salute (E)	33+	30+	27+	.	30	30	45	.
SW Marquee (E)	31	25+	26	.	29	25	45	.
Cooper (L)	26	29+	24	.	25	29	44	.
Fusion (M)	33+	30+	24	.	29	30	43	.
CDC Meadow (E)	32+	.	26	.	29	.	43	.
DS Admiral (E)	34+	30+	29+	.	32	30	43	.
CEB 1093 (L)	29	27+	24	.	27	27	43	.
SW Capri (E)	31	27+	26	.	29	27	39	.
SW Circus (E)	30	.	25	.	28	.	38	.
CDC Sage (M)	24	.	20	.	22	.	38	.
K2 (E)	32+	27+	25	.	29	27	36	.
CDC Striker (M)	29	22+	25	.	27	22	36	.
Cruiser (M)	28	26+	24	.	26	26	34	.
Test avg. :	31	28	25	.	28	28	42	.
High avg. :	35	31	29	.	32	31	47	.
Low avg. :	24	22	20	.	22	22	34	.
# LSD (.05) :	3	NS [^]	2	.				.
## TPG-value :	32	22	27	.				.
### C.V. :	7	9	7	.				.

* 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.

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

Table 14. East, west, and state Field pea averages for bushel weight (BW), height (HT), lodging (LDG), and grain protein (PRT), at two east South Dakota locations for 2007.

Variety (Mat.)* - by state BW avg.	East Avg. - BW, HT, LDG, PRT				West Avg. - BW, HT, LDG, PRT				State Avg. - BW, HT, LDG			
	BW lb	HT in	LDG**	PRT %	BW lb	HT in	LDG**	PRT %	BW lb	HT in	LDG**	PRT %
CDC Striker (M)	63	.	.	29.1	57	24	0	.	61	24	0	29.1
CDC Meadow (E)	64	.	.	24.5	55	26	1	.	61	26	1	24.5
CDC Golden (M)	63	.	.	28.1	55	24	2	.	60	24	2	28.1
SW Circus (E)	63	.	.	28.3	56	22	1	.	60	22	1	28.3
K2 (E)	62	.	.	27.1	57	22	2	.	60	22	2	27.1
SW Marquee (E)	62	.	.	28.6	56	24	0	.	60	24	0	28.6
SW Capri (E)	63	.	.	29.3	55	22	1	.	60	22	1	29.3
Cruiser (M)	62	.	.	30.5	55	24	4	.	60	24	4	30.5+
CEB 4152 (E)	62	.	.	26.3	55	24	0	.	60	24	0	26.3
CEB 1093 (L)	62	.	.	23.1	54	23	0	.	60	23	0	23.1
SW Salute (E)	62	.	.	26.8	55	26	6	.	59	26	6	26.8
DS Admiral (E)	61	.	.	26.3	55	25	2	.	59	25	2	26.3
Fusion (M)	62	.	.	26.9	53	25	6	.	59	25	6	26.9
Eclipse (M)	63	.	.	29.1	52	23	3	.	59	23	3	29.1
CDC Sage (M)	62	.	.	26.1	54	22	1	.	59	22	1	26.1
SW Midas (E)	62	.	.	25.9	52	23	3	.	59	23	3	25.9
Cooper (L)	61	.	.	25.4	53	23	1	.	58	23	1	25.4
Test avg.:	62	.	.	27.1	55	24	2	.	60	24	2	27.1
High avg.:	64	.	.	30.5	57	26	6	.	61	26	6	30.5
Low avg.:	61	.	.	23.1	52	22	0	.	58	22	0	23.1
# LSD (.05):									1	2	2	0.6
## TPG-value:									60	24	1	29.9
### C.V.:									2	7	44	1

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

** Lodging scale: 0 = all plants erect, 3 = 50% lodged at 45° 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 15. Seed source, traits, and disease reactions for field pea entries tested in 2007.

Variety	Seed source	Rel Mat *	Vine type	Vine ht #	Ldg (1-5)~	Fusarium Wilt **	Powdery mildew **	Mycosphaerella blight **	PVP \$ or PBR Status
DS Admiral	LL-02	E	S-L	17	2	MS	MR	MS	Yes
CEB 4152	MS-	E	-	-	1	-	-	-	Yes
SW Capri	MS-04	E	S-L	18	1	MS	S	MS	Yes
SW Circus	LL-02	E	S-L	-	2	MS	S	MS	Yes
CEB 1093	LL-06	L	-	17	-	-	-	-	Yes
Cooper	MS-02	L	S-L	17	2	MS	MR	MS	Yes
Cruiser	LL-02	M	S-L	18	4	MS	S	MS	Yes
Eclipse	FPS-02	M	S-L	14	1	S	MR	MS	Yes
Fusion	MS-08	M	S-L	16	4	S	MR	MS	Yes
CDC Golden	ASS-03	M	S-L	-	2	MS	MR	MS	No
K2	PUSA-04	E	S-L	16	2	S	S	-	Yes
SW Marquee	LL-04	E	S-L	19	1	MS	MR	MS	Yes
CDC Meadow	ASS-06	E	S-L	-	-	MS	MR	MS	No
SW Midas	LL-05	E	S-L	17	2	MS	MR	MS	Yes
CDC Sage	ASS-05	M	S-L	-	3	MR	MR	MS	Yes
SW Salute	LL-02	E	S-L	17	5	MS	MR	S	Yes
CDC Striker	ASS-02	M	S-L	18	1	MR	S	S	Yes

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

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

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

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

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

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EC 774
Revised
Annually

2009 Variety Recommendations (2008 Crop Performance Results)

Small Grains and Field Peas

SPRING WHEAT • OATS • BARLEY • WINTER WHEAT • FIELD PEAS



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 2009

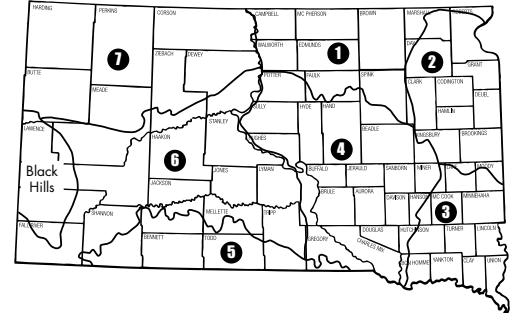
Recommendations are based on information from the South Dakota Crop Performance Testing (CPT) Program and regional land-grant university nurseries. Variety performance depends on genetics and the environment. Environmental factors like temperature, moisture, plant pests, soil fertility, soil type, and 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, are listed below:

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

^{#PVP} Plant variety protection with non-title V status.

^{#PVP/SLR} Plant variety protection with non-title V status and seed licensing requirements.

Crop Adaptation Areas for South Dakota (revised 1992)



SPRING WHEAT			
Recommended		Acceptable/Promising	
Variety	CAA	Variety	CAA
Briggs ^{PVP} Faller ^{PVP} Granger ^{PVP} Howard ^{PVP} RB07 ^{PVP} Steele-ND ^{PVP} Traverse ^{PVP}	all except 3 Statewide all except 3 Statewide all except 3 all except 3 Statewide	Glenn ^{PVP} Tom ^{PVP}	Statewide 3, 4
OAT			
Recommended		Acceptable/Promising	
Variety	CAA	Variety	CAA
Beach ^{#PVP} Jerry ^{#PVP} Morton ^{#PVP} Souris ^{#PVP, SPL} Stallion ^{PVP}	5, 6, 7 5, 6, 7 1, 2, 7 Statewide Statewide	Buff (hull-less) Don Hi Fi ^{#PVP} Reeves	Statewide 5, 6, 7 1, 2, 7 5, 6, 7
BARLEY			
Recommended		Acceptable/Promising	
Variety	CAA	Variety	CAA
Conlon ^{PVP} Eslick - feed Lacey ^{PVP} Tradition ^{PVP} Rawson ^{PVP}	1, 4, 6, 7 6, 7 Statewide Statewide 1, 2, 7	Drummond ^{PVP} Pinnacle ^{PVP} Rassmusson ^{PVP}	Statewide 1, 2, 7 Statewide
WINTER WHEAT			
Recommended		Acceptable/Promising	
Variety	CAA	Variety	CAA
Alice (white) ^{PVP} Expedition ^{PVP} Harding ^{PVP} Millennium ^{PVP} Nu Dakota ^{PVP} Overland ^{PVP} Wendy (white) ^{PVP} Wesley	1 ^{pc} , 4 ^{pc} , 5, 6, 7 ^{pc} 1 ^{pc} , 4, 5, 6, 7 ^{pc} 1 ^{pc} , 2 ^{pc} , 4, 7 1 ^{pc} , 4 ^{pc} , 5, 6, 7 ^{pc} 5, 6, 7 ^{pc} 1 ^{pc} , 3, 4 ^{pc} , 5, 6, 7 ^{pc} 5, 6, 7 ^{pc} 5, 6, 7 ^{pc}	Arapahoe ^{PVP} Darrell ^{PVP} Hatcher ^{PVP} Hawken ^{PVP}	1 ^{pc} , 3, 4 ^{pc} , 5, 6, 7 ^{pc} 1 ^{pc} , 4, 5, 6, 7 ^{pc} 5, 6, 7 ^{pc} 3, 4 ^{pc} , 5, 6

ALIVE

American Malting Barley Assoc. approved malting varieties tested by SDSU:

Conlon	Drummond
Lacey	Robust
Stellar-ND	Tradition

^{pc} 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

2008 South Dakota Test Results, Variety Traits, and Yield Averages

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Variety selection is a very important management decision in a sound crop production program. This report contains variety recommendations, descriptions, and yield data for the spring-seeded small grains of spring wheat, oat, and barley; fall-seeded 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 an important factor; 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 is based on reactions to prevalent races of a disease. Disease resistance changes over time; therefore, growers should inspect variety disease reactions annually and not assume they have not changed.

Variety Recommendations (inside cover)

The Plant Science Department 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.” 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 meet the criteria for the “Recommended” list. A variety needs two 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 to assure genetic and variety purity.

How to Use This Information

It is suggested that growers use this bulletin 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 the varieties suggested for your CAA.**

2. **Evaluate the varieties you selected for desirable traits.** The descriptive information (tables 3, 6, 9, 12, and 14) is updated as changes occur and is obtained from S.D. crop testing plots and research plots maintained by plant breeders and plant pathologists. 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 to the maturity check variety given (see footnote 1 in table C). The Fusarium head blight tolerance ratings for hard red spring wheat are also given. The head blight ratings show **there is no variety resistance to this disease.** It does, however, indicate that **some varieties are more tolerant of the disease than other varieties.**

3. **Evaluate each variety you select for agronomic performance.** One- and three-year average yields for each variety tested are included for each test location if the variety was 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 table 1, oat in tables 4a-b, barley in table 7, winter wheat in tables 10a-b, and field pea in table 13. Averages for bushel weight, protein content levels, and plant height in spring wheat are reported in table 2, oat in table 5, barley in table 8, and winter wheat in table 11.

The test yield and high and low yield variety averages, least significant difference (LSD) values, 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, one can compare varieties to experimental lines that may be released in the near future.

Comparing yields over years

Always compare one-year yields with other one-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 that are discussed later. Likewise, the LSD value and the top performance group for yield or other performance variables 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 49 bu/a in 2008 compared to Briggs at 46 bu/a. Was the yield difference between these two varieties significant? Compare the yield difference of 3 bu/a between the two varieties ($59 - 46$) to the LSD value of 5 bu/a. Since the 3 bu/a difference is less than the LSD value of 5 bu/a, the varieties do not differ significantly in yield. If the difference had been 6 bu/a, the difference would have exceeded 5 bu/a; and there would have been a significant yield difference between the varieties.

Use the LSD value to determine the top performance group (TPG) or entries for each location

At each location, any test entry that qualifies for the TPG can be identified in each column as follows: First, find the highest value within the column and subtract the test LSD value from it to obtain an intermediate value. For example, in the spring wheat at South Shore, the highest 2008 yield was RB07 at 85 bu/a. If we subtract the test LSD of 7 from this high yield, we obtain an intermediate value of 78 bu/a ($85 - 7 = 78$). Second, the TPG-value must be greater than the intermediate value. Remember, these values are rounded to the nearest whole bushel. Therefore, the TPG-value must be at least one bushel greater than the intermediate value of 78. This means the TPG-value must be at least 79 bu/a; and in this case, entries in the TPG must yield 79 bu/a or higher to be in the best performing group for yield.

Similarly, the TPG of entries for the bushel weight, plant height, lodging score, and grain protein can also be identified for

each table column. The TPG values for the yield, bushel weight, tall height, and high grain protein are minimum TPG values because the LSD value is subtracted from the highest average value to identify the TPG. In contrast, the TPG value for lodging score, short height, and low protein is a maximum TPG value because the LSD value is added to the lowest average value to identify the TPG.

For example, you might subtract the LSD value from the tallest entry to identify the tallest entries or TPG suitable for use as forage. In contrast, you might add the LSD value to the shortest entry to identify the shortest entries (TPG) if you are looking for short entries. Another example would be to subtract the protein LSD value in barley from the highest protein entry to identify the highest protein entries for feed. In contrast, you might add the barley protein LSD value to the lowest protein entry to identify the lowest protein entries for malting, where relatively low protein values are desired. 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 with the plus (+) sign.

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 with high levels of experimental error (CV exceeds 15%), LSD and TPG values are not reported because the data contained 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 across the state where an entry was in the TPG for yield. **The statewide top yield percentage for each spring wheat entry is reported in table 1, for oat entry in tables 4a and 4b, and for barley in table 7.** The top-yield frequencies for winter wheat and field pea entries were not determined.

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 three-year period. High percentages for the three-year 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, and don't be surprised if the percentage reaches 100% for the longer three-year period.

Use of origin, traits, and disease reactions tables

Growers are encouraged to use the traits and disease reactions tables for spring wheat (table 3), oat (table 6), barley (table 9), winter wheat (table 12), and field pea (table 14) every year. These tables contain the most up-to-date information in South Dakota for any changes in traits and disease races.

When evaluating winter wheat entries it is suggested that you also review the relative coleoptile length values reported in table 12. 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 coleoptile of Tandem is generally longer, whereas the coleoptiles of Alice, Wendy, Arapahoe, Darrell, Expedition, Millennium, and Wesley are shorter than for Harding. Note: The coleoptile for Wendy is the shortest of all entries and may exhibit poor emergence if planted as deep as Tandem.

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 entries tested by seed company and listed by crop include:

Wheat:	Agri Pro - AP	Trigen Seed, LLC- TS
	Westbred, LLC- WB	
Barley:	Busch Agricultural Resources, Inc- BARI	
Field pea:	Alternate Seed Strategies – ASS	
	Legume Logic – LL	Meridian Seeds – MS
	Pulse USA – PUSA	

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 whenever possible.

Fertility and weed control programs differed between the East

River (Brookings, South Shore, Beresford, Spink Co., Selby, and Warner) and West River (Bison, Ralph, and Wall) locations. East River plots were fertilized with a starter application of 55 lb/a of 37-15-0 (20.3 lbs. of N and 8.25 lbs. of phosphorous/a) down a secondary tube at seeding. In addition, at these locations a post-emergence tank-mix of Bronate plus Puma at labeled rates was applied on the spring wheat. West River plots were fertilized with 6 gals/acre of 10-34-0 (6.6 lbs. of nitrogen and 24 lbs. of phosphorous/acre) at seeding. Post-emergence applications of Starane NXT herbicide at 1.25 pt/a were made in West River spring wheat, barley, and oats plots, except at Ralph where an additional 1 pt/a of Axial was applied on the barley and wheat. Field pea plots were seeded at 7 pure live seeds (PLS) per square foot (320,000 seeds/a) with inoculated seed. Chemical weed control consisted of 2 pt/a of Prowl at Wall and Bison; 0.75 pt/a of Poast post-emergence at Selby; and 4.5 oz/a Spartan pre-emergence at South Shore.

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 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 rate to 46 PLS per square foot if the seedbed is poor. If planting is delayed until May 1 or later, increase the seeding rate to 50 PLS per square foot. 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 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 - *A. Ibrahim and S. Kalsbeck*
Brookings Agronomy Farm - *D. Doyle and Staff*
N.E. Research Farm (South Shore) - *A. Heuer*
S.E. Research Farm (Beresford) - *R. Berg and Staff*
Central Research Farm (Highmore) - *R. Bortnem and M. Volek*
Dakota Lakes Research Farm (Pierre) - *D. Beck and Staff*

The cooperation and resources . . . of these growers are gratefully acknowledged:

Cooperator	Location	Cooperator	Location
A. & I. Ryckman	Brown Co.	Nelson Brothers	Miller
M. Stiegelmeier	Selby	R. Seidel	Bison
B. Greenough	Oelrichs	S. Masat	Spink Co.
R. & L. Haskins	Hayes	H. Roghair	Okaton
D. Wilson	Sturgis	M. Aamot	Kennebec
R. Van Der Pol	Platte	B. Jorgensen	Tripp Co.
L. Novotny	Martin	L. Erickson	Ralph
D. Patterson	Wall	G. Geise	Selby

This report is available online at <http://www.sdstate.edu/~wpls/http/var/vartrial.html>.

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

Trait	Crop				
	Spring Wheat	Oats	Barley	Winter Wheat	Field pea
Yield	3/15*	3/15	3/12	3/15	3/15
Bushel weight	3/15	3/15	3/12	3/15	3/15
Height	3/15	3/15	3/12	3/15	3/15
Lodging	WA	WA	WA	WA	WA
Disease reaction	A	A	A	WA	A
Protein	3/15	3/15	3/12	3/15	3/15
Quality data#	2/4	WA	WA	3/15	WA
Unique traits\$	WA	WA	WA	WA	WA

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

A= annually, WA= when available.

Table B. Date test trials were seeded, by crop and test location, in 2008

Location	Crop				
	HRS Wheat	Oats	Barley	Field Pea	HRW Wheat (Fall 2007)
Beresford	.	April 10	.	.	.
Bison	<u>Apr 17**</u>	Apr 17	<u>Apr 17</u>	Apr 17	Sept. 19
Brookings	April 21	April 21	April 21	.	Sept. 6
Brookings – IMS*	.	.	.	.	Sept. 6
Brown Co.	April 17	April 17	April 17	.	.
Pierre-DL	.	.	.	.	Sept. 12
Hayes	.	.	.	.	Sept. 17
Kennebec	.	.	.	.	Sept. 20
Martin	.	.	.	.	Sept. 23
Miller	April 5§	April 5	April 5	.	.
Okaton	.	April 17	.	.	.
Onida	.	.	.	.	Sept. 12
Platte	.	.	.	.	Sept. 14
Ralph	Apr 17	.	Apr 17	.	.
Selby	April 18	<u>April 18</u>	April 18	April 23	Sept. 11
South Shore	April 23	April 23	April 23	April 23	<u>Sept. 11</u>
Spink Co.	April 19	.	.	.	.
Sturgis	.	.	.	.	Sept. 20
Winner	.	.	.	.	Sept. 14
Winner – IMS*	.	.	.	.	Sept. 14
Wall	April 15	April 15	April 15	April 15	Sept. 13

* IMS indicates this trial was an intensive management study.

** Locations that are underlined were dropped because their high coefficient of variation indicated they contained too much error to be a valid test.

§ Shaded dates indicate test trials that were not harvested because of drought or hail damage.

Performance Trial Highlights

General – The performance of all the small grain crops in year 2008 was variable depending on region. Adequate moisture and cool late spring temperatures produced a bumper winter wheat crop across the state. The same conditions produced a bumper crop of spring wheat, oats, and barley crops in the eastern and central regions of the state. In contrast, limited moisture produced below average yields of spring wheat, barley, and oats in the extreme western regions of the state. Test trial locations and seeding dates are indicated in table B.

Comments regarding tables – Tables 1, 4a-b, 7, 10a-c, and 13 are first sorted high to low by state three-year, and then sorted high to low by state 2008 yield averages. Likewise, tables 2, 5, 8, and 11 are sorted high to low by state or all location bushel weight (BW) average. Care should be taken when reading the yield average tables because the entries are first sorted by three-year averages then by the 2008 averages. You are encouraged to first evaluate yield performance by looking at the three-year averages then by looking at the 2008 yield averages. In some cases, varieties that were only tested in 2008 produced the highest numerical yields for year 2008. In other cases, however, the highest numerical yields may have been produced by varieties that have been tested for three years. Just look at all the values in the 2008 yield column, regardless of if they were tested for the current year or for three years.

HRS Wheat:

Yields (table 1) – The entries **Traverse, Faller, and Steele-ND at 100%; RB07 at 80%; and Howard, Briggs and Granger at 60%** (table 1.) were the top-yield frequency entries for the past three years (2006-08). 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 60% of the test locations during the past three-year period. The entries **Albany at 87%; RB07 at 83%; Faller and Steele-ND at 67%; and Howard at 50%** were the top-yield frequency entries for 2008.

Bushel weight (table 2) - The top bushel weight entries (five-location averages in tables 2) included 10 entries at 60 lbs., including the varieties **Glenn, Tom, Ada, Kelby, and Granger**. Varieties differing by 1 lb. were significantly different.

Height (table 2) - The check variety **Chris at 37”** was the tallest, while **Kelby and Samson at 28”** were the shortest entries. Entries differing by 1” were significantly different.

Lodging (table 2) – The entries **Howard, Faller, Kuntz, and Traverse** with a lodging score of 2 were significantly higher in lodging resistance compared to the other varieties. Entries differing by 1 were significantly different.

Grain protein content (table 2) – The entries **Chris at 14.6%; Glenn and Alsen at 14.0%; Steele-ND at 13.9%; Briggs and Howard at 13.8%; and Hat Trick at 13.7%** were highest in grain protein. Entries differing by 0.9% were significantly different.

Spring oat:

Yields (table 4b) – The entries **Souris, HiFi, Beach, and Stal-lion at 100%**; and **Morton at 75%** (table 4c) were the top-yield frequency entries for the past three years (2006-08). 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 80% of the test locations for the past three years. The entries **Souris at 100%; HiFi at 71%; and Beach at 57%** were the top-yield frequency entries for 2008.

Bushel weight (table 5) - The top bushel weight entry (table 5) was the hullless entry **Buff at 45 lbs**. Hytest was the highest in bushel weight among the hulled entries. The eastern and western bushel weight averages indicate entries had to differ by 1 lb. to be significantly different.

Height (table 5) - The tallest entries were **Beach and Morton at 43”** in the eastern, and **Beach and Morton at 42”** and **Hytest, Reeves, and Jerry at 41”** in the western test trials. Entries differing by 1” in the eastern and 2” in the western test trials were significantly different.

Lodging (table 5) – The eastern lodging score differences among the entries were not significant (NS).

Grain protein content (table 5) – The entry **Hytest at 16.5%** in the eastern and **Stark Hls at 20.4%** in the western test trials were the highest in grain protein. Entries differing by 0.5% and 0.8% in the eastern and western test trials, respectively, were significantly different.

Spring Barley:

Yields (table 7) - The entries **Eslick at 100%; Rawson at 75%; and Tradition and Conlon at 50%** (table 7) were the top-yield frequency entries for the past three years (2006-08). 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 during the past three-year period. The entries **Eslick at 80%** and **Rawson and Pinnacle at 40%** were the top-yield frequency entries for 2008.

Bushel weight (table 8) – The four-location average indicated the top bushel weight entry was Conlon at 49 lbs. Entries differing by 1 lb. were significantly different.

Height (table 8) – The four-location average indicated **Rawson, Robust, and Drummond at 32”** were the tallest entries; while **Eslick at 26”** was the shortest entry. Entries differing by 2” were significantly different.

Lodging (table 8) – The entry **Rawson with lodging score of 2** had the best lodging resistance among the entries tested. Entries differing by 1 were significantly different.

Grain protein content (table 8) – The top grain protein entries were **Tradition at 12.1%; Conlon and Drummond at 12.0%; Robust at 11.9%; and Stellar-ND at 11.8%**. The entry **Pinnacle (10.5%)** was the lowest in grain protein content. Entries differing by 0.4% were significantly different.

HRW Wheat:

Yield (tables 10a-c) - The individual location averages for yield for the past three years (2006-08) at Wall, Sturgis, Winner, Martin, and Brookings were valid. At these locations, the entries **Overland, NuDakota, Expedition, Wendy~W, Wesley, Millennium, and Wahoo** appeared most often in the top-yield group. In 2008, the entries **Overland, NuDakota, Expedition, and Smoky Hill** appeared in the top-yield group most often.

Bushel weight (table 11) - The top bushel weight entry was **RonL at 60 and 59 lbs** in the western and eastern trials, respectively. Entries differing by **1 lb** were significantly different.

Height (table 8) - **Harding at 40"** was the tallest entry in the western trials; and entries differing by **1"** were significantly different.

Grain protein content (table 11) – **Harding at 13.8% and Hawken at 13.7%** were the highest in grain protein in the western

trials; while **Harding at 13.4% and Lyman at 13.3%** were the highest in grain protein in the eastern trials. Entries differing by **0.3% and 0.4%** in the western and eastern test trials, respectively, were significantly different.

Field Pea:

Yield (table 13) – When averaged over the past two years (2007-2008) there was no difference among the entries in yield performance at Selby and Wall; while at South Shore all the entries but K2 that had been tested for two years were in the top performance group. The top entries for yield for 2008 by location were: South Shore – **Spider at 74, Cooper at 69, and Eclipse at 66 bu/a**; Selby – **Spider at 37 bu/a**; Wall – **Spider at 35 bu/a**.

Grain protein content (table 14, average of South Shore and Selby) – **CDC Striker at 29.1%** was the highest and **SW Midas at 24.2%** was the lowest in protein.

Table C. Explanation of performance table footnotes

No.	Explanation of footnotes
	Tables with yield, bushel weight, height, and grain protein averages:
[1]	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]	State top-yield frequency (spring grains) – the frequency (%) of all test sites that an entry was in the top performance-group for yield on a statewide basis. 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) (all crops) – 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 the LSD value, the difference between the values is nonsignificant (NS).
[6]	TPG-value (all crops) – the minimum value within a column that yield, bushel weight, tall height, and high protein must equal or exceed; or the maximum value within a column that short height, lodging scores, and low protein must be equal to or less than to qualify for the TPG. TPG- values are identified by a plus (+) sign.
[7]	Coefficient of variation (C.V.) (all crops) - the percent of experimental error associated with a test trial. Ideally, the value for yield is less than 15%. Values less than 5% tend to be less common while values 6 to 15% are more common. Occasionally, values exceed 15%; this means the trial contained too much experimental error to be a valid test; thus, no data for that location is not reported.
	Tables with crop variety origin, traits, and disease reaction information:
[8]	Lodging Resistance & Winter Hardy Ratings: P- poor, F- fair, G- good, VG- very good, or E- excellent.
[9]	Awn Texture (barley): S- smooth, SS- semi-smooth, SR- semi-rough, and R- rough.
[10]	End-use Quality (winter wheat): A- acceptable, F- fair, G- good, E- excellent for B- baking or N- noodles.
[11]	Coleoptile Length (winter wheat) - value is expressed as a percentage of the variety Harding (3-1/4" long).
[12]	Fusarium head blight or headscaab - a disease reaction followed by a plus (+) sign indicates a variety exhibits a consistent tolerance to head blight in regards to grain yield and quality compared to other varieties.
[13]	Disease reactions (all crops): VS- very susceptible, S- susceptible, MS- moderately susceptible, MR- moderately resistant, R-resistant, M- mixture of both susceptible and resistant types.
[14]	Plant variety protection (PVP, title V certification option in the US and Plant breeders rights (PBR, Canada) are sold by variety name only as a class of certified seed. Status is yes, no or pending (pdg).
[15]	Relative maturity (field pea): E- early, M- medium, or L- late maturity.
[16]	Leaf type (field pea): N- normal or SL- semi-leafless.

Table 1. Spring wheat yield results at six South Dakota locations, 2006-2008. Table is sorted by 3-yr then by 2008 state yield average.

Variety, Heading [1]	Location Yield Avg. (Bu/a at 13% moist.)											State Yield Avg.(bu/a)		State Top-Yield Freq. (%)	
	Brookings		South Shore		Spink Co.		Brown Co.		Selby		Wall	2008	3-Yr	2008	3-Yr
	2008	3-Yr	2008	3-Yr	2008	3-Yr	2008	3-Yr	2008	3-Yr	2008	2008	3-Yr	2008	3-Yr
RB07, 2	48+	45	85+	65+	66	63+	90+	63+	50+	52+	46+	64	58	83	80
Traverse, 0	45	49+	75	62+	75+	66+	80	64+	42	50+	48+	61	58	33	100
Faller, 4	49+	46+	78	61+	73+	62+	83	64+	45+	50+	48+	63	57	67	100
Steele-ND, 3	47+	46+	80+	65+	70+	62+	80	62+	45+	49+	41	61	57	67	100
Howard, 4	47+	45	82+	66+	70+	63+	84	65+	38	45	42	61	57	50	60
Briggs (Ck), 0	46+	47+	76	63+	65	59	76	61+	37	45	48+	58	55	33	60
Granger, 0	47+	47+	77	60+	66	59	72	57+	40	48+	50+	59	54	33	60
Ada, 1	44	42	65	54	61	56	77	57+	38	46+	42	55	51	0	40
Kelby, 2	43	42	70	58	58	54	76	58+	29	41	46+	54	51	17	20
Glenn, 3	40	39	73	58	61	56	71	55	37	43	.	56	50	0	0
Alsen, 4	40	40	71	55	65	54	77	56	37	41	43	56	49	0	0
Reeder, 3	38	41	61	53	57	49	80	59+	35	42	38	52	49	0	20
Chris, 3	33	34	49	41	42	40	62	49	29	32	35	42	39	0	0
Albany, 4	46+	.	76	.	70+	.	85+	.	47+	.	46+	62	.	87	.
Tom, +2	41	.	74	.	61	.	83	.	33	.	50+	57	.	17	.
Samson, 2	38	.	71	.	59	.	78	.	40	.	48+	56	.	17	.
Hat Trick, 3	41	.	65	.	63	.	74	.	39	.	46+	55	.	17	.
Kuntz, 2	41	.	68	.	58	.	83	.	28	.	43	54	.	0	.
Test avg. :	44	44	73	59	64	57	77	59	39	45	45	57	53		
High avg. :	50	49	85	66	75	66	90	65	50	52	50	64	58		
Low avg. :	33	34	49	41	42	40	62	49	29	32	34	42	39		
[5] LSD (0.05):	5	4	7	7	6	8	6	8	6	7	7				
[6] TPG-value :	46	46	79	60	70	60	85	57	45	46	44				
[7] C.V. :	8	8	6	7	6	7	6	7	10	9	11				

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

Table 2. Spring wheat bushel wt. (BW), height (HT), lodging (LDG), and grain protein (PROT) values averaged over five South Dakota locations in 2008. Table is sorted by BW average.

Variety, Heading [1]	Five-Location Averages*			
	BW lb	HT in	LDG	PROT %
Glenn, 3	60+	34	3	14.0+
Tom, 2	60+	31	3	13.5
Ada, 1	60+	31	3	13.5
Kelby, 2	60+	28	3	14.1+
Granger, 0	60+	35	3	13.6
Alsen, 4	59	31	3	14.0+
RB07, 2	59	30	3	13.7+
Steele-ND, 3	59	33	3	13.9+
Briggs (Ck), 0	59	33	3	13.8+
Howard, 4	59	33	2+	13.8+
Hat Trick, 3	59	31	3	13.7+
Faller, 4	58	32	2+	13.6
Kuntz, 2	58	29	2+	13.6
Albany, 4	58	30	3	12.8
Samson, 2	58	28	3	13.2
Reeder, 3	58	32	3	13.6
Traverse, 0	58	34	2+	13.2
Chris, 3	56	37+	3	14.6+
Test avg. :	59	32	3	13.6
High avg. :	60	37	3	14.6
Low avg. :	56	28	2	12.8
[5] LSD (0.05):	1	2	1	0.9
[6] TPG-value :	60	36	2	13.7
[7] C.V. :	2	9	36	11

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

* Locations include: Brookings, South Shore, Spink Co., Brown Co., and Selby.

Table 3. Origin, traits, and disease reactions for spring wheat varieties tested in 2008. Table is sorted by relative heading.

