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## 1970 Small Grain Variety Trials

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### Recommended Citation

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# 1970 SMALL GRAIN VARIETY TRIALS

PLANT SCIENCE DEPARTMENT  
AGRICULTURAL EXPERIMENT STATION  
SOUTH DAKOTA STATE UNIVERSITY, BROOKINGS



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## Standard Variety Small Grain Trials

1966-1970

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Variety trials with small grains are conducted annually at selected sites throughout South Dakota. While all entries have merit, the degree of good performance in one trait or another varies from one location or year to another. The 1970 trials included varieties currently being grown by farmers, newer releases not yet widely used, and experimental strains being evaluated for possible release. Included herewith are grain yields, five-year averages available and supplemental data. The trials are conducted under supervision of the Crop Performance Testing Activity, Agricultural Experiment Station.

### Location of Trials

Climate, soil and topography generally define certain areas or boundaries across the state but these are not absolute. Small grains are more widely adapted than are row crops in South Dakota. Testing only at Brookings is insufficient so trials are conducted at up to seven locations with some crops. The locations and dates of seeding and harvesting are presented in Table 1.

### Weather and Climatic Conditions

Fall seeding was accomplished from September 3 through September 17. Fall seeding was early in the southern areas and the open fall season of 1969 permitted grassy weed growth ideal for the spread of wheat mosaic. Moisture was generally adequate and coupled with a late freeze-up favored fall growth in most fall sown trials. Spring precipitation, especially in April, was above normal and delayed seeding until late April and early May. The cool, wet weather that followed retarded germination and growth and caused stand reductions at some sites.

In the eastern and northern portions of the state precipitation was normal or better and temperatures were below normal until mid-June. Elsewhere, precipitation

The assistance of the following individuals is acknowledged: R. S. Albrechtsen, P. B. Price, D. L. Reeves and D. G. Wells of the Plant Science Department; Substation supervisors Albert Dittman, Jake Fredrikson, Harry Geise, Frank Holmes, Quentin Kingsley, Burton Lawrensen and Herb Lund; and farmer-cooperators Floyd Sargent, Lavon Shearer and Joe Wunder.

TABLE 1. LOCATION OF TRIALS AND DATES OF SEEDING AND HARVESTING, 1970

County	Location and Post Office	Date Seeded	Date Harvested
<u>Barley</u>			
Brookings	Agronomy Farm, Brookings	May 2	as ready
Codington	Northeast Research Farms, Watertown	May 7	July 31
Hyde	Central Substation, Highmore	April 27	July 21
McPherson	North Central Substation, Eureka	May 5	July 30
Pennington	O. G. and Lavon Shearer Farm, Quinn	May 4	July 16
Perkins	Joe Wunder Farm, Bison	May 4	July 27
<u>Flax</u>			
Brookings	Agronomy Farm, Brookings	May 8	August 20
Codington	Northeast Research Farms, Watertown	May 7	August 18
Hyde	Central Substation, Highmore	April 27	August 21
<u>Oats</u>			
Brookings	Agronomy Farm, Brookings	April 28	as ready
Clay	Southeast Research Farm, Beresford	April 10	July 15
Codington	Northeast Research Farms, Watertown	May 7	July 31
Hyde	Central Substation, Highmore	April 27	July 21
McPherson	North Central Substation, Eureka	May 5	July 30
Pennington	O. G. and Lavon Shearer Farm, Quinn	May 4	July 28
Perkins	Joe Wunder Farm, Bison	May 4	July 27
<u>Spring Wheat</u>			
Brookings	Agronomy Farm, Brookings	April 28	August 3
Codington	Northeast Research Farms, Watertown	May 7	August 5
Hyde	Central Substation, Highmore	April 27	July 24
McPherson	Northcentral Substation, Eureka	May 5	August 6
Pennington	O. G. and Lavon Shearer Farm, Quinn	May 4	July 28
Perkins	Joe Wunder Farm, Bison	May 4	August 10
<u>Winter Wheat</u>			
Bennett	Floyd Sargent Farm, Martin	Sept. 9	mosaic
Clark	Northeast Research Farms, Garden City	Sept. 3	poor stand
Clay	Southeast Research Farm, Beresford	Sept. 17	July 15
Hyde	Central Substation, Highmore	Sept. 10	July 17
Lyman	South Central Research Farm, Presho	Sept. 11	Hail
Pennington	O. G. and Lavon Shearer Farm, Quinn	Sept. 9	July 16
Perkins	Joe Wunder Farm, Bison	Sept. 8	July 27
<u>Rye</u>			
Brookings	Agronomy Farm, Brookings	Sept. 16	July 20
Codington	Northeast Research Farms, Watertown	Sept. 3	poor stand
Clay	Southeast Research Farm, Beresford	Sept. 17	July 15
Hyde	Central Substation, Highmore	Sept. 10	July 17
Lyman	South Central Substation, Presho	Sept. 11	Hail

was limited after the month of May. By mid-June warm or hot winds were frequent at many sites and precipitation became limiting or critical. These stresses affected the yields and quality of the grains produced, especially the spring seeded materials.

Barley lodged badly at Brookings because of excessive growth caused by high rainfall in May and June and because of high soil fertility. At other locations only the weaker varieties lodged.

Trials were abandoned at Garden City, Watertown, Presho and Watertown. All were winter grain trials. Poor survival was the cause at Garden City and Watertown, severe streak mosaic at Martin, and hail damage at Presho.

A knowledge of the conditions under which the crop was grown, Tables 2 and 3, also help one to better understand why yields differed in any one year.

