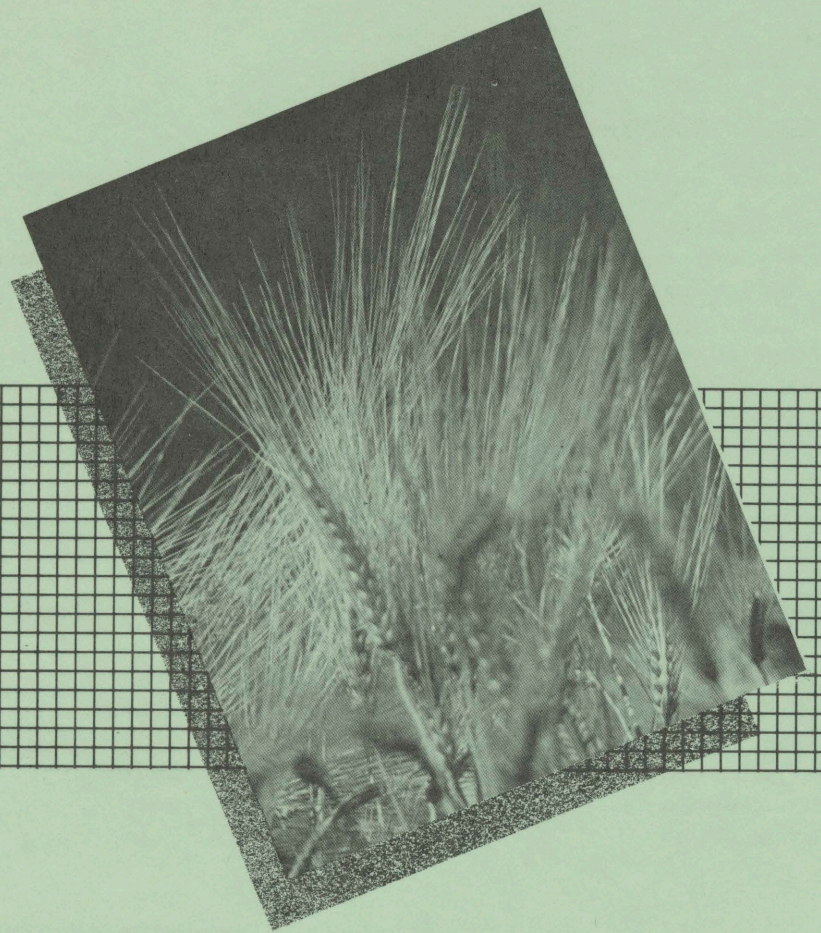
1989

1989 Variety Recommendations : Small Grains

Cooperative Extension, South Dakota State University



EC 774

1989 variety recommendations (1988 crop performance results)

small grains

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

SMALL GRAIN VARIETY RECOMMENDATIONS FOR 1989

These recommendations are based on data and information obtained from the South Dakota Crop Performance Testing Program and regional nurseries maintained by other land-grant colleges in the Midwest. Variety performance is dependent on genetics and environment. Environmental factors such as temperature, moisture, plant pests, soil fertility, soil type, and the farmer's management practices influence variety performance. Farmers should note that the performance of recommended varieties in response to environmental conditions is generally better than the performance of other varieties. However, the better performance of the recommended variety cannot be guaranteed due to complex variety-by-environmental interactions.

Spring Wheat

Recommended (Variety-area)

Butte 86	Statewide
Guard @	Statewide
Marshall @	B2,C1,D1,D2,D3,E
Prospect	Statewide
Stoa	Statewide
2369 @	Statewide

Acceptable/Promising (Variety-area)

Alex	Statewide
Amidon	B1,B2,B3
Angus +	B2,C1,D1,D2,D3
Celtic	Statewide
Len	Statewide
Shield ~	Statewide

Durum Wheat

Recommended (Variety-area)

Crosby	All durum areas
Rugby	All durum areas
Vic	All durum areas
Ward	All durum areas
Monroe	All durum areas
Fjord	All durum areas

Oats

Recommended (Variety-area)

Burnett	A,B1,B2,B3,B4,C1,C2,C3,D4
Don	Statewide
Hytest	Statewide
Kelly	Statewide
Moore	Statewide
Steele	B1,B3,D1,D2,D3

Acceptable/Promising (Variety-area)

Hazel	Statewide
Lancer	**Statewide
Ogle	B1,B2,B3,B4,C2,C3,D4
Porter @	B1,B2,B3,D4
Sandy	B2,C1,D1,D2,D3,E
Starter	Statewide
Wright @	B1,B2+,C1+,D1,D2,D3

1988 South Dakota Test Results, Characteristics, and Yield Averages...

SMALL GRAINS

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Successful crop production depends on selecting the best varieties for a particular area. This publication contains variety recommendations, descriptions, and yield data for small grains.

Important factors in variety selection include yield, 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 quality may be more profitable for the producer than the highest yielding variety.

Disease resistance information is based on reactions to present and prevalent races of a disease. Disease resistance is not absolute and may change as new races of a disease develop over time.

VARIETY RECOMMENDATIONS

Variety recommendations (inside cover pages) are made annually by the Plant Science Department Variety Recommendation Committee. Recommendations for a given crop may vary from one crop adaptation area to another. Crop adaptation areas (see map) are based on soil type, elevation, temperature, and rainfall. Varieties are recommended on the basis of growing season, average rainfall, disease frequency, and farming practices that are common to a given crop adaptation area. In many cases, farm location and management skills in one adaptation area may resemble those in another area. Keep this in mind when considering these recommendations. A variety, either public or private, must be evaluated according to the minimum requirements listed in Table 1 before it is eligible for the recommended list.

Varieties are classified as "recommended" or "acceptable/promising." Varieties listed as "recommended" have exhibited a high level of performance. Those listed as "acceptable/promising" have either performed well but do not merit the "recommended" list or are new varieties which have shown a high performance potential but have undergone limited testing. In the case of the "acceptable/promising" list, the varieties may have only been tested for a 2-year period and therefore do not have to meet the full minimum requirements that are needed for the recommended list as indicated in Table 1.

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

VARIETY DESCRIPTION

Descriptive data for all varieties (see Table of Characteristics) are evaluated annually by the Variety Recommendation Committee. Such information is obtained from the South Dakota Crop Performance Testing Program, from breeding nurseries maintained by plant breeders, and from plant pathologists. Descriptive data like straw strength, protein, height, and test weight are based on statewide 3-year averages, unless otherwise noted. Since disease resistance may change from year to year, disease information is based on the most recent growing season in which data is available. In addition, days from planting to heading are given for the most recent growing season. Comments regarding the production aspects of some varieties are listed under Additional Variety Comments in the back of this publication.

YIELD

All yield information, included in the Yield Tables, is obtained from the South Dakota Crop Performance Testing Program. One-year yields for varieties tested are included for each test location. In addition, 3-year averages are also included where varieties have been tested for three or more years. All yields, test averages, and test least significant difference (LSD) values located at the bottom of each location are rounded off to the nearest whole number or bushel per acre.

It is important to note that test averages and LSD values indicated below each location column were calculated from all test data. The data obtained from each location included both released varieties and experimental lines presently under test. Therefore, the test average for a location will likely not equal the average of the varieties alone, because the averages of the experimental lines were also included when the test average was calculated. Likewise, the appropriate LSD value calculated from the location data is also based upon both varieties and experimental lines. The variety and experimental line yields were included in location yield averages and LSD value calculations for a major reason. That reason is that the results better reflect how released varieties perform with one another and with new experimental lines which may be released in the near future.

Yield comparisons should be made on only 3-year averages or on only 1-year averages. One should not compare a 1-year average of a variety at one location with a 3-year average of that variety at another location.

To evaluate the yielding potential among the different varieties tested, one can use the test LSD value. The test LSD refers to the least significant difference or simply, the smallest difference in yield between two varieties or experimental lines that will enable one to say one variety or experimental line is better than another. If the yield difference between two varieties is greater than the test LSD, the varieties differ in yield. If the yield difference is equal to or less than the test LSD, the varieties are similar in yield.

The test LSD value can also be used to

determine the top yielding group for each location. For example, at each location the variety or experimental line with the highest numerical yield is identified using 1- or 3-year averages. The appropriate test LSD value for that location is then subtracted from the highest yielding variety or experimental line average. Varieties having an average yield which is equal to or less than this value (highest yield average minus (-) test LSD) are not in the top yielding group at that location. In contrast, however, varieties having averages which are greater than this value (highest yield average minus (-) test LSD) are in the top yield group at that location. For example, the top yielding spring wheat variety at Brookings for the last 3 years is Stoa with an average yield of 41 bu/A. If we subtract seven (7) bu/A (the test LSD value) from 41 we obtain a value of 34. Therefore, all varieties listed in that column which have a yield of more than 34 bushels are in the top yielding group relative to the top yielder, Stoa. Likewise, any variety that yields 34 bushels or less is not in the top yielding group. **For convenience, the top yielding groups for all locations have been determined and the top yielding group within a location has already been identified with an asterisk (*).**

In some cases varieties may have similar yield averages, but some may be in the top yielding group while others are not. For example, the three year average of Leo 747, Marshall, Wheaton, and Shield at Redfield is 24 bushels per acre. The variety Shield is a top yielder while the others are not. This is due to the previously mentioned rounding-off of yield averages and LSD values in order to conserve space in the yield tables. Identification of the top yielding varieties (those with an asterisk) was done by computer and is correct.