Variety	Origin	Relative Heading [1]	Lodging Res [8]	Rust [13]			Fusarium Head Blight	PVP Status [14]
				Stripe	Stem	Leaf		
Briggs (Ck)	SD-02	0	G	MR	R	MR	M+	Yes
Granger	SD-04	0	G	MR	R	MR	M+	Yes
Traverse	SD-06	0	G	MR	R	MR	MR+	Yes
Ada	MN-06	1	G	.	R	R	MS+	Yes
Kelby	AW-06	2	VG	.	MR	R	MR	Yes
Kuntz	AW-07	2	VG	MS	MR	MR	MS+	Yes
RB07	MN-07	2	G	MS	MR	MR	MS	Yes
Tom	MN-08	2	G	.	MR	MR	MR+	Pdg
Samson	WB-07	2	G	S	R	MR	S	Yes
Chris	MN-65	3	P	.	R	MS	S	No
Glenn	ND-05	3	G	MR	R	R	MR+	Yes
Hat Trick	TS-07	3	G	MR	MR	R	MR	Yes
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+	Yes
Faller	ND-07	4	G	.	R	R	MR+	Yes
Albany	TS-09	4	G	R	R	MS	MR+	Pdg

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



Table 4a. Oat yield results- South Dakota eastern locations, 2006-2008. Table is sorted by 2008 state yield average.

Variety, Heading [1]	Location Yield Avg. (Bu/a at 13% moist.)								Eastern Yield Avg. (bu/a)		State Yield Avg. (bu/a)		State Top-Yield Freq. (%)	
	Brookings		South Shore		Beresford		Brown Co.		2008	3-Yr	2008	3-Yr	2008	3-Yr
	2008	3-Yr	2008	3-Yr	2008	3-Yr	2008	3-Yr						
Souris, 6	133+	130+	157+	140+	155+	135+	138+	129+	146+	.	129	.	100	100
HiFi, 8	128	124+	155+	134+	146+	128+	146+	128+	144+	.	125	.	71	100
Beach, 6	135+	129+	151+	136+	135	126+	137+	120+	140+	Data not given, due to high C.V	122	Data not given, due to high C.V	57	100
Stallion, 8	133+	131+	145+	136+	136	136+	130	120+	136	.	119	.	43	100
Morton, 7	115	116	153+	134+	135	127+	121	112+	131	.	115	.	29	75
Jerry, 5	109	113	140	124	128	114	109	90	122	.	113	.	29	0
Don, 1	111	109	124	122	134	117	129	100	125	.	107	.	0	0
Reeves, 2	120	109	126	122	131	116	120	91	124	.	104	.	0	0
Hyttest, 4	101	92	119	103	96	82	111	87	107	.	93	.	0	0
Buff Hls, 3	81	82	120	103	93	89	108	78	101	.	89	.	0	0
Stark Hls, 6	81	66	90	79	82	64	104	76	89	.	77	.	0	0
Test avg.:	120	109	134	121	128	112	123	103	126	111	111	.		
High avg.:	143	131	157	140	155	136	151	129	148	134	129	.		
Low avg.:	81	66	90	79	82	64	100	76	89	71	77	.		
[5] LSD (0.05):	12	14	17	12	11	19	16	23	9			.		
[6] TPG-value:	132	118	141	129	145	118	136	107	140			.		
[7] C.V.:	7	6	9	8	6	8	9	11	10			.		

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

Table 4b. Oat yield results- South Dakota western locations, 2006-2008. Table is sorted by 2008 state yield an average.

Variety Heading [1]	Location Yield Avg. (Bu/a at 13% moist.)						Western Yield Avg. (bu/a)		State Yield Avg. (bu/a)		State Top-Yield Freq. (%)	
	Wall		Bison		Okaton		2008	3-Yr	2008	3-Yr	2008	3-Yr
	2008	3-Yr	2008	3-Yr	2008	3-Yr						
Souris, 6	73+	.	84+	.	162+	.	106+	.	129	.	100	100
HiFi, 8	67+	.	77+	.	155+	.	100+	.	125	.	71	100
Beach, 6	65	.	74	.	156+	Data	98	.	122	Data	57	100
Stallion, 8	59	.	70	.	161+	not	97	.	119	not	43	100
Morton, 7	50	.	80+	.	152	given,	94	.	115	given,	29	75
Jerry, 5	71+	.	81+	.	150	due to	101+	.	113	due to	29	0
Don, 1	47	.	60	.	147	high	85	.	107	high	0	0
Reeves, 2	49	.	49	.	133	C.V.	77	.	104	C.V.	0	0
Hyttest, 4	45	.	59	.	122	.	75	.	93	.	0	0
Buff Hls, 3	47	.	61	.	111	.	73	.	89	.	0	0
Stark Hls, 6	40	.	45	.	95	.	60	.	77	.	0	0
Test avg. :	57	.	70	.	142	.	90	.	111	.		
High avg. :	76	.	84	.	162	.	106	.	129	.		
Low avg. :	40	.	45	.	95	.	60	.	77	.		
[5] LSD (0.05):	11	.	8	.	9	.	8	.		.		
[6] TPG-value :	66	.	77	.	154	.	99	.		.		
[7] C.V. :	14	.	8	.	4	.	12	.		.		

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

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Table 5. Eastern, western, and statewide oat bushel weight (BW), height (HT), lodging (LDG), and grain protein (PROT) averages in 2008. Table is sorted by state BW average.

Variety, Heading [1]	Eastern Avg.				Western Avg.			State Avg.		
	BW lb	HT in	LDG	PROT %	BW lb	HT in	PROT %	BW lb	HT in	PROT %
Buff Hls, 3	45+	37	2+	14.8	42+	35	19.2	44	36	16.7
Hyttest, 4	41	42	2+	16.5+	39	41+	18.5	40	41	17.3
Stark Hls, 6	41	42	2+	13.7	35	38	20.4+	39	40	16.6
Reeves, 2	39	42	2+	14.8	38	41+	17.2	38	41	15.8
Beach, 6	38	43+	2+	13.2	38	42+	15.9	38	42	14.4
Stallion, 8	38	41	2+	14.0	37	40	16.5	38	41	15.1
Jerry, 5	38	40	2+	14.1	37	41+	18.1	38	40	15.8
Don, 1	37	35	2+	13.9	38	33	16.3	37	34	14.9
Souris, 6	37	36	2+	13.3	37	35	17.3	37	36	15.0
Morton, 7	37	43+	2+	13.8	36	42+	16.8	37	42	15.1
HiFi, 8	37	41	2+	13.5	35	40	17.3	36	41	15.1
Test avg. :	39	39	2	14.2	38	38	17.6	39	39	15.7
High avg. :	45	43	2	16.5	42	42	20.4	44	42	17.5
Low avg. :	37	35	2	12.9	35	33	15.9	36	34	14.4
[5] LSD (0.05):	1	1	NS	0.5	1	2	0.8			
[6] TPG-value :	45	43	2	16.1	42	41	19.7			
[7] C.V. :	3	5	23	5.0	3	5	3			

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

Table 6. Origin, variety traits, and disease reactions for oat entries tested in 2008, sorted by relative heading.

Variety	Origin	Relative Heading [1]	Lodging Res [8]	Grain Color	Smut [13]	Rust [13]		Red Leaf [13]	PVP Status [14]
						Stem	Crown		
Hulled types:									
Don	IL-85	1	G	White	R	MS	S	MR	No
Reeves	SD-02	2	G	White	MR	S	MS	MS	No
Jerry	ND-94	5	G	White	MS	MS	S	MS	Yes
Hyttest	SD-86	4	G	Lt. Cream	MR	MS	S	S	No
Beach	ND-04	6	F-G	White	R	S	MS	MS	Yes
Souris	ND-06	6	G	White	MR	MS	R	MS	Yes
Morton	ND-01	7	G	White	R	MR	R	MS	Yes
HiFi	ND-01	8	G	White	MR	R	MR	MS	Yes
Stallion	SD-06	8	G	White	S	S	MR	MR	Yes
Hulless types:									
Buff Hls	SD-02	3	G	Hulless	R	S	MS	MR	No
Stark Hls	ND-04	6	G	Hulless	.	MR	MS	S	Yes

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

Table 7. Barley yield results at five South Dakota locations, 2006-2008. Table is sorted by 3-yr then by 2008 state yield average.

Variety, Heading [1]	Location Yield Avg. (Bu/a at 13% moist.)									State Yield Avg. (bu/a)		State Top-Yield Freq. (%)	
	Brookings		South Shore		Brown Co.		Selby		Wall	2008	3-Yr	2008	3-Yr
	2008	3-Yr	2008	3-Yr	2008	3-Yr	2008	3-Yr	2008	2008	3-Yr	2008	3-Yr
Eslick, 3	71+	75+	96+	84+	114+	77+	72+	81+	54	81	79	80	100
Rawson, 2	68+	71+	92+	88+	109	77+	56	66	27	70	76	40	75
Lacey, 0	69+	70+	73	77	100	69	54	66	56	70	71	20	25
Tradition, 0	64	60	79	80+	103	71+	50	64	50	69	69	0	50
Drummond, 2	64	61	75	79	95	69+	54	68	51	68	69	0	25
Conlon, 0	67+	63	83	84+	106	68+	37	55	32	65	68	20	50
Stellar-ND, 2	56	63	76	73	100	67+	53	63	64+	70	67	20	25
Robust, 3	58	61	69	71	82	63	48	55	48	61	63	0	0
Pinnacle, 3	68	.	96+	.	121+	.	60	.	47	78	.	40	-
Rasmusson, 3	73+	.	78	.	99	.	59	.	63	74	.	20	-
Test avg. :	66	66	81	80	103	70	54	65	50	71	70		
High avg. :	73	75	96	88	121	77	72	81	64	81	79		
Low avg. :	56	60	69	71	82	63	37	55	27	61	63		
[5] LSD (0.05):	9	12	9	9	11	12	9	11	9				
[6] TPG-value :	65	64	88	80	111	66	64	71	56				
[7] C.V. :	10	8	8	6	7	9	11	10	12				

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

Table 8. Barley bushel weight (BW), height (HT), lodging (LDG), and grain protein (PROT) values averaged over four locations in 2008. Table is sorted by BW average.

Variety, Heading [1]	Four-Location Averages*			
	BW lb	HT in	LDG	PROT %
Conlon, 0	49+	31	3	12.0+
Eslick, 3	48	26	3	11.2
Tradition, 0	48	31	3	12.1+
Lacey, 0	47	29	3	11.5
Rasmusson, 3	47	30	3	11.4
Pinnacle, 3	47	30	3	10.5
Rawson, 2	47	32+	2+	11.2
Robust, 3	47	32+	3	11.9+
Drummond, 2	46	32+	3	12.0+
Stellar-ND, 2	46	30	3	11.8+
Test avg. :	47	30	3	11.6
High avg. :	49	33	3	12.1
Low avg. :	46	26	2	10.5
[5] LSD (0.05):	1	2	1	0.4
[6] TPG-value :	49	32	2	11.8
[7] C.V. :	2	8	15	5

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

* Locations include: Brookings, South Shore, Brown Co., and Selby.

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Table 9. Origin, traits, and disease reactions for barley varieties tested in 2008.

Variety	Origin	Relative Heading [1]	Lodging Res [8]	Grain Use	Awn Texture [9]	Loose Smut [13]	Stem Rust [13]	Blotch [13]		PVP Status [14]
								Spot	Net	
Two-row types:										
Conlon	ND-96	0	G	Malt	SS	S	S	M	MR	Yes
Rawson	ND-05	2	F	Feed	SR	S	S	R	MS	Yes
Eslick	MT-04	3	F	Feed	R	S	.	.	.	No
Pinnacle	ND-07	3	.	.	S	.	.	.	MS	Pdg
Six-row types:										
Lacey	MN-00	0	G	Malt	S	S	S	M	S	Yes
Tradition	BARI-03	0	F	Malt	S	MS	MR	M	S	Yes
Stellar-ND	ND-05	2	G	Feed	SS	S	S	M	MS	Yes
Drummond	ND-00	2	VG	Malt	SS	S	S	R	MS	Yes
Rasmusson	MN-08	3	G	.	S	S	S	M	S	Pdg
Robust	MN-83	3	G	Malt	S	S	S	M	S	Yes

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

Table 10a. Winter wheat yield results - South Dakota western locations, 2006-2008. Table is sorted by 3-yr then by 2008 state yield average.

Variety, Heading [1,2]	Location Yield Avg. (Bu/a at 13% moist.)						Western Yield Avg. (bu/a)		State Yield Avg. (bu/a)	
	Wall		Hayes		Sturgis		2008	3-Yr	2008	3-Yr
	2008	3-Yr	2008	3-Yr	2008	3-Yr				
Overland, 4	85+	61+	78	.	44+	36+	74+	.	77	.
NuDakota~W, 3	78	62+	75	.	39	33	72+	.	76	.
Expedition, 0	80+	61+	81+	.	39	34	70	.	73	.
Wendy~W, -1	84+	64+	83+	.	28	30	69	Data	73	Data
Wesley, 2	79+	61+	77	.	41+	36+	69	not	71	not
Hatcher, 2	65	56	71	.	46+	40+	68	given,	70	given,
Millennium, 4	76	56	77	.	41+	36+	69	due to	71	due to
Wahoo, 3	75	58+	75	.	39	36+	65	high	66	high
Arapahoe, 3	71	56	73	.	36	32	65	C.V.	66	C.V.
Darrell, 5	73	55	79+	.	43+	37+	69	.	71	.
Alice~W, -1	77	60+	74	.	40+	35	69	.	70	.
Harding, 5	67	52	71	.	34	33	63	.	65	.
Tandem, 4	68	55	82+	.	39	35	65	.	64	.
Jagalene, 3	77	58+	70	.	37	34	63	.	67	.
Jerry, 5	62	49	66	.	34	32	60	.	61	.
Smoky Hill, 4	81+	.	85+	.	39	.	71+	.	76	.
Hawken, 3	79+	.	73	.	36	.	70	.	71	.
Fuller, 2	78	.	76	.	36	.	68	.	71	.
Lyman, 3	72	.	75	.	40+	.	70	.	71	.
RonL, 2	71	.	75	.	39	.	68	.	70	.
InfinityCL, 3	72	.	78	.	34	.	69	.	70	.
SettlerCL, 3	75	.	79+	.	33	.	67	.	67	.
Test avg. :	74	57	76	.	37	35	69	.	70	.
High avg. :	85	64	85	.	46	40	74	.	77	.
Low avg. :	62	49	66	.	28	30	60	.	61	.
[5] LSD (0.05):	7	7	7	.	7	5	4	.		.
[6] TPG-value :	79	58	79	.	40	36	71	.		.
[7] C.V. :	6	10	6	.	12	9	11	.		.

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

Table 10b. Winter wheat yield results - South Dakota western locations, 2006-2008. Table is sorted by 3-yr then by 2008 state yield average (Continued).

Variety, Heading [1.2]	Location Yield Avg. (Bu/a at 13% moist.)								Western Yield Avg. (bu/a)		State Yield Avg. (bu/a)	
	Kennebec		Winner		Winner-IMS		Martin		2008	3-Yr	2008	3-Yr
	2008	3-Yr	2008	3-Yr	2008	3-Yr	2008	3-Yr				
Overland, 4	91	.	75+	57+	84+	.	59	47+	74	.	77	.
NuDakota~W, 3	84	.	83+	58+	84+	.	58	47+	72	.	76	.
Expedition, 0	77	.	70	51+	76+	.	68+	48+	70	.	73	.
Wendy~W, -1	79	.	68	52+	81+	.	60	48+	69	Data	73	Data
Wesley, 2	76	.	65	49	82+	.	64+	52+	69	not	71	not
Hatcher, 2	73	.	72	49	77+	.	71+	52+	68	given,	70	given,
Millennium, 4	89	.	68	52+	71	.	63	47+	69	due to	71	due to
Wahoo, 3	82	.	58	47	58	.	69+	50+	65	high	66	high
Arapahoe, 3	86	.	61	50+	68	.	61	49+	65	C.V.	66	C.V.
Darrell, 5	81	.	67	47	73	.	68+	49+	69	.	71	.
Alice~W, -1	77	.	71	52+	78+	.	63	48+	69	.	70	.
Harding, 5	86	.	61	49	60	.	59	44	63	.	65	.
Tandem, 4	82	.	56	46	66	.	62	46	65	.	64	.
Jagalene, 3	62	.	57	42	82+	.	54	39	63	.	67	.
Jerry, 5	76	.	56	42	69	.	55	43	60	.	61	.
Smoky Hill, 4	84	.	69	.	84+	.	58	.	71	.	76	.
Hawken, 3	78	.	79+	.	83	.	63	.	70	.	71	.
Fuller, 2	75	.	77+	.	70	.	62	.	68	.	71	.
Lyman, 3	95	.	74	.	65	.	66+	.	70	.	71	.
RonL, 2	79	.	73	.	81+	.	60	.	68	.	70	.
InfinityCL, 3	82	.	75+	.	70	.	69	.	69	.	70	.
SettlerCL, 3	74	.	70	.	74	.	67+	.	67	.	67	.
Test avg. :	81	.	70	50	74	.	63	47	68	.	70	.
High avg. :	95	.	83	58	86	.	71	52	74	.	77	.
Low avg. :	62	.	56	42	58	.	54	39	60	.	61	.
[5] LSD (0.05):	6	.	9	9	11	.	8	6		.		.
[6] TPG-value :	90	.	75	50	76	.	64	47		.		.
[7] C.V. :	5	.	10	10	11	.	8	9		.		.

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

Table 10c. Winter wheat yield results - South Dakota eastern locations, 2006-2008. Table is sorted by 3-yr then by 2008 state yield average (Continued).

Variety, Heading [1,2]	Location Yield Avg. (Bu/a at 13% moist.)												Eastern Yield Avg. (bu/a)		State Yield Avg. (bu/a)	
	Brookings		Brookings-IMS		Selby		Platte		Onida		Pierre		2008	3-Yr	2008	3-Yr
	2008	3-Yr	2008	3-Yr	2008	3-Yr	2008	3-Yr	2008	3-Yr	2008	3-Yr				
Overland, 4	79	74+	90+	.	84+	.	85+	.	85+	.	57+	.	80+	.	77	.
NuDakota~W, 3	91+	73+	95+	.	83+	.	88+	.	79+	.	55+	.	82+	.	76	.
Expedition, 0	80	69+	96+	.	76	.	85+	.	81+	.	45	.	77	.	73	.
Wendy~W, -1	83	69+	89	.	84+	.	81+	.	81+	.	42	.	77	Data	73	.
Wesley, 2	77	66+	92+	.	73	.	71	.	80+	.	49	.	74	not	71	Data
Hatcher, 2	81	66+	87	.	75	.	73	.	66	.	48	.	72	given,	70	not
Millennium, 4	74	69+	78	.	78	.	77	.	76	.	49	.	72	only	71	given,
Wahoo, 3	78	67+	79	.	67	.	66	.	69	.	45	.	67	one	66	due to
Arapahoe, 3	75	71+	72	.	74	.	67	.	73	.	44	.	68	site	66	high
Darrell, 5	84	67+	90+	.	76	.	72	.	74	.	49	.	74	with	71	C.V.
Alice~W, -1	79	62	88	.	71	.	69	.	79+	.	48	.	72	3-yr	70	.
Harding, 5	75	65+	73	.	71	.	64	.	69	.	52	.	67	avg.	65	.
Tandem, 4	70	60	75	.	70	.	63	.	69	.	36	.	64	.	64	.
Jagalene, 3	70	55	82	.	65	.	72	.	80+	.	60+	.	72	.	67	.
Jerry, 5	68	65+	70	.	74	.	66	.	65	.	28	.	62	.	61	.
Smoky Hill, 4	94+	.	97+	.	78	.	84+	.	80+	.	58+	.	82+	.	76	.
Hawken, 3	88	.	89	.	73	.	72	.	71	.	37	.	72	.	71	.
Fuller, 2	84	.	92+	.	77	.	69	.	79+	.	51	.	75	.	71	.
Lyman, 3	80	.	78	.	81	.	70	.	73	.	48	.	72	.	71	.
RonL, 2	74	.	89	.	72	.	70	.	75	.	53+	.	72	.	70	.
InfinityCL, 3	82	.	85	.	78	.	71	.	71	.	47	.	72	.	70	.
SettlerCL, 3	75	.	87	.	61	.	72	.	70	.	37	.	67	.	67	.
Test avg. :	81	67	86	.	75	.	74	.	75	.	46	.	73	.	70	.
High avg. :	97	74	97	.	84	.	88	.	86	.	60	.	82	.	77	.
Low avg. :	68	55	70	.	61	.	63	.	65	.	25	.	62	.	61	.
[5] LSD (0.05):	7	10	8	.	6	.	9	.	9	.	8	.	5	.		.
[6] TPG-value :	91	65	90	.	79	.	80	.	78	.	53	.	78	.		.
[7] C.V. :	6	8	6	.	6	.	9	.	7	.	12	.	9	.		.

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

Table 11. Western, eastern, and statewide winter wheat bushel wt.(BW), height (HT), and grain protein (PROT) averages in 2008. Table is sorted by state BW average.

Variety, Heading [1,2]	Western Avg.			Eastern Avg.		State Avg.	
	BW lb	HT in	PROT %	BW lb	PROT %	BW lb	PROT %
RonL, 2	60	35	12.4	59+	11.3	59	11.7
Lyman, 3	60	38	13.5	58	13.3+	59	13.4
Millennium, 4	60	39	12.8	57	12.1	59	12.3
Overland, 4	60	36	12.9	57	12.1	59	12.4
Tandem, 4	60	39	13.4	58	12.8	59	13.0
Smoky Hill, 4	60	33	13.2	58	12.5	59	12.8
Wendy~W, -1	60	31	13.2	57	12.5	59	12.8
Alice~W, -1	60	33	12.9	57	12.1	59	12.4
InfinityCL, 3	60	37	12.6	57	11.8	59	12.1
Darrell, 5	59	37	13.1	57	12.2	58	12.5
Expedition, 0	59	35	12.9	57	11.9	58	12.3
Hawken, 3	59	30	13.7+	57	12.9	58	13.2
Harding, 5	59	40+	13.8+	57	13.4+	58	13.5
Fuller, 2	59	33	13.3	57	12.7	58	12.9
Jagalene, 3	58	34	13.0	56	12.0	57	12.3
Arapahoe, 3	58	38	13.0	57	12.5	57	12.7
SettlerCL, 3	58	33	12.5	56	12.1	57	12.2
Jerry, 5	58	39	13.4	56	13.0	57	13.2
Hatcher, 2	58	33	12.5	56	11.5	57	11.9
NuDakota~W, 3	58	31	13.1	55	11.9	57	12.3
Wesley, 2	58	32	13.4	55	12.7	56	13.0
Wahoo, 3	56	37	13.1	55	12.3	56	12.6
Test avg. :	59	35	13.0	57	12.3	58	12.6
High avg. :	61	40	13.8	59	13.4	60	13.5
Low avg. :	56	30	12.4	55	11.3	56	11.7
[5] LSD (.05):	1	1	0.3	1	0.4		
[6] TPG-value :	61	40	13.6	59	13.1		
[7] C.V. :	3	5	4.0	2	5.0		

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

Table 12. Origin, traits, and disease reactions for winter wheat varieties tested in 2008.

Variety [2]	Relative Heading [1]	Origin	Lodging Res [8]	Winter Hardy Rtg [8]	End-Use Qty [10]	Coleoptile Lgth [11]	Wheat Steak Mosaic [13]	Tanspot [13]	Fusarium Head Blight [13]	Rust [13]			PVP Status [14]
										Stripe	Leaf	Stem	
Alice~W	-1	SD-06	G	G	EB	78	MR	MS	MS	.	MS	MR	Yes
Wendy~W	-1	SD-04	E	E	GN	67	MS	R	S	MR	MS	MR	Yes
Expedition	0	SD-02	F	G-E	GB	88	S	MS	S	MS	S	R	Yes
Fuller	2	KS-07	F-G	G	AB	.	MS	MR	MS	.	MR	MR	Pdg
Hatcher	2	CO-04	G	F-G	GB	89	S	.	S	MS	MS	MR	Yes
RonL	2	KS-06	G-E	G	GB	.	MR	.	MR	R	S	MR	Yes
Wesley	2	NE-98	E	G-E	GB	79	S	MR	MR	MR	MS	R	No
Lyman	3	SD-08	F	G-E	AB	90	MR	MD	MS	R	R	R	Pdg
Arapahoe	3	NE-88	F	G-E	GB	83	S	S	MR	MS	MR	MR	Yes
Hawken	3	AP-07	E	G	AB	.	MS	MR	MS	MR	MR	MR	Yes
InfinityCL	3	NE-05	G	G	AB	.	S	.	.	MR	MR	MR	Yes
Jagalene	3	AP-02	E	G	AB	92	MS	MR	S	MR	S	MR	Yes
NuDakota~W	3	AP-06	E	G-E	AB	.	MR	MR	S	MR	MS	MR	Yes
SettlerCL	3	NE-08	G	G	AB	.	S	.	.	MS	MS	MR	Pdg
Wahoo	3	NE/WY-01	G	G	AB	91	S	.	MR	MR	MS	R	Yes
Millennium	4	NE-99	G	F-G	AB	78	S	MS	MS	MR	MR	MR	Yes
Overland	4	NE/SD-07	G	E	AB	89	.	.	MR	R	R	R	Pdg
Smoky Hill	4	WPB-07	G	G	EB	.	MS	MR	S	R	R	MR	Yes
Tandem	4	SD-97	F-G	G	EB	112	S	S	MR	MR	S	MR	Yes
Darrell	5	SD-06	G	G	EB	89	MR	MS	MR	.	MS	R	Yes
Harding	5	SD-99	F-G	E	AB	100	MR	MR	MS	MS	MR	MR	Yes
Jerry	5	ND-01	F	E	GB	92	MS		MS	MR	MR	R	No

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

Table 13. Field pea yield results at three South Dakota locations, 2006-2008. Table is sorted by 3-yr then by 2008 three-location yield average.

Variety, Rel. Mat. [15]	Location Yield Avg. (Bu/a) 13% moist.						3-Location Avg. (bu/a)	
	South Shore		Selby		Wall		2008	2-Yr
	2008	2-Yr	2008	2-Yr	2008	2-Yr		
Cooper, L	69+	66+	28	45+	28	27+	42	46
CDC Golden, M	63	66+	26	43+	26	27+	38	45
Eclipse, M	66+	66+	22	41+	25	29+	38	45
CDC Meadow, E	63	59+	27	42+	26	30+	39	44
DS Admiral, E	60	60+	28	40+	28	32+	39	44
Fusion, M	55	60+	20	36+	24	29+	33	42
SW Midas, E	51	56+	25	42+	18	26+	31	41
CDC Striker, M	63	50+	28	40+	28	29+	40	40
K2, E	55	45	23	37+	29	30+	36	37
Spider, M	74+	.	37+	.	23	.	45	.
Polstead, M	61	.	26	.	35+	.	41	.
Tudor, M	64	.	27	.	26	.	39	.
Arcadia, E	68+	.	22	.	27	.	39	.
Camry, M	60	.	26	.	21	.	36	.
Test avg.:	62	59	26	41	26	29	38	43
High avg.:	74	66	37	45	35	32	45	46
Low avg.:	51	45	20	36	18	26	31	37
[5] LSD (.05):	9	20	4	NS	4	NS		
[6] TPG-value:	66	47	34	36	32	26		
[7] C.V.:	10	9	11	7	10	7		

[15] Maturity- relative to other varieties in the trial. Note that additional table footnotes are explained in Table C.

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Table 14. Seed source, traits, and disease reactions for field pea entries tested in 2008.

Variety	Seed Source	Rel Mat [15]	Pea Protein content* (%)	Vine		Ldg (1-5) [4]	Fusarium Wilt [13]	Powdery Mildew [13]	Mycosphaerella Blight [13]	PVP or PBR Status [14]
				Type [16]	Ht (in)					
DS Admiral	LL-02	E	25.7	S-L	17	2	MS	MR	MS	Yes
Eclipse	PUSA-02	M	28.4	S-L	14	1	S	MR	MS	Yes
Fusion	MS-08	M	25.8	S-L	16	4	S	MR	MS	Yes
SW Midas	LL-05	E	24.2	S-L	17	2	MS	MR	MS	Yes
CDC Striker	ASS-02	M	29.1	S-L	18	1	MR	S	MS	Yes
Cooper	MS-02	L	25.7	S-L	17	2	MS	MR	MS	Yes
CDC Golden	ASS-03	M	27.1	S-L	.	2	MS	MR	MS	No
CDC Meadow	ASS-06	E	25.3	S-L	.	.	MS	MR	MS	No
K2	PUSA-04	E	25.6	S-L	16	2	S	S	.	Yes
Polstead	PUSA-07	M	27.9	S-F	17	2	S	MR	S	Yes
Tudor	PUSA-05	M	26.3	S-L	20	2	MS	MR	S	Yes
Camry	PUSA-05	M	25.7	S-L	16	4	S	MR	MS	Yes
Arcadia	LL-07	E	24.5	S-L	20	3	MS	MS	VS	Yes
Spider	LL-08	M	28.2	S-L	21	4	R	R	MR	Yes

[15] Maturity- relative to other varieties in the trial. Note that additional table footnotes are explained in Table C.

* Protein content is an average of two locations-- South Shore and Selby.

2010 Variety Recommendations (2009 Crop Performance Results)

Small Grains and Field Peas

SPRING WHEAT • OATS • BARLEY • WINTER WHEAT • FIELD PEAS

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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 2010

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:

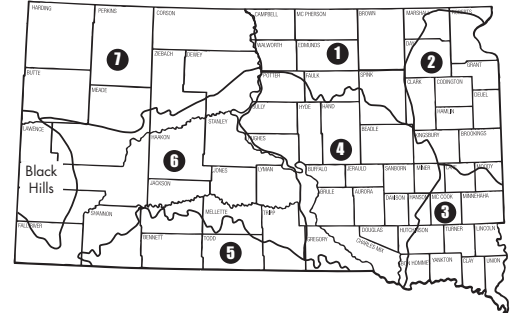
^{PVP} Plant variety protection has been issued or is anticipated; seed sales are restricted to classes of certified seed.

^{#PVP} Plant variety protection with non-title V status.

^{#PVP/SLR} Plant variety protection with non-title V status and seed licensing requirements.

SPRING WHEAT			
Recommended		Acceptable/Promising	
Variety	CAA	Variety	CAA
Brick ^{PVP} Briggs ^{PVP} Faller ^{PVP} Granger ^{PVP} Howard ^{PVP} RB07 ^{PVP} Steele-ND ^{PVP} Traverse ^{PVP}	Statewide All except 3 Statewide All except 3 Statewide All except 3 All except 3 Statewide	Albany ^{PVP} Glenn ^{PVP} Tom ^{PVP}	Statewide Statewide 3, 4
OAT			
Recommended		Acceptable/Promising	
Variety	CAA	Variety	CAA
Beach ^{PVP} Colt ^{PVP} Souris ^{PVP/SLR} Stallion ^{PVP}	5, 6, 7 Statewide Statewide Statewide	Buff (hullless) Don Hi Fi ^{#PVP} Jerry ^{#PVP} Reeves Rockford Streaker ^{PVP} (hullless)	Statewide 5, 6, 7 1, 2, 7 5, 6, 7 5, 6, 7 1, 2, 7 Statewide
BARLEY			
Recommended		Acceptable/Promising	
Variety	CAA	Variety	CAA
Conlon ^{PVP} Eslick - feed Lacey ^{PVP} Pinnacle ^{PVP} Rasmusson ^{#PVP/SLR} Rawson ^{PVP}	1, 4, 6, 7 6, 7 Statewide 1, 2, 7 Statewide 1, 2, 7	Drummond ^{PVP}	Statewide
WINTER WHEAT			
Recommended		Acceptable/Promising	
Variety	CAA	Variety	CAA
Alice ^{PVP} (white) Expedition ^{PVP} Harding ^{PVP} Millennium ^{PVP} NuDakota ^{PVP} Overland ^{PVP} Wendy ^{PVP} (white)	1 ^{pc} , 4 ^{pc} , 5, 6, 7 ^{pc} 1 ^{pc} , 4, 5, 6, 7 ^{pc} 1 ^{pc} , 2 ^{pc} , 4, 7 1 ^{pc} , 4 ^{pc} , 5, 6, 7 ^{pc} 5, 6, 7 ^{pc} 1 ^{pc} , 3, 4 ^{pc} , 5, 6, 7 ^{pc} 5, 6, 7 ^{pc}	Arapahoe ^{PVP} Darrell ^{PVP} Hatcher ^{PVP} Hawken ^{PVP} Lyman ^{PVP} Smoky Hill ^{PVP} Wesley	1 ^{pc} , 3, 4 ^{pc} , 5, 6, 7 ^{pc} 1 ^{pc} , 4, 5, 6, 7 ^{pc} 5, 6, 7 ^{pc} 3, 4 ^{pc} , 5, 6 1 ^{pc} , 3, 4 ^{pc} , 5, 6, 7 ^{pc} 5, 6, 7 ^{pc} 5, 6, 7 ^{pc}

Crop Adaptation Areas for South Dakota (revised 1992)



American Malting Barley Assoc. approved malting varieties tested:

Conlon	Drummond
Lacey	Rasmusson
Stellar-ND	Robust

^{pc} 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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EC 774-10: Access at <http://agbiopubs.sdstate.edu/articles/EC774-10.pdf>.