TABLE 2. RESULTS OF LABORATORY ANALYSIS OF SOIL SAMPLES TAKEN PRIOR TO SEEDING SMALL GRAIN TRIALS AND FERTILIZER APPLIED FOR THE 1970 CROP YEAR

Location	Soil Classification	Laboratory analysis				Fertilizer applied		
		Percent Organic Matter	lb/A		pH	Method	lb/A	
			P	K			N	P205
Beresford	Kranzburg SiCLL	4.1	37	514	6.5	Disced in	40	30
Bison	Morton SiL	2.0	24	496	6.8	Disced in	39	44
Eureka	Williams L	3.8	140	682	7.2	Disced in	30	20
Highmore	Williams L	2.5	38	496	6.5	Disced in	40	30
Quinn	Morton CL	2.1	20	567	6.7	Disced in	39	44
Watertown	Kranzburg SiL	4.5	30	327	6.8	Plowed down	40	30

#### Planting and Harvesting Procedures

Field preparation, fertility level and rotation sequence are generally the same each year at the substations and were in accordance with recommended practices. The trials at Bison, Martin and Quinn were on summer fallow. The trials at each location were seeded in a randomized block design. These were four replications of oats, rye and winter wheat, and five of barley, flax and spring wheat.

All rod-row plots were 14 feet long in rows one foot apart. The two center rows were trimmed of border effect to 12 feet just before harvest for yield determinations. A small sickle-bar mower, equipped with catching hopper, was used to cut the grain. Any lodged grain was gleaned from the harvested area prior to bagging the sample. The samples were returned to the Main Station, dried when necessary and stored in a pole-shed until threshed in a Vogel-type nursery plot thresher. Following threshing the samples were cleaned, weighed for yield determinations and bushel weights recorded.

TABLE 3. TEMPERATURE AND PRECIPITATION DATA FOR THE 1970 SMALL GRAIN GROWING SEASON OF SOUTH DAKOTA

Location	Month	Temperature			Precipitation		
		Mean Average	Departure from normal	Ave. Departure	Monthly total	Departure from normal	Total Departure
			Degrees F.			Inches	
Bison*	April	38.7			6.15		
	May	55.4			4.37		
	June	67.3			3.28		
	July	73.3			2.19		
	Aug.	72.3			1.61		
	Last freeze	May 1 - 28°			17.60		
Eureka*	April	40.9	-2.7		2.03	0.68	
	May	55.6	-0.5		2.89	0.30	
	June	67.8	2.8		3.95	0.12	
	July	72.4	0.0		2.51	0.06	
	Aug.	71.6	0.9	0.1	0.68	-1.73	-0.57
	Last freeze	May 5 - 30°			12.06		
Highmore* 1 W	April	42.7	-2.7		3.69	1.95	
	May	58.9	1.7		1.54	-0.79	
	June	70.1	3.3		3.28	-0.26	
	July	74.7	0.2		2.64	0.66	
	Aug.	74.1	1.3	0.7	1.57	-0.47	1.09
	Last freeze	May 2 - 27°			12.72		
Centerville* 6 SE	April	48.4			2.74		
	May	63.6			3.65		
	June	71.7			2.48		
	July	76.0			1.47		
	Aug.	75.2			0.85		
	Last freeze	May 2 - 25°			11.19		
Brookings* 2 NE	April	41.8	-3.4		2.86	1.09	
	May	56.4	-1.2		5.66	2.87	
	June	66.8	-0.3		4.22	0.27	
	July	71.0	-2.2		2.44	0.29	
	Aug.	68.5	-2.7	-2.0	1.24	-1.73	2.79
	Last freeze	May 4 - 31°			16.42		
Watertown 15 N	April	42.5			2.00		
	May	58.0			1.88		
	June	68.7			2.03		
	July	73.0			2.29		
	Aug.	71.0			1.00		
	Last freeze	May 1 - 30°			9.20		

\* Based upon reports of Monthly Climatological Data, U. S. Dept. of Commerce, ESSA, Office of State Climatologist, State University, Brookings, SD, 57006

### Measurements of Performance

The yield reported for each entry in the trials is the average bushels per acre obtained from grain weights of an equal number of replicatons. Entries of equal potential may have yielded differently because of variations in soil fertility, slope or stand. Mathematical determinations have been made to determine whether yield differences were caused by variations in environment or were true varietal differences.

Duncan's Multiple Range Test (5% level) was used to determine whether significant differences occurred. The line drawn between any two entry means in the 1970 yield data indicates that there is no difference between the entries above that line at the 5% level of probability.

### Discussion of Results

A more accurate estimation of a variety's capabilities under variable conditions is obtained from several years data. The 1970 and available data for four previous years are presented in tables following the text. Varietal characteristics for materials currently being grown can be found in tables for each crop at the back of this circular.

Oats: The effect of relative maturity on performance varied between test sites. While 1970 weather appeared to favor early and mid-season oats, some late varieties did well. Orbit is late. It had high yields at many sites but low test weights.

Barley: The barley trials were often seriously affected by drought and heat. These conditions lowered yields and especially test weights. Larker has been the best of the barleys presently acceptable for malting.

Flax: The flax trials were enlarged to include more experimental lines. All recommended flax varieties are resistant to races of rust in the area. When late seeding is necessary, the grower should use an early variety. In early plantings, Nored, which is late, has done as well as Summit, which is early.

Rye: The newer varieties, Cougar and Pearl, have performed quite well in the past two years at most locations. Caribou and Antelope also yielded well but seed is scarce. Stands were often poor because of inviable seed. Varieties having poor stands are indicated in the rye tables.

Durums: Because of their lateness the durums were hurt by heat and drought.

Winter Wheat: Lancer and Scout 66 have the better yield record over a period of years. Gage is very satisfactory in the southern areas of the state and the lower areas near the Black Hills. If winter killing is a problem, the hardier varieties, Hume and Winoka, should be considered.



Spring Wheat: The spring bread wheats were either of standard height or were semi-dwarfs. At the four highest yield locations, the best semi-dwarf was usually 2 to 4 bushels ahead of the best tall variety. At two of the three lower yield sites the best tall entry was 1-2 bushels ahead of the best semi-dwarf while at the third site yields were the same. It isn't known how these comparisons would have been if higher yields had been possible although some tests in other years have shown that some semi-dwarfs, but only some, have a better potential for yield than present tall varieties.

Semi-dwarfs do have the advantage of resisting lodging under lush growth conditions. At least Era among the semi-dwarfs and Neepawa among the tall varieties have grain of questionable quality.