In some cases, a test LSD value is not given and the designation NS (non-significant) is indicated. This means that variety yield differences could not be determined. Therefore, all the varieties have a similar yielding potential for the location and time period indicated. In such cases, all varieties could be considered to be in the top yielding group. When considering variety performance remember that it is almost impossible to repeat environmental conditions of a test in future years; therefore, that is why one should look at as many trials or test locations as possible. Crop producers should examine yield data over as many test locations and years as is possible. As a minimum, comparisons in yielding potential among varieties should be done by using 3-year averages.

When evaluating varieties keep in mind that one should try to determine the average performance of a variety over many tests. This average performance is called "yield stability" and is indicated at the end of each yield table for the spring seeded small grains. A variety which exhibits good yield stability is a variety which may or may not be the best yielder at all locations, but does rank high in yielding potential at several locations. For example, a variety which ranks in the top yielding group over 50% or more of the test locations exhibits good yielding stability. One that is in the top yielding group at less then 50% of the test locations exhibits a lower yielding stability. Generally varieties with a yield stability percentage of 50% or more have the ability to adapt to greater differences in environmental conditions among test locations than varieties with a lower yield stability. A variety with a relatively high yield stability percentage is desireable.

ORIGIN OF VARIETIES TESTED

The public varieties tested were released from various Agricultural Experiment Stations. Abbreviations for each station include:

Canada--CAN	Missouri--MO
Colorado--CO	Montana--MT
Illinois--IL	Nebraska--NE
Indiana--IN	North Dakota--ND
Iowa--IA	South Dakota--SD
Kansas--KS	Texas--TX
Minnesota--MN	Wisconsin--WI

Many public varieties were jointly developed and released by experiment stations and the U.S. Department of Agriculture. The private varieties tested were released by commercial companies. Entry fees are charged for all private experimental lines, but not for released varieties sold in South Dakota and entered in the Crop Performance Testing Program. In most cases, the company which released a variety also entered the variety in the test trials. The abbreviations for these companies include:

Busch Agricultural Resources, Inc.--BARI
Cargill--CARG
Hybri-Tech--HYT
Northrup King--NK
Nickerson American Plant Breeders-- NAPB
Pioneer Hi-Bred Int'l., Inc.--PIO
Rohm and Haas Co.--R&H
Western Plant Breeders--WPB
SunSeed Genetics Inc--SGI

In some cases, however, some grain varieties were developed by one company and exclusive marketing rights were given or sold to another company. In such cases the marketing company entered the variety for testing. Such varieties and the companies which market them (Company-Variety) are listed below:

Sexauer--Challenger
AgriPro--Abilene, Thunderbird, Telemark, Nordic, Celtic, Stockholm, Fjord
Discount Farm Center, Inc., Watertown, SD.--Norseman

The Variety Recommendation Committee consists of the Plant Science Department head; Extension agronomists and plant pathologists; plant breeders; research agronomists and plant pathologists; and representatives from the State Seed Laboratory, Seed Certification Service, and the Foundation Seed Stocks Division.

The efforts of K.K. Kirby, K.M. Seller, R. Schut, L. Hall, and L. Edler at Brookings in obtaining the small grain data is gratefully acknowledged.

The cooperation and resources of the following farm cooperators are gratefully acknowledged:

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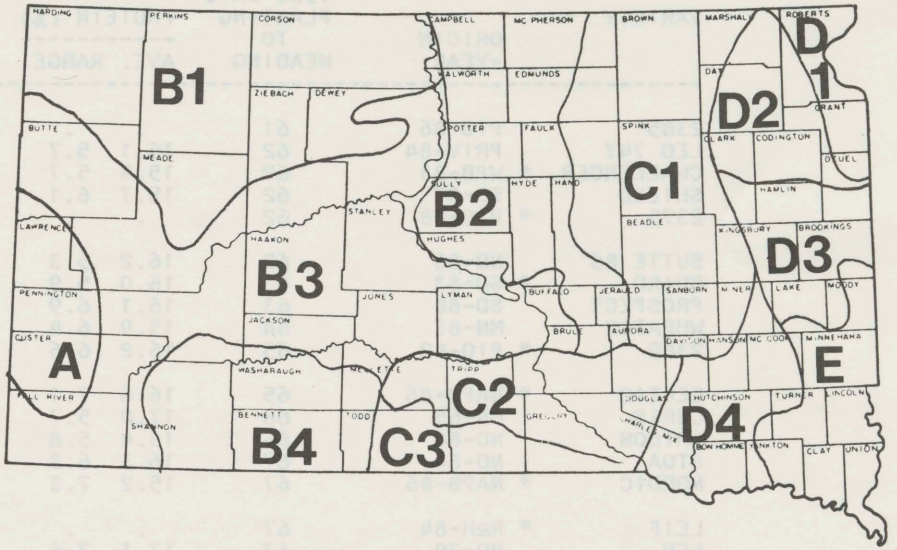
Table 1. Minimum criteria needed to make recommended list in this publication.

Trait	Crop				
	HRS Wheat	Durum Wheat	HRW Wheat	Oats	Barley
Yield	3/15[a]	3/12	3/15	3/15	3/12
Test Weight	3/15	3/12	3/15	3/15	3/12
Height	3/15	3/12	3/15	3/15	3/12
Protein	3/15	3/12	3/15	---	3/12
Heading Date (flowering)	3/6	3/6	3/6	3/6	3/6
Quality Data	2/4[b]	WA	WA	WA	WA
Moisture	---	---	---	---	---
Maturity	---	---	---	---	---
Disease Reaction	A	A	A	A	A
Lodging	WA	WA	WA	WA	WA
Unique[d] Characteristics	WA	WA	WA	WA	WA

A = annually
WA = when available
a = 3 = years and 15 = location - years
b = milling and baking parameters
c = oil content and iodine number
d = includes any production or marketing characteristics, either positive or negative, which may effect a variety's production in South Dakota, i.e. insect resistance and irrigation potential.



CROP ADAPTATION AREAS

- A Black Hills
- B1 Northwestern Tableland
- B2 North Central Glacial Upland
- B3 Pierre Plain
- B4 Southwestern Tableland
- C1 Northern James Valley
- C2 South Central Upland
- C3 South Central Tableland
- D1 Northeast Lowland
- D2 Northern Prairie Coteau
- D3 Central Prairie Coteau
- D4 Southern James Flatland
- E Southeast Prairie Upland

CHARACTERISTICS OF SPRING WHEAT VARIETIES

VARIETY		ORIGIN -YEAR	1988 DAYS- PLANTING TO HEADING	STATE-WIDE AVERAGES PROTEIN (%) AVE.	PROTEIN (%) RANGE	TEST WEIGHT (LB/BU)	HEIGHT (IN.)	86-88 YIELD (BU/AC)	1988 YIELD (BU/AC)	STRAW STRENGTH	DISEASE RESISTANCE LEAF RUST	STEM RUST
2385		PIO-86	61	.	.	.	.	.	15	GOOD	R	MR
LEO 747		PRIV-84	62	16.1	5.7	55	26	28	13	GOOD	MS/S	MS
CHALLENGER	*	WPB-83	62	15.4	5.7	56	26	28	15	GOOD	R	R
SHIELD		SD-87	62	15.7	6.1	56	30	30	15	GOOD	R	MR
2375	*	PIO-88	62	.	.	.	.	.	15	GOOD	.	.
BUTTE 86		ND-86	62	16.2	5.3	56	30	31	16	FAIR	MR	R
GUARD	*	SD-83	63	16.0	5.9	56	27	30	16	GOOD	R	R
PROSPECT		SD-88	63	16.1	6.9	55	28	30	16	GOOD	R	R
WHEATON		MN-83	64	15.9	6.4	52	25	28	13	GOOD	R	R
2369	*	PIO-82	65	16.2	6.6	56	27	28	13	GOOD	MR	R
CELTIC	*	NAPB-86	65	16.6	7.1	55	28	28	12	GOOD	R	R
CHRIS		MN-65	66	17.0	5.7	54	32	22	10	POOR	MR	R
AMIDON		ND-88	66	16.4	5.8	55	32	29	13	GOOD	R	R
STOA		ND-84	67	16.3	6.2	55	30	31	14	FAIR	R	R
NORDIC	*	NAPB-86	67	15.2	7.3	55	27	29	12	GOOD	MR	R
LEIF	*	R&H-84	67	.	.	.	.	.	9	GOOD	R	R
LEN		ND-79	67	17.1	7.6	54	27	25	11	GOOD	R	R
TELEMARK	*	NAPB-86	67	16.6	6.8	53	25	27	12	GOOD	R	R
ANGUS		MN-78	68	16.6	6.4	55	27	24	10	GOOD	R	R
NORSEMAN	*	NAPB-85	68	16.6	7.3	53	24	27	11	GOOD	R	X
MARSHALL	*	MN-82	68	15.9	6.8	54	25	29	13	GOOD	MR	R
ALEX		ND-81	68	16.9	6.2	55	31	25	10	POOR	R	MR

* PLANT VARIETY PROTECTION - TO BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED.
# S = SUSCEPTIBLE, MS = MODERATELY SUSCEPTIBLE, MR = MODERATELY RESISTANT , R = RESISTANT , X = MIXTURE OF S AND R.