Small Grains and Field Peas

2009 South Dakota Test Results, Variety Traits, and Yield Averages

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Variety selection is a very important management decision in a sound crop production program. This report contains variety recommendations, descriptions, and yield data for the spring-seeded small grains—spring wheat, oat, and barley; fall-seeded 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 than a variety selected merely for its yield history.

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

Variety Recommendations (inside cover)

The Plant Science Department 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 criteria listed in Table B 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 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 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 the varieties suggested for your CAA.**

2. **Evaluate the varieties you selected for desirable traits.**

Variety descriptive information (tables 1e, 2e, 3e, 4e, and 5b) is updated as changes occur and is obtained from crop testing/research plots maintained by plant breeders and plant researchers. 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. The 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.** One- and three-year average yields for each variety tested are included for each test location if the variety was tested for three or more years, except for field pea trials where only two years of data are available. 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-b, oat in tables 2a-b, barley in tables 3a-b, winter wheat in tables 4a-b, and field pea in table 5a. Averages for bushel weight, grain protein levels, lodging scores, and plant height in spring wheat are reported in tables 1c-d, oat in tables 2c-d, barley in tables 3c-d, and winter wheat in tables 4c-d.

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 include 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 one-year yields with other one-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 or other performance variables 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 75 bu/a in 2009 compared to Albany at 71 bu/a. Did the yield difference between these varieties differ significantly? Compare the yield difference of 4 bu/a between the varieties (75 – 71) to the LSD value of 6 bu/a. Since the 4 bu/a difference is less than the LSD value of 6 bu/a, the varieties do not differ significantly in yield. If the difference between Faller and Albany had been 7 bu/a, the difference would have exceeded 6 bu/a; and there would have been a significant yield difference between these varieties.

Use the LSD value to determine the top performance group (TPG) or entries for each location

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. For example, in spring wheat the top yielding entry at Spink County for 2009 was Albany that averaged 83 bu/a (table 1a). Subtracting LSD value of 7 bu/a from the highest yield entry of 83 bu/a equals 76 bu/a. Normally, entries in that column yielding 77 bu/a or higher are in the TPG. However, we can also say a yield of 76 bu/a also qualifies as a TPG-value because the yield averages are rounded to the nearest bushel. This inclusion of 76 bu/a 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. In this case, the variety Faller would also be included in the TPG for yield at Spink County in 2009.

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 high 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 the variables height and grain protein 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 suitable for use as forage. In contrast, you might add the LSD-value to the shortest entry to identify the shortest entries (TPG) if you are looking for short varieties. Another example would be to subtract the protein LSD-value in barley from the highest protein entry to identify the highest protein entries for feed. In contrast, you might add the barley protein LSD-value to the lowest protein entry to identify the lowest protein entries for malting, where relatively low protein values are desired. 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 the **bold type** 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 with high levels of experimental error (CV exceeds 15%), LSD and TPG values are not reported because the data contained 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 across the state where an entry was in the TPG for yield. The statewide top yield percentage for spring wheat entries are reported in table 1b, for oat entries in tables 2b, and for barley entries in table 3b. The top-yield frequencies for winter wheat were not determined because winter survival can cause large variations in top-yield frequency percentages.

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

Growers are encouraged to use the traits and disease reactions tables for spring wheat (table 1e), oat (table 2e), barley (table 3e), winter wheat (table 4e), and field pea (table 5b) every year. These tables contain the most up-to-date information in South Dakota for any changes in traits and disease races.

When evaluating winter wheat entries, it is suggested that you also review the relative coleoptile length values reported in table 12. 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 company and listed by crop include:

Wheat:	Agri Pro Coker – AC	Trigen Seed, LLC – TS
	Westbred, LLC – WB	
Field pea:	Alternate Seed Strategies – ASS	
	Legume Logic – LL	Meridian Seeds – MS
	Pulse USA – PUSA	

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 A. Yield means are generated from four variety replications per location per year when possible.

Fertility and weed control programs differed between the East River (Brookings, South Shore, Beresford, Spink Co., Selby, and Warner) and West River (Bison, Ralph, and Wall) locations. East River 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 Selby and Spink County spring wheat plots, Folicur was applied by cooperators according to label directions at recommended rates to protect against Fusarium head blight. West River plots were fertilized with 6 gals/acre of 10-34-0 (6.6 pounds of nitrogen and 24 pounds of phosphorous/acre) at seeding. Post-emergence applications of Starane NXT herbicide at 1.25 pt/a were applied in West River spring wheat, barley, and oats plots, except at Ralph and Bison where an additional 1 pt/a of Axial was applied on the barley and wheat. Field pea plots were seeded at 7 pure-live-seeds/ft² (320,000 seeds/a) with inoculated seed. Chemical weed control consisted of 2 pt/a of Prowl H₂O pre-emergence and 1 pt/a Poast post-emergence at Wall and Bison; and 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 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.

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S.E. Research Farm (Beresford) – *R. Berg and Staff*
Dakota Lakes Research Farm (Pierre) – *D. Beck and Staff*

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

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

Table A. Date test trials were seeded by crop and test location in 2009.

Location	Crop				
	HRS Wheat	Oats	Barley	Field Pea	HRW Wheat (Fall 2008)
Beresford	.	April 14	.	.	.
Bison	May 14**	May 14	May 14	May 14**	Sept. 23**
Brookings	April 17	April 17	April 17	.	Sept. 6
Brown Co.	April 23	April 23	April 23	.	.
Pierre-DL	.	.	.	.	Sept. 12
Hayes	.	.	.	.	Sept. 17
Kennebec	.	.	.	.	Sept. 17
Martin	.	.	.	.	Sept. 29**
Miller	April 24	April 24	April 24	.	.
Okaton	.	April 23	.	.	.
Onida	.	.	.	.	Sept. 12
Platte	.	.	.	.	Sept. 14
Ralph	May 12	.	May 12	.	.
Selby	May 4	May 4	May 4	April 28	Sept. 11
South Shore	April 21	April 21	April 21	April 21	Sept. 11**
Spink Co.	April 28	.	.	.	.
Sturgis	.	.	.	.	Sept. 25
Winner	.	.	.	.	Sept. 14
Wall	April 23	April 23	April 23	April 24	Sept. 24

* IMS indicates this trial was an intensive management study.

** Location(s) dropped – high CV value indicated too much experimental error to be valid.

Table B. Minimum criteria required by crop for the recommended list in this publication.

Trait	Crop				
	Spring Wheat	Oats	Barley	Winter Wheat	Field pea
Yield, protein, bushel weight, and plant height	3/15*	3/15	3/12	3/15	3/15
	3/15	3/15	3/12	3/15	3/15
	3/15	3/15	3/12	3/15	3/15
Lodging & unique traits	WA	WA	WA	WA	WA
Disease reactions	A	A	A	WA	A
Quality data#	2/4	WA	WA	3/15	WA

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

A= annually, WA= when available.

Performance Trial Highlights

General – The performance of all the small grain crops in year 2009 was variable depending on region. Adequate moisture and cool late spring temperatures produced a bumper small grain crop at some locations in the state (Brown Co. and South Shore). Test trial locations and seeding dates are indicated in Table A.

Comments regarding tables – Tables 1a-b, 2a-b, 3a-b, 4a-b, and 5a are first sorted high to low by state 3-year and then by state 2009 yield averages. Likewise, tables 1c, 2c, 3c, and 4c are sorted high to low by state or all location grain protein (Prt) averages, while tables 1d, 2d, 3d, and 4d are sorted low to high by state or all location lodging (Ldg) score averages. Take care when reading the yield average tables because the entries are first sorted by 3-year averages then by the 2009 averages. First, evaluate yield performance by looking at the 3-year averages and then at the 2009 yield averages. In some cases, some varieties first tested in 2009 produced the highest yields for 2009. In other cases, however, the highest 2009 yields may have been produced by varieties that have been tested for three years. Look at all the values in the 2009 yield column.

HRS Wheat:

Yields (Tables 1a-b) – The entries **Traverse, Faller, and Howard at 100%; SD 3948 and Briggs at 83%; Steele-ND at 67%; and Brick at 50%** (tables 1.) were to top-yield frequency entries for the past 3-years (2007-09). These entries exhibited good yield stability or the ability to adapt to a wide range of growing conditions by being in the top-performance group at more than 50% of the locations tested for the past three years. The entries **Faller at 89%, Traverse at 78%, Albany at 67%, and SD 4023 at 56%** were the top-yield frequency entries for 2009.

Grain protein content (Table 1c) – The entries **Vantage at 15.8%; Chris at 15.3%; SD 4011, Kelby, and Alsen at 15.1%; and Glenn and SD4076 at 15.0%** averaged 15% or higher in grain protein across all six locations. Depending on location, entries had to differ by 0.3 to 0.9% in grain protein to be significantly different from one another.

Bushel weight (Table 1c) - The top bushel weight entries (six-location averages in tables 1c) included the entries **Brick at 59.1 lb, Glenn and SD 3948 at 59.0 lb, Barlow at 58.7 and Breaker at 58.6 lb**. Depending on location, varieties had to differ from 1 to 1.5 lb to be significantly different from one another

Lodging (Table 1d) – The entries **Kelby, Kuntz, SD 4024, SD 4036, Samson, Brogan, Reeder, Breaker Vantage, and Mott** averaged the best in lodging score (1) across all locations compared to the other entries. Entries generally had to in lodging score by 1 to be significantly different from one another.

Height (Table 1d) - The entries **Chris at 38” and SD 3997 at 36”** was the tallest entries, while **Kelby and Brennan at 29”** were the shortest entries across all six locations. Depending on location, entries generally had to differ by 2-3” to be significantly different in plant height.

Spring oat:

Yields (Tables 2a-b) – The entries **Souris, Hi Fi, and Beach at 100%, Stallion at 80%, and Colt and Morton at 60%** (tables 2b) were to top-yield frequency entries for the past 3-years (2007-09). The entries **SD 031128-245 at 78%, Souris and Hi Fi at 67%, and**

Rockford and SD 031128-330 at 56% were to top-yield frequency entries for 2009.

Grain protein content (Table 2c) – The entry **SD 051502**, a hullless experimental line, at **16.9%** and **Hyttest at 16.5%** were the entries with the highest grain protein averages across the six locations in table 2c. Depending on location, entries had to differ by 0.7% to 1.9% in grain protein to be significantly different from one another.

Bushel weight (Table 2c) - The top bushel weight entries across the six location listed in table 2c were the hullless entries **Buff at 43.9, SD 051502 Hls at 43.7, and Streaker Hls at 43.4 lbs**. Among the hulled entries, **Hyttest at 39.2 lbs** was the highest in bushel weight. The eastern and western bushel weight averages indicate entries had to differ by 1 lb. to be significantly different. Depending on location, entries had to differ by 1.1 to 1.9 lbs to be significantly different from one another.

Lodging (Table 2d) – All the locations listed in table 2d had a lodging score average of 2 or higher. When averaged across all six locations, the entries **SD 031128-245, Rockford, SD 031128-330, Souris, Buff, HiFi, Morton, and Beach** had better lodging scores compared to the other entries.

Height (Table 2d) - The entries **Beach at 45” and Morton at 44”** were the tallest when averaged across the six locations in table 2d, whereas **Don at 33” and Don and Colt at 35”** were the shortest entries. Depending on location, entries had to differ by 3-4” in plant height to be significantly different from one another.

Spring Barley:

Yields (Tables 3a-b) – The entries **Pinnacle at 100%, Eslick, Rawson, Rasmusson, and Conlon at 75%, and Lacey at 50%** (table 3b) were to top-yield frequency entries for the past 3-years (2007-09). The entries **Eslick at 88% and Pinnacle and Rawson at 50%** were to top-yield frequency entries for 2009.

Grain protein content (Table 3c) – The top grain protein entries were **Conlon at 12.9% and Robust at 12.8%**. The entries **Pinnacle at 11.1% and Rawson at 12.0%** were the lowest in grain protein when average across all six locations. In addition, Pinnacle and Rawson were generally the lowest in grain protein at every location.

Bushel weight (Table 3c) – The five-location average indicated the top bushel weight entries were **Conlon at 48.0 and Eslick at 47.5 lbs**. The varieties Drummond and Stellar-ND tended to be the lowest in bushel weight at most locations.

Lodging (Table 3d) – the entries **Pinnacle, Stellar-ND, Rawson, and Lacey** had the lowest five-location lodging score averages.

Height (Table 3d) – The five-location average indicated **Drummond and Robust at 35”** were the tallest entries, while **Eslick at 28”** was the shortest entry. Depending on location, entries had to differ by 2-3” in plant height to be significantly different from one another.

HW Wheat:

Yield (Tables 4a-b) - The entries **Expedition, Overland, Wahoo, Darrell, Wesley, NuDakota, Millennium, Wendy, Hawken, Lyman, Harding, and Arapahoe** were in the top-yield group at half or more of the locations tested for the past three years. In 2009, the entries **SD06069, SD051118, SD06158, Expedition, Smoky Hill, Overland, Wahoo, Wesley, Wendy, and Radiant** appeared in the top-yield group at half or more of the locations tested.

Grain protein content (Table 4c) – the entries Art at 14.8%, Wesley at 14.6%, Harding, Lyman, and SD03164-2 at 14.4% had the most consistently high protein values across the six locations reported in table 4c. Depending on location, entries had to differ by 0.4% to 1.2% in protein to be significantly different from one another.

Bushel weight (Table 4d) - The top bushel weight entries were AP503CL2 at 60.2; Wendy, SD06069, Infinity CL, and Expedition at 60.0; and Smoky Hill at 59.9 lbs. Depending on location, entries had to differ by 1.0 to 2.1 lbs in bushel weight to be significantly different from one another.

Field Pea:

Yield (Table 5a) – When averaged over the past two years (2008-2009), the top yield group at both South Shore and Selby included the same entries **Spider, Cooper Arcadia, CDC Meadow, CDC Golden, and CDC Striker**. The top entries by location for yield in 2009 were: South Shore – **Cooper, Arcadia, CDC Meadow, CDC Golden, Thunderbird, and Commander**; Wall – all entries were in the top yield group because no significant differences in yield could be detected; and at Selby – **Spider, Cooper, Arcadia, CDC Meadow, CDC Golden, CDC Striker, Thunderbird, Commander, and Summit**.

Grain protein content (Table 5b, average of South Shore and Selby) – The entries **Korando at 25.8%, CDC Striker at 25.2%, and CDC Golden at 25.0%** were the highest, while **Sage at 23.3%** was the lowest in protein.

Table C. Explanation of performance table footnotes

No.	Explanation of footnotes
	Tables with yield, bushel weight, height, and grain protein averages:
[1]	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. In oat, Hls indicates the variety is a hulless type variety.
[2]	~W (winter wheat) – Denotes a white wheat variety.
[3]	State top-yield frequency (spring grains) – the frequency (%) of all test sites that an entry was in the top performance-group for yield on a statewide basis. 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) (all crops) – 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 the LSD value the difference between the values is nonsignificant (NS).
[6]	TPG-value (all crops) – the minimum value within a column that yield, bushel weight, tall height, and high protein must equal or exceed; or the maximum value within a column that short height, lodging scores, and low protein must be equal to or less than to qualify for the TPG. TPG- values are indicated in bold type.
[7]	Coefficient of variation (C.V.) - the percent of experimental error associated with a test trial. Ideally, the for yield is less than 15%. Values less than 5% tend to be less common while values of 6 to 15% are more common. Occasionally, values exceed 15%; this means the trial contained too much experimental error to be a valid test; thus, there is no data reported for that trial.
	Tables with crop variety origin, traits, and disease reaction information:
[8]	Lodging Resistance & Winter Hardy Ratings: P- poor, F- fair, G- good, VG- very good, or E- excellent.
[9]	Awn Texture (barley): S- smooth, SS- semi-smooth, SR- semi-rough, and R- rough.
[10]	End-use Quality (winter wheat): A- acceptable, F- fair, G- good, E- excellent for B- baking or N- noodles.
[11]	Coleoptile Length (winter wheat) - value is expressed as a percentage of the variety Harding (3-1/4" long).
[12]	Fusarium head blight or headscab - a disease reaction followed by a plus (+) sign indicates a variety exhibits a consistent tolerance to head blight in regards to grain yield and quality compared to other varieties.
[13]	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.
[14]	Plant variety protection (PVP, title V certification option in the US and Plant breeders rights (PBR, Canada) are sold by variety name only as a class of certified seed. Status is yes, no or pending.
[15]	Relative maturity (field pea): E- early, M- medium, or L- late maturity.
[16]	Leaf type (field pea): N- normal or SL- semi-leafless.

Table 1a. Spring wheat yield results- South Dakota eastern locations, 2007-2009.
Table sorted by 3-yr then by 2009 state yield average.

Variety, Heading [1]	Location Yield Avg.--Bu/a at 13% moist.												East Yield Avg. bu/a		State Yield Avg. bu/a	
	Brookings		South Shore		Miller		Spink Co.		Selby		Brown Co.		2009	3-Yr	2009	3-Yr
	2009	3-Yr	2009	3-Yr	2009	3-Yr	2009	3-Yr	2009	3-Yr	2009	3-Yr				
Faller, 6	75	55	82	75	43	.	76	68	60	52	81	71	70	64	61	58
Traverse, 2	66	52	84	72	49	.	66	66	57	50	82	70	67	62	60	57
Howard, 6	64	50	78	76	42	.	62	63	58	47	72	69	63	61	55	56
RB07, 4	58	47	63	70	42	.	67	61	60	53	73	70	61	60	55	56
Steele-ND, 5	59	49	77	74	43	.	59	60	55	49	72	68	61	60	54	55
SD 3948, -	60	49	70	73	44	.	69	63	51	43	72	67	61	59	56	54
Briggs-Ck, 2	58	49	73	71	41	.	67	60	54	45	69	65	60	58	54	53
Granger, 2	62	50	69	68	46	.	53	55	50	45	73	64	59	56	54	52
Brick, 0	56	48	72	69	44	.	66	59	51	42	64	61	59	56	53	52
Tom, 4	56	46	72	67	42	.	68	59	55	44	71	68	61	57	53	52
Glenn, 5	60	43	70	67	42	.	65	58	49	42	71	60	60	54	52	50
Kuntz, 4	53	42	66	64	38	.	66	57	56	42	74	68	59	55	50	50
Kelby, 3	52	44	63	65	40	.	66	56	49	40	63	61	56	53	48	49
Reeder, 5	52	42	67	61	40	.	73	53	51	41	72	64	59	52	51	48
Alsen, 6	57	43	62	61	36	.	63	55	47	39	68	61	56	52	49	48
Chris, 5	50	37	53	46	27	.	45	39	45	33	56	50	46	41	41	38
Albany, 6	71	.	77	.	40	.	83	.	61	.	83	.	69	.	60	.
SD 4023, -	63	.	81	.	42	.	79	.	59	.	80	.	67	.	59	.
Barlow, 3	65	.	78	.	45	.	67	.	53	.	74	.	64	.	56	.
SD 4024, -	60	.	69	.	43	.	76	.	55	.	77	.	63	.	56	.
SD 4035, -	60	.	77	.	44	.	73	.	52	.	76	.	64	.	55	.
SD 4073, -	58	.	73	.	37	.	72	.	55	.	78	.	62	.	55	.
Breaker, 5	60	.	75	.	41	.	68	.	53	.	74	.	62	.	55	.
Sabin, 3	61	.	71	.	45	.	63	.	61	.	71	.	62	.	55	.
Brogan, 5	56	.	64	.	41	.	74	.	53	.	76	.	61	.	53	.
Samson, 4	58	.	78	.	38	.	73	.	55	.	70	.	62	.	53	.
SD 4011, -	60	.	68	.	43	.	65	.	50	.	70	.	59	.	53	.
SD 4036, -	60	.	74	.	44	.	73	.	54	.	72	.	63	.	53	.
SD 4046, -	54	.	71	.	40	.	63	.	53	.	72	.	59	.	53	.
SD 3997, -	62	.	71	.	38	.	67	.	45	.	74	.	60	.	51	.
SD 4076, -	58	.	71	.	42	.	66	.	45	.	71	.	59	.	51	.
Brennan, 4	56	.	70	.	40	.	65	.	54	.	66	.	59	.	51	.
Mott, 6	50	.	70	.	27	.	64	.	51	.	68	.	55	.	49	.
Vantage, 9	54	.	61	.	28	.	58	.	56	.	65	.	54	.	47	.
Test avg.:	59	47	72	67	41	.	67	58	53	44	72	65	61	56	54	52
High avg.:	75	55	86	76	49	.	83	68	61	53	83	71	70	64	61	58
Low avg.:	50	37	53	46	27	.	45	39	45	33	56	50	46	41	41	38
[5] LSD (0.05):	6	6	7	7	5	.	7	9	5	6	4	6				
[6] TPG-value:	69	49	79	69	44	.	76	59	56	47	79	65				
[7] C.V.:	7	8	7	7	8	.	7	7	7	9	4	6				

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

Column values in **bold type** at each location are top-performance group values.

Note that additional table footnotes are explained in Table C.

Table 1b. HRS wheat yield results- South Dakota western locations, 2007-2009.

Table sorted by 3-yr then by 2009 state yield average.

Variety, Heading [1]	Location Yield Avg.--Bu/a at 13% moist.						West Yield Avg. bu/a		State Yield Avg. bu/a		State Top-Yield Freq. (%) [3]	
	Wall		Bison		Ralph		2009	3-Yr	2009	3-Yr	2009	3-Yr
	2009	3-Yr	2009	3-Yr	2009	3-Yr						
Faller, 6	47	.	28	28	58	.	44	.	61	58	89	100
Traverse, 2	49	.	32	31	52	.	44	.	60	57	78	100
Howard, 6	43	.	27	29	48	.	39	.	55	56	11	100
RB07, 4	48	.	27	32	55	.	43	.	55	56	33	67
Steele-ND, 5	42	.	30	29	47	.	40	.	54	55	11	100
SD 3948, -	49	.	34	31	52	.	45	.	56	54	44	83
Briggs-Ck, 2	43	.	27	30	51	.	40	.	54	53	11	83
Granger, 2	49	.	31	30	52	.	44	.	54	52	33	33
Brick, 0	45	.	30	32	46	.	40	.	53	52	33	50
Tom, 4	42	.	22	26	45	.	36	.	53	52	0	33
Glenn, 5	39	.	30	28	45	.	38	.	52	50	11	17
Kuntz, 4	43	.	21	26	35	.	33	.	50	50	11	17
Kelby, 3	39	.	21	29	37	.	32	.	48	49	0	17
Reeder, 5	37	.	21	27	50	.	36	.	51	48	0	17
Alsen, 6	40	.	22	28	46	.	36	.	49	48	0	17
Chris, 5	32	.	20	22	43	.	32	.	41	38	0	0
Albany, 6	39	.	30	.	54	.	41	.	60	.	67	
SD 4023, -	43	.	27	.	56	.	42	.	59	.	56	
Barlow, 3	42	.	31	.	50	.	41	.	56	.	11	
SD 4024, -	43	.	29	.	53	.	42	.	56	.	33	
SD 4035, -	43	.	32	.	34	.	36	.	55	.	22	
SD 4073, -	47	.	22	.	49	.	39	.	55	.	11	
Breaker, 5	42	.	30	.	53	.	42	.	55	.	22	
Sabin, 3	47	.	22	.	57	.	42	.	55	.	44	
Brogan, 5	44	.	22	.	44	.	37	.	53	.	0	
Samson, 4	44	.	29	.	36	.	36	.	53	.	11	
SD 4011, -	45	.	26	.	46	.	39	.	53	.	11	
SD 4036*, -	41	.	25	.	32	.	33	.	53	.	11	
SD 4046, -	48	.	28	.	44	.	40	.	53	.	22	
SD 3997, -	41	.	23	.	38	.	34	.	51	.	0	
SD 4076, -	43	.	19	.	44	.	35	.	51	.	0	
Brennan, 4	44	.	24	.	42	.	37	.	51	.	0	
Mott, 6	36	.	21	.	54	.	37	.	49	.	11	
Vantage, 9	36	.	23	.	42	.	34	.	47	.	11	
Test avg.:	43	.	26	29	47	.		.				
High avg.:	49	.	34	32	58	.		.				
Low avg.:	32	.	19	22	32	.	39	.	54	52		
[5] LSD (0.05):	4	.	6	5	6	.	45	.	61	58		
[6] TPG-value:	45	.	28	27	52	.	32	.	41	38		
[7] C.V.:	7	.	14	12	9	.		.				

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

Column values in **bold type** at each location are top-performance group values.

Note that additional table footnotes are explained in Table C.

Table 1c. HRS wheat grain protein (Prt) and bushel weight (BW) averages at six South Dakota locations.
Table sorted high to low by all location grain protein average.

Variety, Heading [1]	Location Protein (Prt) & Bushel weight (BW) averages												All Locations Average	
	Brookings		South Shore		Miller		Spink Co.		Selby		Brown Co.			
	Prt %	BW lb	Prt %	BW lb	Prt %	BW lb	Prt %	BW lb	Prt %	BW lb	Prt %	BW lb	Prt %	BW lb
Vantage, 9	14.9	56.4	15.9	58.7	16.6	53.4	16.2	59.8	15.7	57.5	15.9	58.7	15.8	57.4
Chris, 5	14.6	54.9	15.1	56.7	15.9	51.6	15.4	58.3	15.5	58.1	15.4	56.3	15.3	56.0
SD 4011, -	14.6	55.8	14.6	56.8	15.5	54.2	15.4	58.7	15.5	57.7	15.3	57.9	15.1	56.9
Kelby, 3	14.7	55.9	15.4	56.5	15.3	54.9	15.0	58.6	15.3	59.2	15.1	58.2	15.1	57.2
Alsen, 6	14.5	56.1	15.5	57.1	15.8	55.4	15.4	58.9	14.7	58.5	14.9	59.2	15.1	57.5
Glenn, 5	14.1	57.5	15.2	60.1	15.3	56.3	14.8	60.3	15.7	60.5	15.3	59.6	15.0	59.0
SD 4076, -	14.5	56.1	14.8	58.7	15.4	56.7	14.8	59.0	15.5	58.9	15.0	59.6	15.0	58.1
RB07, 4	14.2	54.6	15.1	56.6	15.7	52.6	15.0	58.1	14.8	60.0	15.0	58.7	14.9	56.7
Brick, 0	14.8	58.1	15.5	59.5	14.8	57.7	14.8	59.5	14.7	60.2	15.1	59.7	14.9	59.1
Reeder, 5	14.4	54.2	14.7	58.3	15.3	53.0	15.0	59.2	15.0	58.0	15.1	59.4	14.9	57.0
Brennan, 4	14.5	55.6	14.9	57.4	15.4	53.7	14.8	58.1	14.8	59.8	14.9	58.6	14.9	57.2
Sabin, 3	14.5	56.3	14.6	57.8	15.7	52.5	15.1	58.8	14.0	59.5	15.1	59.6	14.8	57.4
SD 3997, -	14.1	56.4	15.1	58.5	15.2	53.4	14.5	58.9	14.9	57.9	15.1	59.1	14.8	57.4
Briggs-Ck, 2	14.3	58.2	14.5	58.6	15.2	54.7	14.9	59.5	14.2	59.1	15.3	58.3	14.7	58.1
Granger, 2	14.3	55.7	14.6	57.6	14.9	54.2	15.0	57.9	14.5	58.2	14.8	58.4	14.7	57.0
Barlow, 3	14.1	57.0	15.1	59.9	15.0	56.6	14.4	60.1	14.4	58.5	14.9	60.3	14.6	58.7
Brogan, 5	14.1	55.1	14.8	57.0	15.4	54.7	14.4	60.2	14.1	58.7	14.8	60.2	14.6	57.6
SD 3948, -	14.0	58.0	14.6	56.9	15.1	57.5	14.8	60.2	14.2	60.7	15.1	60.6	14.6	59.0
Steele-ND, 5	14.3	55.1	14.2	59.0	14.7	53.9	14.7	60.1	14.7	60.0	15.0	59.2	14.6	57.9
Breaker, 5	13.9	56.0	14.7	59.7	15.0	56.5	14.4	60.1	14.9	59.4	14.5	59.6	14.6	58.6
Howard, 6	13.9	57.0	14.5	59.3	14.8	53.0	14.6	59.9	14.9	59.7	14.7	59.5	14.5	58.1
SD 4036, -	14.0	53.7	14.3	56.1	15.3	53.7	14.2	57.5	14.9	56.6	14.6	59.1	14.5	56.1
Tom, 4	14.1	56.3	14.6	59.0	14.9	54.8	14.2	58.4	14.7	59.2	14.7	58.5	14.5	57.7
Samson, 4	14.2	54.5	14.2	57.8	15.4	53.0	14.4	59.0	14.1	57.8	14.5	58.2	14.5	56.7
Kuntz, 4	14.2	55.9	14.5	58.1	15.1	52.5	14.6	57.9	14.2	58.4	14.2	58.6	14.4	56.9
Mott, 6	13.7	53.6	14.2	56.8	14.8	50.4	14.3	58.3	14.5	58.7	15.0	58.2	14.4	56.0
SD 4035, -	14.3	54.1	14.4	58.5	15.0	54.9	14.1	57.9	14.0	58.5	14.7	59.4	14.4	57.2
Traverse, 2	13.9	54.0	14.2	57.7	14.7	54.0	14.8	56.7	14.2	57.0	14.6	58.8	14.4	56.4
SD 4046, -	13.8	55.5	14.1	59.3	15.1	54.9	14.4	59.4	13.6	58.4	14.4	60.8	14.2	58.0
SD 4023, -	14.0	56.4	14.1	59.8	15.1	53.8	14.2	60.2	14.0	59.9	14.1	59.6	14.2	58.3
Faller, 6	13.3	56.8	13.5	57.7	15.1	53.0	14.5	58.6	14.3	59.3	14.6	59.8	14.2	57.5
SD 4073, -	13.9	52.4	13.8	57.2	15.0	52.9	14.2	58.3	13.9	58.1	14.0	58.4	14.1	56.2
SD 4024, -	13.8	55.2	14.0	58.0	14.9	54.4	14.1	59.8	14.0	59.2	14.0	59.7	14.1	57.7
Albany, 6	12.8	56.6	13.6	57.6	14.8	54.8	13.6	60.1	13.0	59.2	13.9	60.0	13.6	58.0
Test avg. :	14.1	55.7	14.6	58.1	15.2	54.1	14.7	59.0	14.5	58.8	14.8	59.1		
High avg. :	14.9	58.2	15.9	60.1	16.6	57.7	16.2	60.3	15.7	60.7	15.9	60.8		
Low avg. :	12.8	52.4	13.5	56.1	14.4	50.4	13.6	56.7	13.0	56.6	13.9	56.3		
[5] Lsd(.05) :	0.5	1.5	0.6	1.7	0.4	1.4	0.4	1.2	0.9	1.3	0.3	1.0		
[6] TPG-value :	14.4	56.7	15.3	58.4	16.2	56.3	15.8	59.1	14.8	59.4	15.6	59.8		
[7] C.V. :	2	2	3	2	2	2	2	1	5	2	2	1		

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

Column values in **bold type** at each location are top-performance group values.

Note that additional table footnotes are explained in Table C.

Table 1d. HRS wheat lodging (Ldg) score and plant height (Ht) averages at six South Dakota locations.
Table sorted low (best) to high by all locations average lodging scores.