The varieties recommended for South Dakota in 1971 and their specific areas of adaptation are shown on the back cover of this circular.

TABLE 4. STANDARD VARIETY SPRING-SEEDED WHEAT TRIALS, BROOKINGS, 1966-1970

Variety	Average Yield, Bushels per Acre						Date $\frac{1}{2}$ headed June	1970 Test Wt. lb/bu
	1966	1967	1968	1969	1970	1966-70		
<u>Spring wheats</u>								
Polk	40.1	36.5	25.2	23.4	36.9	32.4	25	61.0
Manitou	41.7	46.4	18.6	24.5	35.9	33.4	24	59.0
Waldron			22.2	23.9	35.8		24	59.5
Fortuna	40.3	39.7	21.9	a	33.6	33.9	23	59.5
Sheridan	38.6	42.9	24.3	22.9	32.6	32.3	27	59.5
Chris	36.8	41.3	19.0	26.3	32.0	31.1	24	59.5
RL 4220					31.5		26	60.0
Neepawa				20.0	29.8		23	57.0
Thatcher	39.0	34.7	21.1	14.1	17.0	25.2	23	53.0
<u>Durums</u>								
Wells	47.0	45.9	29.1	25.2	37.8	37.0	28	61.0
Leeds	46.9	48.2	24.9	21.6	35.3	35.4	26	62.0
Hercules		45.7		24.4	31.2		25	62.0
DT 316					30.7		7/3	59.0
<u>Semi-dwarfs, etc.</u>								
Era					38.7		28	58.5
WS 1809					36.3		20	58.0
WS 1812				22.1	34.9		23	60.0
Wisc. 271					34.6		25	57.5
DEK. Bonanza					34.1		23	57.5
678-1-6-9					33.1		23	56.0
Fletcher					32.7		29	57.0
Resner Triticale					23.4		29	42.5
Mean Yield					32.7			
Duncans (.05)					7.0			

<sup>a</sup> The seed used was low in germination.

TABLE 5. STANDARD VARIETY BARLEY TRIALS, BROOKINGS, 1966-1970

Variety	Average Yield, Bushels per Acre						1970* Test Wt. lb/bu
	1966	1967	1968	1969	1970*	1966-70	
Primus II				54.2	41.4		42.0
Bonanza					40.4		40.0
Larker	66.1	81.6	50.7	55.1	37.5	58.2	42.0
Paragon			44.8	52.5	37.4		40.0
Firlbecks III		74.1	37.0		36.7		44.0
Conquest	73.9	84.1	47.7	48.6	36.0	58.1	39.0
Dickson	70.7	80.3	50.6	47.6	34.2	56.7	37.0
Liberty	71.4	73.7	46.5	47.2	31.1	54.0	39.5
Mean Yield					36.8		

\*Field was very fertile. Generous quantities of moisture combined with high fertility permitted luxuriant growth with subsequent severe, early lodging of plants.

TABLE 6. STANDARD VARIETY OAT TRIALS, BROOKINGS, 1966-1970

Variety	Average Yield, Bushels per Acre						1970
	1966	1967	1968	1969	1970	1966-70	Test Wt. lb/bu
Wyndmere	100.3	103.7	43.6	49.6	81.6	75.8	35.0
SD 124					81.0		34.0
Holden	104.1	112.0	44.3	51.5	78.5	78.1	35.0
Brave	105.3	123.1	34.6	35.3	77.8	75.2	34.0
Orbit	112.3	127.4	67.5	62.4	76.6	89.2	31.0
Portal	98.5	121.8	43.0	60.9	76.5	80.1	36.0
SD 1541					76.2		35.0
Nodaway 70					76.0		36.0
Burnett	99.8	110.8	55.4	41.9	75.7	76.7	35.5
Froker				62.4	75.5		36.0
Kelsey		115.5	57.2	42.3	75.4		34.0
Multi M 70					74.7		36.0
Sioux	118.0	109.0	62.1	32.0	74.3	79.1	32.0
Clintford	86.2	110.3	40.1	51.7	74.2	72.5	37.0
Dupree	96.7	111.8	39.7	41.9	72.4	72.5	34.0
Otter				54.8	71.1		35.5
Kota	71.8	109.6	62.8	47.6	70.9	72.5	36.0
Dawn	86.1	108.9	24.8	41.9	70.2	66.4	35.0
Santee	75.8	114.9	45.8	43.1	69.8	69.9	36.0
Clintland 64	75.8	121.8	49.6	34.1	69.4	70.1	35.0
Garland	100.0	100.3	46.8	48.9	67.8	72.8	36.0
Lodi	113.4	105.5	46.2	35.8	65.8	73.3	31.5
O'Brien	103.0	101.8	33.3	42.8	65.2	69.2	37.0
Pettis			35.4	62.6	63.6		36.5
Jaycee	94.7	109.4	39.1	45.4	62.8	70.3	34.0
Multi E 70					33.0*		36.0
Mean Yield					71.4		

\* Extensive bird damage

TABLE 7. STANDARD VARIETY FLAX TRIALS, BROOKINGS, 1966-70

Variety	Average Yield, Bushels per Acre						1970
	1966	1967	1968	1969	1970	1966-70	Test Wt. lb/bu
Redwood 65	11.9	33.1	20.0	21.8	23.3	22.0	54.0
Summit	13.5	30.6	18.5	28.9	22.0	22.7	54.0
Nored	14.7	28.3	21.8	27.6	21.8	22.8	54.0
Linott		30.3	21.0	24.6	21.3		54.0
B-5128	12.5	28.8	19.3	20.4	21.3	20.5	54.0
SD 1374					21.2		54.0
Redwood	15.6	28.8	19.7	23.4	21.1	21.7	54.0
Noralta	15.6	32.8	17.6	24.5	21.0	22.3	54.0
Norland	12.2	26.5	17.9	15.4	20.9	18.6	54.0
Foster				25.6	20.8		54.0
CI 2444		29.7	19.3	25.8	20.6		54.0
SD 1439					20.4		54.0
Norstar			18.3	24.4	20.2		54.0
SD 2056					20.0		54.0
SD 669					20.0		55.0
SD 1431					19.8		54.0
SD 1349					19.8		54.0
Bolley	13.6	13.6	19.8	23.1	19.7	17.9	53.0
SD 128					19.4		54.0
Windom	18.3	29.8	17.9	24.2	19.3	21.9	54.0
Mean Yield					20.7		