***** ADDITIONAL VARIETY COMMENTS ARE LOCATED IN THE BACK OF THIS PUBLICATION *****

SPRING WHEAT ONE- AND THREE- YEAR AVERAGE YIELDS AT VARIOUS LOCATIONS IN SOUTH DAKOTA

	LOCATION															
	BROOKINGS		WATERTOWN		BERESFORD		HIGHMORE		WALL		REDFIELD		BISON		MARTIN	
	88	3-YR	88	3-YR	88	3-YR	88	3-YR	88	3-YR	88	3-YR	88	3-YR	88	3-YR
VARIETY	BU/AC															
ALEX	10	32	9	28	5	22	12	25	14	20	14	21	7	22	7	24
AMIDON	12	33	15*	35*	9	27	14	30	18	24	18	25*	10	26*	8	32*
ANGUS	9	30	10	29	7	27	12	25	11	19	13	20	13*	20	8	26
BUTTE 86	17*	39*	17*	34*	10	29*	20	33*	23*	29*	20*	28*	8	27*	13	33*
CELTIC	13	35*	15	34*	9	29*	14	29	16	22	14	23	5	19	10	29
CHALLENGER	13	33	16*	30	13*	28*	20	29	21*	25	15	23	13*	28*	16	32*
CHRIS	9	27	8	26	8	23	9	21	14	19	12	17	9	20	9	23
GUARD	13	38*	18*	35*	15*	32*	19	30	19	26	20*	25*	17*	30*	14	33*
LEIF	9	.	6	.	6	.	10	.	14	.	9	.	8	.	9	.
LEN	10	32	15	29	11	28*	9	23	15	19	14	20	10	20	11	28
LEO 747	15	33	18*	34*	12	27	15	26	18	26	14	24	13*	26*	13	29
MARSHALL	12	39*	14	35*	11	29*	11	26	18	24	19*	24	7	20	11	29
NORDIC	13	36*	19*	37*	13*	34*	13	28	15	21	14	21	6	20	11	32*
NORSEMAN	9	36*	10	34*	9	29*	13	28	16	19	14	22	8	24	9	27
PROSPECT	16*	35*	18*	37*	12	31*	17	29	21*	25	21*	28*	13*	27*	18*	36*
SHIELD	18*	40*	17*	36*	13*	34*	17	28	22*	28*	17	24*	11*	27*	16	29
STOA	15	41*	17*	36*	10	33*	16	31	18	24	21*	28*	8	22	11	33*
TELEMARK	12	33	16*	32*	13*	30*	15	26	11	19	16	23	11	.	11	.
WHEATON	13	36*	12	33*	12	30*	17	31	21*	22	15	24	6	23	11	30
2369	13	36*	15*	36*	14*	31*	19	30	16	22	13	20	12*	24	13	28
2375	16*	.	19*	.	14*	.	22*	.	21*	.	16	.	13*	.	17*	.
2385	13	.	20*	.	13*	.	18	.	22*	.	14	.	14*	.	18*	.
LOCATION:																
TEST AVERAGE-	13**	35	15	33	11	29	16	28	18	23	16	23	10	24	12	30
TEST LSD(5%)-	3$	7	4	6	3	7	3	6	5	5	4	4	6	5	4	6

* A VARIETY IN THE TOP YIELDING GROUP WITHIN A LOCATION - SEE YIELD COMMENTS FOR EXPLANATION.
** TEST AVERAGE-INCLUDES ALL VARIETIES AND EXPERIMENTAL LINES; HOWEVER, ONLY VARIETIES ARE REPORTED IN THE TABLE.
$ TEST LSD(5%)- SEE YIELD COMMENTS FOR EXPLANATION.

(CONTINUED)

SPRING WHEAT ONE- AND THREE- YEAR AVERAGE YIELDS AT VARIOUS LOCATIONS IN SOUTH DAKOTA

	LOCATION											
	SELBY		AURORA CO.		GROTON		RALPH		BEAR BUTTE		YIELD STABILITY	
	88	3-YR	88	3-YR	88	3-YR	88	3-YR	88	3-YR	88	3-YR
VARIETY	BU/AC										%	
ALEX	19	28	9	23	6	28	17	25*	1	22	0$$	8$$
AMIDON	19	30	10	27*	8	32*	19*	28*	4	27*	15	62
ANGUS	17	24	10	21	6	30	14	22	2	23	8	0
BUTTE 86	23*	34*	16*	29*	12	36*	19*	25*	6	27*	54	100
CELTIC	20	30	12	24*	9	33*	13	24*	4	28*	0	54
CHALLENGER	18	30	14	24*	7	32*	15	22	9*	28*	31	46
CHRIS	15	24	8	20	5	24	14	20	3	21	0	0
GUARD	21	33*	18*	29*	9	32*	16	22	6	26	38	69
LEIF	17	.	6	.	6	.	16	.	3	.	0	.
LEN	17	26	9	21	5	27	15	23	4	22	0	8
LEO 747	19	31*	15	25*	7	31	11	20	5	28*	15	38
MARSHALL	19	30	15	27*	11	34*	18*	23	3	22	15	38
NORDIC	21	31*	11	27*	8	32*	17	24*	2	30*	15	69
NORSEMAN	18	28	10	25*	9	37*	14	21	3	24	0	38
PROSPECT	20	34*	16*	29*	5	33*	17*	26*	6	25	62	77
SHIELD	22	31*	16*	26*	6	28	13	24	5	32*	46	69
STOA	21	33*	13	27*	12	38*	20*	27*	4	26*	23	69
TELEMARK	19	28	13*	28*	5	30	15	.	3	.	.	.
WHEATON	18	28	12	25*	15*	35*	12	20	5	25	15	38
2369	19	29	14	24*	7	32*	12	21	4	26	15	38
2375	19	.	16*	.	6	.	15	.	5	.	62	.
2385	20	.	16*	.	9	.	14	.	8*	.	46	.
LOCATION:												
TEST AVERAGE-	20**	30	13	25	8	32	15	23	5	26		
TEST LSD(5%)-	2$	4	3	6	3	7	3	4	2	5		

* A VARIETY IN THE TOP YIELDING GROUP WITHIN A LOCATION.
** TEST AVERAGE-INCLUDES ALL VARIETIES AND EXPERIMENTAL LINES; HOWEVER, ONLY VARIETIES ARE REPORTED.
$ TEST LSD(5%)- SEE YIELD COMMENTS FOR EXPLANATION.
$$ YIELD STABILITY - PERCENTAGE OF TEST LOCATIONS A GIVEN VARIETY WAS IN THE TOP-YIELDING GROUP.

CHARACTERISTICS OF DURUM WHEAT VARIETIES

VARIETY		ORIGIN -YEAR	1988 DAYS-PLANTING TO HEADING	STATE-WIDE AVERAGES: PROTEIN (%) AVE.	PROTEIN (%) RANGE	TEST WEIGHT (LB/BU)	HEIGHT (IN.)	86-88 YIELD (BU/AC)	1988 YIELD (BU/AC)	STRAW STRENGTH	QUALITY	DISEASE RESISTANCE: LEAF RUST	STEM RUST
MONROE		ND-84	63	15.9	2.3	56	30	31	18	GOOD	STRONG GLUTEN	R#	R#
CROSBY		ND-76	64	16.5	2.6	56	31	29	17	FAIR	SATISFACTORY	R	R
FJORD	*	NAPB-86	65	.	.	.	.	.	17	GOOD	STRONG GLUTEN	R	R
RUGBY		ND-73	65	16.5	3.2	57	30	30	17	GOOD	SATISFACTORY	MS	R
WARD		ND-72	65	16.6	2.9	56	31	29	16	FAIR	SATISFACTORY	R	R
VIC		ND-79	65	16.6	1.6	56	30	27	15	GOOD	STRONG GLUTEN	R	R
STOCKHOLM*		NAPB-86	65	.	.	.	.	.	15	GOOD	STRONG GLUTEN	R	R
RENVILLE		ND-88	65	.	.	.	.	.	15	GOOD	STRONG GLUTEN	R	R
LAKER	*	WPB-84	65	16.2	2.1	55	27	26	15	GOOD	SATISFACTORY	MR	R

* PLANT VARIETY PROTECTION - TO BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED.
\# S = SUSCEPTIBLE, MS = MODERATELY SUSCEPTIBLE, MR = MODERATELY RESISTANT , R = RESISTANT.