Variety, Heading [1]	Location Avg.- Lodging score (Ldg) & Plant height (Ht)												All Locations Average	
	Brookings		South Shore		Miller		Spink Co.		Selby		Brown Co.			
	Ldg score	Ht inch	Ldg score	Ht inch	Ldg score	Ht inch	Ldg score	Ht inch	Ldg score	Ht inch	Ldg score	Ht inch	Ldg score	Ht inch
Kelby, 3	1	28	2	28	2	26	.	32	1	27	2	31	1	29
Kuntz, 4	1	30	2	29	2	28	.	35	1	27	2	31	1	30
SD 4024, -	1	28	2	30	2	28	.	35	1	30	1	32	1	30
SD 4036, -	1	29	2	30	2	27	.	35	1	25	1	32	1	30
Samson, 4	1	29	1	30	2	27	.	36	1	26	1	30	1	30
Brogan, 5	1	30	1	32	2	29	.	37	1	30	2	31	1	31
Reeder, 5	1	30	2	31	2	31	.	37	1	31	1	33	1	32
Breaker, 5	1	30	2	33	2	29	.	37	1	30	2	33	1	32
Vantage, 9	1	31	1	33	1	29	.	37	1	32	1	32	1	32
Mott, 6	1	32	1	36	1	33	.	38	1	37	1	36	1	35
Brennan, 4	1	29	2	29	2	26	.	35	1	27	2	30	2	29
SD 4023, -	3	29	3	31	3	29	.	36	1	29	3	31	2	31
Albany, 6	2	32	2	30	2	28	.	36	1	29	3	32	2	31
SD 4076, -	3	30	2	33	3	29	.	37	1	29	2	31	2	31
RB07, 4	2	30	3	31	2	30	.	35	1	32	2	31	2	31
Sabin, 3	3	31	3	31	2	31	.	36	1	30	3	32	2	32
SD 4011, -	3	31	2	33	3	30	.	35	1	31	3	33	2	32
Alsen, 6	1	32	2	33	3	28	.	36	1	30	2	34	2	32
SD 4035, -	2	30	2	32	2	29	.	36	1	32	1	32	2	32
SD 3948, -	3	33	3	34	3	31	.	39	1	32	2	33	2	33
Tom, 4	3	32	3	32	2	30	.	37	1	32	3	34	2	33
Faller, 6	2	32	2	34	2	32	.	37	1	31	2	33	2	33
SD 4073, -	2	32	2	33	2	30	.	38	1	32	2	34	2	33
Steele-ND, 5	3	32	3	32	3	31	.	37	1	34	2	35	3	33
Brick, 0	3	34	3	35	3	31	.	38	2	32	2	35	2	34
Howard, 6	2	32	3	36	3	29	.	37	1	34	3	34	2	34
Barlow, 3	2	33	2	33	2	30	.	38	1	33	2	35	2	34
Glenn, 5	2	33	2	34	3	31	.	38	1	34	1	34	2	34
Granger, 2	2	34	3	36	3	33	.	39	2	35	3	35	2	35
Traverse, 2	2	34	3	34	3	32	.	39	2	34	2	36	2	35
SD 3997, -	1	35	2	37	2	33	.	37	1	36	2	38	2	36
SD 4046, -	3	33	3	35	3	31	.	38	1	34	4	35	3	34
Briggs-Ck, 2	3	33	3	34	3	32	.	37	2	34	3	32	3	34
Chris, 5	3	37	4	39	3	36	.	43	2	40	4	37	3	38
Test avg.:	2	31	2	33	2	30	.	37	1	32	2	33		
High avg.:	3	37	4	39	3	36	.	43	2	40	4	38		
Low avg.:	1	28	1	28	1	26	.	32	1	25	1	30		
[5] Lsd(.05):	1	2	1	2	1	2	.	3	1	3	1	2		
[6] TPG-value:	1	35	1	37	1	34	.	40	1	37	1	36		
[7] C.V.:	25	6	22	5	22	5	.	6	20	6	27	5		

[1] Heading- days earlier or later (- or +) than Briggs, the check variety (Ck) for maturity.
 Column values in **bold type** at each location are top-performance group values.
 Note that additional table footnotes are explained in Table C.

**Table 1e. Origin, traits, and disease reactions for spring wheat varieties tested in 2009.
Table sorted early to late maturity by relative heading (Rel Hdg).**

Variety	Origin & Year	Rel Hdg [1]	Ldg Res [8]	Disease Reactions [13]				PVP Status [14]
				Rust			Fusarium Head Blight	
				Stripe	Stem	Leaf		
Brick	SD-08	0	G	-	MR	MR	MR+	Yes
Briggs-Ck	SD-02	2	G	MR	R	MR	M+	Yes
Granger	SD-04	2	G	MR	R	MR	M+	Yes
Traverse	SD-06	2	G	MR	R	MR	MR+	Yes
Barlow	ND-09	3	G	-	R	R	MR+	Yes
Kelby	AW-06	3	VG	-	MR	R	MR	Yes
Sabin	MN-09	3	G	-	R	MR	MR+	Yes
Brennan	AW-09	4	G	-	R	MR	M++	Pdg
Samson	WB-07	4	G	S	R	MR	S	Yes
Tom	MN-08	4	G	-	MR	MR	MR+	Yes
Kuntz	AW-07	4	VG	MS	MR	MR	MR	Yes
RB07	MN-07	4	G	MS	MR	MR	MS	Yes
Breaker	WB-07	5	-	S	R	MR	MR	Yes
Brogan	WB-09	5	-	S	MR	MR	MS	Yes
Chris	MN-65	5	P	-	R	MS	S	No
Glenn	ND-05	5	G	MR	R	R	MR+	Yes
Reeder	ND-99	5	G	MR	R	MS	MS	Yes
Steele-ND	ND-04	5	G	MR	MR	R	MR+	Yes
Albany	TS-09	6	G	R	R	MS	MR+	Yes
Alsen	ND-00	6	G	R	R	MS	MR+	Yes
Howard	ND-06	6	G	-	R	R	MR+	Yes
Faller	ND-07	6	G	-	R	R	MR+	Yes
Mott	ND-09	6	G	-	MR	MS	S	Yes
Vantage	WB-07	9	-	S	R	MS	MS	Yes
SD 3948	SD-	-	-	MR	-	MR	MR	-
SD 3997	SD-	-	-	-	-	-	-	-
SD 4011	SD-	-	-	-	-	-	-	-
SD 4023	SD-	-	-	-	-	-	-	-
SD 4024	SD-	-	-	-	-	-	-	-
SD 4035	SD-	-	-	-	-	-	-	-
SD 4036	SD-	-	-	-	-	-	-	-
SD 4046	SD-	-	-	-	-	-	-	-
SD 4073	SD-	-	-	-	-	-	-	-
SD 4076	SD-	-	-	-	-	-	-	-

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

Note that additional table footnotes are explained in Table C.

Table 2a. Spring oat yield results- South Dakota eastern locations, 2007-2009.
Table sorted by 3-yr then by 2009 state yield average.

Variety, Heading [1]	Location Yield Avg. -- Bu/a at 13% moisture												East Yield Avg. bu/a		State Yield Avg. bu/a	
	Brookings		So. Shore		Beresford		Miller		Selby		Brown Co.		2009	3-Yr	2009	3-Yr
	2009	3-Yr	2009	3-Yr	2009	3-Yr	2009	3-Yr	2009	3-Yr	2009	3-Yr				
Souris, 7	167	141	207	168	105	125	148	.	146	.	165	145	156	145	126	130
HiFi, 8	171	138	192	161	124	124	149	.	141	.	157	143	156	142	126	126
Beach, 7	157	139	174	155	126	127	130	.	132	.	130	130	142	138	117	123
Stallion, 9	138	132	136	141	97	122	138	.	133	.	141	135	131	133	108	118
Morton, 8	112	114	155	148	119	122	136	.	130	.	128	123	130	127	108	115
Colt, 0	109	117	140	135	124	129	130	.	126	.	127	124	126	126	104	114
Don, 1	119	114	127	127	105	117	125	.	126	.	125	124	121	121	100	108
Reeves, 2	108	112	117	125	117	122	130	.	141	.	124	116	123	119	100	106
Jerry, 5	102	109	134	131	107	115	129	.	110	.	123	114	118	117	99	108
Buff Hls, 3	112	90	130	116	98	95	102	.	106	.	110	99	110	100	90	90
Streaker Hls, 3	114	97	110	113	54	78	103	.	94	.	113	105	98	98	84	89
Hyttest, 4	103	96	111	107	94	85	94	.	98	.	112	101	102	97	86	89
Stark Hls, 7	113	78	137	101	92	79	105	.	115	.	132	97	116	89	96	79
SD 031128-245, -	174	.	177	.	139	.	143	.	152	.	151	.	156	.	127	.
Rockford, 8	184	.	195	.	94	.	143	.	134	.	157	.	151	.	125	.
SD 031128-330, -	170	.	179	.	139	.	136	.	141	.	148	.	152	.	124	.
SD 041445-93, -	138	.	146	.	133	.	134	.	131	.	150	.	139	.	111	.
SD 1445-119, -	124	.	141	.	141	.	142	.	130	.	144	.	137	.	112	.
SD 060966, -	98	.	133	.	126	.	136	.	137	.	146	.	129	.	108	.
SD 051502 Hls, -	98	.	123	.	99	.	95	.	102	.	109	.	104	.	84	.
Test avg. :	131	114	148	133	112	111	127	.	126	.	135	120	130	119	107	107
High avg. :	184	141	207	168	141	129	149	.	152	.	165	145	156	145	127	130
Low avg. :	98	78	110	101	54	78	94	.	94	.	109	97	98	89	84	79
[5] LSD (0.05):	13	24	11	25	19	21	11	.	12	.	15	19	.	.	.	.
[6] TPG-value :	171	117	196	143	122	108	138	.	140	.	150	126	.	.	.	.
[7] C.V. :	7	7	5	7	12	9	6	.	7	.	8	8	.	.	.	.

[1] Heading- days earlier or later (- or +) than Don, the check variety (Ck) for maturity. Hls = Hulless variety.
 Column values in bold type at each location are top-performance group values.
 Note that additional table footnotes are explained in Table C.

Table 2b. Spring oat yield results- South Dakota western locations, 2007-2009.
Table sorted by 3-yr then by 2009 state yield average.

Variety, Heading [1]	Location Yield Avg Bu/a at 13% moisture						West Yield Avg. bu/a		State Yield Avg. bu/a		State Top-Yield Freq. (%)	
	Wall		Bison		Okaton		2009	3-Yr	2009	3-Yr	2009	3-Yr
	2009	3-Yr	2009	3-Yr	2009	3-Yr						
Souris, 7	86	.	54	69	55	.	76	.	126	130	67	100
HiFi, 8	85	.	62	66	53	.	74	.	126	126	67	100
Beach, 7	90	.	54	63	56	.	79	.	117	123	44	100
Stallion, 9	92	.	43	61	53	.	79	.	108	118	33	80
Morton, 8	77	.	57	68	58	.	71	.	108	115	22	60
Colt, 0	81	.	48	65	48	.	70	.	104	114	11	60
Don, 1	80	.	48	60	49	.	70	.	100	108	0	40
Reeves, 2	79	.	38	53	42	.	67	.	100	106	22	40
Jerry, 5	74	.	59	69	53	.	67	.	99	108	11	40
Buff Hls, 3	74	.	36	51	40	.	64	.	90	90	0	20
Streaker Hls, 3	86	.	37	52	45	.	74	.	84	89	0	20
Hyttest, 4	67	.	51	58	41	.	58	.	86	89	0	20
Stark Hls, 7	80	.	45	41	46	.	70	.	96	79	0	0
SD 031128-245, -	92	.	60	.	53	.	79	.	127	.	78	.
Rockford, 8	97	.	57	.	61	.	85	.	125	.	56	.
SD 031128-330, -	92	.	59	.	53	.	79	.	124	.	56	.
SD 041445-93, -	67	.	51	.	49	.	61	.	111	.	33	.
SD 1445-119, -	67	.	62	.	54	.	63	.	112	.	33	.
SD 060966, -	92	.	51	.	50	.	78	.	108	.	33	.
SD 051502 Hls, -	71	.	27	.	31	.	58	.	84	.	0	.
Test avg.:	81	.	50	60	50	.	71	.	107	107		
High avg.:	97	.	62	69	61	.	85	.	127	130		
Low avg.:	67	.	27	41	31	.	58	.	84	79		
[5] LSD (0.05):	7		12	13	8							
[6] TPG-value:	90		50	56	53							
[7] C.V.:	6		14	9	12							

[1] Heading- days earlier or later (- or +) than Don, the check variety (Ck) for maturity. Hls = hullless variety.
Column values in **bold type** at each location are top-performance group values.
Note that additional table footnotes are explained in Table C.

Table 2c. Spring oat grain protein (Prt) and bushel weight (BW) averages at six South Dakota locations. Sorted high to low by all location grain protein average.

Variety, Heading [1]	Location Protein (Prt) & Bushel weight (BW)												All Locations Average	
	Brookings		South Shore		Beresford		Miller		Selby		Brown Co.		Prt %	BW lb
	Prt %	BW lb	Prt %	BW lb	Prt %	BW lb	Prt %	BW lb	Prt %	BW lb	Prt %	BW lb		
SD 051502 Hls, - Hyttest, 4	13.2	39.8	18.4	44.6	18.6	40.8	17.2	44.4	17.7	46.5	16.5	46.2	16.9	43.7
Streaker Hls, 3	12.9	42.9	17.7	44.1	16.8	35.9	15.9	44.4	16.1	44.7	14.6	48.3	15.7	43.4
Buff Hls, 3	13.0	44.8	16.4	46.2	16.9	41.5	15.3	41.4	14.7	41.1	15.9	48.5	15.4	43.9
Reeves, 2	13.4	37.3	15.9	37.5	15.4	34.3	13.4	36.8	15.1	37.7	15.5	38.4	14.7	37.0
Stark Hls, 7	9.8	40.4	16.4	42.7	15.4	33.8	15.6	42.1	15.1	43.4	15.3	47.3	14.6	41.6
Stallion, 9	12.7	36.2	15.5	37.5	15.6	31.4	14.2	36.7	13.8	38.6	14.6	42.1	14.4	37.1
Jerry, 5	12.3	33.7	15.0	38.4	15.4	33.9	13.4	35.8	13.9	36.3	14.5	40.8	14.1	36.5
Colt, 0	12.3	36.1	15.2	39.8	14.7	35.2	12.4	35.2	14.8	37.3	14.1	38.4	13.9	37.0
SD 031128-330, -	12.6	38.6	15.8	39.3	14.4	34.2	11.6	35.9	14.9	37.3	14.0	38.6	13.9	37.3
SD 031128-245, - Morton, 8	14.3	38.9	15.4	38.9	14.2	32.9	12.7	36.1	13.7	37.3	12.9	38.2	13.9	37.0
Don, 1	13.2	33.3	14.4	36.0	14.7	30.0	12.3	35.7	13.9	37.3	14.1	39.4	13.7	35.3
SD 060966, -	12.4	34.6	13.9	36.4	14.1	32.4	13.5	35.9	14.0	34.7	14.3	37.1	13.7	35.2
SD 041445-93, -	12.4	34.8	14.8	39.0	13.5	34.4	13.6	36.6	13.9	38.1	13.6	38.5	13.6	36.9
	10.8	36.2	14.9	37.7	15.5	35.6	11.9	36.1	14.5	38.7	13.8	41.1	13.6	37.5
Rockford, 8	9.7	38.9	15.2	38.1	14.8	28.3	13.6	35.5	14.1	38.5	14.0	40.7	13.5	36.7
HiFi, 8	10.8	37.6	15.3	37.7	14.8	29.5	12.9	34.6	13.8	37.1	13.6	39.5	13.5	36.0
Souris, 7	10.6	36.9	15.2	37.7	14.8	30.7	12.3	34.7	14.4	37.4	13.6	39.8	13.5	36.2
Beach, 7	10.0	37.3	14.5	38.3	14.9	33.3	13.0	36.8	14.0	38.5	13.5	40.6	13.3	37.5
SD 1445-119, -	11.1	36.2	14.2	38.0	14.6	36.0	11.9	36.3	14.1	38.5	13.8	39.9	13.3	37.5
Test avg. :	12.1	37.6	15.6	39.4	15.4	34.1	13.6	37.3	14.7	39.0	14.4	41.4	14.3	38.1
High avg. :	14.3	44.8	18.4	46.2	18.6	41.5	17.2	44.4	17.7	46.5	16.6	48.5	16.9	43.9
Low avg. :	9.7	33.3	13.9	36.0	13.5	28.3	11.6	34.6	13.7	34.7	12.9	37.1	13.3	35.2
[5] Lsd(.05) :	1.9	1.3	0.7	1.5	1.1	1.9	1.4	1.3	0.8	1.1	0.9	1.7		
[6] TPG-value :	12.5	43.6	17.7	44.8	17.5	39.7	15.9	43.2	17.0	45.5	15.8	46.9		
[7] C.V. :	11	2	3	3	5	4	8	3	4	2	5	3		

[1] Heading- days earlier or later (- or +) than Don, the check variety (Ck) for maturity. Hls = hulless variety.
 Column values in **bold type** at each location are top-performance group values.
 Note that additional table footnotes are explained in Table C.

Table 2d. Spring oat lodging (Ldg) score and plant height (Ht) averages at six South Dakota locations. Sorted low (best) to high by all locations average lodging scores.

Variety, Heading [1]	Location Lodging score (Ldg) & Plant height (Ht)												All Locations Average	
	Brookings		South Shore		Beresford		Miller		Selby		Brown Co.		Ldg score	Ht inch
	Ldg score	Ht inch	Ldg score	Ht inch	Ldg score	Ht inch	Ldg score	Ht inch	Ldg score	Ht inch	Ldg score	Ht inch		
SD 031128-245, - Rockford, 8	2	46	2	41	3	41	1	35	1	40	2	41	2	41
	1	48	2	44	3	43	1	38	1	37	2	41	2	42
SD 031128-330, - Souris, 7	2	44	2	41	3	40	1	37	1	39	2	36	2	40
	2	42	2	39	3	39	1	35	2	36	2	37	2	38
Buff Hls, 3	2	38	2	37	4	36	2	33	1	34	2	34	2	35
HiFi, 8	2	47	2	44	3	40	2	39	1	36	3	42	2	41
Morton, 8	3	50	2	49	4	45	2	39	2	40	2	44	2	44
Beach, 7	3	47	3	48	4	45	2	43	1	40	3	45	2	45
Don, 1	4	37	3	34	3	34	1	30	2	33	3	31	3	33
Stark Hls, 7	3	46	3	47	5	42	2	40	2	40	3	44	3	43
Colt, 0	5	39	3	37	4	37	1	31	2	35	2	34	3	35
Hyttest, 4	3	45	3	44	5	41	2	40	2	41	3	41	3	42
Jerry, 5	4	44	4	42	4	41	2	36	1	38	3	39	3	40
SD 041445-93, - Stallion, 9	4	44	3	40	5	40	2	36	2	41	3	39	3	40
	4	45	4	44	5	41	2	38	2	39	3	41	3	41
SD 060966, - SD 1445-119, - Reeves, 2	5	36	4	36	4	35	1	32	3	33	2	31	3	34
	4	46	4	40	5	41	2	38	2	38	3	39	3	40
	4	43	4	39	5	40	3	36	2	38	4	39	4	39
Streaker Hls, 3	4	41	4	38	5	39	2	34	3	36	4	40	4	38
SD 051502 Hls, -	4	42	4	37	5	40	3	33	3	39	4	39	4	38
Test avg. :	3	43	3	41	4	40	2	36	2	38	3	39		
High avg. :	5	50	4	49	5	45	3	43	3	41	4	45		
Low avg. :	1	36	2	34	3	34	1	30	1	33	2	31		
[5] Lsd(.05) :	1	3	1	4	1	2	1	4	1	3	1	4		
[6] TPG-value :	1 & 2	47	2	46	3	43	1	40	1	38	2	42		
[7] C.V. :	21	5	17	6	11	3	22	8	29	5	17	6		

[1] Heading- days earlier or later (- or +) than Don, the check variety (Ck) for maturity. Hls = Hulless variety.
 Column values in **bold type** at each location are top-performance group values.
 Note that additional table footnotes are explained in Table C.

Table 2e. Origin, variety traits, and disease reactions for oat entries tested in 2009.

Variety	Origin	Rel Hdg [1]	Ldg Res [8]	Grain Color	Disease Reactions				PVP Status [14]
					Smut	Rust			
						Stem	Crown	Leaf	
Colt	SD-08	0	-	White	VR	MS	MS	MS	Yes
Don	IL-85	1	G	White	R	MS	S	MR	No
Reeves	SD-02	2	G	White	MR	S	MS	MS	No
Buff Hls	SD-02	3	G	Hulless	R	S	MS	MR	No
Streaker Hls	SD-09	3	-	Hulless	-	MR	MS	R	Yes
Hyttest	SD-86	4	G	Lt.Cream	MR	MS	S	S	No
Jerry	ND-94	5	G	White	MS	MS	S	MS	Yes
Beach	ND-04	7	F-G	White	R	S	MS	MS	Yes
Stark Hls	ND-04	7	G	Hulless	-	MR	MS	S	Yes
Souris	ND-06	7	G	White	MR	MS	R	MS	Yes
HiFi	ND-01	8	G	White	MR	R	MR	MS	Yes
Morton	ND-01	8	G	White	R	MR	R	MS	Yes
Rockford	ND-09	8	-	-	-	S	MR	-	Yes
Stallion	SD-06	9	G	White	S	S	MR	MR	Yes
SD 041445-93	SD-	-	-	-	-	-	-	-	-
SD 1445-119	SD-	-	-	-	-	-	-	-	-
SD 051502 Hls	SD-	-	-	Hulless	-	-	-	-	-
SD 060966	SD-	-	-	-	-	-	-	-	-
SD 031128-245	SD-	-	-	-	-	-	-	-	-
SD 031128-330	SD-	-	-	-	-	-	-	-	-

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

Table 3a. Spring barley yield results- South Dakota east locations, 2007-2009.
Table sorted by 3-yr then by 2009 state yield average.

Variety, Heading [1]	Location Yield Avg. (Bu/a at 13% moist.)										East Yield Avg. bu/a		State Yield Avg. bu/a	
	Brookings		South Shore		Miller		Selby		Brown Co.		2009	3-Yr	2009	3-Yr
	2009	3-Yr	2009	3-Yr	2009	3-Yr	2009	3-Yr	2009	3-Yr				
Pinnacle, 3	89	74	105	96	95	.	80	70	107	94	95	84	82	84
Eslick, 3	87	72	124	99	95	.	89	79	92	81	97	83	89	83
Rawson, 2	86	73	121	101	87	.	74	66	102	87	94	82	83	82
Rasmusson, 3	84	74	107	89	84	.	79	72	108	85	92	80	79	80
Lacey, 0	85	73	105	86	83	.	81	69	106	83	92	78	79	78
Drummond, 2	82	66	100	87	77	.	74	69	103	81	87	76	75	76
Conlon, 0	93	73	118	96	82	.	80	58	94	78	93	76	70	76
Stellar-ND, 2	89	68	93	81	80	.	72	66	103	81	87	74	75	74
Robust, 3	74	63	96	79	77	.	67	59	91	71	81	68	69	68
Test avg.:	85	71	107	90	84	.	77	68	100	82	90	78	77	78
High avg.:	93	74	124	101	95	.	89	79	108	94	97	84	89	84
Low avg.:	74	63	93	79	77	.	67	58	91	71	81	68	69	68
[5] LSD (0.05):	8	7	12	11	9	.	10	9	8	12				
[6] TPG-value:	85	67	112	90	86	.	79	70	100	82				
[7] C.V.:	7	8	8	7	8	.	9	9	6	8				

[1] Heading- days earlier or later (- or +) than Lacey, the check variety (Ck) for maturity.
 Column values in bold type at each location are top-performance group values.
 Note that additional table footnotes are explained in Table C.

Table 3b. Spring barley yield results- South Dakota west locations, 2007-2009.
Table sorted by 3-yr then by 2009 state yield average.

Variety, Heading [1]	Location Yield Avg. (Bu/a at 13% moist.)						West Yield Avg. bu/a		State Yield Avg. bu/a		State Top-Yield Freq. (%) [3]	
	Wall		Bison		Ralph		2009	3-Yr	2009	3-Yr	2009	3-Yr
	2009	3-Yr	2009	3-Yr	2009	3-Yr						
Pinnacle, 3	78	.	33	.	70	.	60	.	82	84	50	100
Eslick, 3	86	.	48	.	90	.	75	.	89	83	88	75
Rawson, 2	83	.	39	.	73	.	65	.	83	82	50	75
Rasmusson, 3	70	.	35	.	66	.	57	.	79	80	25	75
Lacey, 0	73	.	36	.	64	.	58	.	79	78	38	50
Drummond, 2	68	.	35	.	58	.	54	.	75	76	13	0
Conlon, 0	71	.	13	.	9	.	31	.	70	76	38	75
Stellar-ND, 2	73	.	29	.	61	.	54	.	75	74	25	0
Robust, 3	69	.	30	.	51	.	50	.	69	68	0	0
Test avg.:	74	.	33	.	60	.	56	.	77	78		
High avg.:	86	.	48	.	90	.	75	.	89	84		
Low avg.:	68	.	13	.	9	.	31	.	69	68		
[5] LSD (0.05):	5		6		10							
[6] TPG-value:	81		42		80							
[7] C.V.:	5		11		12							

[1] Heading- days earlier or later (- or +) than Lacey, the check variety (Ck) for maturity.
 Column values in bold type at each location are top-performance group values.
 Note that additional table footnotes are explained in Table C.

Table 3c. Spring barley grain protein (Prt) and bushel weight (BW) averages at five South Dakota locations. Sorted high to low by all location grain protein average.

Variety, Heading [1]	Location Protein (Prt) & Bushel weight (BW)										All Locations average	
	Brookings		South Shore		Miller		Selby		Brown Co.			
	Prt %	BW lb	Prt %	BW lb	Prt %	BW lb	Prt %	BW lb	Prt %	BW lb	Prt %	BW lb
Conlon, 0	12.0	47.8	12.5	49.7	13.4	46.0	13.0	48.7	13.6	46.5	12.9	48.0
Robust, 3	11.4	45.3	12.9	46.4	12.7	42.1	13.2	46.1	13.8	42.6	12.8	45.7
Drummond, 2	11.8	43.8	12.1	44.8	12.6	41.7	13.2	45.6	13.5	43.8	12.6	45.1
Stellar-ND, 2	11.8	44.5	12.3	44.3	13.2	41.8	12.5	45.0	13.1	43.3	12.5	44.9
Rasmusson, 3	11.5	45.0	12.0	46.4	12.8	43.7	12.5	46.5	13.2	44.4	12.4	46.1
Lacey, 0	11.8	45.3	12.3	47.0	12.6	43.7	12.4	46.1	13.0	44.9	12.4	46.5
Eslick, 3	11.7	47.9	12.0	48.3	12.6	44.4	11.4	48.0	13.7	44.6	12.3	47.5
Rawson, 2	11.4	45.3	11.4	47.8	12.2	43.5	12.3	46.2	12.8	45.2	12.0	46.5
Pinnacle, 3	10.0	45.3	10.9	45.0	11.4	43.0	11.3	45.6	11.8	44.7	11.1	45.9
Test avg.:	11.5	45.5	12.0	46.5	12.6	43.2	12.4	46.3	13.2	44.3		
High avg.:	12.0	47.9	12.9	49.7	13.4	46.0	13.2	48.7	13.8	46.5		
Low avg.:	10.0	43.8	10.9	44.3	11.4	41.7	11.3	45.0	11.8	42.6		
[5] Lsd(.05):	0.4	1.0	0.8	1.0	0.4	1.0	0.6	-0.9	0.6	1.0		
[6] TPG-value:	11.6	46.9	12.1	48.7	13.0	45.0	12.6	47.8	13.2	45.5		
[7] C.V.:	2	1	5	2	2	2	4	1	3	2		

[1] Heading- days earlier or later (- or +) than Lacey, the check variety (Ck) for maturity.
 Column values in **bold type** at each location are top-performance group values.
 Note that additional table footnotes are explained in Table C.

Table 3d. Spring barley lodging (Ldg) score and plant height (Ht) averages at five South Dakota locations. Table sorted low to high by all location lodging score average.

Variety, Heading [1]	Location Lodging score (Ldg) & Plant height (Ht)										All Locations Average	
	Brookings		South Shore		Miller		Selby		Brown Co.			
	Ldg score	Ht inch	Ldg score	Ht inch	Ldg score	Ht inch	Ldg score	Ht inch	Ldg score	Ht inch	Ldg score	Ht inch
Pinnacle, 3	1	32	1	31	1	30	1	32	3	34	1	32
Stellar-ND, 2	1	34	1	33	1	31	1	33	3	33	1	33
Rawson, 2	1	36	1	33	1	33	1	32	3	34	1	34
Lacey, 0	1	35	1	33	1	31	1	35	3	34	1	33
Drummond, 2	1	38	1	35	1	32	2	33	3	36	2	35
Rasmusson, 3	1	34	1	33	2	29	1	30	3	32	2	31
Robust, 3	1	36	1	35	1	33	2	35	3	35	2	35
Eslick, 3	2	27	1	28	2	27	2	30	4	31	2	28
Conlon, 0	1	35	1	34	3	30	3	31	4	38	2	33
Test avg.:	1	34	1	33	2	31	2	32	3	34		
High avg.:	2	38	1	35	3	33	3	35	4	38		
Low avg.:	1	27	1	28	1	27	1	30	3	31		
[5] Lsd(.05):	1	2	NS	2	1	2	1	3	1	3		
[6] TPG-value:	1	36	1	33	1	31	1	32	3	35		
[7] C.V.:	22	4	15	4	37	5	33	6	13	5		

[1] Heading- days earlier or later (- or +) than Lacey, the check variety (Ck) for maturity.
 Column values in **bold type** at each location are top-performance group values.
 Note that additional table footnotes are explained in Table C.

Table 3e. Origin, traits, and disease reactions for barley varieties tested in 2009
Table sorted early to late maturity by relative heading (Rel Hdg).

Variety	Origin	Rel Hdg [1]	Ldg Res [8]	Grain Use	Awn Texture [9]	Loose Smut [13]	Stem Rust [13]	Blotch [13]		PVP Status [14]
								Spot	Net	
Two-row types:										
Conlon	ND-96	0	G	Malt	SS	S	S			Yes
Rawson	ND-05	2	F	Feed	SR	S	S	M	MR	Yes
Eslick	MT-04	3	F	Feed	R	S	S	R	MS	No
Pinnacle	ND-07	3	-	-	S	S			MS	Pdg
Six-row types:										
Lacey	MN-00	0	G	Malt	S	S	S	M	S	Yes
Stellar-ND	ND-05	2	G	Feed	SS	S	S	R	MS	Yes
Drummond	ND-00	2	VG	Malt	SS	S	S	M	MS	Yes
Rasmusson	MN-08	3	G	-	S	S	S	M	S	Pdg
Robust	MN-83	3	G	Malt	S	S	S	M	S	Yes

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

Note that additional table footnotes are explained in Table C.

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Table 4a. Winter wheat yield results - South Dakota western locations, 2007-2009.

Table is sorted by 3-yr then by 2009 state yield average.

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

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

Column values in **bold type** at each location are top-performance group values.

Note that additional table footnotes are explained in Table C.

* Indicates this trial was an intensive management study (IMS).

** A significant variety x location interaction indicates that yield values differed significantly by variety and location, therefore evaluate yield values by location not by the Western and State yield averages.

Table 4b. Winter wheat yield results - South Dakota eastern locations, 2007-2009.

Table is sorted by 3-yr then by 2009 state yield average.