TABLE 8. STANDARD VARIETY RYE TRIALS, BROOKINGS, 1964-1970

Variety	Average Yield, Bushels per Acre						1970
	1964	1967	1968	1969	1970	1964-70	Test Wt. lb/bu
Von Lochow		52.0	38.5	28.4	69.2		56.0
Pearl			37.7	27.4	58.5		54.2
Petkus		51.0	32.7	58.0	57.5		53.5
Zelder		44.3	32.7	46.1	56.7		54.0
Elk	35.5	54.7	28.3	42.6	52.4	42.7	54.0
SD 1					51.7		54.5
Adams		38.0	30.4	34.6	46.5		54.0
Caribou	30.7	37.1	31.1	19.7	46.0	32.9	53.8
Dominant		56.2	34.0	34.4	43.0		52.5
Cougar				54.2	42.0		52.2
Dakold		33.0	34.9	32.4	40.1		54.5
Sangaste <sup>a</sup>		46.9	24.7	34.9	37.3		52.1
Antelope <sup>a</sup>	25.2	36.5	38.0	50.6	37.1	37.5	53.2
Frontier <sup>a</sup>		41.6	42.7	35.4	36.8		54.2
Mean Yield					48.2		

<sup>a</sup> Seeding rates were adjusted to compensate for low germination, but this failed to give satisfactory results.

TABLE 9. STANDARD VARIETY SPRING-SEEDED WHEAT TRIALS, WATERTOWN, 1966-1970

Variety	Average Yield, Bushels per Acre						1970
	1966	1967	1968	1969	1970	1966-70	Test Wt. lb/bu
<u>Spring wheats</u>							
Polk	29.4	38.1	33.0	29.8	21.0	30.3	59.5
Manitou	23.4	41.3	31.8	33.8	20.5	30.2	55.5
Waldron			37.5	25.8	19.7		55.0
Fortuna	19.7	44.1	33.9	<sup>a</sup>	18.6	29.1	56.6
Chris	23.3	39.7	34.3	32.3	18.3	29.6	55.5
RL 4220					18.1		55.5
Neepawa				28.9	17.7		54.5
Sheridan	18.2	35.8	33.8	31.6	16.9	27.3	55.5
Thatcher	25.1	37.6	17.5	17.9	9.1	21.4	54.5
<u>Durums</u>							
Hercules		43.8		30.1	18.5		58.5
Leeds	29.0	44.6	33.5	25.3	18.1	30.1	60.5
Wells	30.1	43.3	32.6	29.7	16.9	30.5	58.0
DT 316					15.5		57.0
<u>Semi-dwarfs, etc.</u>							
WS 1809					21.0		55.0
678-1-6-9					20.9		54.5
Wisc. 271					20.0		55.5
Era					20.0		56.5
DEK Bonanza					18.3		54.0
WS 1812				30.0	18.2		55.0
Fletcher					13.1		55.5
Resner Triticale					7.2		42.5
Mean Yield					17.5		
Duncans (.05)					3.1		

<sup>a</sup> The seed used was low in germination.

TABLE 10. STANDARD VARIETY BARLEY TRIALS, WATERTOWN, 1966-1970

Variety	Average Yield, Bushels per Acre						1970
	1966	1967	1968	1969	1970	1966-70	Test Wt. lb/bu
Paragon			43.4	74.7	28.8		42.0
Bonanza					28.5		41.0
Liberty	31.4	70.8	55.2	62.0	27.5	49.4	43.0
Primus II				75.9	26.9		39.0
Conquest	25.8	66.7	43.1	69.9	26.4	46.4	39.0
Dickson	14.7	48.5	39.6	68.3	24.2	39.1	42.0
Larker	24.2	61.2	52.7	72.4	23.6	46.8	42.0
Firlbecks III		59.5	41.4		20.9		46.0
Mean Yield					25.9		

TABLE 11. STANDARD VARIETY OAT TRIALS, WATERTOWN, 1966-1970

Variety	Average Yields, Bushels per Acre						1970
	1966	1967	1968	1969	1970	1966-70	Test Wt. lb/bu
SD 1541					70.3		35.5
Orbit	51.4	104.7	65.1	113.5	69.1	80.8	35.0
Santee	53.0	101.0	55.0	88.0	66.6	72.7	37.0
SD 124					65.7		37.5
Holden	54.5	83.3	77.7	96.1	65.3	75.4	38.0
Garland	52.5	76.4	54.7	89.9	64.1	67.5	37.5
Portal	54.2	101.9	64.7	113.2	62.2	79.2	37.5
Burnett	60.3	101.7	83.2	106.8	60.6	82.5	38.0
Nodaway 70					59.8		38.0
Otter				113.3	59.7		34.0
Froker				111.5	59.4		36.0
Pettis			60.9	104.0	58.1		38.0
Clintford	58.8	104.1	72.8	98.8	57.2	78.3	39.0
Sioux	51.4	99.4	68.4	125.9	56.9	80.4	34.5
Multi M 70					56.7		38.0
Jaycee	47.1	100.1	69.4	96.8	56.6	74.0	37.0
Lodi	52.0	83.5	65.0	100.4	56.6	71.5	32.0
Brave	47.1	99.6	66.9	110.6	56.1	76.1	36.5
Dupree	48.1	91.0	75.6	104.3	56.0	75.0	38.5
Kota	48.5	99.0	76.5	126.7	52.8	80.7	39.0
Kelsey		101.9	64.1	119.4	51.2		34.0
O'Brien	48.6	104.9	62.4	99.4	50.3	73.1	39.0
Wyndmere	48.7	80.7	65.6	107.6	50.2	70.6	35.5
Dawn	41.9	86.8	54.1	90.7	48.5	64.4	35.0
Clintland 64	58.8	104.1	72.8	104.8	46.1	77.3	38.0
Multi E 70					35.2		39.0
Mean Yield					57.3		