***** ADDITIONAL VARIETY COMMENTS ARE LOCATED IN THE BACK OF THIS PUBLICATION *****

DURUM WHEAT ONE- AND THREE- YEAR AVERAGE YIELDS AT VARIOUS LOCATIONS IN SOUTH DAKOTA

VARIETY	LOCATION: BROOKINGS 88	BROOKINGS 3-YR	WATERTOWN 88	WATERTOWN 3-YR	DAY CO. 88	DAY CO. 3-YR	WALL 88	WALL 3-YR	REDFIELD 88	REDFIELD 3-YR	BISON 88	BISON 3-YR	MARTIN 88	MARTIN 3-YR	SELBY 88	SELBY 3-YR
	BU/AC															
CROSBY	15*	36*	21*	33*	9	.	18	20*	17*	.	8*	21*	13	.	20*	27*
FJORD	17*	.	22*	.	6	.	17	.	19*	.	9*	.	14*	.	20*	.
LAKER	12	30*	18	27	7	.	13	16	13	.	8*	16	12	.	18*	27*
MONROE	18*	37*	23*	35*	10	.	23*	23*	19*	.	10*	22*	17*	.	20*	30*
RENVILLE	12	.	16	.	5	.	16	.	16*	.	9*	.	11	.	20*	.
RUGBY	14	37*	20	36*	8	.	18	21*	14	.	11*	22*	15*	.	19*	29*
STOCKHOLM	15*	.	20	.	9	.	15	.	17*	.	9*	.	12	.	18*	.
VIC	16*	33*	19	31	4	.	16	19	13	.	9*	17	14*	.	18*	27*
WARD	14	35*	19	32*	6	.	18	20*	13	.	10*	21*	13	.	18*	28*
TEST AVERAGE-	15**	35	20	32	7	.	17	20	16	.	9	20	13	.	19	28
TEST LSD(5%)-	3$	NS#	2	5	.	.	4	5	4	.	NS	4	3	.	NS	NS

* A VARIETY IN THE TOP YIELDING GROUP WITHIN A LOCATION - SEE YIELD COMMENTS FOR EXPLANATION.
** TEST AVERAGE-INCLUDES ALL VARIETIES AND EXPERIMENTAL LINES; HOWEVER, ONLY VARIETIES ARE REPORTED IN THE TABLE.
$ TEST LSD(5%)- SEE YIELD COMMENTS FOR EXPLANATION.
\# NS- INDICATES YIELD DIFFERENCES AMONG VARIETIES WITHIN A LOCATION ARE NONSIGNIFICANT.

(CONTINUED)

DURUM WHEAT ONE- AND THREE- YEAR AVERAGE YIELDS AT VARIOUS LOCATIONS IN SOUTH DAKOTA

	LOCATION					
	GROTON		RALPH		YIELD STABILITY	
	88	3-YR	88	3-YR	88	3-YR
VARIETY	BU/AC				%	
CROSBY	9*	33*	33*	33*	70$$	100$$
FJORD	11*	.	33*	.	80	.
LAKER	6	27*	37*	35*	40	57
MONROE	3	33*	32*	33*	80	100
RENVILLE	6	.	35*	.	30	.
RUGBY	11*	35*	37*	34*	50	100
STOCKHOLM	4	.	24*	.	40	.
VIC	4	32*	29*	31*	50	57
WARD	9*	35*	38*	35*	40	100
LOCATION:						
TEST AVERAGE-	7**	32	33	33		
TEST LSD(5%)-	3$	NS#	NS	NS		

* A VARIETY IN THE TOP YIELDING GROUP WITHIN A LOCATION.
** TEST AVERAGE-INCLUDES ALL VARIETIES AND EXPERIMENTAL LINES; HOWEVER, ONLY VARIETIES ARE REPORTED IN THE TABLE.
$ TEST LSD(5%)- SEE YIELD COMMENTS FOR EXPLANATION.
# NS- INDICATES YIELD DIFFERENCES AMONG VARIETIES WITHIN A LOCATION ARE NONSIGNIFICANT.
$$ YIELD STABILITY - PERCENTAGE OF TEST LOCATIONS A GIVEN VARIETY WAS IN THE TOP-YIELDING GROUP.

CHARACTERISTICS OF SPRING OAT VARIETIES

VARIETY		ORIGIN -YEAR	1988 DAYS- PLANTING TO HEADING	STATE-WIDE AVERAGES PROTEIN (%) AVE.	PROTEIN (%) RANGE	TEST WEIGHT (LB/BU)	HEIGHT (IN.)	YIELD (BU/AC) 86-88	YIELD (BU/AC) 1988	STRAW STRENGTH	GRAIN COLOR	DISEASE RESISTANCE RED LEAF	SMUT	STEM RUST	CROWN RUST
WEBSTER		IA-84	57	**16.3	5.2	31	29	69	42	GOOD	YELLOW	$ MS#	MS#	S#	MR#
NODAWAY 70		MO-69	58	15.8	5.1	33	32	55	31	POOR	WHITE	MS	R	S	S
KELLY		SD-84	58	17.5	4.0	34	31	59	32	FAIR	WHITE	MS	MR	S	MR
STARTER	*	MN-86	58	18.4	6.7	35	30	67	35	STRONG	YELLOW	MR	R	S	S
DON		IL-85	58	16.6	6.3	33	28	77	44	GOOD	WHITE	MR	R	S	R
PRESTON		MN-82	58	20.2	4.8	32	30	62	33	FAIR	LT. TAN	S	MS	S	R
OTEE		IL-73	58	18.6	8.6	32	30	62	39	FAIR	IVORY	R	R	MS	S
BURNETT		IL-76	59	15.2	8.8	32	32	60	31	POOR	IVORY	S	MR	S	S
LANCER		SD-79	59	16.4	7.8	31	30	61	30	GOOD	WHITE	S	MR	MR	S
OGLE		IL-80	60	14.5	7.9	30	30	74	44	GOOD	YELLOW	R	MS	S	MS
HAZEL		IL-85	60	15.5	6.5	32	28	75	45	STRONG	WHITE	R	S	S	R
HYTEST		SD-86	60	17.1	6.0	35	34	61	32	GOOD	LT. CREAM	MS	MR	S	S
TRUCKER		SD-88	61	16.3	7.9	34	32	60	27	GOOD	WHITE	S	MR	S	MR
LYON		MN-77	62	17.5	8.9	29	35	54	24	GOOD	WHITE	S	R	MS	S
WRIGHT	*	WI-76	62	17.9	7.7	32	34	63	29	GOOD	LT. TAN	MS	R	MR	MS
BENSON	*	MN-79	62	16.8	6.6	31	33	60	29	FAIR	WHITE	S	R	S	MR
MOORE		MN-79	63	16.7	10.0	31	33	61	28	GOOD	WHITE	S	R	R	MS
STEELE		ND-84	63	18.4	7.0	30	33	62	25	GOOD	LT. TAN	MR	MS	R	R
MONIDA		MT-84	63	.	.	29	31	@75	@35	GOOD	WHITE	.	.	S	S
SANDY		SD-86	64	16.1	9.3	31	34	57	21	STRONG	LT. CREAM	S	MR	S	MR
PROAT	*	MN-85	64	19.4	9.0	31	32	62	27	GOOD	LT. TAN	MS	R	S	R
VALLEY		ND-88	64	.	.	.	.	.	35	GOOD	IVORY	MR	.	R	R
PORTER	*	IN-82	64	17.5	13.0	31	30	66	34	GOOD	LT. TAN	R	R	S	S
OTANA		MT-76	70	.	.	.	.	.	@34	FAIR	WHITE	S	S	S	S

* PLANT VARIETY PROTECTION - TO BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED.
@ WEST RIVER LOCATIONS ONLY.
$ BARLEY YELLOW DWARF (BYD) VIRUS IS COMMONLY REFERRED TO AS RED LEAF IN OATS.
# S = SUSCEPTIBLE, MS = MODERATELY SUSCEPTIBLE, MR = MODERATELY RESISTANT , R = RESISTANT.
** GROAT PROTEIN - GENERALLY 3.5 TO 4.0% HIGHER THAN WHOLE KERNEL PROTEIN, 1985-87 DATA.

***** ADDITIONAL VARIETY COMMENTS ARE LOCATED IN THE BACK OF THIS PUBLICATION *****

SPRING OAT ONE- AND THREE- YEAR AVERAGE YIELDS AT VARIOUS LOCATIONS IN SOUTH DAKOTA

	LOCATION															
	BROOKINGS		WATERTOWN		BERESFORD		HIGHMORE		WALL		BISON		MARTIN		SELBY	
VARIETY	88	3-YR	88	3-YR	88	3-YR	88	3-YR	88	3-YR	88	3-YR	88	3-YR	88	3-YR
	BU/AC															
BENSON	30	69	34	64*	27	43	38	58	42	73*	16*	55*	59	89*	36	45
BURNETT	37	62	40	63*	31	40	42	60	47*	76*	17*	61*	57	88*	35	50*
DON	53*	104*	64*	96*	59*	84*	64*	71*	55*	74*	14*	60*	76*	101*	44*	51*
HAZEL	51*	102*	65*	92*	65*	80*	64*	70*	58*	76*	18*	60*	78*	101*	42*	50*
HYTEST	38	70	40	72*	34	51	43	58	45	72*	20*	56*	55	84	35	45
KELLY	41	72	43	66*	40	49	36	52	55*	64*	16*	53*	60	83	31	45
LANCER	27	63	32	62*	28	49	43	56	51*	71*	26*	61*	61	87*	31	46
LYON	25	58	16	51*	15	35	42	55	38	66*	22*	60*	36	72	41*	47
MONIDA	.	.	.	.	.	.	.	.	52*	85*	28*	76*	48	99	.	.
MOORE	35	71	21	59*	27	49	36	56	43	70*	21*	64*	47	85	36	50*
NODAWAY 70	37	63	46	53*	34	36	27	43*	51	67*	13*	55*	64	80	35	43
OGLE	50*	80	61*	84*	61*	74*	61*	71*	48*	75*	17*	66*	73*	95*	42*	57*
OTANA	.	.	.	.	.	.	.	.	45	.	28*	.	54	.	.	.
OTEE	45*	72	51	67*	63*	60	49	57	47*	63*	27*	57*	60	81	29	42
PORTER	36	78	29	61*	41	51	48	67*	41	78*	26*	65*	60	103*	35	54*
PRESTON	38	81*	37	72*	49	66*	43	51	42	66*	18*	55*	53	73	29	42
PROAT	30	80	28	72*	27	55	36	57	44	72*	13*	52*	54	86	26	46
SANDY	24	67	10	58*	21	45	29	52	33	64*	15*	60*	42	83	28	46
STARTER	38	88*	37	73*	45	71*	55*	61	56*	73*	18*	64*	60	86	33	44
STEELE	29	79	15	68*	26	58	36	61	35	66*	23*	60*	49	87*	25	45
TRUCKER	28	64	29	66*	21	45	41	57	53*	72*	21*	62*	43	80	38	48
VALLEY	40	.	26	.	37	.	47	.	52*	.	26*	.	62	.	45*	.
WEBSTER	45*	82*	61*	78*	51	66*	54*	61	54*	72*	25*	70*	64	85	50*	51*
WRIGHT	31	75	29	69*	30	58	40	58	45	71*	22*	57*	52	84	34	48
LOCATION:																
TEST AVERAGE-	38**	76	39	70	40	57	45	59	47	71	21	59	58	87	36	48
TEST LSD(5%)-	11$	24	7	NS#	6	24	10	10	12	NS	NS	NS	10	17	10	8