Variety, Heading [1,2]	Location yield averages - Bu/a at 13% moisture												Eastern Yield Yield avg. bu/a		State Yield Avg. Yield avg. bu/a	
	Brookings				Selby		Onida		Pierre		Platte					
	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	.	48	.	43	.	68	.	66	.	66	.
SD05118	72	.	85	.	79	.	48	.	40	.	79	.	67	.	65	.
SD06158	70	.	79	.	84	.	47	.	50	.	75	.	68	.	65	.
Expedition, 1	71	65	84	.	70	71	49	61	46	50	83	75	67	.	65	.
Smoky Hill, 5	66	.	84	.	77	.	49	.	48	.	81	.	68	.	65	.
Overland, 5	65	68	73	.	73	78	52	66	50	58	79	78	65	.	64	.
Wahoo, 4	54	60	63	.	75	68	49	59	48	52	81	68	62	.	63	.
Darrell, 6	72	64	73	.	76	66	52	61	43	46	73	65	65	.	63	.
Wesley, 3	68	63	66	.	75	67	49	63	46	50	83	73	65	.	62	.
Settler CL, 4	63	.	74	.	69	.	51	.	46	.	72	.	63	.	62	.
SD06163	67	.	72	.	74	.	43	.	44	.	83	.	64	.	62	.
NuDakota~W, 4	67	67	73	.	75	71	46	62	42	50	71	73	62	.	61	.
Millennium, 5	62	64	73	.	72	73	47	61	41	51	73	73	61	.	61	.
Infinity CL, 4	65	.	78	.	69	.	48	.	37	.	68	.	61	.	61	.
Fuller, 3	68	.	83	.	72	.	47	.	41	.	69	.	63	.	61	.
SD05W018	75	.	81	.	74	.	46	.	48	.	71	.	66	.	61	.
Wendy~W, 0	66	65	79	.	77	73	48	62	48	51	79	71	66	.	61	.
Art, 1	78	.	76	.	77	.	45	.	36	.	72	.	64	.	60	.
Hatcher, 3	58	60	77	.	68	59	51	57	37	43	66	64	60	.	60	.
Radiant, 5	60	.	75	.	83	.	51	.	43	.	52	.	61	.	60	.
Hawken, 4	64	68	74	.	74	65	50	61	42	45	70	68	62	.	60	.
Lyman, 4	69	71	81	.	67	76	45	59	38	49	73	71	62	.	60	.
SD03164-2	71	.	78	.	63	.	44	.	44	.	80	.	63	.	60	.
Harding, 6	63	63	73	.	77	72	44	58	40	51	65	66	60	.	60	.
Striker, 5	67	.	77	.	78	.	37	.	38	.	60	.	60	.	59	.
Jagalene, 4	50	50	68	.	70	55	51	58	45	49	76	60	60	.	59	.
Arapahoe, 4	64	65	73	.	71	70	44	59	34	46	71	67	60	.	59	.
Jerry, 6	62	60	73	.	76	72	45	55	33	37	64	61	59	.	58	.
Alice~W, 0	68	62	79	.	62	61	46	60	39	48	67	62	60	.	58	.
AP503CL2, 4	68	.	70	.	64	.	41	.	39	.	68	.	58	.	56	.
Test avg. :	66	63	76	.	73	69	47	60	42	49	72	68	63	.	61	.
High avg. :	78	71	86	.	84	78	52	66	50	58	83	78	68	.	66	.
Low avg. :	50	50	63	.	62	55	37	55	33	37	52	60	58	.	56	.
[5] LSD (0.05):	12	11	9	.	10	14	6	8	7	10	9	12	**	.	**	.
[6] TPG-value :	66	60	77	.	74	64	46	58	43	48	74	66	.	.	.	.
[7] C.V. :	13	9	9	.	9	7	10	8	11	9	9	9	.	.	.	.

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

Column values in **bold type** at each location are top-performance group values.

Note that additional table footnotes are explained in Table C.

* Indicates this trial was an intensive management study (IMS).

** A significant variety x location interaction indicates that yield values differed significantly by variety and location, therefore evaluate yield values by location not by the Eastern and State yield averages.

Table 4C. Winter wheat grain protein average at eight locations in 2009.
Table is sorted by all-location average.

Variety, Heading [1,2]	Test trial 2009 protein averages at 13% Moisture								All- location avg.
	Winner		Brookings		Selby	Onida	Pierre	Platte	
	CPT	IMS*	CPT	IMS*					
	%	%	%	%	%	%	%	%	
Art, 1	15.8	16.3	13.8	13.3	15.0	14.5	16.4	13.3	14.8
Wesley, 3	15.5	15.8	13.8	13.8	15.2	14.0	15.4	13.2	14.6
Harding, 6	15.6	15.7	13.6	12.8	14.9	13.6	15.7	13.6	14.4
Lyman, 4	15.0	15.1	13.2	13.1	15.7	14.3	15.4	13.5	14.4
SD03164-2	15.5	15.7	13.3	12.9	15.2	13.2	15.4	13.9	14.4
Jerry, 6	15.2	15.3	13.1	12.5	15.1	14.9	15.4	13.5	14.4
Arapahoe, 4	15.2	15.4	13.5	13.1	14.7	13.7	16.0	13.1	14.3
Striker, 5	14.9	15.2	13.5	13.1	14.9	14.1	15.9	12.9	14.3
Hawken, 4	14.9	14.9	14.4	13.6	14.8	13.4	14.8	13.2	14.2
Wahoo, 4	14.5	14.8	14.0	13.4	15.4	13.5	15.0	13.3	14.2
SD06163	15.8	16.0	13.2	13.1	14.9	12.5	15.3	13.1	14.2
Wendy~W, 0	14.8	15.1	13.6	12.7	15.1	14.0	15.2	13.3	14.2
SD06069	15.0	14.7	13.1	14.6	14.6	13.2	15.2	12.7	14.1
Jagalene, 4	14.6	14.5	14.1	13.8	14.9	13.9	14.2	12.9	14.1
Fuller, 3	14.6	14.8	13.6	12.7	15.1	13.7	15.0	12.9	14.1
SD05118	14.5	15.0	12.7	12.1	15.3	13.9	15.6	13.2	14.0
Smoky Hill, 5	14.8	14.6	13.7	12.9	14.7	13.3	15.0	12.8	14.0
Millennium, 5	14.2	14.5	13.2	12.9	14.8	13.9	14.7	13.0	13.9
Alice~W, 0	14.9	15.2	12.6	12.3	15.1	13.0	15.3	12.8	13.9
NuDakota~W, 4	14.4	14.8	13.8	12.9	14.4	13.0	14.5	12.9	13.8
Expedition, 1	14.5	14.8	12.8	12.6	14.7	13.1	15.1	12.9	13.8
Overland, 5	14.2	14.4	13.2	12.9	15.0	13.3	14.3	12.5	13.7
Darrell, 6	14.6	14.8	12.6	12.4	14.7	13.7	14.3	12.6	13.7
SD06158	14.6	14.8	12.9	12.5	14.8	12.7	14.5	12.6	13.7
AP503CL2, 4	14.5	14.3	13.2	12.8	14.4	12.9	14.7	11.8	13.6
SD05W018	14.3	14.3	12.8	12.1	14.4	12.9	14.4	12.7	13.5
Radiant, 5	14.0	14.2	12.2	11.0	13.9	14.3	15.4	12.5	13.4
Settler CL, 4	13.8	13.9	12.8	12.1	14.5	12.3	14.5	12.6	13.3
Infinity CL, 4	13.9	13.8	12.6	11.8	14.0	12.8	14.5	12.4	13.2
Hatcher, 3	13.7	14.1	12.5	12.0	13.7	13.2	14.0	12.3	13.2
Test avg. :	14.7	14.9	13.2	12.8	14.8	13.5	15.0	12.9	14.0
High avg. :	15.8	16.3	14.4	14.6	15.7	14.9	16.4	13.9	14.8
Low avg. :	13.7	13.8	12.2	11.0	13.7	12.3	14.0	11.8	13.2
[5] LSD (.05):	0.5	0.4	0.7	1.2	0.7	1.3	0.6	0.6	**
[6] TPG-value :	15.3	15.9	13.7	13.4	15.0	13.6	15.8	13.3	
[7] C.V. :	2.0	2.0	4.0	7.0	3.0	7.0	3.0	4.0	

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

Note that additional table footnotes are explained in Table C.

Column values in **bold type** at each location are top-performance group values.

* Indicates the trial was an intensive management study (IMS).

** A significant variety x location interaction indicates that protein values differed significantly by variety and location, therefore evaluate protein values by location not by the all-location average.

Table 4D. Winter wheat bushel weight averages at eight locations in 2009.

Tables is sorted by all-location average.

Variety, Heading [1,2]	Test trial 2009 bushel weight averages								All-location avg.a
	Winner-IMS	Kennebec	Wall	Hayes	Sturgis	Brookings-IMS	Selby	Platte	
	lb	lb	lb	lb	lb	lb	lb	lb	
AP503CL2, 4	58.7	60.5	61.0	64.4	60.5	57.9	61.1	57.9	60.2
Wendy~W, 0	57.7	59.6	61.7	63.3	60.5	59.8	59.1	58.9	60.0
SD06069	58.6	60.7	61.0	63.2	.	59.4	59.4	57.7	60.0
Infinity CL, 4	58.3	59.5	61.3	62.9	59.6	59.8	59.2	59.3	60.0
Expedition, 1	58.6	60.1	61.1	61.8	59.6	58.8	60.7	59.2	60.0
Smoky Hill, 5	59.5	61.5	59.9	63.8	60.2	58.0	59.5	57.5	59.9
Lyman, 4	57.7	59.7	59.3	62.6	60.3	60.1	59.0	59.8	59.7
SD06158	58.8	61.4	60.4	63.3	60.2	57.8	59.1	57.0	59.7
Overland, 5	58.1	59.6	61.0	62.8	61.1	57.7	59.2	58.8	59.6
SD03164-2	58.8	59.1	61.2	62.5	59.8	59.2	57.9	58.8	59.6
SD06163	57.8	59.7	61.2	62.3	60.0	58.9	59.5	57.5	59.6
Hawken, 4	58.1	60.4	59.3	62.6	59.9	57.5	60.6	58.6	59.6
Harding, 6	59.3	60.9	58.4	62.2	.	57.9	59.2	59.3	59.6
SD05W018	58.7	59.8	58.6	63.4	.	59.5	58.8	58.1	59.5
Alice~W, 0	57.2	59.4	61.2	62.6	60.2	59.0	58.3	58.1	59.4
Darrell, 6	59.1	59.9	59.0	62.4	.	57.9	58.7	59.0	59.4
Art, 1	57.4	59.7	59.3	63.0	58.4	57.6	60.3	59.0	59.4
Millennium, 5	58.6	60.9	60.5	62.7	61.8	55.8	58.8	57.7	59.3
Striker, 5	57.3	59.9	61.1	61.9	60.4	58.3	60.5	56.1	59.3
Settler CL, 4	57.7	59.8	59.3	62.3	60.2	57.9	59.1	58.9	59.3
Jagalene, 4	58.9	60.3	60.3	65.0	59.8	55.5	58.8	56.4	59.3
SD05118	57.8	59.7	59.9	62.1	60.4	58.2	59.3	57.4	59.2
Fuller, 3	58.2	59.6	59.0	62.5	59.1	59.0	58.8	57.7	59.2
Jerry, 6	56.4	59.4	61.1	61.5	61.3	56.9	59.2	57.3	58.8
Hatcher, 3	57.6	57.2	60.7	62.1	60.5	58.0	58.6	56.4	58.6
Arapahoe, 4	56.6	59.5	59.1	61.4	.	56.6	58.6	58.7	58.6
Radiant, 5	57.5	60.2	59.0	63.8	62.0	53.9	60.7	53.8	58.4
Wahoo, 4	56.8	59.2	61.1	62.2	58.9	53.1	59.6	56.5	58.4
Wesley, 3	56.3	59.2	59.8	62.1	59.3	55.0	58.4	56.6	58.2
NuDakota~W, 4	56.7	57.3	58.9	60.6	57.6	55.1	56.8	54.5	57.1
Test avg. :	58.0	59.8	60.1	62.6	60.1	57.6	59.2	57.7	59.3
High avg. :	59.5	61.5	61.7	65.0	62.0	60.1	61.1	59.8	60.2
Low avg. :	56.3	57.2	58.4	60.6	57.6	53.1	56.8	53.8	57.2
[5] LSD (.05):	1.0	1.7	1.6	1.5	1.8	2.1	1.6	1.3	**
[6] TPG-value :	58.5	59.8	60.1	63.5	60.2	58.0	59.5	58.5	
[7] C.V. :	1	2	2	2	2	3	2	2	

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

Note that additional table footnotes are explained in Table C.

Column values in **bold type** at each location are top-performance group values.

^a All-location average does not include Sturgis, where weights for some varieties were missing.

* Indicates the trial was an intensive management study (IMS).

** A significant variety x location interaction indicates that bushel weight values differed significantly by variety and location, therefore evaluate bushel weight values by location not by the all-location average.

Table 4e. Origin, traits, and disease reactions for winter wheat varieties tested in 2009.
Table sorted early to late maturity by relative heading (Rel Hdg).

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]	Tanspot [13]	Rust [13]			PVP Status [14]
									Stripe	Leaf	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	MS	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.
 Note that additional table footnotes are explained in Table C.

Table 5a. Field pea yield results at three South Dakota locations, 2008-2009.
Table sorted by 2-yr then by 2009 state yield average.

Variety, Rel. Mat. [15]	Location Yield Avg. Bu/a at 13% moist.						All Locations Yield Avg. bu/a	
	South Shore		Wall		Selby		2009	2-Yr
	2009	2-Yr	2009	2-Yr	2009	2-Yr		
Spider, M	76	75	32	.	95	66	68	71
Cooper, L	81	75	33	.	96	62	70	69
Arcadia, E	84	76	29	.	84	53	66	65
CDC Meadow, E	80	71	31	.	92	59	68	65
CDC Golden, M	79	71	34	.	85	56	66	64
CDC Striker, M	64	64	34	.	85	57	61	61
SW Midas, E	72	61	31	.	81	53	61	57
DS Admiral, E	59	59	32	.	77	52	56	56
Thunderbird, M	87	.	30	.	86	.	68	.
Commander, E	85	.	33	.	84	.	67	.
Summit, E	77	.	30	.	90	.	66	.
Agassiz, E	74	.	33	.	81	.	63	.
Korando, M	58	.	26	.	78	.	54	.
Sage, E	70	.	32	.	71	.	58	.
DS 98244, VE	.	.	32	.	.	.	.	.
Test avg. :	75	69	31	.	85	57	64	64
High avg. :	87	76	34	.	96	66	70	71
Low avg. :	58	59	26	.	71	52	54	56
[5] LSD (.05):	9	14	NS		12	10		
[6] TPG-value :	78	62	26		84	56		
[7] C.V. :	8	9	11		10	12		

[15] Maturity- relative to other varieties in the trial.

Note that additional table footnotes are explained in Table C.

Column values in **bold type** at each location are top-performance group values.

Table 5b. Seed source, traits, grain protein and disease reactions for field pea entries tested in 2009.

Variety	Seed Source	Rel Mat [15]	Vine Type [16]	Grain Protein %	Wilt Fuarium Wilt	Powdery Mildew	Mycosphaerella Blight	PVP or PBR Status [14]
DS 98244	PUSA-09	VE	S-L	-	-	-	-	-
Agassiz	MS-09	E	S-L	24.9	-	R	MS	Yes
Arcadia	LL-07	E	S-L	23.5	MS	MS	VS	Yes
CDC Meadow	ASS-06	E	S-L	23.7	MS	MR	MS	No
Commander	PUSA	E	S-L	24.9	R	MR	-	Yes
DS Admiral	LL-02	E	S-L	23.9	MS	R	MS	Yes
Sage	ASS-05	E	S-L	23.3	MR	MR	MS	Yes
Summit	ASS-09	E	S-L	23.5	R	MR	-	Yes
SW Midas	LL-05	E	S-L	23.6	MS	R	MS	Yes
Korando	PUSA-09	M	S-L	25.8	R	MR	-	Yes
Spider	LL-08	M	S-L	24.9	MR	R	MS	Yes
CDC Golden	ASS-03	M	S-L	25.0	MS	MR	MS	No
CDC Striker	ASS-02	M	S-L	25.2	MR	S	MS	Yes
Thunderbird	MS-09	M	S-L	24.9	MS	MR	MS	-
Cooper	MS-02	L	S-L	23.5	MS	MR	MS	Yes

[15] Maturity- relative to other varieties in the trial.

Note that additional table footnotes are explained in Table C.

Nathan Mueller | SDSU Extension Agronomist, Brookings
Bruce Swan | Ag Research Manager/Specialist, Rapid City
Ruth Beck | Agronomy Field Specialist, Pierre

Funded by the SD Pulse Council
<http://www.sdpulsegrowers.com>

Table 1. Variety list and suppliers in the 2013 field pea variety trials.

Variety	Supplier
AC Agassiz	Meridian Seeds
SW Arcadia	Legume Logic (Great Northern Ag)
Bluemoon	Legume Logic (JB Farms)
Bridger	Legume Logic (Great Northern Ag)
CDC Striker	Pulse USA
Commander	Howe Seeds Inc.
Cruiser	Pulse USA
D.S. Admiral	Pulse USA
Daytona	Meridian Seeds
Gunner	Legume Logic (Paulsen Premium Seed)
Jetset	Meridian Seeds
K2	Legume Logic (Great Northern Ag)
Korando	Pulse USA
Mystique	Pulse USA
Navarro	Legume Logic (Great Northern Ag)
Nette	Pulse USA
Salamanca	Legume Logic (Great Northern Ag)
Shamrock	Legume Matrix
Spider	Legume Logic (Great Northern Ag)
SW Midas	Pulse USA
Torch	Legume Matrix
Vegas	Legume Logic (JB Farms)
Viper	Pulse USA

2013 Field Pea Variety Trial Results

Contact information for participating suppliers:

Legume Logic

206 5th Ave SW, Box 317
Crosby, ND 58730
Phone: 701-965-6058

Meridian Seeds LLC

PO Box 224, 2 – 6th Ave N
Casselton, ND 58012
Phone: 701-347-9965

Howe Seeds Inc.

PO Box 496
McLaughlin, SD 57642
Phone: 605-823-4892

Legume Matrix

901 14th Ave. SE Box 1028
Jamestown, ND 58401
Phone: 701-252-4757

Pulse USA

1900 Commerce Drive
Bismarck, ND 58501
Phone: 701-530-0734

Trial Highlights

Field pea variety trials were conducted at 5 locations in 2013 (Table 2). Statewide yield in the variety trials was 39.1 bu/ac in 2013 (Table 3). Lowest and highest yielding locations were at Bison (23.5 bu/ac) and Blunt (52.5 bu/ac), respectively. Similar to other crops, field pea variety selection is a significant and important management decision. Within the varieties tested in 2013, the average yield difference between the highest and lowest yielding variety was 11 bu/ac statewide (Table 3). Assuming an average price cash price of \$7.00 for yellow peas and \$8.50 for green peas, the difference in profitability attributed to variety selection could be as much as \$70/acre and \$73/acre for yellow and green field peas, respectively. Additional variety information can be found in Table 9 and other resources for field pea production on page 10.

Practices and Methods

Four replications of each variety were planted at each location. Locations were seeded at 350,000 seeds/acre (inoculated with a granular pea inoculum) with a John Deere 750 drill w/10" spacing. Plots were 25 ft long and 5 ft wide at harvest.

Location Name	County	Previous Crop	Planting date
Blunt	Hughes	Corn	April 3
Pierre	Hughes	Corn	April 2
Wall	Pennington	Fallow	April 5
Bison	Perkins	Wheat	May 2
Ralph	Harding	Wheat	April 29

Acknowledgements

The efforts of the following groups and people are gratefully appreciated: SDSU West River Staff – Amanda Kammerer and Charlie Ellis, R. Leesman (Blunt), D. Shea (Bison), L. Erickson (Ralph), D. Patterson (Wall), Dakota Lakes Research Farm – D. Beck and Staff (Pierre) and the SD Pulse Council.

2013 Field Pea Variety Trial Results

Table 3. Field pea variety performance results (average of 4 replications and 5 location sorted by yield) – **Statewide performance across all 5 locations.**

Varietal Information		Measurements					
Variety	Seed Color	Yield Bu/A (13%)	Harvest Moisture %	Test Wt. (Lbs/Bu)	Protein (13%)	Seed Size (seeds/lbs)	Canopy Height (inches)
Salamanca	Yellow	45.0	11.6	61.4	26.0	1945	22
SW Midas	Yellow	42.6	10.4	61.3	24.8	2363	17
Shamrock	Green	42.2	11.3	60.8	24.5	2083	21
AC Agassiz	Yellow	42.2	11.4	61.2	25.9	2154	20
Gunner	Yellow	40.4	11.7	61.3	25.5	2106	21
Korando	Yellow	40.3	11.2	60.7	26.1	1779	21
Torch	Yellow	40.2	11.4	61.2	25.7	1956	21
Check=Vegas	Yellow	40.0	11.2	61.8	26.0	2147	20
Spider	Yellow	39.9	11.9	61.5	26.5	2077	20
Bridger	Yellow	39.8	11.4	61.3	25.3	2197	20
Daytona	Green	39.5	11.0	61.2	25.3	1971	18
Bluemoon	Green	39.4	11.3	61.4	25.2	1979	21
Vegas	Yellow	39.4	11.5	61.9	26.1	2194	21
D.S. Admiral	Yellow	39.4	10.8	61.5	24.6	2062	20
Jetset	Yellow	39.1	11.0	61.5	25.2	2049	19
Mystique	Yellow	39.1	12.0	61.5	26.2	2008	21
Commander	Yellow	38.8	11.5	61.9	26.3	2144	19
Nette	Yellow	38.5	11.4	62.2	24.6	2034	20
K2	Yellow	36.9	10.6	62.1	24.8	2240	18
Cruiser	Green	36.7	10.7	61.3	25.9	2325	19
CDC Striker	Green	35.7	11.3	62.2	27.0	2083	20
Navarro	Yellow	35.0	12.0	60.8	25.4	1821	20
Viper	Green	34.5	11.4	60.8	25.6	2060	20
SW Arcadia	Green	33.6	10.8	60.8	25.3	2407	16
Trial Average		39.1	11.3	61.4	25.6	2091	20
LSD (0.05)†		4.6	0.6	0.8	0.6	68	2
C.V.‡		17.8	8.1	2.0	1.9	5.0	11.4

† Yield, moisture, test weight, protein, seed size, and canopy height value required (\geq LSD) to determine if varieties are different from each other with confidence. No significant (N.S.) difference between values

‡ C.V. is a measure of variability or experimental error, 15% or less is acceptable.

2013 Field Pea Variety Trial Results

Varietal Information		Measurements					
Variety	Seed Color	Yield Bu/A (13%)	Harvest Moisture %	Test Wt. (Lbs/Bu)	Protein (13%)	Seed Size (seeds/lbs)	Canopy Height (inches)
Shamrock	Green	31.3	12.4	60.5	25.0	2148	-
Mystique	Yellow	28.8	12.2	59.6	27.0	1988	-
Salamanca	Yellow	26.9	12.6	62.7	26.9	1978	-
AC Agassiz	Yellow	26.7	12.6	61.5	27.5	2053	-
Korando	Yellow	26.6	11.7	58.9	26.5	1843	-
Spider	Yellow	25.7	12.7	62.3	27.1	2103	-
Bridger	Yellow	25.7	12.3	61.6	26.5	2148	-
Gunner	Yellow	25.6	12.4	61.4	26.3	2063	-
D.S. Admiral	Yellow	25.5	12.1	61.0	25.1	2043	-
Check (Vegas)	Yellow	25.1	12.6	60.4	26.8	2225	-
Vegas	Yellow	24.6	13.2	61.6	27.3	2243	-
Jetset	Yellow	24.5	12.0	60.9	26.2	1985	-
Nette	Yellow	22.8	11.8	61.1	25.1	2035	-
Navarro	Yellow	22.6	12.7	57.7	25.2	1883	-
K2	Green	22.4	12.7	62.4	26.0	2245	-
Torch	Yellow	22.1	12.3	60.2	26.4	1893	-
CDC Striker	Green	21.7	12.6	60.6	27.6	2000	-
SW Midas	Yellow	21.6	12.4	60.7	26.0	2228	-
Bluemoon	Green	20.8	12.8	63.0	26.1	2028	-
Cruiser	Green	20.8	12.8	60.8	26.8	2345	-
Commander	Yellow	19.9	13.2	-	27.4	2085	-
Viper	Green	18.0	13.2	-	26.6	2120	-
Daytona	Green	17.8	13.2	-	26.6	1995	-
SW Arcadia	Green	16.5	13.2	-	26.1	2320	-
Trial Average		23.5	12.6	60.9	26.4	2083	-
LSD (0.05)†		7.5	0.9	N.S.	-	115	-
C.V.‡		19.4	4.4	2.4	-	3.9	-

† Yield, moisture, test weight, protein, seed size, and canopy height value required (\geq LSD) to determine if varieties are different from each other with confidence. No significant (N.S.) difference between values.

‡ C.V. is a measure of variability or experimental error, 15% or less is acceptable.

2013 Field Pea Variety Trial Results

Varietal Information		Measurements					
Variety	Seed Color	Yield Bu/A (13%)	Harvest Moisture %	Test Wt. (Lbs/Bu)	Protein (13%)	Seed Size (seeds/lbs)	Canopy Height (inches)
Salamanca	Yellow	58.6	13.0	61.7	27.7	2108	25
Bluemoon	Green	56.3	12.0	61.5	26.6	1895	24
AC Agassiz	Yellow	56.1	12.0	61.5	27.6	2200	22
Daytona	Green	56.1	11.8	62.1	26.1	1875	21
Jetset	Yellow	55.8	11.7	62.5	26.6	2025	23
SW Midas	Yellow	55.0	10.7	62.1	25.9	2377	20
D.S. Admiral	Yellow	54.9	11.7	62.0	26.2	2018	24
Bridger	Yellow	54.3	13.2	62.0	26.2	2343	20
Cruiser	Green	54.0	11.1	60.8	27.4	2208	24
Viper	Green	53.1	11.9	61.4	25.9	1960	22
Gunner	Yellow	51.9	12.8	61.4	27.1	2098	26
Nette	Yellow	51.8	11.9	62.8	26.1	1998	21
CDC Striker	Green	51.4	11.8	61.8	28.6	2128	22
Spider	Yellow	51.2	13.1	61.2	28.1	1995	23
K2	Green	51.1	10.9	62.6	25.7	2215	21
Commander	Yellow	50.9	12.7	61.6	28.4	2133	22
Mystique	Yellow	50.9	13.9	61.3	27.7	2015	25
Korando	Yellow	50.7	12.4	61.0	27.1	1728	24
SW Arcadia	Green	50.3	10.5	61.8	26.7	2445	19
Shamrock	Green	49.7	13.0	60.0	26.2	1995	23
Check (Vegas)	Yellow	49.6	12.2	61.7	27.6	2178	22
Navarro	Yellow	49.5	13.7	61.0	27.1	1815	23
Torch	Yellow	48.4	12.9	61.5	27.5	2078	24
Vegas	Yellow	47.4	13.0	61.9	27.5	2285	23
Trial Average		52.5	12.2	61.6	27.0	2088	23
LSD (0.05)†		N.S.	1.7	1.3	-	141	3
C.V.‡		10.7	9.8	1.5	-	4.8	8.7

† Yield, moisture, test weight, protein, seed size, and canopy height value required (\geq LSD) to determine if varieties are different from each other with confidence. No significant (N.S.) difference between values.

‡ C.V. is a measure of variability or experimental error, 15% or less is acceptable.

2013 Field Pea Variety Trial Results

Table 6. Field pea variety performance results (average of 4 replications sorted by yield) – Pierre (Dakota Lakes Research Farm)

Varietal Information		Measurements					
Variety	Seed Color	Yield Bu/A (13%)	Harvest Moisture %	Test Wt. (Lbs/Bu)	Protein (13%)	Seed Size (seeds/lbs)	Canopy Height (inches)
SW Midas	Yellow	49.1	10.3	61.3	24.2	2438	14
Torch	Yellow	42.7	11.5	60.3	25.2	1948	18
Salamanca	Yellow	41.2	12.0	60.1	25.6	1823	18
Bluemoon	Green	40.0	11.7	60.4	24.9	2038	18
Spider	Yellow	39.6	12.5	60.3	26.5	2228	15
AC Agassiz	Yellow	39.1	12.3	60.0	26.7	2203	18
Daytona	Green	39.0	11.2	61.0	24.2	2123	14
CDC Striker	Green	38.0	11.8	61.4	26.2	2165	17
Mystique	Yellow	38.0	12.2	61.5	25.3	2093	16
Vegas	Yellow	37.6	11.7	61.4	25.8	2203	18
Check (Vegas)	Yellow	37.2	11.9	61.9	25.8	2185	18
K2	Green	36.0	11.0	60.7	23.8	2325	16
Nette	Yellow	35.8	12.9	62.5	24.3	2103	17
Bridger	Yellow	35.4	12.0	61.1	25.2	2143	20
Cruiser	Green	35.3	11.3	61.4	25.2	2440	15
D.S. Admiral	Yellow	35.1	11.3	60.3	23.8	2218	16
Commander	Yellow	34.1	12.0	61.2	25.8	2203	13
Gunner	Yellow	34.1	13.1	60.4	25.8	2268	16
Shamrock	Green	33.9	12.1	61.2	23.7	2175	19
Jetset	Yellow	32.3	12.6	61.0	24.9	2165	17
Korando	Yellow	31.8	11.9	59.7	26.3	1798	20
Navarro	Yellow	30.3	13.1	59.2	25.4	1805	19
SW Arcadia	Green	28.9	11.7	60.1	25.2	2503	13
Viper	Green	27.1	12.3	60.0	26.0	2170	18
Trial Average		36.3	11.9	60.7	25.2	2156	17
LSD (0.05)†		4.6	1.5	1.5	-	136	3
C.V.‡		9.0	8.9	1.8	-	4.5	14.4

† Yield, moisture, test weight, protein, seed size, and canopy height value required (\geq LSD) to determine if varieties are different from each other with confidence.

‡ C.V. is a measure of variability or experimental error, 15% or less is acceptable.

2013 Field Pea Variety Trial Results

Varietal Information		Measurements					
Variety	Seed Color	Yield Bu/A (13%)	Harvest Moisture %	Test Wt. (Lbs/Bu)	Protein (13%)	Seed Size (seeds/lbs)	Canopy Height (inches)
Shamrock	Green	57.9	10.1	60.9	23.9	1803	18
Vegas	Yellow	55.3	9.8	61.1	24.8	2028	17
Salamanca	Yellow	53.9	10.7	61.6	24.7	1808	18
Gunner	Yellow	51.5	11.1	61.9	23.3	1915	19
Korando	Yellow	51.5	10.4	62.0	25.3	1673	17
Check=Vegas	Yellow	50.1	9.9	61.6	24.5	1935	17
SW Midas	Yellow	49.0	9.5	60.8	23.7	2283	16
Torch	Yellow	48.3	10.4	61.3	24.1	1860	17
Spider	Yellow	48.0	10.8	62.1	24.6	1848	17
Commander	Yellow	48.0	10.4	62.3	24.0	2103	18
AC Agassiz	Yellow	46.1	11.0	61.8	22.8	2040	17
Daytona	Green	45.7	9.8	60.8	24.5	1758	15
Bridger	Yellow	43.7	10.3	60.9	23.5	2053	18
Jetset	Yellow	43.6	10.4	63.4	23.9	2013	16
Mystique	Yellow	43.0	11.5	61.6	24.7	1873	19
K2	Green	42.4	10.0	62.3	23.8	2075	14
Nette	Yellow	41.2	10.8	62.4	23.2	1950	16
Bluemoon	Green	40.1	10.6	61.2	23.4	1878	15
D.S. Admiral	Yellow	40.0	10.5	62.4	23.6	2025	16
Cruiser	Green	38.6	10.1	61.8	24.8	2295	14
Viper	Green	38.3	10.9	62.3	24.5	1948	15
SW Arcadia	Green	35.8	10.1	60.7	23.3	2265	13
Navarro	Yellow	35.0	10.8	62.8	24.5	1703	15
CDC Striker	Green	34.1	10.9	63.4	25.8	1995	16
Trial Average		45.0	10.4	61.8	24.1	1963.3	16
LSD (0.05)†		N.S.	1.1	1.7	-	103	3
C.V.‡		26.6	7.4	1.8	-	3.7	14.8

† Yield, moisture, test weight, protein, seed size, and canopy height value required (\geq LSD) to determine if varieties are different from each other with confidence. No significant (N.S.) difference between values.

‡ C.V. is a measure of variability or experimental error, 15% or less is acceptable.