TABLE 12. STANDARD VARIETY FLAX TRIALS, WATERTOWN, 1966-1970

Variety	Average Yield, Bushels per Acre						1970 Test Wt. lb/bu
	1966	1967	1968	1969	1970	1966-70	
CI 2444		20.8	19.8	20.0	14.5		54.5
Summit	17.2	21.7	18.5	22.8	13.2	18.7	54.0
SD 1439					13.1		54.0
Redwood 65	16.8	22.0	19.7	20.7	12.9	18.4	54.0
SD 2056					12.8		55.0
B-5128	14.8	21.2	16.8	20.1	12.7	17.1	54.0
Linott		19.2	21.7	21.2	12.5		54.5
SD 1349					12.1		53.5
Foster				23.2	12.1		55.0
Noralta	15.1	23.3	16.7	19.0	12.0	17.2	54.5
SD 669					11.9		54.0
Windom	16.6	18.2	18.3	18.8	11.9	16.8	54.5
SD 126					11.9		54.0
Norstar			20.9	18.5	11.8		53.5
SD 1431					11.6		54.5
Nored	18.1	19.5	21.8	21.8	11.6	18.6	54.0
Norland	13.8	22.4	18.4	17.0	11.6	16.6	53.0
Bolley	15.7	20.7	19.5	13.7	11.0	16.1	54.0
Redwood	16.3	21.6	19.4	21.2	10.5	17.8	55.0
SD 1374					9.5		53.5
Mean Yield					12.1		

TABLE 13. STANDARD VARIETY FLAX TRIAL, HIGHMORE, 1965-1970

Variety	Average Yield, Bushels per Acre						1970 Test Wt. lb/bu
	1965	1967	1968	1969	1970	1965-70	
SD 2056					24.5		54.5
SD 1439					23.7		54.0
Windom	21.2	21.2	23.4	27.6	23.5	23.4	54.5
Summit	23.5	20.5	20.6	26.0	23.2	22.8	53.5
Nored			23.5	22.8	22.9		54.0
Linott		21.2	20.4	28.2	22.9		54.0
SD 669					22.8		53.5
B-5128	20.2	19.7	18.7	25.8	22.6	21.4	54.5
CI 2444			18.6	24.3	22.1		54.0
Redwood	21.0	22.7	19.2	23.7	22.1	21.7	54.0
SD 1431					21.9		54.5
Redwood 65		18.7	20.2	23.9	21.9		53.0
Norstar			19.2	25.0	21.9		53.5
Bolley		21.2	22.9	23.4	21.6		53.0
SD 1374					21.3		54.0
SD 1349					20.6		54.0
Foster				28.2	19.6		54.0
Noralta		20.1	19.3	23.1	19.6		53.5
SD 126					19.5		54.0
Norland	16.3	21.4	18.3	24.0	19.1	19.8	53.0
Mean Yield					21.9		

TABLE 14. STANDARD VARIETY SPRING-SEEDED WHEAT TRIALS, HIGHMORE, 1966-1970

Variety	Average Yield, Bushels per Acre						1970 Test Wt. lb/bu
	1966	1967	1968	1969	1970	1966-70	
<u>Spring wheats</u>							
Waldron			48.7	38.8	29.8		54.5
Neepawa				36.8	28.3		55.5
Fortuna	17.6	53.3	51.1	<sup>a</sup>	26.6	37.1	56.5
Manitou	16.9	48.4	51.3	37.0	26.3	36.0	56.5
Polk	16.0	43.3	47.1	34.1	25.3	33.2	58.0
Sheridan	13.9	41.6	46.6	40.1	23.3	34.5	56.0
Chris	16.2	48.9	46.9	37.1	23.3	34.5	56.0
RL 4220					20.2		55.0
Thatcher	17.3	35.0	38.8	28.9	19.8	28.0	54.0
<u>Durums</u>							
DT 316					26.3		56.0
Leeds	15.8	54.1	56.4	42.7	25.6	38.9	59.5
Hercules		50.7		38.9	24.6		56.0
Wells	15.3	46.0	50.6	45.8	23.2	36.2	57.5
<u>Semi-dwarfs, etc.</u>							
WS 1809					33.1		56.5
WS 1812				34.1	29.9		55.0
Wisc. 271					26.5		52.5
Era					26.4		54.0
678-1-6-9					26.0		51.5
Era					26.4		54.0
DEK Bonanza					23.9		53.0
Fletcher					22.8		52.0
Resner Triticale					21.6		43.0
Mean Yield					25.4		
Duncans (.05)					4.6		

<sup>a</sup> The seed used was low in germination.

TABLE 15. STANDARD VARIETY BARLEY TRIALS, HIGHMORE, 1966-1970

Variety	Average Yields, Bushels per Acre						1970 Test Wt. lb/bu
	1966	1967	1968	1969	1970	1966-70	
Primus II				49.0	49.9		49.0
Larker	26.8	69.5	74.2	60.7	45.9	55.4	45.0
Paragon			69.5	60.2	44.9		42.0
Bonanza					44.8		42.0
Liberty	35.5	71.8	78.3	61.4	42.2	57.8	44.0
Firlbecks III		80.9	62.6		41.1		46.0
Conquest	22.8	71.8	65.2	58.1	40.6	51.7	43.0
Dickson	21.7	61.8	53.4	59.1	30.1	45.2	41.0
Mean Yield					42.4		