* A VARIETY IN THE TOP YIELDING GROUP WITHIN A LOCATION - SEE YIELD COMMENTS FOR EXPLANATION.
** TEST AVERAGE-INCLUDES ALL VARIETIES AND EXPERIMENTAL LINES; HOWEVER, ONLY VARIETIES ARE REPORTED IN THE TABLE.
$ TEST LSD(5%)- SEE YIELD COMMENTS FOR EXPLANATION.
# NS- INDICATES YIELD DIFFERENCES AMONG VARIETIES WITHIN A LOCATION ARE NONSIGNIFICANT.

(CONTINUED)

SPRING OAT ONE- AND THREE- YEAR AVERAGE YIELDS AT VARIOUS LOCATIONS IN SOUTH DAKOTA

	LOCATION									
	AURORA CO.		GROTON		BEAR BUTTE		FREEMAN		YIELD STABILITY	
	88	3-YR	88	3-YR	88	3-YR	88	3-YR	88	3-YR
VARIETY	BU/AC								%	
BENSON	21	45	6	70*	14	61	25	49	8$$	42$$
BURNETT	18	47	8	66	15	58	23	49	17	42
DON	23	60*	13	82*	26*	73*	41*	69*	83	100
HAZEL	19	57*	16*	74*	25*	72*	43*	69*	92	100
HYTEST	17	47	11	68	12	58	29	55	8	25
KELLY	14	50	11	63	13	61	29	53	17	25
LANCER	10	49	7	72*	15	66*	22	48	17	50
LYON	9	39	10	59	9	57	27	49	17	25
MONIDA	.	.	.	.	10	63	.	.	.	.
MOORE	21	47	18	73*	7	59	21	52	8	42
NODAWAY 70	12	42	10	56	17	69*	26	50	8	42
OGLE	27*	63*	17*	81*	15	73*	51*	65*	92	92
OTANA	.	.	.	.	10	.	.	.	.	.
OTEE	23	50	12	67	18	69*	47*	57*	42	33
PORTER	28*	47	22*	77*	8	58	32	50	33	58
PRESTON	24	54	10	67	8	55	39	58*	8	50
PROAT	21	53	16*	72*	6	52	22	49	17	33
SANDY	12	42	12	70*	7	53	16	46	8	33
STARTER	15	51	13	64	19	70*	31	58*	25	58
STEELE	19	51	8	68	8	56	25	50	8	33
TRUCKER	10	52	12	70*	12	59	15	50	17	33
VALLEY	30*	.	15	.	11	.	35	.	33	.
WEBSTER	25*	58*	10	75*	18	72*	42*	61*	67	83
WRIGHT	20	51	9	74*	11	61	23	51	8	33
LOCATION:										
TEST AVERAGE-	20**	51	13	78	13	63	32	53		
TEST LSD(5%)-	6$	15	6	14	5	8	10	11		

* A VARIETY IN THE TOP YIELDING GROUP WITHIN A LOCATION.
** TEST AVERAGE-INCLUDES ALL VARIETIES AND EXPERIMENTAL LINES; HOWEVER, ONLY VARIETIES ARE REPORTED IN THE TABLE.
$ TEST LSD(5%)- SEE YIELD COMMENTS FOR EXPLANATION.
$$ YIELD STABILITY - PERCENTAGE OF TEST LOCATIONS A GIVEN VARIETY WAS IN THE TOP-YIELDING GROUP.

CHARACTERISTICS OF SPRING BARLEY VARIETIES

VARIETY	ORIGIN -YEAR	1988 DAYS-PLANTING TO HEADING	STATE-WIDE AVERAGES: PROTEIN (%) AVE.	PROTEIN (%) RANGE	TEST WEIGHT (LB/AC)	HEIGHT (IN.)	86-88 YIELD (BU/AC)	1988 YIELD (BU/AC)	STRAW STRENGTH	GRAIN TYPE	AWN TYPE	ROW TYPE	DISEASE RESISTANCE: SMUT	STEM RUST	LEAF SPOT
PRIMUS II	SD-66	59	13.2	2.0	45	27	44	30	FAIR	FEED	SMOOTH	6	S#	R#	S#
BOWMAN	ND-84	62	13.6	2.9	48	27	52	35	GOOD	FEED	SMOOTH	2	S	R	MR
GLENN	ND-78	64	13.7	2.1	42	27	45	28	FAIR	MALT	ROUGH	6	S	R	MR
AZURE	ND-82	65	12.7	2.4	43	28	46	24	FAIR	FEED	SMOOTH	6	S	R	MR
ROBUST *	MN-83	65	13.1	2.3	45	27	45	26	GOOD	MALT	SMOOTH	6	S	R	R
HAZEN	ND-84	65	13.0	3.3	44	27	48	25	GOOD	FEED	SMOOTH	6	S	S	R
MOREX	ND-78	65	13.2	3.4	43	28	41	22	FAIR	MALT	SMOOTH	6	S	R	R
B1602	BARI-88	66	.	.	.	.	.	24	GOOD	MALT	ROUGH	6	S	.	MR
GALLATIN	MT-87	66	.	.	.	.	.	27	FAIR	FEED	ROUGH	2	S	.	MR

* PLANT VARIETY PROTECTION - TO BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED.
\# S = SUSCEPTIBLE, MS = MODERATELY SUSCEPTIBLE, MR = MODERATELY RESISTANT , R = RESISTANT.

***** ADDITIONAL VARIETY COMMENTS ARE LOCATED IN THE BACK OF THIS PUBLICATION *****

SPRING BARLEY ONE- AND THREE- YEAR AVERAGE YIELDS AT VARIOUS LOCATIONS IN SOUTH DAKOTA

	LOCATION															
	BROOKINGS		WATERTOWN		HIGHMORE		WALL		BISON		MARTIN		SELBY		AURORA CO.	
	88	3-YR	88	3-YR	88	3-YR	88	3-YR	88	3-YR	88	3-YR	88	3-YR	88	3-YR
VARIETY	BU/AC															
AZURE	20	51*	36*	58*	35	43*	26*	46*	21	45*	43	64*	23	38*	21	35*
BOWMAN	31*	55*	40*	56*	54*	56*	42*	56*	23*	50*	57*	74*	39*	40*	20	38*
B1602	22	.	26	.	34	.	29*	.	20	.	37	.	29	.	25	.
GALLATIN	16	.	30	.	42	.	34*	.	27*	.	49	.	31	.	15	.
GLENN	24	54*	32	51*	41	49*	31*	44*	19	40*	50	64*	28	37*	29*	38*
HAZEN	22	55*	34	56*	36	46*	30*	50*	20	44*	46	68*	27	39*	26*	39*
MOREX	20	44*	24	42	22	35*	27*	41*	20	42*	38	59*	24	34*	19	29*
PRIMUS II	28*	56*	32	48	52*	45*	32*	45*	21	41*	50	62*	32	37*	31*	33*
ROBUST	25	57*	27	51*	39	42*	30*	45*	20	45*	42	61*	26	37*	28*	33*
LOCATION:																
TEST AVERAGE-	23**	53 '	30	52	39	45	31	47	21	44	46	65	28	37	24	35
TEST LSD(5%)-	5$	NS#	5	9	10	NS	NS	NS	4	NS	7	NS	4	NS	5	NS

* A VARIETY IN THE TOP YIELDING GROUP WITHIN A LOCATION - SEE YIELD COMMENTS FOR EXPLANATION.
** TEST AVERAGE-INCLUDES ALL VARIETIES AND EXPERIMENTAL LINES; HOWEVER, ONLY VARIETIES ARE REPORTED IN THE TABLE.
$ TEST LSD(5%)- SEE YIELD COMMENTS FOR EXPLANATION.
# NS- INDICATES YIELD DIFFERENCES AMONG VARIETIES WITHIN A LOCATION ARE NONSIGNIFICANT.

Yields Table—Spring Barley Continued . . .