2013 Field Pea Variety Trial Results

Varietal Information		Measurements					
Variety	Seed Color	Yield Bu/A (13%)	Harvest Moisture %	Test Wt. (Lbs/Bu)	Protein (13%)	Seed Size (seeds/lbs)	Canopy Height (inches)
Salamanca	Yellow	44.1	9.8	61.7	24.9	2008	26
AC Agassiz	Yellow	43.3	9.1	61.7	25.1	2273	25
D.S. Admiral	Yellow	42.4	8.7	62.3	24.4	1962	26
Korando	Yellow	41.7	9.7	61.5	25.1	1855	25
Nette	Yellow	41.1	9.4	62.2	24.5	2083	24
Bridger	Yellow	40.8	9.3	61.5	25.0	2298	23
Commander	Yellow	40.6	9.7	63.2	26.0	2195	23
Shamrock	Green	39.8	9.0	61.3	23.5	2295	25
Jetset	Yellow	39.8	8.4	60.1	24.2	2058	23
Bluemoon	Green	39.3	9.4	62.2	25.0	2055	26
Torch	Yellow	39.3	9.9	62.5	25.4	1992	24
Gunner	Yellow	39.1	9.3	61.9	24.9	2185	25
Check=Vegas	Yellow	38.0	9.3	63.6	25.5	2210	24
Daytona	Green	37.7	9.2	61.4	24.9	2105	24
Viper	Green	37.2	8.8	59.8	24.8	2103	26
Navarro	Yellow	37.2	9.6	61.9	24.9	1900	25
SW Midas	Yellow	37.2	8.9	61.6	24.2	2488	21
SW Arcadia	Green	36.5	8.9	61.0	25.1	2503	20
Mystique	Yellow	36.4	9.9	63.0	26.3	2073	27
Vegas	Yellow	35.9	9.3	63.0	25.3	2213	25
Cruiser	Green	35.1	8.7	61.7	25.3	2335	24
Spider	Yellow	34.8	10.3	62.4	26.4	2213	25
CDC Striker	Green	34.2	9.7	63.4	26.7	2125	23
K2	Green	32.7	9.0	62.8	24.9	2338	21
Trial Average		38.5	9.3	62.0	25.1	2161	24
LSD (0.05)†		5.0	0.6	2.0	-	86	2
C.V.‡		9.3	4.2	2.2	-	2.8	6.5

† Yield, moisture, test weight, protein, seed size, and canopy height value required (\geq LSD) to determine if varieties are different from each other with confidence.

‡ C.V. is a measure of variability or experimental error, 15% or less is acceptable.

2013 Field Pea Variety Trial Results

Table 9. Field pea variety origin, characteristics, and disease ratings

Variety Information		Agronomic Characteristics					Disease Ratings§		
Variety ^{PVP Status}	Origin†-Year	Cotyledon or Seed Color	Normal (N) or semi-leafless (SL)	Maturity	Flower Color	Lodging Resistance‡	Mycoph-eralla Blight	Powdery Mildew	Fusarium Wilt
AC Agassiz ^{PVPpending}	AAFC-2006	Yellow	SL	Medium	White	E	S	R	MS
SW Arcadia ^{PVPpending}	SW-2009	Green	SL	Medium	White	F	S	MS	MS
Bluemoon	-	Green	SL	Medium	White	-	-	-	-
Bridger	2011	Yellow	SL	Early	White	-	-	-	-
CDC Striker	CDC-2002	Green	SL	Medium	White	E	MS	S	MR
Commander	-	Yellow	SL	Medium	White	-	-	MR	R
Cruiser ^{PVP}	PG-2002	Green	SL	Medium	White	F	MS	S	S
Daytona	-	Green	SL	Medium	White	E	S	R	MS
D.S. Admiral ^{PVP}	Denmark-1988	Yellow	SL	Early	White	G	MS	R	MS
Gunner	-	Yellow	SL	Late	White	-	-	-	-
Jetset	-	Yellow	SL	Early	White	E	S	R	MS
K2 ^{PVP}	2005	Green	SL	Medium	White	G	-	S	S
Korando ^{PVP}	-	Yellow	SL	Medium	White	F	-	MR	R
Mystique ^{PVPpending}	2012	Yellow	SL	Late	White	G	-	-	-
Navarro	-	Yellow	SL	Early	White	-	-	-	-
Nette ^{PVPpending}	-	Yellow	SL	Early	White	G-E	-	-	-
Salamanca	-	Yellow	SL	Medium	White	-	-	-	-
Shamrock ^{PVPpending}	-	Green	SL	V. Late	White	-	-	-	-
Spider ^{PVP}	NIR-2008	Yellow	SL	Medium	White	F	MR	R	R
SW Midas ^{PVP}	SW-2002	Yellow	SL	Early	White	G	MS	R	MS
Torch	-	Yellow	SL	Late	White	-	-	-	-
Vegas ^{PVPpending}	-	Yellow	SL	Late	White	E	-	-	-
Viper ^{PVP}	-	Green	SL	Early	White	G-E	-	-	-

† Origin: AAFC, Agriculture & AgriFood Canada; CDC, University of Saskatchewan Crop Dev. Centre; NIR, Nickerson International Research SNC; PG, Progene Plant Research; SW, Svalof Weibull;

‡Lodging resistance: E, excellent; G, good; F, Fair

§ Disease ratings: R, resistant; MR, moderately resistant; MS, moderately susceptible; S, susceptible.

2013 Field Pea Variety Trial Results

Description of varieties with additional information

AC Agassiz (AAFC, 2006): Developed from the cross (AC Tamor/Montana)/ Grande. It is a semi-leafless field pea (*Pisum sativum* L.) variety with yellow cotyledons and a medium-sized round seed. High yield variety with good lodging resistance. Resistant to powdery mildew, but moderately susceptible to Fusarium wilt and Mycosphaerella blight.

CDC Striker (CDC, 2002): Developed from the cross Majoret/(Century *afst*/Maestro). It is a semi-leafless variety with green cotyledons and medium-sized round seeds. Good lodging resistance. Susceptible to powdery mildew and moderately susceptible to Mycosphaerella blight. Large acreage in North Dakota.

D.S. Admiral^{PVP} (Denmark, 1988): Developed from the cross Renata//Bohatyr/M420062. It is a semi-leafless variety with yellow cotyledons. Resistant to powdery mildew, but moderately susceptible to root rot and Mycosphaerella blight.

Supporting information from SDSU Extension

Recent Extension Articles:

Ruth Beck on “Disease Concerns in Field Peas”

<http://igrow.org/agronomy/other-crops/disease-concerns-in-field-peas/>

Ruth Beck on “More about Peas”

<http://igrow.org/agronomy/other-crops/more-about-peas/>

Ruth Beck on “Thinking about Growing Field Peas in 2013?”

<http://igrow.org/agronomy/other-crops/thinking-about-growing-field-peas-in-2013>

Ruth Beck on “The Value of Field Peas in a Crop Rotation before Wheat”

<http://igrow.org/agronomy/wheat/the-value-of-field-peas-in-a-crop-rotation-before-wheat/>

Bob Thaler on “Using South Dakota Grown Field Peas in Swine Diets”

<http://igrow.org/up/resources/02-2037-2012.pdf>

Fertilizer Recommendations

http://pubstorage.sdstate.edu/AgBio_Publications/articles/EC750.pdf

Other resources:

South Dakota Certified Seed Grower Directory

<http://www.sdstate.edu/ps/sdcia/upload/2013-2014-Grower-Directory.pdf>

Chris Graham | SDSU Extension Agronomist, Rapid City
Bruce Swan | Ag Research Manager, Rapid City

Funded by the SD Pulse Council: <http://www.sdpulsegrowers.com>

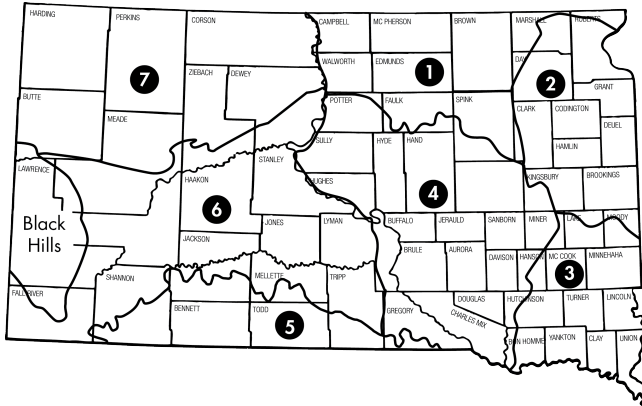


Table 1. Variety list and suppliers in the 2014 lentil variety trials.

Variety	Supplier
CDC Imigreen CL	Pulse USA
CDC Impala CL	Pulse USA
CDC Invincible CL	Pulse USA
CDC Maxim CL	Pulse USA
Redcoat	Pulse USA
Richlea	Pulse USA

Trial Highlights

Lentil variety trials were conducted at 2 locations: Wall and Bison, SD in 2014. The trials consisted of six lentil varieties – 4 Clearfield™ and 2 traditional. Additional planting information can be found in Table 2.

Practices and Methods

Four replications of each variety were planted at each location. Locations were seeded at 12 seeds/ft² with a John Deere 750 drill w/10" spacing. Plots were 25 ft long and 5 ft wide at harvest. Beyond herbicide (applied with surfactant and UAN) was applied to the Clearfield varieties at the six leaf stage at 6 oz/ac.

Table 2. Location name and county, previous crop, and planting date for each trial in 2014

Location Name	County	Previous Crop	Planting date	Harvest date
Wall	Pennington	Fallow	May 2, 2014	August 20, 2014
Bison	Perkins	Wheat	April 22, 2014	August 21, 2014

Acknowledgements

The efforts of the following groups and people are gratefully appreciated: SDSU West River Staff – Tiana Shuster and Charlie Ellis, D. Shea (Bison), D. Patterson (Wall), E. Paul (Pulse USA) and the SD Pulse Council.

Contact information for participating suppliers:

Pulse USA
1900 Commerce Drive
Bismarck, ND 58501
Phone: 701-530-0734

Crop Zone 6		
Wall		
Variety	Yield (lbs/ac)	Test Wt
CDC Impala CL	1203	62.6
Richlea	1098	57.6
Redcoat	1089	59.0
CDC Invincible CL	984	60.7
CDC Maxim CL	871	61.4
CDC Imigreen CL	705	58.0
Trial Average	1049	60.3
LSD	320	1.8
TPG value	883	60.8

Crop Zone 7		
Bison		
Variety	Yield (lbs/ac)	Test Wt
CDC Impala CL	897	63.6
CDC Invincible CL	862	61.5
CDC Imigreen CL	767	58.4
CDC Maxim CL	531	59.8
Redcoat ^δ	-	-
Richlea ^δ	-	-
Trial Average	842	61.2
LSD	282	3.1
TPG value	615	60.5

^δ - Non-Clearfield varieties at the Bison location were lost due to sprayer error.

Jonathan Kleinjan | SDSU Extension Agronomist & Crop Performance Testing (CPT) Director

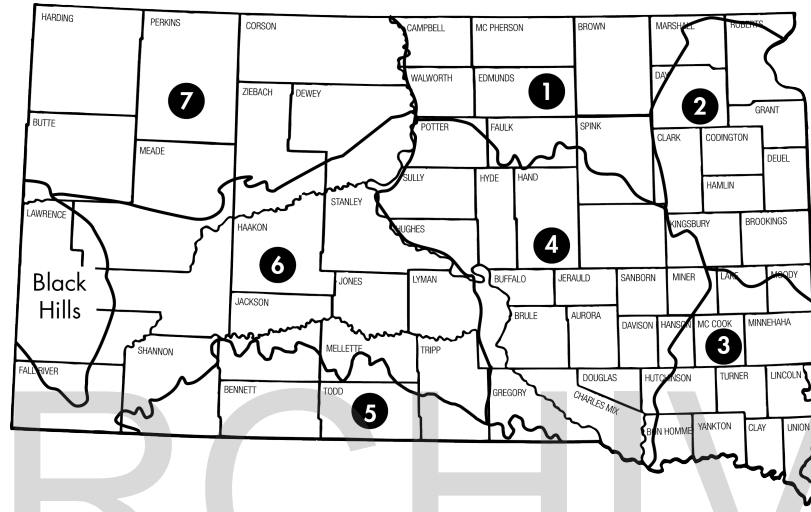
Kevin Kirby | Ag Research Manager, Brookings

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Ruth Beck | SDSU Extension Agronomy Field Specialist, Pierre

Funded by the SD Pulse Council: <http://www.sdpulsegrowers.com>



Contact information for participating suppliers:

Legume Logic Meridian Seeds LLC

206 5th Ave SW, Box 317

Crosby, ND 58730

Phone: 701-965-6058

Legume Matrix

901 14th Ave. SE Box 1028

Jamestown, ND 58401

Phone: 701-252-4757

Meridian Seeds LLC

PO Box 224, 2 – 6th Ave N

Casselton, ND 58012

Phone: 701-347-9965

Pulse USA

1900 Commerce Drive

Bismarck, ND 58501

Phone: 701-530-0734

Trial Highlights

Field pea variety trials were conducted at 5 locations in 2014 (Table 2). Additional variety information can be found in Table 3.

Acknowledgements

The efforts of the following groups and people are gratefully appreciated: SDSU West River Staff – Tiana Shuster and Charlie Ellis, R. Leesman (Blunt), D. Shea (Bison), R. Stiegelmeier (Selby), D. Patterson (Wall), Dakota Lakes Research Farm – D. Beck and Staff (Pierre) and the SD Pulse Council.

Table 1. Variety list and suppliers in the 2014 field pea variety trials

Variety	Supplier
Abarth	Pulse USA
AC Agassiz	Meridian Seeds
SW Arcadia	Pulse USA
Bluemoon	Legume Logic (JB Farms)
Bridger	Legume Logic (Great Northern Ag)
CDC Striker	Pulse USA
D.S. Admiral	Pulse USA
Daytona	Meridian Seeds
Earlstar	Meridian Seeds
Greenwood	Pulse USA
Gunner	Legume Logic (Paulsen Premium Seed)
Hyline	Legume Logic (Great Northern Ag)
Jetset	Meridian Seeds
K2	Legume Logic (Great Northern Ag)
Korando	Pulse USA
Mystique	Pulse USA
Navarro	Legume Logic (Great Northern Ag)
Nette	Pulse USA
Quantum	Legume Matrix
Salamanca	Legume Logic (Great Northern Ag)
Shamrock	Legume Matrix
Spider	Legume Logic (Great Northern Ag)
SW Midas	Pulse USA
Torch	Legume Matrix
Viper	Pulse USA
Yellowstone	Legume Logic (Dick Roland)

Practices and Methods

Four replications of each variety were planted at each location. Locations were seeded at 350,000 seeds/acre (inoculated with a granular pea inoculum) with a John Deere 750 drill w/10" spacing. Plots were 25 ft long and 5 ft wide at harvest. The location as Selby will be seeded in 7.5" row spacing and plot will be 13 ft long and 5 ft wide at harvest.

Table 2. Location name and county, previous crop, and planting date for each trial in 2014

Location Name	County	Previous Crop	Planting date
Blunt	Hughes	Corn	April 17, 2014
Pierre	Hughes	Corn	April 17, 2014
Wall	Pennington	Fallow	April 8, 2014
Bison	Perkins	Wheat	April 10, 2014
Selby	Walworth	Corn	April 15, 2014

Table 3. 2014 Field pea variety origin, characteristics, and disease ratings

Variety Information	Agronomic Characteristics				Disease Ratings§				
Variety ^{PVP Status}	Origin†-Year	Cotyledon or Seed Color	Normal (N) or semi-leafless (SL)	Maturity	Flower Color	Lodging Resistance‡	Mycoph-eralla Blight	Powdery Mildew	Fusarium Wilt
Abarth	-	Yellow	SL	Early	-	-	-	R	-
AC Agassiz ^{PVP}	AAFC-2006	Yellow	SL	Medium	White	E	S	R	MS
SW Arcadia ^{PVP}	SW-2009	Green	SL	Medium	White	F	S	MR	MS
Bluemoon	-	Green	SL	Medium	White	-	-	S	-
Bridger ^{PVPpending}	DLSeeds-2011	Yellow	SL	Medium	White	-	-	MS	-
CDC Striker	CDC-2002	Green	SL	Medium	White	E	MS	S	MR
D.S. Admiral ^{PVP}	Denmark-1988	Yellow	SL	Early	White	G	MS	R	MS
Daytona	-	Green	SL	Medium	White	E	S	R	MS
Earlystar	-	Yellow	SL	Early	-	-	-	-	-
Greenwood	-	Green	SL	Early	-	-	-	R	-
Gunner	-	Yellow	SL	Medium	White	-	-	MS	-
Hyline	-	Yellow	SL	Medium	-	-	-	R	-
Jetset	-	Yellow	SL	Early	White	E	S	R	MS
K2 ^{PVP}	SW-2005	Green	SL	Early	White	G	-	S	S
Korando ^{PVP}	LG-2009	Yellow	SL	Early	White	F	-	R	R
Mystique ^{PVPpending}	DLSeeds-2012	Yellow	SL	Medium	White	G	-	MR	-
Navarro ^{PVPpending}	DLSeeds-2013	Yellow	SL	Early	White	-	-	MS	-
Nette ^{PVPpending}	-	Yellow	SL	Early	White	G-E	-	MR	-
Quantum ^{PVP}	Seminis-1989	Yellow	SL	Medium	-	-	-	S	-
Salamanca	-	Yellow	SL	Early	White	-	-	MS	-
Shamrock ^{PVP}	LG-2011	Green	SL	Late	White	-	-	S	-
Spider ^{PVP}	LG-2009	Yellow	SL	Medium	White	F	MR	R	R
SW Midas ^{PVP}	SW-2001	Yellow	SL	Early	White	G	MS	R	MS
Torch	-	Yellow	SL	Medium	White	-	-	S	-
Viper ^{PVP}	LG-2011	Green	SL	Early	White	G-E	-	MR	-
Yellowstone	-	Yellow	SL	Medium	-	-	-	R	-

† Origin: AAFC, Agriculture & AgriFood Canada; CDC, University of Saskatchewan Crop Dev. Centre; LG, Limagrain Europe; SW, Svalof Weibull;

‡Lodging resistance: E, excellent; G, good; F, Fair

§ Disease ratings: R, resistant; MR, moderately resistant; MS, moderately susceptible; S, susceptible.

Crop Zone 1

Selby		
Variety	Yield	Test Wt
Hyline	65	59.7
Earlstar	64	59.5
Gunner	62	59.5
Quantum	61	58
Bridger	59	59.7
Spider	59	60.5
Daytona	58	58.2
Mystique	58	60.5
DS Admiral	57	58.2
Nette	57	59.7
Jetset	56	58.5
Shamrock	56	59.3
Abarth	55	59.1
Arcadia	55	58.5
Navarro	55	58.7
SW Midas	55	60.7
Torch	55	59.1
Bluemoon	54	58.3
Salamanca	54	59.7
Yellowstone	54	59.1
K2	52	58.5
Greenwood	51	58.9
Agassiz	50	60.5
Korando	50	58.2
Navarro Treated	50	58.7
CDC Striker	45	59.9
Viper	44	58.5
Trial Average	55	61.6
LSD	6	NS
TPG value	59	NA
CV	11	2.5

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Crop Zone 4

Dakota Lakes			
Variety	Yield	Test Wt	2-Year Average
Bridger	47	63.5	41
Hyline	47	61.6	-
Shamrock	43	62.1	38
Arcadia	42	62.8	35
Quantum	42	61.3	-
Gunner	41	61.5	-
Navarro	41	60.8	35
DS Admiral	40	62.1	38
Earlstar	40	61.3	-
Navarro Treated	38	62.1	-
Bluemoon	37	51.7	39
Salamanca	37	63.1	39
Mystique	36	62.5	37
Yellowstone	36	62.3	-
K2	35	53.6	35
Nette	35	63.2	35
Viper	35	62.2	31
SW Midas	34	63.3	42
Torch	34	61.7	38
Abarth	33	62.4	-
Jetset	32	61.6	32
Daytona	31	61.6	35
Greenwood	31	62.7	-
Korando	31	62.3	31
Spider	30	62.3	35
Agassiz	29	61.8	33
CDC Striker	25	62.4	32
Trial Average	37	60.7	36
LSD	16	NS	7
TPG value	31	NA	35
CV	27	13.4	-

Blunt			
Variety	Yield	Test Wt	2-Year Average
Earlstar	67	61.8	-
DS Admiral	66	62.6	60
Arcadia	63	61	57
Hyline	63	61.8	-
Spider	63	62.5	57
Navarro	61	61.3	55
Jetset	60	61.3	55
Navarro Treated	60	61	-
Shamrock	59	61.7	54
Quantum	58	61.5	-
Daytona	57	60.4	56
Salamanca	57	61.1	58
Agassiz	56	62.3	56
Nette	56	61.7	54
Torch	56	61.4	52
Yellowstone	56	62.4	-
Korando	53	61	52
Bridger	52	61.3	53
CDC Striker	51	62.3	51
Mystique	51	61	51
SW Midas	51	62.3	53
Bluemoon	50	61.1	53
Greenwood	50	62.2	-
Gunner	49	62.6	-
K2	48	61	49
Viper	46	61.3	50
Abarth	42	61.6	-
Trial Average	56	61.6	54
LSD	10	1.6	7
TPG value	57	61	53
CV	16	1.9	-

Crop Zone 6

Wall			
Variety	Yield	Test Wt	2-Year Average
Quantum	65	60.7	-
Navarro Treated	62	61.9	-
Shamrock	61	60.9	51
Salamanca	60	61.3	52
Arcadia	57	61.7	47
Navarro	57	60.9	47
Mystique	56	60.4	46
Spider	56	61.6	51
Yellowstone	56	61.7	-
Viper	55	61.7	46
Gunner	54	61.3	-
Nette	54	62.1	48
SW Midas	54	61.9	46
Agassiz	53	62	51
Earlstar	53	61.8	-
Hyline	53	61.5	-
Torch	53	61.9	46
Korando	52	61.3	47
DS Admiral	51	61.7	47
Jetset	51	61.3	45
Abarth	50	61.6	-
Bridger	50	62.1	45
Daytona	50	59.6	44
Greenwood	50	62.1	-
Bluemoon	49	61.5	44
K2	46	62	39
CDC Striker	43	62.6	39
Trial Average	54	61.5	46
LSD	7	1	6
TPG value	58	61.6	48
CV	12	1.4	-

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Crop Zone 7

Bison			
Variety	Yield	Test Wt	2-Year Average
Navarro Treated	44	58.7	-
Spider	44	61.2	35
Mystique	42	60.3	33
Navarro	41	60.2	32
Shamrock	41	60.8	35
Torch	41	60.1	32
Earlstar	40	60.5	-
Bridger	39	59.7	30
Hylene	39	60.1	-
Korando	37	59.3	30
Quantum	37	59.1	-
Arcadia	36	62	26
DS Admiral	35	60.4	28
Gunner	35	59.4	-
Salamanca	34	60.6	31
Bluemoon	33	60.9	25
Daytona	33	58.6	26
Greenwood	33	61.6	-
SW Midas	33	60.3	28
Viper	32	60.1	25
Yellowstone	32	60.7	-
Jetset	31	60.5	27
K2	30	60.6	25
Nette	30	60.7	26
Agassiz	29	60.3	26
CDC Striker	26	60.3	22
Abarth	21	58.9	-
Trial Average	36	60.7	29
LSD	7	NS	5
TPG value	37	NA	30
CV	26.1	3.0	-

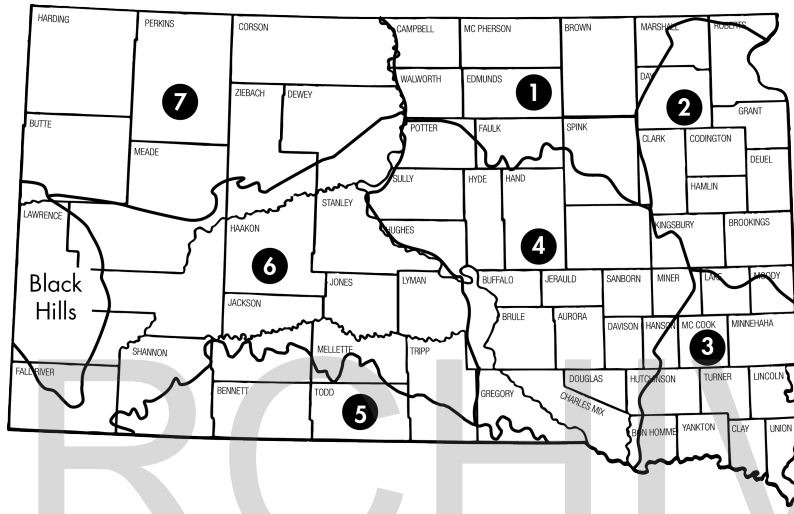
All Zones

Protein Content	
Variety	Percent
CDC Striker	27.3
Korando	26.8
Salamanca	26.5
Spider	25.9
Torch	25.9
Bridger	25.8
Yellowstone	25.7
Daytona	25.6
Jetset	25.6
Viper	25.5
Bluemoon	25.4
Gunner	25.3
Agassiz	25.2
Mystique	25
Navarro Treated	24.8
SW Midas	24.5
Navarro	24.4
DS Admiral	24.3
Hyline	24.3
Shamrock	24.3
K2	24.2
Nette	24.1
Quantum	24.1
Abarth	23.8
Arcadia	23.7
Earlstar	23.4
Greenwood	23.3
Trial Average	25
LSD	1.4
TPG value	25.9

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Crop Zones in South Dakota



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Trial Highlights

The 2015 Field Pea Variety Trials consisted of 5 sites (Bison, Blunt, Dakota Lakes, Selby and Wall) across the central and western portions of South Dakota. In total, 24 varieties (16 yellow and 8 green – Table 1) were tested. Across all sites, the trial average was 43 bu/ac with a range of 35 – 50 bu/ac. The highest yielding site was Blunt with a trial average of 60 bu/ac and a range of 49-74 bu/ac. This range (25 bu/ac) highlights the fact that variety selection is incredibly important.

Weather played a significant role in this year’s growing season. Planting occurred in extremely dry conditions for most of the sites. Dry conditions led to delayed and uneven germination. As the spring progressed, conditions shifted to generally wet conditions. Combined with rising temperatures, powdery mildew was seen at Blunt and Selby. Hail damage was recorded at the Dakota Lakes site, which may have affected yields somewhat.

Table 1. Field Pea Varieties included in 2015 Variety Trial

Variety	Cotyledon Type	Distributor
AAC Carver	Yellow	Meridian Seeds
Abarth	Yellow	Pulse USA
AC Earlystar	Yellow	Meridian Seeds
Agassiz	Yellow	Meridian Seeds
Arcadia	Green	Pulse USA, Great Northern Ag.
Bluemoon	Green	JB Farms
Bridger	Yellow	Great Northern Ag
CDC Amarillo	Yellow	University of Saskatchewan
CDC Meadow	Yellow	University of Saskatchewan
CDC Saffron	Yellow	University of Saskatchewan
Daytona	Yellow	Meridian Seeds
DS Admiral	Yellow	Pulse USA
Durwood	Yellow	Pulse USA
Gunner	Yellow	Great Northern Ag
Hyline	Yellow	Great Northern Ag
Jetset	Green	Meridian Seeds
Korando	Yellow	Pulse USA
Mystique	Yellow	Pulse USA
Navarro	Yellow	Great Northern Ag
Nette 2010	Yellow	Pulse USA
Salamanca	Yellow	Great Northern Ag
Spider	Yellow	Great Northern Ag
SW Midas	Yellow	Pulse USA
Trapeze	Yellow	Safflower Technology
Vegas	Yellow	JB Farms
Viper	Green	Pulse USA

Cultural Practices

Bison, Dakota Lakes, Blunt and Wall were planted with a John Deere 750 No-Till Drill. The seeding rate was 350,000 plants/ac (adjusted for germination percentage) and the seed was treated with a granular inoculant. Planting and harvest dates and previous crop are listed in Table 2.

Variety	Planting Date	Harvest Date	Previous Crop
Bison	4/14/15	8/11/15	Spring Wheat
Blunt	3/31/15	8/3/15	Corn
Dakota Lakes	3/31/15	8/3/15	Sorghum
Selby	4/3/15	8/14/15	Soybeans
Wall	4/6/15	8/5/15	Fallow

Acknowledgements

This project would not be possible without the generous funding from the South Dakota Pulse Growers Association and our participating cooperators: B. Siedel (Bison), R. Leesman (Blunt), D. Beck (Dakota Lakes), M. Stiegelmeier (Selby) and D. Patterson (Wall). Additionally, we are grateful to all the SDSU staff that assisted with the trials including M. Swan, C. Ellis and S. Hawkes.

Table 3a. 2015 East River Field Pea Performance - Average yield (13% moisture), test weight and protein.

Variety	Crop Zone 1			
	Selby			2-Yr Yield Average
	Yield	Test Wt.	Protein	Yield
Durwood	67	-	28.6	
Spider	59	-	28.3	59
AAC Carver	57	-	27.6	
CDC Amarillo	56	-	27.5	
Salamanca	56	-	27.5	55
Daytona	55	-	27.3	56
CDC Meadow	54	-	26.9	
CDC Saffron	54	-	27.0	
AC Earlstar	52	-	26.9	
Abarth	52	-	27.1	54
Hyline	51	-	27.0	58
Navarro	51	-	26.8	53
Mystique	51	-	26.5	55
Nette 2010	48	-	26.3	53
Bridger	48	-	26.0	53
Korando	48	-	26.3	49
Viper	48	-	25.7	46
Arcadia	48	-	25.8	51
DS Admiral	43	-	24.7	51
Trapeze	43	-	25.3	
Jetset	42	-	24.5	49
Agassiz	42	-	24.9	46
SW Midas	36	-	22.3	45
Gunner	34	-	21.9	48
Trial Average	50	-	26.4	52
TPG value‡	53¶	-	27.3	54
C.V.§	9.7	-	6.3	NA

† Yield or test weight value required to determine if varieties are significantly different from one another with 95% confidence.

‡ Minimum value required to be in the top yield group (TYG) of varieties.

¶ Durwood was significantly greater than all other varieties, TYG based on Spider

§ C.V. (Coefficient of Variation) is a measure of variability or experimental error, >15% is acceptable.

Table 3b. 2015 East River Field Pea Performance - Average yield (13% moisture), test weight and protein.

Variety	Crop Zone 4				
	Blunt			2-Yr Yield Average	3-Yr Yield Average
	Yield	Test Wt.	Protein	Yield	Yield
Spider	74	61.7	26.2	68	63
AAC Carver	70	61.7	23.6		
CDC Saffron	69	61.1	24.5		
CDC Meadow	66	61.3	24.1		
Bridger	66	61.0	25.1	59	57
CDC Amarillo	66	62.5	24.9		
Abarth	66	61.0	24.1	54	
Durwood	66	62.2	25.0		
Korando	63	60.2	27.6	58	56
AC Earlstar	62	61.2	23.9		
Trapeze	59	60.6	26.9		
Nette 2010	59	61.9	24.5	58	56
DS Admiral	59	61.0	24.8	62	60
Salamanca	59	59.8	27.2	58	58
Bluemoon	58	61.2	25.7	53	55
Daytona	58	59.7	26.5	57	57*
Hyline	57	60.9	24.8	61	
Navarro	57	60.9	26.2	59	56
Jetset	57	60.7	26.7	58	56
Mystique	56	60.1	26.7	53	53
Agassiz	55	61.1	28.0	56	56
SW Midas	55	61.7	23.9	53	53
Gunner	54	61.1	25.5	51	
Arcadia	53	60.9	25.0	58	56
Viper	49	60.1	27.3	48	50
Trial Average	60	61.0	25.5	57	56
TPG value‡	66	61.7	27.3	55¶	57
C.V.§	4.5	0.8	5.1	NA	NA

† Yield or test weight value required to determine if varieties are significantly different from one another with 95% confidence.

‡ Minimum value required to be in the top yield group (TYG) of varieties.

¶ Spider was significantly greater than all other varieties, TYG based on DS Admiral

* Despite reported yield equal to TYG value this variety is not included in the TYG. Similar numbers are due to rounding but excluded based on statistical procedures used.

§ C.V. (Coefficient of Variation) is a measure of variability or experimental error, >15% is acceptable.

Table 3c. 2015 East River Field Pea Performance - Average yield (13% moisture), test weight and protein.

Variety	Crop Zone 4				
	Dakota Lakes			2-Yr Yield Average	3-Yr Yield Average
	Yield	Test Wt.	Protein	Yield	Yield
Mystique	53	60.6	26.6	45	43
Hyline	50	61.0	25.1	46	
Durwood	50	60.6	26.4		
Salamanca	50	61.1	27.1	43	43
Spider	49	60.5	27.3	40	40
CDC Saffron	49	61.1	25.6		
CDC Amarillo	48	61.2	25.7		
Bridger	48	60.0	26.2	46	42
CDC Meadow	47	61.0	25.5		
Abarth	47	60.9	25.4	43	
Bluemoon	47	60.7	26.7	42	
Navarro	47	61.0	25.7	44	39
Agassiz	46	61.0	25.9	39	39
Gunner	46	60.8	24.9	42	
AAC Carver	46	60.4	23.8		
Nette 2010	45	61.0	25.6	40	38
SW Midas	44	61.9	24.1	39	43
DS Admiral	44	60.4	26.3	42	40
Trapeze	43	61.2	25.9		
Daytona	42	59.5	25.9	37*	38
Jetset	41	61.1	26.0	37*	35
AC Earlystar	37	61.7	23.9		
Korando	36	58.0	27.5	33	33
Arcadia	34	60.6	23.9	37	34
Viper	34	60.1	27.7	33	31
Trial Average	45	60.7	25.8	40	39
TPG value†	46	NS	26.8	37	37
C.V.§	12.7	2.5	4.2	NA	NA

† Yield or test weight value required to determine if varieties are significantly different from one another with 95% confidence.