TABLE 16. STANDARD VARIETY OAT TRIALS, HIGHMORE, 1966-1970

Variety	Average Yield, Bushels per Acre						1970
	1966	1967	1968	1969	1970	1966-70	Test Wt. lb/bu
Dupree	44.2	89.5	84.4	97.0	66.4	76.3	34.5
Orbit	45.8	92.7	76.8	100.4	64.9	76.1	31.5
Sioux	33.1	76.9	74.5	107.5	62.7	70.9	33.0
Otter				95.1	62.3		34.0
Pettis			93.8	98.6	62.1		38.5
Burnett	48.8	85.3	92.9	96.6	61.3	77.0	35.5
Brave	46.4	92.2	95.7	92.3	61.3	77.6	35.0
SD 124					60.9		34.5
Nodaway 70					60.6		37.5
Santee	51.9	81.2	93.1	89.8	60.4	75.3	36.0
Kota	37.2	69.4	87.4	108.4	57.6	72.0	35.5
SD 1541					57.4		34.0
Portal	44.1	71.7	98.2	98.1	57.3	73.9	35.0
Holden	45.9	62.6	90.4	95.3	56.8	70.2	35.0
Clintford	47.0	92.3	71.5	85.1	56.7	70.5	38.5
Kelsey		79.3	77.5	111.0	56.7		35.5
Garland	43.0	42.0	91.7	84.4	56.1	63.4	36.5
Jaycee	52.7	70.0	93.8	89.1	55.6	72.2	36.5
Lodi	30.8	61.8	79.8	108.6	55.1	67.2	33.0
Wyndmere	44.4	65.2	99.5	87.0	54.1	70.0	33.0
Froker				101.9	53.6		35.0
Clintland 64	43.7	75.8	92.8	72.5	52.2	67.4	33.5
Multi M 70					51.8		35.5
Dawn	37.1	80.3	59.7	86.7	51.0	63.0	34.5
Multi E 70					49.2		38.0
O'Brien	49.8	76.5	86.2	81.0	48.4	68.4	36.5
Mean Yield					57.4		

TABLE 17. STANDARD VARIETY WINTER-WHEAT TRIALS, HIGHMORE, 1965-1970

Variety	Average Yield, Bushels per Acre						1970
	1965	1966	1967	1969	1970	1966-70	Test Wt. lb/bu
Scout	35.4	30.7	44.8	17.7	39.0	33.5	59.7
Trapper			44.8	18.8	35.5		60.5
SD 66171				24.3	35.1		59.7
NB 66425					34.8		59.3
SD 66117-1				27.6	33.7		59.7
Trader			45.4	28.0	32.8		60.3
Gage	29.2	31.3	43.0	18.2	31.5	30.6	59.7
Lancer	39.7	29.7	43.4	18.7	31.1	32.5	60.5
Winoka		26.0	45.0	28.3	30.2		60.0
Scout 66				18.7	29.9		59.7
Hume	33.9	25.5	41.3	20.1	28.1	29.8	58.7
Minter	22.8	25.0	44.9	23.5	27.6	28.8	58.5
Nebred	15.7	30.9	41.0	21.7	26.2	27.1	59.7
Sturdy					22.7		57.5
Froid					22.6		55.7
Guide				18.2	20.8		57.2
Mean Yield					30.1		

TABLE 18. STANDARD VARIETY RYE TRIALS, HIGHMORE, 1966-1970

Variety	Average Yield, Bushels per Acre						1970
	1966	1967	1968	1969	1970	1966-70	Test Wt. lb/bu
Elk	21.8	62.5	33.7	26.2	53.0	39.4	55.3
Adams		42.4	33.6	14.4	49.6		55.7
Von Lochow	34.8	57.8	53.0	17.6	49.3	42.5	56.7
Antelope	70.6	44.6	47.9	25.6	49.0	47.5	56.0
Pearl			41.8	25.0	46.4		54.8
Cougar					45.6		55.2
Petkus		61.2	52.6	33.5	45.4		55.0
Zelder		59.6	58.2	27.3	42.5		56.0
Dominant		65.9	52.3	13.9	41.9		55.2
Dakold		32.9	39.3	21.3	39.8		56.0
SD 1					36.2		55.7
Caribou <sup>a</sup>	23.6	45.5	42.3	11.6	35.2	31.6	55.7
Sangaste <sup>a</sup>		52.9	33.9	19.6	33.7		54.2
Frontier <sup>a</sup>		52.4	48.3	24.9	31.8		56.3
Mean Yield					42.8		

<sup>a</sup> Seeding rates were adjusted to compensate for low germination, but this failed to give satisfactory results.

TABLE 19. STANDARD VARIETY SPRING-SEEDED WHEAT TRIALS, EUREKA, 1966-1970

Variety	Average Yield, Bushels per Acre						1970
	1966	1967	1968	1969	1970	1966-70	Test Wt. lb/bu
<u>Spring wheat</u>							
Fortuna	17.3	40.8	43.8	<sup>a</sup>	22.0	31.0	55.0
Waldron			36.9	35.1	20.9		50.0
Neepawa				39.0	20.0		52.0
RL 4220					16.7		51.0
Manitou	17.0	33.5	35.6	39.0	14.4	27.9	52.5
Chris	14.1	27.2	41.7	39.1	14.1	27.2	52.0
Polk	18.2	28.0	32.8	37.8	14.0	26.2	54.5
Sheridan	15.4	20.0	36.9	36.5	13.8	24.5	51.0
Thatcher	17.1	28.1	26.1	30.0	13.4	22.8	51.0
<u>Durums</u>							
Leeds	16.1	32.3	34.9	42.9	19.1	29.1	58.0
Hercules		32.1		41.4	18.7		56.5
DT 316					17.6		56.5
Wells	14.3	29.0	35.6	45.9	13.9	27.7	53.0
<u>Semi-dwarf, etc.</u>							
WS 1812				31.5	20.3		54.5
WS 1809					20.0		51.5
678-1-6-9					17.5		51.0
DEK Bonanza					17.2		51.0
Wisc. 271					12.7		49.0
Fletcher					11.8		49.5
Resner Triticale					11.1		43.0
Era					11.0		48.0
Mean Yield					16.2		
Duncans (.05)					5.6		

<sup>a</sup> The seed used was low in germination.