SPRING BARLEY ONE- AND THREE- YEAR AVERAGE YIELDS AT VARIOUS LOCATIONS IN SOUTH DAKOTA

	LOCATION							
	GROTON		RALPH		BEAR BUTTE		YIELD STABILITY	
	88	3-YR	88	3-YR	88	3-YR	88	3-YR
VARIETY	BU/AC						%	
AZURE	10	49*	29	38	4	39	18$$	82$$
BOWMAN	19*	51*	39*	48*	16*	51*	91	100
B1602	9	.	33	.	4	.	9	.
GALLATIN	5	.	42*	.	6	.	27	.
GLENN	18*	41*	29	38	7	39	27	82
HAZEN	8	44*	29	42	3	42	18	82
MOREX	8	41*	31	43*	5	38	9	82
PRIMUS II	13	39*	28	36	9	45*	36	82
ROBUST	12	44*	31	41	6	43*	18	91
LOCATION:								
TEST AVERAGE-	11**	42	32	41	7	42		
TEST LSD(5%)-	5$	NS#	4	6	5	8		

* A VARIETY IN THE TOP YIELDING GROUP WITHIN A LOCATION.
** TEST AVERAGE-INCLUDES ALL VARIETIES AND EXPERIMENTAL LINES; HOWEVER, ONLY VARIETIES ARE REPORTED.
$ TEST LSD(5%)- SEE YIELD COMMENTS FOR EXPLANATION.
# NS- INDICATES YIELD DIFFERENCES AMONG VARIETIES WITHIN A LOCATION ARE NONSIGNIFICANT.
$$ YIELD STABILITY - PERCENTAGE OF TEST LOCATIONS A GIVEN VARIETY WAS IN THE THE TOP-YIELDING GROUP.

CHARACTERISTICS OF SPRING TRITICALE VARIETIES

VARIETY		ORIGIN -YEAR	1988 DAYS-PLANTING TO HEADING	STATE-WIDE AVERAGES: PROTEIN (%) AVE.	PROTEIN (%) RANGE	TEST WEIGHT (LB/BU)	HEIGHT (IN.)	86-88 YIELD (BU/AC)	1988 YIELD (BU/AC)	STRAW STRENGTH	DISEASE RESISTANCE: LEAF RUST	STEM RUST
KARL		ND-84	62	.	.	.	.	.	19	GOOD	MS#	R#
KRAMER		ND-83	62	.	.	.	.	.	20	GOOD	MS	R
VICTORIA	*	SGI-88	64	.	.	.	.	.	25	.	.	.
MARVEL		SD-86	65	.	.	.	.	.	19	GOOD	MR	R
GRACE	*	SGI-81	66	.	.	.	.	.	24	.	.	.

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\# S = SUSCEPTIBLE, MS = MODERATELY SUSCEPTIBLE, MR = MODERATELY RESISTANT , R = RESISTANT.

SPRING TRITICALE ONE-YEAR AVERAGE YIELDS AT VARIOUS LOCATIONS IN SOUTH DAKOTA

	LOCATION															
	BROOKINGS		WATERTOWN		DAY CO.		WALL		REDFIELD		BISON		MARTIN		SELBY	
	88	3-YR	88	3-YR	88	3-YR	88	3-YR	88	3-YR	88	3-YR	88	3-YR	88	3-YR
VARIETY	BU/AC															
GRACE	9	.	14	.	15	.	31*	.	32*	.	16*	.	20*	.	28*	.
KARL	15*	.	15	.	14	.	30*	.	28*	.	7	.	22*	.	23	.
KRAMER	12	.	15	.	21	.	35*	.	25*	.	5	.	25*	.	19	.
MARVEL	8	.	11	.	11	.	19	.	28*	.	11	.	16*	.	25*	.
VICTORIA	15	.	20*	.	20	.	37*	.	34*	.	16*	.	22*	.	26*	.
LOCATION:																
TEST AVERAGE-	12**	.	15	.	16	.	30	.	29	.	11	.	22	.	24	.
TEST LSD(5%)-	3$	.	3	.	-	.	9	.	NS#	.	3	.	NS	.	3	.

* A VARIETY IN THE TOP YIELDING GROUP WITHIN A LOCATION - SEE YIELD COMMENTS FOR EXPLANATION.
** TEST AVERAGE-INCLUDES ALL VARIETIES AND EXPERIMENTAL LINES; HOWEVER, ONLY VARIETIES ARE REPORTED IN THE TABLE.
$ TEST LSD(5%)- SEE YIELD COMMENTS FOR EXPLANATION.
# NS- INDICATES YIELD DIFFERENCES AMONG VARIETIES WITHIN A LOCATION ARE NONSIGNIFICANT.

SPRING TRITICALE ONE-YEAR AVERAGE YIELDS AT VARIOUS LOCATIONS IN SOUTH DAKOTA

	LOCATION					
	GROTON		RALPH		YIELD STABILITY	
	88	3-YR	88	3-YR	88	3-YR
VARIETY	BU/AC				%	
GRACE	21*	.	52*	.	70	.
KARL	17*	.	23*	.	60	.
KRAMER	18*	.	22*	.	50	.
MARVEL	21*	.	36*	.	50	.
VICTORIA	24*	.	38*	.	80	.
LOCATION:						
TEST AVERAGE-	20**	.	34	.		
TEST LSD(5%)-	NS#	.	NS	.		

* A VARIETY IN THE TOP YIELDING GROUP WITHIN A LOCATION.
** TEST AVERAGE-INCLUDES ALL VARIETIES AND EXPERIMENTAL LINES; HOWEVER, ONLY VARIETIES ARE REPORTED.
$ TEST LSD(5%)- SEE YIELD COMMENTS FOR EXPLANATION.
# NS- INDICATES YIELD DIFFERENCES AMONG VARIETIES WITHIN A LOCATION WERE NONSIGNIFICANT.
$$ YIELD STABILITY - PERCENTAGE OF TEST LOCATIONS A GIVEN VARIETY WAS IN THE THE TOP-YIELDING GROUP.

CHARACTERISTICS OF WINTER WHEAT VARIETIES

VARIETY		ORIGIN -YEAR	1988 DAYS-JANUARY 1 TO HEADING	STATE-WIDE AVERAGES: PROTEIN (%) AVE.	PROTEIN (%) RANGE	TEST WEIGHT (LB/BU)	HEIGHT (IN.)	86-88 YIELD (BU/AC)	1988 YIELD (BU/AC)	STRAW STRENGTH	MIL-LING	WINTER HARDI-NESS	DISEASE RESISTANCE: STREAK MOSAIC	LEAF RUST	STEM RUST
ARKAN	*	KS-82	148	.	.	.	.	.	22	EXC.	???	FAIR-G	S	MR	R
TAM 107	*	TX-84	149	13.9	5.4	58	28	44	33	EXC.	ACC.	FAIR	.	S	MR
DODGE		KS-86	149	.	.	.	.	.	30	GOOD	EXC.	POOR	S	R	R
SAGE		KS-73	150	14.6	5.9	59	33	43	32	GOOD	GOOD	GOOD	MR	MS	R
SCOUT 66		NE-66	150	14.1	5.3	58	34	42	31	FAIR	GOOD	FAIR	MR	MS	R
NORKAN		KS-86	150	15.1	4.4	58	28	47	30	GOOD	EXC.	FAIR	S	R	R
ABILENE	*	NAPB-87	150	.	.	.	.	.	35	GOOD	GOOD	GOOD	MR	MS	MR
ARAPAHOE		NE-88	150	.	.	.	.	.	35	FAIR	.	GOOD	.	MR	MR
SIOUXLAND	*	NE-84	150	14.3	4.8	58	33	47	33	GOOD	GOOD	GOOD	S	MS	R
BENNETT	*	NE-76	150	14.9	4.4	58	30	41	33	GOOD	GOOD	GOOD	S	S	R
$QUANTUM 542*		HYT	150	.	.	.	.	.	36	.	.	.	.	.	.
THUNDERBIRD	*	NAPB-85	150	14.3	6.0	59	30	44	34	EXC.	ACC.	GOOD	.	MR	R
$BOUNTY 205	*	CARG	150	14.7	5.7	57	31	42	27	GOOD	ACC.	FAIR-G	.	MS	MR
$QUANTUM 562*		HYT	150	.	.	.	.	.	35	.	.	.	.	.	.
DAWN		SD-80	151	14.4	5.5	58	30	41	28	GOOD	GOOD	FAIR-G	MR	MS	R
CENTURA	*	NE-83	151	14.2	5.9	58	32	45	32	GOOD	GOOD	GOOD	MS	MR	MR
REDLAND	*	NE-86	151	.	.	.	.	.	34	GOOD	GOOD	GOOD	MR	MS	R
BRULE		NE-82	151	13.5	5.0	56	32	45	32	GOOD	GOOD	GOOD	MR	MS	R
RODEO	*	RHS-85	151	.	.	.	.	.	31	GOOD	.	FAIR-G	.	MR	MR
$BOUNTY 301	*	CARG	151	14.7	3.8	57	31	40	27	GOOD	ACC.	FAIR-G	.	MR	R
CENTURK 78	*	NE-78	151	14.0	6.0	57	32	43	29	GOOD	GOOD	GOOD	MS	S	R
COLT	*	NE-83	151	14.4	4.5	57	28	43	30	EXC.	GOOD	FAIR	S	MR	R
LANCOTA	*	NE-75	151	15.5	5.1	57	32	43	26	GOOD	EXC.	GOOD	MR	R	R
CODY	*	NE-86	152	.	.	.	.	.	32	GOOD	GOOD	GOOD	S	MR	MR
$QUANTUM 568*		HYT	152	12.6	2.8	58	30	51	34	GOOD	.	FAIR-G	.	.	.
ROUGHRIDER		ND-76	153	14.9	6.0	58	35	40	25	FAIR	GOOD	EXC.	S	S	MS
ROSE		SD-81	153	15.0	5.4	57	32	42	26	EXC.	EXC.	GOOD-E	S	S	MR
NORWIN		MT-85	154	14.2	5.5	56	26	34	22	EXC.	GOOD	GOOD-E	.	S	MR
SEWARD		ND-87	154	.	.	.	.	.	27	GOOD	ACC.	GOOD-E	S	MS	MR
AGASSIZ		ND-83	155	14.9	5.8	57	37	37	23	FAIR	GOOD	EXC.	.	S	MR

$ INDICATES A HYBRID. THEREFORE,NO RELEASE DATE IS GIVEN.
* PLANT VARIETY PROTECTION - TO BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED.
# S = SUSCEPTIBLE, MS = MODERATELY SUSCEPTIBLE, MR = MODERATELY RESISTANT , R = RESISTANT.