‡ Minimum value required to be in the top yield group (TYG) of varieties.

* Despite reported yield equal to TYG value this variety is not included in the TYG. Similar numbers are due to rounding but excluded based on statistical procedures used.

§ C.V. (Coefficient of Variation) is a measure of variability or experimental error, >15% is acceptable.

Table 3d. 2015 West River Field Pea Performance - Average yield (13% moisture), test weight and protein.

Variety	Crop Zone 6				
	Wall			2-Yr Yield Average	3-Yr Yield Average
	Yield	Test Wt.	Protein	Yield	Yield
Salamanca	52	61.4	27.4	56	52
Spider	49	62.4	27.2	52	50
Nette 2010	48	63.3	27.4	51	48
Daytona	48	60.8	27.1	49	45
Mystique	47	62.1	27.0	52	47*
Durwood	47	61.5	27.2		
Jetset	45	61.7	27.0	48	45
Bluemoon	45	62.3	26.9	47	44
CDC Meadow	45	63.7	27.0		
CDC Amarillo	44	62.7	27.0		
Bridger	44	63.2	26.8	47	45
SW Midas	44	62.3	26.9	49	45
AAC Carver	44	61.7	26.9		
CDC Saffron	43	62.4	26.9		
Gunner	42	62.1	26.7	48	
Arcadia	42	61.8	26.1	49	45
Abarth	41	60.6	26.3	45	
Agassiz	41	61.5	26.3	47	47
AC Earlystar	40	61.5	26.4		
Hyline	40	62.1	26.3	47	
Navarro	40	60.1	25.9	48	45
Vegas	39	62.1	25.9		
Trapeze	39	60.6	26.1		
DS Admiral	39	63.3	25.9	45	44
Korando	38	61.7	25.9	45	44
Viper	37	62.2	25.4	46	43
Trial Average	43	62.0	26.6	48	46
TPG value†	46	59.9	26.7	51	47
C.V.§	9.7	1.8	2.0	NA	NA

† Yield or test weight value required to determine if varieties are significantly different from one another with 95% confidence.

‡ Minimum value required to be in the top yield group (TYG) of varieties.

* Despite reported yield equal to TYG value this variety is not included in the TYG. Similar numbers are due to rounding but excluded based on statistical procedures used.

§ C.V. (Coefficient of Variation) is a measure of variability or experimental error, >15% is acceptable.

Table 3e. 2015 West River Field Pea Performance - Average yield (13% moisture), test weight and protein.

Variety	Crop Zone 7				
	Bison			2-Yr Yield Average	3-Yr Yield Average
	Yield	Test Wt.	Protein	Yield	Yield
CDC Amarillo	45	63.9	23.9		
Hyline	40	62.1	23.5	39	
Spider	39	62.1	26.0	41	36
Salamanca	38	63.8	25.7	36	33
CDC Saffron	35	62.4	24.4		
Gunner	35	63.4	24.5	35	
Mystique	34	61.0	24.7	38	33
Bluemoon	33	62.2	26.1	33	28
Vegas	33*	62.6	25.4		
Navarro	32	63.2	24.3	37	32
Durwood	31	63.4	24.7		
CDC Meadow	30	63.2	24.3		
Daytona	30	60.6	25.2	32	27
Abarth	29	62.2	23.6	27	
AAC Carver	28	63.9	23.0		
Korando	28	62.1	25.7	32	29
AC Earlystar	27	63.1	22.6		
SW Midas	27	63.2	23.8	30	27
Bridger	26	63.6	25.1	32	29
Arcadia	25	62.8	23.9	30	26
Trapeze	25	62.3	25.1		
DS Admiral	24	62.3	23.7	30	27
Viper	21	63.3	26.1	26	24
Nette 2010	21	64.1	24.1	26	24
Jetset	20	62.5	26.2	26	25
Agassiz	18	61.7	25.9	24	23
Trial Average	30	62.7	24.7	26	28
TPG value†	33	62.3	25.1	34	30
C.V.§	4.5	2.0	4.1	NA	NA

† Yield or test weight value required to determine if varieties are significantly different from one another with 95%

‡ Minimum value required to be in the top yield group (TYG) of varieties.

* Despite reported yield equal to TYG value this variety is not included in the TYG. Similar numbers are due to rounding but excluded based on statistical procedures used.

§ C.V. (Coefficient of Variation) is a measure of variability or experimental error, >15% is acceptable.

Christopher Graham | SDSU Assistant Professor/Extension Agronomist
Bruce Swan | Agricultural Research Manager

Basic Agronomic Details

Location: Southwest of Bison, SD - Perkins County
(GPS: 45.501008, -102.561605)

Cooperator: Brad Seidel

Soil Type: Sandy Loam

Previous crop: Spring wheat

Tillage: No-Till

Row spacing: 10 inches

Seeding Rate: 550,000 pure live seed/acre

Innoculant: Granular

Fertilizer: None

Herbicide: Sprayed with 40 oz/A Prowl H2O @ 10 gpA spray rate.
Sprayed on May 21, 2015 w / Beyond 1L @ 4 oz/A. + 32 oz/A Penetrate II + 28-0-0 @ 32
oz/A rate. 10 gpA spray rate.

Date seeded: 4/17/15

Date harvested: 8/11/2015

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Trial Highlights

The 2015 Lentil Variety Trials consisted of 2 sites (Bison and Dakota Lakes) in the western and central portions of South Dakota. A total of 6 lentil varieties were tested at each site (Table 1). Three of these varieties were Clearfield® designated varieties (often denoted with 'im' in the name), which means that they have tolerance to Beyond® herbicide (imidazolinone chemistry) and are sold only as certified seed.

This trial was segregated into two mini-trials. The first examined all varieties irrespective of Clearfield genetics in a conventional manner. In Table 1 this is the Non CL column. The second trial examined yields of the Clearfield varieties with Beyond® applied on May 21, 2015.

Weather played a significant role in this year's growing season. Planting occurred in extremely dry conditions for each sites. Dry conditions led to delayed and uneven germination. As the spring progressed, conditions shifted to generally wet conditions. Hail damage was recorded at the Dakota Lakes site, which may have affected yields somewhat. As a result, the yields from Dakota Lakes are omitted due to high coefficient of variation.

In general, there was no statistical significance observed between varieties despite absolute yields ranging by over 340 lbs/ac (926-1268 lbs/ac.). Impala was the highest overall yielder in the non-Clearfield trial. Although spraying in-season for grass and broadleaf weeds increased average overall yield (1051 lbs/ac. vs 1207 lbs/ac.), the yields did not differ by a statistically significant margin. As Figure 1 shows, Impala and Invincible showed almost no change in yield, whereas Maxim did show an increase of nearly 300 lbs/ac. Overall, a lack of statistical yield difference between these varieties with and without Beyond herbicide suggests that pre-plant weed control was generally adequate at this site and weeds did not have a significant impact on final yields.

It is important to note that this is the first year of these trials and results are from a single site. This project will continue in 2016 while being expanded to three sites. We will continue to update these results and present multi-year averages and statistics.

Acknowledgements

These trials are funded through the generous support of the South Dakota Pulse Council. Additional thanks is extended to Brad Seidel and Dwayne Beck for donating the land, to Pulse USA for supplying the Clearfield lentils and to Novozymes for the granular inoculant.

Table 1. Lentil varieties, maturity and yield in 2015 yield trials

Variety Information			Agronomic & Nutritional Performance		
Variety	Seed Color	Maturity Rating	Clearfield	Non-CI Yield (lb/ac)§	CI Yield (lb/ac)¶
Impala	Red	Early	Yes	1268	1273
Invincible	Green	Early	Yes	1101	1110
Maxim	Red	Early/ Medium	Yes	965	1258
Redcoat	Red	Early	No	958	NA
Richlea	Green	Early/ Medium	No	1086	NA
Viceroy	Green	Early	No	926	NA
Trial Average			-	1051	1207
LSD(0.05)†			-	NS	NS

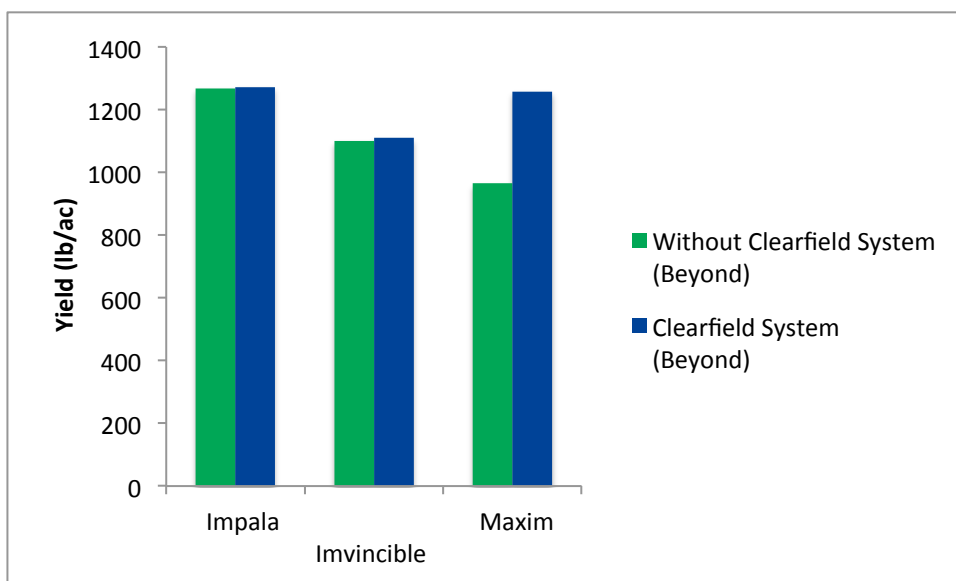
† Value required (\geq LSD) to determine if varieties are significantly different from one another.

§ Beyond not applied

¶ Beyond Clearfield System applied

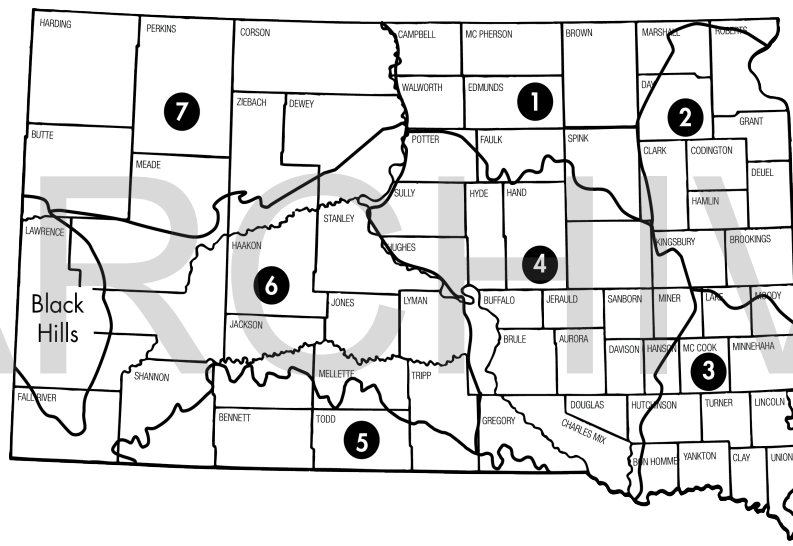
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Figure 1. Average yield of Clearfield lentils with and without Beyond herbicide applied in-season



Chris Graham | SDSU Extension Agronomist, Rapid City
Jonathan Kleinjan | Crop Performance Testing Director, Brookings
Bruce Swan | CPT Ag Research Technician, Rapid City
Kevin Kirby | Senior Ag Research Technician, Brookings
Shawn Hawks | Ag Research Manager, Brookings
Michael Swan | Ag Research Technician, Rapid City

Crop Zones in South Dakota



Trial Highlights

The 2016 Field Pea Variety Trials consisted of 5 sites (Blunt, Dakota Lakes, Pukwana, Selby and Wall) across the central and western portions of South Dakota. In total, 29 varieties (23 yellow and 6 green – Table 1) were tested. Planting and harvest dates can be found in Table 2. All planting was done with a no-till drill and a planting population of 350,000 seeds per acre. Phosphorus was applied based on a pre-plant soil test along with any micronutrient deficiencies. Nitrogen fertilizer was not applied. A typical herbicide application was preplant surface applied using Pendimethalin (Prowl H2O) and Sulfentrazone + Imazethapyr (Authority Assist). Plots were harvested using a Wintersteiger plot combine.

Across all sites, the trial average was 34 bu/ac (down 9 bu/ac from 2015) with a range of 29 – 38 bu/ac. The highest yielding site was Selby with a trial average of 52 bu/ac and a range of 40-66 bu/ac (Table 3). This range (26 bu/ac) highlights the fact that variety selection is incredibly important. Hot, dry conditions during flowering likely played a significant role in the decreased yields this year. The central part of the state experienced temperatures above 90 F for several days in a row, which coincided with the critical pollination period of the peas. Harvest dates were 2 to 3 weeks earlier than the previous year (Table 2).

Tables 4 and 5 show the 2- and 3-year averages for the sites and varieties that have been available. Because weather plays such a significant role in crop development and varies greatly from year to year, these are generally better guidelines when choosing an appropriate variety. For the three-year data, only yield is available. For each table, the data are sorted by yield for ease of use. However, there are other factors to consider when choosing an appropriate variety (test weight, protein, etc.). Finally, lodging is scored on a 0-5 basis with 0 being no lodging and 5 as completely lodged.

Table 1. Field Pea Varieties included in 2016 Variety Trial

Variety	Cotyledon Type	Distributor	Contact Information
AAC Carver	Yellow	Meridian Seeds	Andy Draeger - 701.640. 5703
Abarth	Yellow	Pulse USA	Byron Lannoye - 701.530.0734
Agassiz	Yellow	Meridian Seeds	Andy Draeger - 701.640. 5703
Arcadia	Green	Pulse USA	Byron Lannoye - 701.530.0734
Bluemoon	Green	JB Farms	701-337-6505
Bridger	Yellow	Great Northern Ag.	Kyle Abrahamson - 701.497.3082
CDC Amarillo	Yellow	Meridian Seeds	Andy Draeger - 701.640. 5703
CDC Meadow	Yellow	Meridian Seeds	Andy Draeger - 701.640. 5703
CDC Patrick	Green	Meridian Seeds	Andy Draeger - 701.640. 5703
CDC Raezer	Green	Meridian Seeds	Andy Draeger - 701.640. 5703
CDC Saffron	Yellow	Meridian Seeds	Andy Draeger - 701.640. 5703
CDC Striker	Green	Pulse USA	Byron Lannoye - 701.530.0734
DS-Admiral	Yellow	Pulse USA	Byron Lannoye - 701.530.0734
Durwood	Yellow	Pulse USA	Byron Lannoye - 701.530.0734
Earlstar	Yellow	Meridian Seeds	Andy Draeger - 701.640. 5703
Gunner	Yellow	Legume Logic	Richard Roland - legumel@nccray.com
Hyline	Yellow	Great Northern Ag.	Kyle Abrahamson - 701.497.3082
Jetset	Yellow	Meridian Seeds	Andy Draeger - 701.640. 5703
Korando	Yellow	Pulse USA	Byron Lannoye - 701.530.0734
Majestic	Yellow	Legume Logic	Richard Roland - legumel@nccray.com
Marquee	Yellow	Legume Logic	Richard Roland - legumel@nccray.com
Mystique	Yellow	Pulse USA	Byron Lannoye - 701.530.0734
Navarro	Yellow	Great Northern Ag.	Kyle Abrahamson 701-497-3082
Nette 2010	Yellow	Pulse USA	Byron Lannoye - 701.530.0734
Salamanca	Yellow	Great Northern Ag.	Kyle Abrahamson 701-497-3082
Spider	Yellow	Great Northern Ag.	Kyle Abrahamson 701-497-3082
SW-Midas	Yellow	Pulse USA	Byron Lannoye - 701.530.0734
Vegas	Yellow	JB Farms	701.337.6505
Viper	Green	Pulse USA	Byron Lannoye - 701.530.0734

Table 2. Planting and harvest dates and previous crop.

Variety	Planting Date	Harvest Date	Previous Crop
Blunt	3/28/16	7/19/16	Corn
Dakota Lakes	3/28/16	7/20/16	Sorghum
Pukwana	4/5/16	7/21/16	Corn
Selby	4/6/16	8/3/16	Soybeans
Wall	4/6/16	7/15/16	Fallow

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Table 3a. 2016 Blunt, SD Field Pea Performance - Average yield, test weight, protein, height and lodging. All values are adjusted to 13% moisture where necessary

Variety	Crop Zone 4				
	Blunt				
	Yield (bu/ac)	Test Wt. (lb/bu)	Protein (%)	Height (in)	Lodging (1-5)
Majestic	45.2	60.6	25.6	16.0	1.0
AAC Carver	43.8	61.8	22.2	17.5	1.3
Spider	41.8	61.8	25.8	18.0	1.0
Hyline	40.6	62.7	24.0	9.5	1.4
Durwood	40.5	60.8	24.8	17.5	1.3
Gunner	39.7	61.5	23.8	16.5	1.3
CDC Patrick	39.5	62.5	24.2	16.0	1.3
Agassiz	39.4	62.2	24.5	14.5	1.5
Salamanca	39.3	61.3	25.8	18.0	1.3
Bridger	39.1	61.6	25.2	17.5	1.3
DS-Admiral	39.1	61.6	24.2	17.5	1.3
Nette 2010	39.0	62.9	24.1	14.5	1.5
Jetset	38.7	61.6	24.3	16.0	1.0
CDC Saffron	38.5	61.5	24.8	14.5	1.3
CDC Amarillo	37.9	61.6	24.4	18.0	1.0
Mystique	37.8	60.6	26.1	18.0	1.3
Arcadia	37.6	62.1	23.9	14.0	2.8
CDC Raezer	36.2	61.3	25.0	17.5	1.5
Bluemoon	35.4	62.2	24.9	19.0	1.0
Vegas	34.9	62.2	25.1	16.0	1.5
Navarro	34.5	60.6	25.7	15.5	1.4
Earlystar	34.1	60.9	22.8	16.5	1.8
SW Midas	34.1	61.9	23.7	16.5	1.3
Abarth	33.3	60.2	23.8	16.0	1.8
CDC Meadow	32.3	61.4	23.7	13.0	1.8
Marquee	32.3	61.2	26.6	16.0	1.5
Korando	31.8	61.7	25.9	15.5	1.8
Viper	31.7	62.1	24.4	15.0	1.3
CDC Striker	31.3	61.8	26.7	15.5	1.3
Average	37.2	61.6	24.7	16.1	1.4
[†] LSD	7.2	NS	0.8	-	-

[†] Yield, test weight or protein value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value

Table 3b. 2016 Dakota Lakes (Pierre, SD) Field Pea Performance - Average yield, test weight, protein height and lodging. All values are adjusted to 13% moisture where necessary

Variety	Crop Zone 4				
	Dakota Lakes				
	Yield (bu/ac)	Test Wt. (lb/bu)	Protein (%)	Height (in)	Lodging (1-5)
Agassiz	49.1	59.6	25.2	16.5	1.3
Nette 2010	48.2	61.8	24.1	13.5	1.5
Mystique	47.5	59.7	25.8	16.0	1.0
Spider	47.3	60.7	26.8	17.0	1.5
CDC Amarillo	47.2	60.4	25.1	18.0	1.0
Salamanca	47.2	60.4	26.7	18.0	1.3
Hylene	47.0	60.5	24.0	14.0	2.0
CDC Saffron	46.5	60.6	24.5	13.0	2.3
Durwood	46.5	60.2	25.1	18.5	1.0
AAC Carver	45.2	60.8	22.8	16.0	1.3
DS-Admiral	44.8	60.5	24.4	14.5	1.0
Bridger	44.3	61.4	24.9	13.0	1.3
Korando	44.0	60.0	26.3	14.0	1.8
Bluemoon	43.8	61.0	26.2	15.5	1.5
Jetset	43.8	60.7	23.4	13.5	1.5
Gunner	43.6	61.0	24.1	15.0	2.3
Majestic	43.4	60.0	26.2	19.0	1.0
Vegas	43.0	59.9	25.6	15.5	1.5
CDC Raezer	42.6	60.0	24.8	16.5	1.3
Marquee	41.1	60.8	25.4	14.0	1.0
Abarth	40.7	60.9	24.0	12.5	1.3
CDC Patrick	40.6	60.3	24.0	12.0	1.8
Earlstar	40.2	61.1	22.5	18.0	1.8
SW Midas	40.1	60.6	23.4	15.5	2.0
Navarro	40.0	60.0	26.4	15.0	1.6
CDC Striker	38.9	61.6	26.6	16.5	1.3
Viper	37.7	59.9	25.0	14.5	2.0
Arcadia	36.7	61.4	23.0	11.5	2.5
CDC Meadow	36.5	60.9	24.1	13.5	2.3
Average	43.4	60.6	24.8	15.2	1.6
[†] LSD	4.4	NS	0.552	-	-

[†] Yield, test weight or protein value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value

Table 3c. 2016 Pukwana, SD Field Pea Performance - Average yield, test weight and protein. All values are adjusted to 13% moisture where necessary

Variety	Crop Zone 4				
	Pukwana				
	Yield (bu/ac)	Test Wt. (lb/bu)	Protein (%)	Height (in)	Lodging (1-5)
Salamanca	37.6	59.5	27.3	13.5	1.8
CDC Saffron	36.0	59.7	26.2	12.5	1.5
Navarro	35.0	60.0	26.3	11.0	1.7
Durwood	34.8	59.8	26.1	10.5	1.5
Spider	34.3	59.1	27.7	12.0	1.5
AAC Carver	34.2	58.5	23.8	10.5	1.3
CDC Amarillo	32.9	60.0	25.5	12.5	1.3
Majestic	32.0	57.9	27.1	17.5	1.0
Korando	31.6	58.2	27.3	15.0	1.5
Nette 2010	31.5	61.6	24.5	10.0	2.5
Agassiz	31.0	59.0	26.0	9.5	1.5
Hyline	30.3	58.3	25.2	9.0	2.6
Vegas	29.9	60.1	26.3	12.0	2.0
CDC Patrick	29.8	59.8	25.7	12.0	1.8
Bluemoon	29.7	58.4	27.2	10.0	2.3
Gunner	29.6	59.4	25.1	9.5	2.3
Jetset	29.6	59.9	26.0	9.5	1.8
Viper	29.6	59.8	26.4	11.5	1.8
Mystique	29.5	58.6	26.7	13.5	1.8
Abarth	29.2	60.0	25.5	10.0	2.0
Arcadia	29.2	59.3	24.2	13.0	2.3
Bridger	29.2	59.7	25.9	11.5	1.8
CDC Meadow	28.9	60.2	24.3	11.0	2.5
Earlstar	28.3	60.6	23.3	8.5	2.5
DS-Admiral	27.5	59.8	25.6	11.0	1.8
SW Midas	26.4	60.9	24.0	12.0	2.3
Marquee	25.7	59.0	27.1	12.0	1.5
CDC Striker	25.6	62.0	29.3	13.5	1.3
CDC Raezer	23.3	59.8	25.4	11.5	2.0
Average	30.4	59.6	25.9	11.6	1.8
†LSD	4.9	1.39	0.7	-	-

† Yield, test weight or protein value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value

Table 3d. 2016 Selby, SD Field Pea Performance - Average yield, test weight, protein, height and lodging. All values are adjusted to 13% moisture where necessary

Variety	Crop Zone 1				
	Selby				
	Yield (bu/ac)	Test Wt. (lb/bu)	Protein (%)	Height (in)	Lodging (1-5)
[‡] CDC Amarillo	65.5	61.0	23.8	-	-
Agassiz	60.9	61.5	25.0	-	-
CDC Saffron	60.1	59.8	25.2	-	-
CDC Meadow	58.0	62.7	25.5	-	-
Durwood	56.6	61.3	25.6	-	-
AAC Carver	56.5	61.7	25.7	-	-
Marquee	56.1	60.3	25.8	-	-
Hyline	55.9	60.5	25.2	-	-
Spider	55.2	61.5	25.9	-	-
Mystique	54.9	60.1	25.8	-	-
Salamanca	54.5	61.3	25.8	-	-
DS-Admiral	54.3	62.0	25.9	-	-
CDC Patrick	54.1	61.7	25.9	-	-
Earlystar	53.0	61.5	25.8	-	-
Gunner	53.0	59.8	25.9	-	-
Korando	53.0	60.1	26.0	-	-
Abarth	51.9	59.6	26.0	-	-
Bluemoon	51.9	60.3	25.8	-	-
Majestic	50.6	59.4	26.0	-	-
Jetset	50.1	58.9	26.1	-	-
SW Midas	49.7	60.8	26.0	-	-
Nette 2010	49.1	62.1	26.0	-	-
CDC Raezer	48.8	60.6	25.9	-	-
Bridger	48.5	61.5	25.8	-	-
Vegas	46.5	59.8	25.8	-	-
Arcadia	45.1	59.3	25.7	-	-
Navarro	42.8	59.3	25.3	-	-
CDC Striker	42.2	61.0	25.2	-	-
Viper	39.5	60.8	24.7	-	-
Average	52.4	60.7	25.6	-	-
[†] LSD	3.6	1.2	0.4	-	-

[†] Yield, test weight or protein value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value

[‡] LSD (bolded) values are based Agassiz because Amarillo was significantly greater than all other varieties

Table 3e. 2016 Wall, SD Field Pea Performance - Average yield, test weight, protein, height and lodging. All values are adjusted to 13% moisture where necessary

Variety	Crop Zone 6				
	Wall				
	Yield (bu/ac)	Test Wt. (lb/bu)	Protein (%)	Height (in)	[‡] Lodging (1-5)
CDC Saffron	32.1	61.4	25.3	14.5	-
Marquee	30.0	62.6	27.0	15.0	-
Gunner	27.9	62.0	24.9	13.5	-
AAC Carver	27.3	62.3	23.3	16.0	-
Mystique	26.5	61.2	26.6	15.0	-
SW Midas	26.2	63.2	24.4	13.0	-
Nette 2010	25.9	64.0	23.9	15.0	-
CDC Amarillo	25.6	62.5	25.4	14.5	-
Hyline	25.2	61.9	25.8	12.5	-
Bluemoon	24.9	62.4	25.7	13.0	-
CDC Patrick	24.7	62.1	25.3	13.0	-
Agassiz	24.6	63.2	26.6	13.5	-
DS-Admiral	24.5	62.2	24.6	14.5	-
Abarth	24.3	62.4	24.2	13.5	-
Bridger	24.0	62.6	25.6	13.0	-
Durwood	24.0	63.0	25.3	15.5	-
Korando	23.9	62.2	26.2	12.0	-
Navarro	23.9	62.6	25.2	14.5	-
CDC Meadow	23.4	64.1	24.7	14.0	-
Jetset	22.8	61.7	24.4	15.0	-
Majestic	22.8	62.3	26.4	14.5	-
Salamanca	22.4	63.8	25.9	14.0	-
CDC Striker	22.0	62.7	26.1	14.0	-
Vegas	21.9	61.7	27.4	13.5	-
Arcadia	20.4	62.8	25.0	10.0	-
Spider	20.2	63.6	26.9	15.5	-
CDC Raezer	19.8	63.0	24.9	13.0	-
Earlystar	19.5	63.2	24.0	15.0	-
Viper	15.2	63.6	24.8	14.5	-
Average	24.0	62.6	25.4	-	-
[†] LSD	4.3	NS	0.7	-	-

[†] Yield, test weight or protein value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value

[‡] No lodging was recorded at this site.