TABLE 20. STANDARD VARIETY BARLEY TRIALS, EUREKA, 1966-1970

Variety	Average Yield, Bushels per Acre						1970
	1966	1967	1968	1969	1970	1966-70	Test Wt. lb/bu
Liberty	24.1	38.1	52.9	52.5	37.6	41.0	42.0
Primus II				53.6	36.4		43.0
Bonanza					30.0		39.0
Conquest	24.0	34.7	47.9	55.5	27.9	38.0	40.0
Firlbecks III		37.5	67.4		27.5		42.0
Larker	27.8	45.7	51.1	64.6	25.6	43.0	40.0
Paragon			49.5	68.9	24.4		40.0
Dickson	14.0	38.6	63.1	65.4	19.7	40.2	38.0
Mean Yield					28.6		

TABLE 21. STANDARD VARIETY OAT TRIALS, EUREKA, 1966-1970

Variety	Average Yield, Bushels per Acre					1970 Test Wt. lb/bu
	1966	1967	1968	1969	1970	
Nodaway 70					74.8	36.0
SD 1541					69.5	34.0
Brave	24.2	67.6	85.3	95.5	67.5	33.5
Otter				78.1	65.9	30.5
Clintford	24.5	89.1	87.7	58.3	65.6	37.5
SD 124					65.6	34.0
Orbit	12.5	88.3	86.0	82.9	65.4	27.0
Garland	18.1	73.8	72.9	71.3	64.9	33.0
O'Brien	20.2	69.3	77.0	63.0	64.6	35.5
Kota	13.1	67.7	103.8	74.6	64.3	32.0
Burnett	21.2	74.9	94.4	83.9	63.0	34.5
Multi M 70					62.8	34.5
Wyndmere	25.1	81.2	102.1	84.8	62.4	31.0
Clintland 64	17.4	76.1	88.5	68.3	61.1	34.5
Pettis			73.7	71.4	58.4	36.5
Jaycee	15.7	78.2	71.2	57.9	58.4	33.5
Portal	15.1	59.3	99.3	84.1	58.2	33.0
Lodi	12.1	92.1	110.0	76.0	58.1	28.0
Holden	18.4	77.6	96.8	72.7	57.3	32.5
Santee	25.4	91.2	103.3	65.1	57.1	35.0
Dupree	19.5	84.3	102.4	68.5	54.1	32.0
Sioux	17.5	79.2	96.3	74.6	53.4	30.5
Froker				70.0	53.0	30.0
Dawn	10.5	56.5	85.6	59.5	52.9	32.5
Kelsey		73.9	82.7	90.9	52.7	29.5
Russell					50.8	30.0
Multi E 70					46.1	37.0
Mean Yield					60.3	

TABLE 22. STANDARD VARIETY SPRING-SEEDED WHEAT TRIALS, WALL, 1966-1970

Variety	Average Yield, Bushels per Acre						1970
	1966	1967	1968	1969	1970	1966-70	Test Wt. lb/bu
<u>Spring wheat</u>							
Fortuna	22.9	44.3	34.9	a	22.2	31.1	57.0
Neepawa				22.9	20.9		54.5
RL 4220					20.4		57.0
Waldron			32.4	24.8	19.7		54.0
Polk	21.0	43.1	28.4	26.7	19.2	27.7	57.5
Sheridan	22.6	35.4	23.3	22.0	19.1	24.5	57.0
Chris	24.7	37.9	26.3	22.8	18.8	26.1	56.5
Thatcher	21.7	19.9	25.9	15.4	18.8	20.3	54.5
Manitou	23.8	31.2	29.5	23.7	17.9	25.2	56.5
<u>Durums</u>							
Hercules		46.0		26.3	18.6		57.5
Leeds	21.3	42.9	32.7	32.1	18.2	29.4	61.5
DT 316					18.2		57.5
Wells	24.1	42.5	25.0	32.3	17.2	28.2	58.5
<u>Semi-dwarf, etc.</u>							
678-1-6-9					23.9		54.5
DEK Bonanza					22.6		54.5
WS 1809					22.3		55.5
WS 1812					22.0		59.0
Wisc. 271					22.0		54.5
Era					20.7		56.5
Fletcher					18.3		54.5
Resner Triticale					13.3		45.5
Mean Yield					19.7		
Duncans (.05)					4.9		

<sup>a</sup> The seed used was low in germination.

TABLE 23. STANDARD VARIETY BARLEY TRIALS, WALL, 1966-1970

Variety	Average Yield, Bushels per Acre						1970 Test Wt. lb/bu
	1966	1967	1968	1969	1970	1966-70	
Liberty	53.4	63.3	56.4	47.5	22.1	48.5	40.0
Primus II				49.5	20.8		41.0
Conquest		59.2	45.3	45.6	20.1		38.0
Larker	53.8	63.1	56.2	49.7	17.8	48.1	39.0
Bonanza					16.8		38.0
Paragon			44.8	49.4	16.5		41.0
Dickson	56.5	75.7	35.6	44.9	16.4	45.8	39.0
Firlbecks III		65.9	44.8		14.8		46.0
Mean Yield					18.2		

TABLE 24. STANDARD VARIETY OAT TRIALS, WALL, 1966-1970

Variety	Average Yield, Bushels per Acre						1970
	1966	1967	1968	1969	1970	1966-70	Test Wt. lb/bu
Otter				75.3	47.5		33.0
SD 1541					43.2		32.0
Wyndmere	40.6	101.2	75.2	59.7	43.1	64.0	31.5
Holden	37.8	100.0	83.3	61.0	41.9	64.8	31.0
Burnett	44.0	97.8	86.3	70.4	41.0	67.9	31.5
Santee	40.1	78.1	76.9	62.7	40.9	59.7	34.5
Kelsey		109.5	68.0	64.5	40.8		33.0
Sioux	31.5	101.7	72.9	63.7	40.8	62.1	30.0
Clintford	38.8	60.2	80.9	61.8	40.7	56.5	37.0
SD 124					40.7		33.0
Orbit	31.2	126.0	93.3	73.5	40.1	72.8	27.5
Garland	37.3	89.3	82.0	63.0	39.6	62.2	33.5
Dupree	33.5	102.7	78.2	66.1	39.2	63.9	32.0
Lodi	35.1	100.1	65.4	82.0	38.4	64.2	29.0
Kota	38.0	91.7	66.7	61.4	38.2	59.2	34.0
Brave	44.0	110.0	84.1	64.8	38.1	68.2	31.0
Clintland 64	39.9	72.0	71.3	55.6	36.7	55.1	33.0
Nodaway 70					36.2		38.0
O'Brien	40.5	81.8	73.2	56.2	36.2	57.6	34.5
Portal	33.2	95.5	81.9	61.5	36.0	61.6	32.0
Pettis			80.2	59.4	35.1		36.5
Dawn	40.9	74.0	56.9	64.6	35.1	54.3	32.0
Froker				65.0	34.5		34.0
Multi E 70					33.9		34.5
Multi M 70					29.2		34.5
Jaycee	44.1	80.3	82.2	59.6	27.8	58.8	34.5
Mean Yield					38.3		