WINTER WHEAT ONE- AND THREE- YEAR AVERAGE YIELDS AT VARIOUS LOCATIONS IN SOUTH DAKOTA

VARIETY	LOCATION															
	BROOKINGS		HIGHMORE		PRESHO		WALL		REDFIELD		BISON		FT. PIERRE		MARTIN	
	88	3-YR	88	3-YR	88	3-YR	88	3-YR	88	3-YR	88	3-YR	88	3-YR	88	3-YR
	BU/AC															
ABILENE	34	.	38	.	28*	.	54*	.	44*	.	16*	.	31*	.	64	.
AGASSIZ	27	.	27	39	9	27	40*	50	27	45*	15*	30*	12	.	45	41
ARAPAHOE	41*	.	51*	.	21	.	50*	.	43*	.	13*	.	26*	.	65*	.
ARKAN	25	.	35	.	12	.	.	.	27	.	.	.	16	.	.	.
BENNETT	33	.	43	48*	22	30*	52*	59*	39*	48*	19*	33*	27*	.	57	50*
BOUNTY 205	26	.	40	54*	20	29*	50*	58*	36	57*	11*	30*	20	.	55	56*
BOUNTY 301	26	.	39	49*	21	26	41*	53	35	53*	12*	29*	26*	.	49	48*
BRULE	24	.	43	52*	21	36*	46*	60*	45*	58*	17*	36*	28*	.	63	49*
CENTURA	30	.	41	56*	18	35*	51*	59*	40*	53*	14*	33*	25*	.	58	50*
CENTURK 78	39	.	39	54*	18	27	44*	58*	29	50*	13*	36*	23	.	57	49*
CODY	34	.	43	.	21	.	51*	.	37	.	18*	.	26*	.	60	.
COLT	24	.	38	46	17	29*	42*	56	36	52*	15*	36*	21	.	59	54*
DAWN	20	.	40	51*	20	30*	40*	53	35	50	14*	32*	20	.	59	53*
DODGE	30	.	37	.	19	.	44*	.	37	.	14*	.	25*	.	59	.
LANCOTA	18	.	33	.	16	.	43*	.	38*	.	17*	.	19	.	52	.
NORKAN	33	.	34	.	17	.	49*	57	36	.	16*	.	22	.	62	.
NORWIN	16	.	23	36	12	20	41*	49	36	42*	11*	32*	17	.	45	38
QUANTUM 542	35*	.	49*	.	27*	.	56*	.	40*	.	19*	.	26*	.	69*	.
QUANTUM 562	43*	.	45	.	18	.	46*	.	45*	.	16*	.	28*	.	67*	.
QUANTUM 568	.	.	.	.	.	.	48*	.	.	.	23*	.	.	.	.	.
REDLAND	35*	.	41	.	30*	.	48*	.	46*	.	14*	.	24*	.	62	.
RODEO	34	.	40	.	19	.	53*	.	39*	.	18*	.	20	.	62	.
ROSE	32	.	31	47	12	30*	42*	54	29	51*	14*	35*	17	.	53	47*
ROUGHRIDER	34	.	29	46	9	28	40*	52	34	48*	16*	33*	10	.	54	44*
SAGE	33	.	38	50*	24*	30*	46*	56	37*	49*	16*	35*	26*	.	57	53*
SCOUT 66	29	.	34	45	22	31*	46*	57	37	50*	20*	35*	20	.	60	52*
SEWARD	33	.	31	.	16	.	44*	.	35	.	14*	.	17	.	50	.
SIOUXLAND	27	.	44	54*	23*	33*	55*	64*	32	52*	16*	37*	33*	.	56	56*
TAM 107	32	.	27	47	25*	36*	48*	57*	37	51*	19*	35*	32*	.	55	48*
THUNDERBIRD	37*	.	44	53*	24*	35*	54*	58*	37	46*	23*	32*	25*	.	63	56*
LOCATION:																
TEST AVERAGE-	31**	.	38	47	19	30	47	56	37	50	16	34	23	.	58	50
TEST LSD(5%)-	11$	.	6	9	7	7	NS#	8	9	NS	NS	NS	9	.	7	9

* A VARIETY IN THE TOP YIELDING GROUP WITHIN A LOCATION - SEE YIELD COMMENTS FOR EXPLANATION.
** TEST AVERAGE-INCLUDES ALL VARIETIES AND EXPERIMENTAL LINES; HOWEVER, ONLY VARIETIES ARE REPORTED IN THE TABLE.
$ TEST LSD(5%)- SEE YIELD COMMENTS FOR EXPLANATION.
# NS- INDICATES YIELD DIFFERENCES AMONG VARIETIES WITHIN A LOCATION ARE NONSIGNIFICANT.

(CONTINUED)

WINTER WHEAT ONE- AND THREE- YEAR AVERAGE YIELDS AT VARIOUS LOCATIONS IN SOUTH DAKOTA

	LOCATION					
	RALPH		BEAR BUTTE		OKATON	
	88	3-YR	88	3-YR	88	3-YR
VARIETY	BU/AC					
ABILENE	23*	.	27*	.	26	.
AGASSIZ	22*	35*	14	37	12	.
ARAPAHOE	19	.	23*	.	24	.
ARKAN	.	.	.	.	11	.
BENNETT	23*	29*	20	43*	28	.
BOUNTY 205	5	17*	15	.	18	.
BOUNTY 301	10	21*	13	.	16	.
BRULE	21*	31*	23*	44*	23	.
CENTURA	19	30*	26*	49*	25	.
CENTURK 78	21	28*	19	45*	19	.
CODY	19	.	21	.	18	.
COLT	25*	31*	23*	46*	25	.
DAWN	16	24*	19	40	20	.
DODGE	17	.	23*	.	25	.
LANCOTA	15	.	17	37	14	.
NORKAN	14	.	20	.	26	.
NORWIN	15	34*	15	.	11	.
QUANTUM 542	27*	.	20	.	24	.
QUANTUM 562	22*	.	22	.	28	.
QUANTUM 568	21	.	19	46	.	.
REDLAND	23*	.	26*	.	21	.
RODEO	19	.	18	.	18	.
ROSE	17	33*	17	44*	15	.
ROUGHRIDER	16	33*	15	41	11	.
SAGE	20	33*	20	48*	25	.
SCOUT 66	20	31*	23*	44*	24	.
SEWARD	22*	.	14	.	10	.
SIOUXLAND	24*	31*	24*	51*	29	.
TAM 107	22*	29*	27*	.	40	.
THUNDERBIRD	19	29*	18	47*	23	.
LOCATION:						
TEST AVERAGE-	17**	30	20	44	-	.
TEST LSD(5%)-	5$	NS#	5	7	-	.

* A VARIETY IN THE TOP YIELDING GROUP WITHIN A LOCATION.
** TEST AVERAGE-INCLUDES ALL VARIETIES AND EXPERIMENTAL LINES; HOWEVER, ONLY VARIETIES ARE REPORTED.
$ TEST LSD(5%)- SEE YIELD COMMENTS FOR EXPLANATION.
# NS- INDICATES YIELD DIFFERENCES AMONG VARIETIES WITHIN A LOCATION ARE NONSIGNIFICANT.

Characteristics Table—Winter Rye

CHARACTERISTICS OF WINTER RYE VARIETIES

VARIETY	ORIGIN -YEAR	RELATIVE TIME IN HEADING (DAYS)	STRAW STRENGTH	STATE-WIDE AVERAGES TEST WEIGHT (LB/BU)	HEIGHT (INCHES)	86-88 YIELD (BU/AC)	1988 YIELD (BU/AC)	WINTER HARDINESS
FREDERICK	SD-84	0	POOR	54	67	49	42	EXCELLENT
MUSKETEER	CAN-80	0	POOR	53	68	49	41	EXCELLENT
PRIMA	CAN-84	0	FAIR	52	68	48	42	POOR
RYMIN	MN-72	0	FAIR	53	66	51	40	POOR
CHULIPAN	PVT	6	POOR	50	66	51	39	POOR

* PLANT VARIETY PROTECTION - TO BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED.
\# S = SUSCEPTIBLE, MS = MODERATELY SUSCEPTIBLE, MR = MODERATELY RESISTANT , R = RESISTANT.

Yield Table—Winter Rye

WINTER RYE ONE- AND THREE-YEAR AVERAGE YIELDS AT VARIOUS LOCATIONS IN SOUTH DAKOTA

	LOCATION							
	BROOKINGS		WATERTOWN		DAY CO.		REDFIELD	
VARIETY	88	3-YR	88	3-YR	88	3-YR	88	3-YR
	BU/AC							
CHULIPAN	42*	.	33	.	24*	.	58*	.
FREDERICK	46*	.	36*	.	25*	.	62*	.
MUSKETEER	33*	.	39*	.	27*	.	67*	.
PRIMA	45*	.	36*	.	26*	.	62*	.
RYMIN	40*	.	31	.	25*	.	64*	.
LOCATION:								
TEST AVERAGE-	41**	.	35	.	26	.	63	.
TEST LSD(5%)-	NS$,#	.	4	.	NS	.	NS	.