Table 3f. 2016 Combined Sites Field Pea Performance - Average yield, test weight, protein, height and lodging. All values are adjusted to 13% moisture where necessary

Variety	Combined Sites				
	Yield (bu/ac)	Test Wt. (lb/bu)	Protein (%)	Height (in)	Lodging (1-5)
CDC Saffron	38.2	60.8	25.2	13.6	1.7
AAC Carver	37.6	60.6	23.6	15.0	1.3
Salamanca	36.6	60.6	26.3	15.9	1.5
Durwood	36.4	60.5	25.4	15.5	1.3
Nette 2010	36.1	62.4	24.5	13.3	1.8
Agassiz	36.0	60.6	25.5	13.5	1.4
CDC Amarillo	35.9	60.9	24.8	15.8	1.1
Majestic	35.9	59.8	26.3	16.8	1.0
Spider	35.9	60.5	26.6	15.6	1.3
Hyline	35.8	60.8	24.8	11.3	2.0
Jetset	35.6	61.0	24.8	13.5	1.4
Mystique	35.3	60.0	26.2	15.6	1.4
Gunner	35.2	61.0	24.8	13.6	2.0
Bridger	34.2	61.0	25.5	13.8	1.5
DS-Admiral	34.0	60.7	24.9	14.4	1.4
CDC Patrick	33.6	61.0	25.0	13.3	1.6
Bluemoon	33.5	60.8	26.0	14.4	1.6
Navarro	33.4	60.7	25.8	14.0	1.6
Korando	32.8	60.3	26.3	14.1	1.7
Vegas	32.4	60.8	26.0	14.3	1.7
Marquee	32.3	60.9	26.4	14.3	1.3
Abarth	31.9	60.7	24.7	13.0	1.7
SW Midas	31.7	61.4	24.3	14.3	1.9
Arcadia	31.0	60.9	24.4	12.1	2.5
Earlystar	30.6	61.0	23.7	14.5	2.0
CDC Raezer	30.5	60.5	25.2	14.6	1.6
CDC Meadow	30.3	61.1	24.5	12.9	2.2
CDC Striker	29.4	57.7	26.8	14.9	1.3
Viper	28.6	60.6	25.1	13.9	1.7
Average	33.8	60.7	25.3	14.2	1.6
[†] LSD	4.8	NS	-	-	-

[†] Yield, test weight or protein value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value

Table 4a. Two-year average (2015-2016) for Blunt, SD Field Pea Performance - Average yield, test weight and protein. All values are adjusted to 13% moisture where necessary

Variety	Crop Zone 4		
	Blunt		
	Yield (bu/ac)	Protein (%)	Test Wt. (lb/bu)
Spider	58.0	26.2	61.7
AAC Carver	56.7	23.1	61.8
CDC Saffron	53.9	24.9	61.3
Durwood	53.1	25.1	61.5
Bridger	52.6	25.3	61.3
CDC Amarillo	51.9	24.8	62.0
Abarth	49.5	24.1	60.6
CDC Meadow	49.2	24.1	61.3
Salamanca	49.0	26.7	60.5
DS Admiral	48.9	24.7	61.3
Nette 2010	48.8	24.5	62.4
Earlystar	47.9	23.6	61.1
Navarro	47.9	26.3	60.8
Hyline	47.7	24.6	61.9
Jetset	47.7	25.7	61.1
Agassiz	47.4	26.5	61.7
Korando	47.3	27.0	61.0
Mystique	47.0	26.6	60.3
Bluemoon	46.8	25.5	61.7
Gunner	46.7	24.8	61.3
Arcadia	45.5	24.7	61.5
SW Midas	44.3	24.0	61.8
Viper	40.4	26.0	61.1
Average	49.1	25.2	61.3
†LSD	9.9	0.8	0.8

† Yield, test weight or protein value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value

Table 4b. Two-year average (2015-2016) for Dakota Lakes (Pierre), SD Field Pea Performance - Average yield, test weight and protein. All values are adjusted to 13% moisture where necessary

Variety	Crop Zone 4		
	Dakota Lakes		
	Yield (bu/ac)	Protein (%)	Test Wt. (lb/bu)
Hyline	48.6	24.5	60.8
Salamanca	48.4	26.8	60.8
Durwood	48.3	25.7	60.4
Spider	48.3	27.0	60.6
Agassiz	47.7	25.5	60.3
CDC Amarillo	47.6	25.4	60.8
CDC Saffron	47.6	25.0	60.9
Nette 2010	46.4	24.8	61.4
Bridger	46.1	25.5	60.7
AAC Carver	45.3	23.2	60.6
Bluemoon	45.3	26.4	60.8
Gunner	44.8	24.5	60.9
Mystique	44.8	26.2	60.2
DS Admiral	44.4	25.3	60.5
Abarth	43.9	24.7	60.9
Navarro	43.7	25.9	60.9
Jetset	42.6	24.7	60.9
SW Midas	42.2	23.7	61.2
CDC Meadow	41.9	24.8	61.0
Korando	39.8	26.9	59.0
Earlystar	38.4	23.1	61.4
Viper	36.0	26.3	60.0
Arcadia	35.5	23.4	61.0
Average	44.2	25.2	60.7
[†] LSD	4.0	0.8	0.9

[†] Yield, test weight or protein value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value

Table 4c. Two-Year average (2015-2016) for Selby, SD Field Pea Performance - Average yield, test weight and protein. All values are adjusted to 13% moisture where necessary

Variety	Crop Zone 1		
	Selby		
	Yield (bu/ac)	Protein (%)	Test Wt. (lb/bu)
Durwood	62.0	-	24.4
CDC Amarillo	61.0	-	25.0
Spider	57.1	-	26.1
AAC Carver	57.0	-	25.9
CDC Saffron	56.9	-	25.9
CDC Meadow	56.0	-	25.9
Salamanca	55.3	-	26.1
Hylene	53.9	-	26.1
Mystique	53.0	-	26.3
Earlstar	52.6	-	26.4
Abarth	51.9	-	26.5
Agassiz	51.4	-	26.0
Korando	50.4	-	26.7
DS Admiral	48.8	-	26.2
Nette 2010	48.8	-	26.6
Bridger	48.2	-	26.4
Navarro	47.6	-	26.3
Arcadia	46.4	-	26.3
Jetset	46.4	-	26.4
Viper	43.7	-	25.7
Gunner	43.5	-	25.4
SW Midas	42.8	-	25.6
Average	51.6	-	26.0
[†] LSD	4.3	-	1.1

[†] Yield, test weight or protein value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value

Table 4d. Two-year average (2015-2016) for Wall, SD Field Pea Performance - Average yield, test weight and protein. All values are adjusted to 13% moisture where necessary

Variety	Crop Zone 6		
	Wall		
	Yield (bu/ac)	Protein (%)	Test Wt. (lb/bu)
Jetset	37.7	26.3	61.7
CDC Saffron	37.6	26.7	61.9
Nette 2010	37.2	26.3	63.6
Mystique	37.0	27.4	61.7
Salamanca	37.0	27.2	62.6
Durwood	35.6	26.9	62.2
AAC Carver	35.5	25.7	62.0
Bluemoon	35.0	26.9	62.3
SW Midas	35.0	26.3	62.7
CDC Amarillo	34.9	26.8	62.6
Gunner	34.8	26.4	62.0
Spider	34.5	27.7	63.0
CDC Meadow	34.1	26.5	63.9
Bridger	34.0	26.8	62.9
Navarro	33.0	26.1	61.2
Abarth	32.6	25.8	61.5
Agassiz	32.6	27.1	62.3
Hylina	31.9	26.7	62.0
DS Admiral	31.6	25.8	62.7
Korando	31.2	26.6	61.9
Arcadia	31.1	26.2	62.3
Earlstar	29.9	25.8	62.4
Viper	25.9	25.6	62.8
Average	33.9	26.5	62.4
[†] LSD	7.9	0.7	0.9

[†] Yield, test weight or protein value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value

Table 4e. Two-year average (2015-2016) for Combined Sites Field Pea Performance - Average yield, test weight and protein. All values are adjusted to 13% moisture where necessary

Variety	Combined Sites		
	Yield (bu/ac)	Protein (%)	Test Wt. (lb/bu)
Durwood	49.7	26.0	61.2
Spider	49.5	27.2	61.6
CDC Saffron	49.0	26.1	61.2
CDC Amarillo	48.8	26.0	61.6
AAC Carver	48.6	25.0	61.3
Salamanca	47.4	27.2	61.1
Mystique	46.8	27.1	60.6
Hyline	45.5	26.0	61.4
CDC Meadow	45.3	25.8	61.9
Nette 2010	45.3	26.0	62.3
Bridger	45.2	26.5	61.5
Agassiz	44.8	26.8	61.3
Abarth	44.5	25.8	60.8
Jetset	43.6	26.2	61.1
DS Admiral	43.4	26.0	61.3
Navarro	43.0	26.6	60.8
Gunner	42.4	25.8	61.2
Bluemoon	42.3	26.5	61.4
Earlstar	42.2	25.2	61.4
Korando	42.2	27.3	60.4
SW Midas	41.1	25.4	61.7
Arcadia	39.6	25.6	61.4
Viper	36.5	26.4	61.1
Average	44.6	26.2	61.3
[†] LSD	4.2	0.9	0.6

[†] Yield, test weight or protein value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value

Table 5a. Three-year yield average (2014-2016) for Blunt, SD Field Pea Performance Trials. All values are adjusted to 13% moisture where necessary

Variety	Crop Zone 4
	Blunt Yield (bu/ac)
Spider	66.8
DS Admiral	61.7
Hyline	61.0
Bridger	59.5
Jetset	59.1
Salamanca	58.9
Arcadia	58.7
Nette 2010	58.5
Navarro	58.4
Agassiz	57.4
Korando	56.5
Mystique	55.5
Bluemoon	54.8
Abarth	54.3
SW Midas	53.8
Gunner	52.3
Viper	49.6
Average	57.5
[†] LSD	10.0

[†] Yield, test weight or protein value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value

Table 5b. Three-year yield average (2014-2016) for Dakota Lakes (Pierre), SD Field Pea Performance Trials. All values are adjusted to 13% moisture where necessary

Variety	Crop Zone 4
	Dakota Lakes Yield (bu/ac)
Mystique	46.4
Bridger	45.6
Salamanca	44.9
DS Admiral	43.4
Spider	43.3
Nette 2010	43.1
Agassiz	42.9
Navarro	42.9
SW Midas	40.0
Jetset	39.5
Korando	37.3
Arcadia	37.0
Viper	35.1
Abarth	-
Bluemoon	-
Gunner	-
Hyline	-
Average	41.6
[†] LSD	5.4

[†] Yield, test weight or protein value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value

Table 5c. Three-year yield average (2014-2016) for Selby, SD Field Pea Performance Trials. All values are adjusted to 13% moisture where necessary

Variety	Crop Zone 1
	Selby Yield (bu/ac)
Spider	59.2
Hyline	58.6
Salamanca	56.4
Mystique	56.0
Abarth	54.3
DS Admiral	53.4
Bridger	53.0
Nette 2010	52.7
Agassiz	52.4
Bluemoon	52.4
Korando	51.8
Navarro	51.7
Gunner	51.0
Jetset	50.9
Arcadia	50.6
SW Midas	48.1
Viper	45.2
Average	52.8
[†] LSD	4.8

[†] Yield, test weight or protein value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value

Table 5d. Three-year yield average (2014-2016) for Wall, SD Field Pea Performance Trials. All values are adjusted to 13% moisture where necessary

Variety	Crop Zone 6
	Wall Yield (bu/ac)
Salamanca	43.2
Mystique	41.8
Nette 2010	41.4
Jetset	40.5
Spider	40.2
SW Midas	39.9
Gunner	39.8
Navarro	38.7
Arcadia	38.2
Hyline	38.2
Agassiz	37.8
Bridger	37.8
Abarth	36.9
Korando	36.7
DS Admiral	36.6
Viper	34.1
Bluemoon	-
Average	38.9
[†] LSD	NS

[†] Yield, test weight or protein value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value

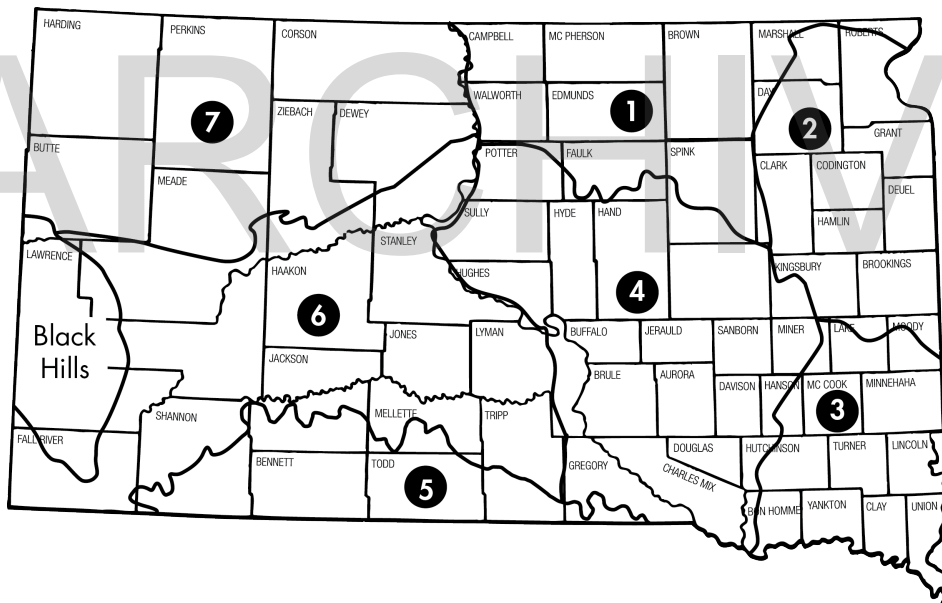
Table 5e. Three-year yield average (2014-2016) for Combined sites. All values are adjusted to 13% moisture where necessary

Variety	Combined Yield (bu/ac)
Spider	50.6
Hyline	49.7
Salamanca	48.7
Mystique	48.0
Bridger	47.4
Nette 2010	47.1
DS Admiral	46.6
Bluemoon	46.4
Agassiz	46.1
Navarro	46.0
Abarth	45.9
Gunner	45.9
Jetset	45.3
Arcadia	44.4
Korando	43.8
SW Midas	43.3
Viper	39.5
Average	46.2
[†] LSD	7.6

[†] Yield, test weight or protein value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value

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Crop Zones in South Dakota



Trial Highlights

The 2017 Field Pea Variety Trials consisted of 5 sites (Blunt, Dakota Lakes, Ft. Thompson, Selby and Sturgis) across the central and western portions of South Dakota. In total, 35 varieties (25 yellow and 10 green – Table 1) were tested. Planting and harvest dates can be found in Table 2. All planting was done with a no-till drill and a planting population of 350,000 seeds per acre. Phosphorus was applied based on a pre-plant soil test along with any micronutrient deficiencies. Nitrogen fertilizer was not applied. A typical herbicide application was preplant surface applied using Pendimethalin (Prowl H2O) and Sulfentrazone + Imazethapyr (Authority Assist). Plots were harvested using a Wintersteiger plot combine.

Across all sites, the trial average was 25 bu/ac (down 9 bu/ac from 2016 and down 18 bu/ac from 2015) with a range of 17 – 29 bu/ac. The highest yielding site was Sturgis with a trial average of 33 bu/ac and a range of 17-40 bu/ac (Table 3). This range (23 bu/ac) highlights the fact that variety selection is incredibly important. Hot, dry conditions during flowering likely played a significant role in the decreased yields this year. The central part of the state experienced temperatures above 90 F for several days in a row, which coincided with the critical pollination period of the peas, with much of the state in moderate to severe drought for a large portion of the growing season.

Tables 4 and 5 show the 2- and 3-year averages for the sites and varieties that have been available. Dakota Lakes data does not include the 2017 growing season. Because weather plays such a significant role in crop development and varies greatly from year to year, these are generally better guidelines when choosing an appropriate variety.

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Table 1. Field Pea Varieties included in 2016 Variety Trial

Variety		
	Cotyledon Type	Distributor
AAC Carver	Yellow	Meridian Seeds
Agassiz	Yellow	Meridian Seeds
Arcadia	Green	Pulse USA
Bluemoon	Green	JB Farms
Bridger	Yellow	Great Northern Ag
CDC Amarillo	Yellow	Meridian Seeds
CDC Greenwater	Green	Meridian Seeds
CDC Inca	Yellow	Meridian Seeds
CDC Meadow	Yellow	Meridian Seeds
CDC Patrick	Green	Meridian Seeds
CDC Raezer	Green	Meridian Seeds
CDC Saffron	Yellow	Meridian Seeds
CDC Striker	Green	Pulse USA
CDC Treasure	Yellow	Meridian Seeds
DS-Admiral	Yellow	Pulse USA
Durwood	Yellow	Pulse USA
Earlystar	Yellow	Meridian Seeds
Ginny	Green	Pulse USA
Hyline	Yellow	Great Northern Ag
Jetset	Yellow	Meridian Seeds
Korando	Yellow	Pulse USA
LG Amigo	Yellow	Pulse USA
LG Koda	Green	Pulse USA
Majestic	Yellow	JB Farms
MP1907	Yellow	Legume Logic
Mystique	Yellow	Pulse USA
Navarro	Yellow	Great Northern Ag
Nette 2010	Yellow	Pulse USA
Salamanca	Yellow	Great Northern Ag
Shamrock	Green	Great Northern Ag
Spider	Yellow	Great Northern Ag
SW Midas	Yellow	Pulse USA
Viper	Green	Pulse USA

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Table 2. Planting and harvest dates and previous crop.

Variety	Planting Date	Harvest Date	Previous Crop
Blunt	4/5/17	8/8/17	Corn
Dakota Lakes	4/6/17	-	Sorghum
Ft. Thompson	4/6/17	8/7/17	Soybeans
Selby	4/6/16	8/1/17	Soybeans
Sturgis	4/12/17	7/20/17	Winter Wheat

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Table 3a. 2017 Blunt, SD Field Pea Performance - Average yield, test weight and protein. All values are adjusted to 13% moisture where necessary

Variety	Crop Zone 4		
	Blunt		
	Yield (bu/ac)	Protein (%)	Test Wt. (lb/bu)
AAC Carver	24.6	26.8	62.5
Agassiz	32.0	28.2	60.9
Arcadia	27.8	27.4	61.7
Bluemoon	25.2	28.3	62.0
Bridger	29.1	28.4	60.8
CDC Amarillo	26.2	28.5	63.0
CDC Greenwater	22.9	27.9	62.6
CDC Inca	32.0	27.7	61.6
CDC Meadow	28.2	27.6	61.5
CDC Patrick	24.0	27.3	62.4
CDC Raezer	23.9	28.7	62.2
CDC Saffron	25.9	26.8	63.1
CDC Striker	26.2	28.5	62.7
CDC Treasure	33.8	27.5	62.4
DS-Admiral	28.6	27.1	62.2
Durwood	25.2	28.2	62.3
Earlstar	33.4	27.5	61.8
Ginny	26.4	27.9	61.6
Hyline	30.0	27.7	61.7
Jetset	28.1	27.4	62.8
Korando	19.2	28.5	62.0
LG Amigo	22.9	27.9	61.0
LG Koda	31.6	27.2	63.0
LL 7647	29.1	27.9	62.5
Majestic	21.1	27.6	62.1
MP1907	29.7	27.9	62.6
Mystique	24.2	27.6	61.6
Navarro	18.8	28.3	61.8
Nette 2010	25.9	28.4	62.2
Salamanca	27.4	28.3	61.6
Shamrock	29.2	27.9	61.1
Spider	27.8	28.8	62.9
SW Midas	32.8	28.3	60.9
Viper	21.9	28.3	62.9
Average	26.9	27.9	62.0
LSD	6.7	0.7	0.7
TYG [†]	27.0	28.0	62.4

[†] Yield, test weight or protein value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value

Table 3b. 2017 Ft. Thompson, SD Field Pea Performance - Average yield, test weight and protein. All values are adjusted to 13% moisture where necessary

Variety	Crop Zone 6		
	Ft. Thompson		
	Yield (bu/ac)	Protein (%)*	Test Wt. (lb/bu)
AAC Carver	20.9	25.8	60.7
Agassiz	21.4	26.9	61.1
Arcadia	19.0	27.2	60.7
Blumoon	20.3	27.8	61.3
Bridger	20.5	27.4	60.2
CDC Amarillo	21.5	26.9	62.3
CDC Greenwater	18.4	27.0	61.8
CDC Inca	17.5	27.2	61.4
CDC Meadow	19.1	26.1	60.6
CDC Patrick	14.4	27.4	60.9
CDC Raezer	16.9	29.1	60.8
CDC Saffron	18.4	26.3	62.0
CDC Striker	12.9	30.3	60.4
CDC Treasure	19.9	27.2	60.5
DS-Admiral	21.6	26.7	61.5
Durwood	18.0	26.5	60.9
Earlstar	19.7	25.7	60.5
Ginny	20.0	27.8	61.2
Hyline	21.9	27.4	60.6
Jetset	19.8	27.5	61.1
Korando	18.0	29.4	59.7
LG Amigo	18.5	27.6	61.2
LG Koda	18.9	27.7	61.1
LL 5053	19.8	29.1	61.6
LL 5196	21.1	29.0	60.6
LL 66	19.8	28.1	60.9
LL 7647	13.2	27.4	61.7
Majestic	15.4	28.0	61.2
MP1907	21.6	27.1	61.8
Mystique	19.9	26.8	60.5
Navarro	19.2	28.1	60.9
Nette 2010	19.9	27.6	61.3
Salamanca	21.3	28.8	60.0
Shamrock	14.7	27.8	60.9
Spider	23.1	26.6	61.3
SW Midas	18.6	27.2	61.3
Viper	18.7	28.7	60.8
Average	19.0	61.0	27.5
LSD	3.1	0.6	0.6
TYG [†]	19.9	61.6	28.7

[†] Yield, test weight or protein value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value.

* Value based Korando

Table 3c. 2017 Selby, SD Field Pea Performance - Average yield, test weight and protein. All values are adjusted to 13% moisture where necessary

Variety	Crop Zone 4		
	Selby		
	Yield (bu/ac)	Protein (%)	Test Wt. (lb/bu)
AAC Carver	32.2	23.8	64.1
Agassiz	31.6	25.7	59.5
Arcadia	32.3	24.4	60.5
Bluemoon	27.2	25.1	61.5
Bridger	28.5	24.3	59.9
CDC Amarillo	34.8	26.8	61.1
CDC Greenwater	23.2	24.9	58.5
CDC Inca	29.3	26.5	62.7
CDC Meadow	24.3	25.7	62.1
CDC Patrick	20.4	25.4	60.3
CDC Raezer	28.0	25.3	62.5
CDC Saffron	29.3	24.4	62.7
CDC Striker	22.1	26.7	60.9
CDC Treasure	31.0	24.7	63.1
DS-Admiral	33.5	24.3	60.9
Durwood	33.2	25.1	58.7
Earlstar	33.8	23.6	60.9
Ginny	29.6	24.4	63.3
Hyline	33.6	24.6	62.5
Jetset	33.4	24.6	59.1
Korando	33.7	25.4	63.9
LG Amigo	34.4	24.9	61.5
LG Koda	35.9	23.9	61.1
LL 5053	26.8	25.8	62.7
LL 5196	31.1	26.2	58.2
LL 66	33.9	25.5	59.9
LL 7647	28.3	25.4	60.5
Majestic	29.3	25.6	61.7
MP1907	34.0	24.2	61.9
Mystique	35.7	25.4	59.9
Navarro	34.9	25.1	58.7
Nette 2010	33.6	24.5	62.5
Salamanca	32.3	25.7	57.6
Shamrock	26.8	24.4	62.3
Spider	30.1	25.6	60.7
SW Midas	31.9	23.8	60.3
Viper	29.1	25.3	61.3
Average	30.6	61.1	25.1
LSD	4.0	2.0	1.0
TYG [†]	31.9	62.1	25.8

[†] Yield, test weight or protein value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value

Table 3d. 2017 Sturgis, SD Field Pea Performance - Average yield, test weight and protein. All values are adjusted to 13% moisture where necessary

Variety	Crop Zone 7		
	Sturgis		
	Yield (bu/ac)	Protein (%)	Test Wt. (lb/bu)
AAC Carver	36.6	23.4	66.6
Agassiz	32.7	26.2	63.7
Arcadia	28.2	25.3	63.8
Blumoon	29.5	24.6	63.5
Bridger	32.1	24.5	64.7
CDC Amarillo	32.5	26.8	65.3
CDC Greenwater	34.0	25.2	65.1
CDC Inca	36.1	26.1	65.3
CDC Meadow	29.0	25.7	65.6
CDC Patrick	17.4	26.0	64.0
CDC Raezer	31.1	25.8	64.8
CDC Saffron	30.9	26.2	64.0
CDC Striker	29.3	26.4	64.6
CDC Treasure	36.7	24.5	65.5
DS-Admiral	30.6	24.9	63.5
Durwood	38.5	24.7	64.8
Earllystar	40.2	23.9	64.3
Ginny	29.6	25.1	64.9
Hyline	36.0	24.6	65.0
Jetset	32.8	26.0	63.7
Korando	37.3	25.9	64.9
LG Amigo	30.8	25.1	63.2
LG Koda	34.6	24.5	65.7
LL 7647	29.8	27.5	65.1
Majestic	35.4	26.4	65.1
MP1907	37.3	27.0	64.3
Mystique	37.8	26.6	64.3
Navarro	34.0	25.3	64.8
Nette 2010	36.6	24.3	65.8
Salamanca	35.9	26.5	64.4
Shamrock	32.5	26.3	65.6
Spider	38.0	27.2	64.3
SW Midas	29.6	25.4	63.1
Viper	34.6	25.7	64.2
Average	33.2	25.6	64.6
LSD	5.7	0.6	0.9
TYG [†]	34.5	26.9	65.7

[†] Yield, test weight or protein value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value.

Table 3e. 2017 All Sites Field Pea Performance - Average yield, test weight and protein. All values are adjusted to 13% moisture where necessary

Variety	All Sites		
	Yield (bu/ac)	Protein (%)	Test Wt. (lb/bu)
AAC Carver	25.7	25.3	63.3
Agassiz	26.3	27.8	61.3
Arcadia	23.0	26.0	61.7
Blumoon	23.2	26.6	62.1
Bridger	25.2	26.8	61.7
CDC Amarillo	25.7	27.4	62.8
CDC Greenwater	22.0	26.1	61.8
CDC Inca	24.9	28.9	62.8
CDC Meadow	21.6	27.1	62.7
CDC Patrick	16.6	26.3	61.9
CDC Raezer	22.8	26.5	62.6
CDC Saffron	22.4	26.3	62.8
CDC Striker	19.9	28.6	61.8
CDC Treasure	27.3	27.9	62.8
DS-Admiral	26.0	26.4	62.1
Durwood	25.4	26.4	61.7
Earlstar	29.1	26.8	62.1
Hyline	26.1	27.0	62.6
Jetset	26.2	27.2	61.8
Korando	25.4	26.3	62.5
LG Amigo	23.7	26.0	61.7
LG Koda	26.8	27.2	62.7
Majestic	23.1	26.4	62.6
MP1907	27.3	27.8	62.4
Mystique	25.9	26.7	61.6
Navarro	24.2	25.9	61.7
Nette 2010	25.1	26.0	62.8
Salamanca	25.6	28.2	61.2
Shamrock	23.0	27.5	62.4
Spider	26.0	27.9	62.3
SW Midas	24.6	26.8	61.5
Viper	23.1	26.6	62.0
Average	24.5	26.9	62.2
LSD	2.9	1.8	0.8
TYG [†]	26.2	27.1	62.5

[†] Yield, test weight or protein value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value

Table 4a. Two-year average (2016-2017) for Blunt, SD Field Pea Performance - Average yield, test weight and protein. All values are adjusted to 13% moisture where necessary

Variety	Crop Zone 4		
	Blunt		
	Yield (bu/ac)	Protein (%)	Test Wt. (lb/bu)
AAC Carver	34.2	24.1	61.4
Agassiz	35.7	26.1	62.0
Arcadia	32.7	25.3	60.6
Bluemoon	30.3	26.3	61.2
Bridger	34.1	26.5	60.3
CDC Amarillo	32.1	26.2	60.9
CDC Meadow	30.2	25.3	60.1
CDC Patrick	31.8	25.5	60.8
CDC Raezer	30.1	26.5	60.2
CDC Saffron	32.2	25.6	61.3
CDC Striker	28.7	27.4	61.6
DS-Admiral	33.9	25.4	60.7
Durwood	32.9	26.2	60.5
Earlstar	33.8	24.8	60.1
Hyline	35.1	25.6	61.6
Jetset	33.4	25.6	60.8
Korando	25.5	27.0	60.8
Majestic	33.2	26.5	59.7
Mystique	31.0	26.8	59.7
Navarro	26.6	26.8	60.6
Nette 2010	32.5	25.9	62.1
Salamanca	33.4	26.8	60.1
Spider	34.8	27.1	61.1
SW Midas	33.4	25.6	61.3
Viper	26.8	26.0	60.9
Average	31.9	60.8	26.0
LSD [†]	6.1	1.5	0.8
TYG	29.5	60.6	26.6

[†] Yield, test weight or protein value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value.

Table 4b. Two-year average (2015-2016) for Dakota Lakes (Pierre), SD Field Pea Performance - Average yield, test weight and protein. All values are adjusted to 13% moisture where necessary

Variety	Crop Zone 4		
	Dakota Lakes		
	Yield (bu/ac)	Protein (%)	Test Wt. (lb/bu)
AAC Carver	45.3	23.2	60.6
Abarth	43.9	24.7	60.9
Agassiz	47.7	25.5	60.3
Arcadia	35.5	23.4	61.0
Bluemoon	45.3	26.4	60.8
Bridger	46.1	25.5	60.7
CDC Amarillo	47.6	25.4	60.8
CDC Meadow	41.9	24.8	61.0
CDC Saffron	47.6	25.0	60.9
DS Admiral	44.4	25.3	60.5
Durwood	48.3	25.7	60.4
Earlstar	38.4	23.1	61.4
Gunner	44.8	24.5	60.9
Hyline	48.6	24.5	60.8
Jetset	42.6	24.7	60.9
Korando	39.8	26.9	59.0
Mystique	44.8	26.2	60.2
Navarro	43.7	25.9	60.9
Nette 2010	46.4	24.8	61.4
Salamanca	48.4	26.8	60.8
Spider	48.3	27.0	60.6
SW Midas	42.2	23.7	61.2
Viper	36.0	26.3	60.0
Average	44.2	25.2	60.7
LSD [†]	4.0	0.8	0.9
TYG	44.6	26.2	60.5

[†] Yield, test weight or protein value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value

Table 4c. Two-year average (2016-2017) for Blunt, SD Field Pea Performance - Average yield, test weight and protein. All values are adjusted to 13% moisture where necessary

Variety	Crop Zone 6		
	Ft. Thompson		
	Yield (bu/ac)	Protein (%)	Test Wt. (lb/bu)
AAC Carver	27.5	24.7	59.5
Agassiz	26.2	26.5	60.0
Arcadia	24.1	25.5	60.0
Bluemoon	25.0	27.5	59.8
Bridger	24.9	26.6	60.0
CDC Amarillo	27.2	26.2	61.0
CDC Meadow	24.0	25.1	60.4
CDC Patrick	22.1	26.4	60.3
CDC Raezer	20.1	27.2	60.3
CDC Saffron	27.2	26.3	60.7
CDC Striker	19.2	29.7	61.3
DS-Admiral	24.5	26.2	60.7
Durwood	26.4	26.3	60.3
Earlstar	24.0	24.3	60.6
Hyline	26.1	25.9	59.3
Jetset	24.7	26.7	60.5
Korando	24.8	28.2	58.9
Majestic	23.7	27.5	59.6
Mystique	24.7	26.8	59.6
Navarro	27.1	27.2	60.4
Nette 2010	25.7	25.9	61.6
Salamanca	29.4	28.0	59.8
Spider	28.7	27.3	60.1
SW Midas	22.5	25.6	61.1
Viper	24.1	27.5	60.3
Average	25.0	26.6	60.2
LSD [†]	3.7	1.2	1.3
TYG	25.7	28.5	60.3

[†] Yield, test weight or protein value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value

Table 4d. Two-year average (2016-2017) for Selby, SD Field Pea Performance - Average yield, test weight and protein. All values are adjusted to 13% moisture where necessary

Variety	Crop Zone 1		
	Selby		
	Yield (bu/ac)	Protein (%)	Test Wt. (lb/bu)
AAC Carver	44.3	24.7	62.9
Agassiz	46.3	25.4	60.5
Arcadia	38.7	25.0	59.9
Bluemoon	39.5	25.4	60.9
Bridger	38.5	25.1	60.7
CDC Amarillo	50.2	25.3	61.0
CDC Meadow	41.2	25.6	62.4
CDC Patrick	37.2	25.7	61.0
CDC Raezer	38.4	25.6	61.5
CDC Saffron	44.7	24.8	61.3
CDC Striker	32.1	26.0	60.9
DS-Admiral	43.9	25.1	61.4
Durwood	44.9	25.4	60.0
Earlstar	43.4	24.7	61.2
Hyline	44.7	24.9	61.4
Jetset	41.9	25.3	59.0
Korando	43.4	25.7	62.0
Majestic	40.0	25.8	60.6
Mystique	45.3	25.6	60.0
Navarro	39.9	25.2	59.0
Nette 2010	41.4	25.2	62.3
Salamanca	43.4	25.7	59.5
Spider	42.7	25.7	61.1
SW Midas	40.8	24.9	60.6
Viper	34.3	25.0	61.1
Average	41.8	25.3	60.9
LSD [†]	4.6	0.8	1.5
TYG	45.5	25.2	61.4

[†] Yield, test weight or protein value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value

Table 5a. Three-year average (2015-2017) for Blunt, SD Field Pea Performance - Average yield, test weight and protein. All values are adjusted to 13% moisture where necessary

Variety	Crop Zone 4		
	Blunt		
	Yield (bu/ac)	Protein (%)	Test Wt. (lb/bu)
AAC Carver	46.0	24.1	56.5
Agassiz	42.0	27.0	61.5
Arcadia	39.6	25.4	60.7
Bluemoon	39.6	26.3	51.1
Bridger	44.7	26.1	60.5
CDC Amarillo	43.3	25.9	61.4
CDC Meadow	42.2	25.0	60.5
CDC Saffron	44.5	25.4	56.2
DS Admiral	42.1	25.4	60.8
Durwood	43.8	25.9	61.0
Earlstar	43.1	24.6	60.5
Hyline	42.8	25.5	61.1
Jetset	41.1	26.1	60.8
Korando	37.9	27.4	59.6
Mystique	39.4	26.9	59.9
Navarro	36.9	26.7	60.2
Nette 2010	41.3	25.5	61.7
Salamanca	42.3	27.1	60.0
Spider	47.9	26.9	61.3
SW Midas	40.5	25.1	61.3
Viper	34.2	26.7	59.8
Average	41.7	26.0	59.8
LSD [†]	5.0	0.7	NS
TYG	43.0	26.7	NS

[†] Yield, test weight or protein value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value

Table 5b. Three-year yield average (2014-2016) for Dakota Lakes (Pierre), SD Field Pea Performance Trials. All values are adjusted to 13% moisture where necessary

Variety	Crop Zone 4
	Dakota Lakes
	Yield (bu/ac)
Agassiz	42.9
Arcadia	37.0
Bridger	45.6
DS Admiral	43.4
Jetset	39.5
Korando	37.3
Mystique	46.4
Navarro	42.9
Nette 2010	43.1
Salamanca	44.9
Spider	43.3
SW Midas	40.0
Viper	35.1
Abarth	-
Bluemoon	-
Gunner	-
Hyline	-
Average	41.6
LSD [†]	5.4
TYG	40.2

[†] Yield, test weight or protein value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value

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Table 5a. Three-year average (2015-2017) for Blunt, SD Field Pea Performance - Average yield, test weight and protein. All values are adjusted to 13% moisture where necessary

Variety	Crop Zone 1	
	Selby	
	Yield (bu/ac)	Protein (%)
AAC Carver	48.7	25.5
Agassiz	44.8	26.3
Arcadia	41.7	26.0
Bridger	41.6	26.1
CDC Amarillo	52.3	26.0
CDC Meadow	45.5	26.2
CDC Saffron	47.7	25.8
DS Admiral	43.7	26.0
Durwood	52.4	25.0
Earlstar	46.4	25.8
Hyline	47.0	26.0
Jetset	42.1	26.2
Korando	44.9	26.6
Mystique	47.2	26.4
Navarro	43.7	26.3
Nette 2010	43.7	26.3
Salamanca	45.8	26.2
Spider	48.1	26.3
SW Midas	39.2	25.4
Viper	38.8	25.9
Average	45.3	26.0
LSD [†]	4.6	0.8
TYG	47.7	25.9

[†] Yield, test weight or protein value required to determine if varieties are significantly different from one another with 95% confidence. Bolded values are not statistically different from the highest value