* A VARIETY IN THE TOP YIELDING GROUP WITHIN A LOCATION.
** TEST AVERAGE-INCLUDES ALL VARIETIES AND EXPERIMENTAL LINES; HOWEVER, ONLY VARIETIES ARE REPORTED IN THE TABLE.
$ TEST LSD(5%)- SEE YIELD COMMENTS FOR EXPLANATION.
\# NS- INDICATES YIELD DIFFERENCES AMONG VARIETIES WITHIN A LOCATION ARE NONSIGNIFICANT.

ADDITIONAL COMMENTS--DURUM WHEAT ● ● ●

VIC-good yield potential and straw strength; strong gluten; some resistance to Hessian fly.

LLOYD-a semidwarf with good straw strength and strong gluten; low test weight.

LAKER-a new late variety marketed by Seed Tec. Good yield potential.

MONROE-a new variety from North Dakota. Earliness should allow it to perform well in South Dakota. Similar to Vic.

FJORD-a new variety from NAPB and marketed by AgriPro. A strong gluten type; performance similar to Vic.

RENVILLE-released from North Dakota in 1988. Good yield potential and disease resistance.

STOCKHOLM-a new semidwarf variety from NAPB and marketed by Agripro. A strong gluten type; performed well compared to other semidwarf's.

ADDITIONAL COMMENTS--BARLEY ● ● ●

GLENN-an approved malting variety with good yield potential and better straw strength than Morex and Larker.

PRIMUS II-most popular feed variety in the state; smooth awn enhances suitability as a forage compared to other varieties.

BOWMAN-a two-row barley with a protein content similar to Primus II, slightly better test weight, and slightly shorter height than

Primus II. A feed barley with excellent yield stability. Smooth awn enhances suitability as a forage.

MOREX-most popular malting variety in state; only fair straw strength; yields and kernel plumpness have been exceeded by newer varieties.

HAZEN-a variety with a protein content and height similar to Larker; test weight slightly lower than Larker but similar to other new lines. A feed barley with good yield stability.

LARKER-a popular malting variety; only fair straw strength and yield potential.

GALLATIN-a two-row feed barley released from Montana in 1987. Good yield potential in western South Dakota.

AZURE-a blue aluerone variety which greatly limits malting potential for South Dakota producers; good yield stabililty and good yield potential as a feed and forage barley.

ROBUST-a new malting barley with good yield potential and straw strength.

B1602-a new variety released by Busch Agricultural Resources Inc. Presently undergoing malting evaluation

ADDITIONAL VARIETY COMMENTS-- ● ● ●
HARD RED SPRING WHEAT

ALEX-medium yield potential; a beardless variety with medium straw strength but high protein content.

AMIDON-new release from North Dakota. Best area of adaption appears to be in the Western production areas. High protein.

ANGUS-intermediate yield potential compared to other varieties with good protein; popular in the north-central and central regions of the state.

BUTTE 86-a 1986 release from North Dakota. When compared to Butte, it has better rust resistance, protein and yield potential. Good yield stability under drought conditions.

CELTIC-a new variety from NAPB and marketed by Agripro. Good yield potential and protein levels. Compared to Guard, about 1 lb. lower in test weight.

CHALLENGER-a semidwarf variety marketed by Sexauer; test weight about 1 lb lower than Butte; low protein content. Best adapted to Western SD.

GUARD-resistant to Hessian fly; good yield potential and stability with a wide area of area of adaptation; medium-low protein.

LEN-a popular variety with good straw strength; a high quality wheat with high protein and a very good kernel type but lower yield potential.

LEO 747-a private release of unknown origin; moderately susceptible to both leaf and stem rust.

MARSHALL-excellent yield potential; yield stability adequate but late; low protein.

NORDIC-from NAPB and marketed by Agripro; good yield potential and low protein.

NORSEMAN-variety marketed by Discount Farm Center, Inc.; a late semidwarf. Appears to be best adapted to eastern South Dakota, but low test weight.

PROSPECT-a new variety released from SDSU in 1988. Good yield potential, yield stability and straw strength. Medium to low protein. Good yield stability under drought conditions.

SHIELD-released from SDSU in 1987. About 1 to 2 days earlier than Guard. Excellent yield potential when harvested on time, but may shatter; resistant to Hessian fly.

STOA-good yield potential and fair stability; straw strength is questionable but should be adequate for most areas; test weight about 2 lbs lower than Butte; good protein; slightly taller than Butte.

TELEMARK-a new variety from NAPB and marketed by Agripro; good protein.

WHEATON-semidwarf variety with excellent yield potential; slightly earlier than many other varieties developed in Minnesota; low test weight and protein.

2369-good yield potential and stability in eastern South Dakota; medium-low protein and good standability; a Pioneer Hi-bred, International Inc. release.

2375-a 1988 release from Pioneer with medium early maturing; good yield in 1988 the only year tested. Good yield stability under drought conditions.

2385-a release from Pioneer Hi-Bred, Int'l., Inc. with early maturing, good protein but relatively low yield in 1987, 1988. Performance was better than 1987.

ADDITIONAL COMMENTS--OATS ● ● ●

KELLY-a medium-tall, early variety with white kernels and high test weight. Bred for early oat forage and for the race horse oat market.

PRESTON-an early variety with a high protein content and good potential for on-farm feed.

WEBSTER-an early multiline blend variety; good yield stability; moderately resistant to crown rust. Good yield stability under drought conditons.

NODAWAY 70-an early variety with plump, white kernels and high test weight; major weaknesses include poor straw strength and rust resistance.

BURNETT-a popular variety with large ivory kernels; poor straw strength and poor crown rust resistance.

DON-a new early white oat from Illinois. Exhibits a good yield, yield stability, and test weight; good crown rust resistance and barley yellow dwarf (BYD) virus resistance. Good yield stability under drought conditions.

HAZEL-a new oat from Illinois with strong straw and good combination of yield, yield stability, and test weight; good barley yellow dwarf (BYD) virus resistance. Good yield stability under drought conditions.

HYTEST-a new light cream colored oat from SDSU with a very high test weight potential.

LANCER-a good milling oat with high protein and good yield potential.

OGLE-excellent yield potential but low test weight; susceptible to crown rust; yellow kernels and medium maturity. Good yield stability under drought conditions.

OTEE-a high protein variety with excellent feed potential.

BENSON-best adapted to northern parts of the state.

LYON-a tall, late variety susceptible to crown rust resistance.

WRIGHT-a tall, late variety with small tan kernels and very high test weight.

MONIDA-a new release from Montana and Idaho. Susceptibility to diseases may limit its production to western South Dakota where it has exhibited an excellent yield potential.

MOORE-a tall, late variety moderately susceptible to crown rust; good forage oat potential and high yield potential.

SANDY-a new strong straw and light cream colored oat from SDSU.

STEELE-a new late variety with excellent crown rust resistance; good test weight and yield potential.

PORTER-a medium-late variety with good crown rust resistance and good yield potential; low protein content; straw strength is a problem under some high yield environments.

PROAT-a variety from Minnesota; a medium-late variety with a high protein potential.

STARTER-an oat from Minnesota; an early variety with strong straw and very good test weight. Susceptible to stem and crown rust.

SMALL GRAIN VARIETY RECOMMENDATIONS FOR 1989 (continued)

Barley

Recommended (Variety-area)

Bowman	Statewide
Glenn	B1,B2,B3,C1+,D1,D2,D3
Hazen	B3,B4,C1,D1,D2,D3
Robust	B3,B4,C1,D1,D2,D3

Acceptable/Promising (Variety-area)

Azure ~~	B1,B2,B3
Morex	B2,C1,D1,D2,D
Primus II	Statewide

(Glenn, Morex, Azure, and Robust are approved for malting)

Winter Wheat

Recommended (Variety-area)

Brule	B3,B4,C2,C3
Dawn	B3,B4,C2,C3
Rose	##Statewide
Sage	B1*,B3,B4,C2,C3
Siouxland @	B1*,B3,B4,C2,C3
Thunderbird	B1#,B3,B4,C2,C3

Acceptable/Promising (Variety-area)

Abilene	B1*,B3,B4,C2,C3
Agassiz	B1,B2,B3,C1,D1,D2,D3
Bounty 205	B4,C2,C3
Centura	B1*,B3,B4,C2,C3
Colt	B3,B4,C2,C3
Nell	B3,B4,C2,C3
Redland	B3,B4,C2,C3
Roughrider	B1,B2,C1,D1,D2,D3
Tam 107	B3*,B4,C2,C3

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* Southern counties of this area
\+ Northern counties of this area
@ U.S. Plant Variety Protection applied for and/or received; seed sales of these varieties are restricted to classes of certified seed.
\# Certified seed of these varieties can only be obtained from Canada.
Stubble planting only in B1,B2, C1,D1,D2.
** Not suggested for Deuel, Brookings, Moody, or Minnehaha counties.
~~ Recommended for feed barley because blue aluerone limits marketability as a malting variety.
~ May shatter if harvest is delayed.

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