TABLE 25. STANDARD VARIETY WINTER WHEAT TRIALS, WALL, 1967-1970

Variety	Average Yield, Bushels per Acre					1970 Test Wt. lb/bu
	1967	1968	1969	1970	1967-70	
Lancer	50.8	63.2	51.0	41.1	51.5	63.0
Scout	53.0	65.3	49.0	36.4	50.9	62.7
Nebred	51.5	61.9	44.3	34.8	48.1	61.7
NB 66425				33.9		61.5
Winoka	45.6	50.8	40.8	33.6	42.7	62.7
Guide		50.8	45.5	33.5		61.5
Scout 66		63.9	45.8	33.4		63.0
Trader	51.0	59.1	47.6	33.2	47.7	62.5
Trapper	45.2	57.9	49.0	32.0	46.0	61.7
Hume	49.4	49.8	46.7	31.3	44.3	61.0
SD 66171			44.9	31.2		61.7
SD 66117-1			39.6	30.3		61.2
Gage	54.2	64.0	50.5	29.9	49.7	61.5
Sturdy				29.4		60.2
Froid				27.3		57.7
Minter	39.9	46.7	36.3	26.1	37.3	59.5
Mean Yield 32.3						

TABLE 26. STANDARD VARIETY WINTER WHEAT TRIALS, BISON, 1970

Variety	Height, inches	Test Wt. lb/bu	Yield, B/A
SD 66171	31	61.1	33.0
SD 66117-1	30	60.2	31.2
Lancer	29	61.0	31.1
Minter	33	60.0	30.8
NB 66425	29	60.0	29.9
Froid	33	59.0	29.5
Guide	31	60.1	29.2
Gage	31	59.5	28.7
Scout 66	30	59.3	28.3
Winoka	31	61.1	28.0
Trader	29	60.6	27.7
Nebred	30	61.2	27.6
Trapper	29	60.2	26.5
Hume	27	59.6	26.3
Sturdy	22	59.1	25.6
Scout	27	59.1	21.9
Mean Yield			28.4

TABLE 27. STANDARD VARIETY SPRING-SEEDED WHEAT TRIALS, BISON, 1966-1970

Variety	Average Yield, Bushels per Acre					1970 Test Wt. lb/bu	
	1966	1967	1968	1969	1970		
<u>Spring wheat</u>							
Fortuna	16.7	25.8	hailed	a	29.0	23.8	59.0
Polk	15.7	24.1	out	20.2	27.0	21.8	60.0
Neepawa				24.9	26.2		55.0
Waldron				18.4	25.7		56.0
Chris	15.0	21.9		24.9	23.7	21.4	56.0
Manitou	14.9	24.9		24.6	22.2	21.7	56.0
RL 4220					21.7		57.0
Sheridan	12.1	26.8		23.0	21.0	20.9	59.0
Thatcher	14.2	26.9		19.5	19.6	20.1	56.0
<u>Durums</u>							
Wells	19.2	28.7		26.1	28.1	25.5	60.0
Hercules		28.9		22.6	26.9		59.0
DT 316					26.6		56.0
Leeds	18.2	24.1		28.3	20.6	22.8	62.0
<u>Semi-dwarfs, etc.</u>							
WS 1812				22.5	27.6		57.0
WS 1809					26.2		55.0
Wisc. 271					24.5		57.0
678-1-6-9					24.0		56.0
Era					22.5		56.0
DEK Bonanza					22.1		55.0
Fletcher					21.4		56.0
Resner Triticale					17.8		46.0
Mean Yield					24.0		
Duncans (.05)					7.4		

<sup>a</sup> The seed used was low in germination.

TABLE 28. STANDARD VARIETY BARLEY TRIALS, BISON, 1967-1970

Variety	Average Yield, Bushels per Acre					1970 Test Wt. lb/bu
	1967	1968	1969	1970	1967-70	
Primus II		hailed	65.0	36.1		45.0
Conquest	38.1	out	71.3	33.1	47.5	40.0
Larker	34.9		76.5	28.6	46.7	43.0
Paragon			73.8	28.4		42.0
Bonanza				28.4		41.0
Liberty	40.8		62.7	25.2	42.9	40.0
Firlbecks III				23.6		44.0
Dickson	37.1		82.2	23.4	47.6	40.0
Mean Yield					28.3	



TABLE 29. STANDARD VARIETY OAT TRIALS, BISON, 1966-1970

Variety	Average Yield, Bushels per Acre						1970
	1966	1967	1968	1969	1970	1966-70	Test Wt. lb/bu
Wyndmere	26.9	63.8	hailed	99.3	60.6	62.6	35.0
Lodi	28.5	57.4	out	110.0	50.1	61.5	33.3
Sioux	30.7	63.7		107.0	50.0	62.8	33.5
Burnett	21.4	67.0		100.7	46.9	59.0	35.0
Kota	24.9	64.4		104.5	46.7	60.1	35.0
Froker				95.1	46.1		36.0
Orbit	29.8	72.6		120.9	45.7	67.3	31.0
Portal	19.0	58.3		96.7	45.2	54.8	33.0
Dawn	20.6	59.1		89.5	43.1	53.1	34.0
Garland	22.1	59.2		90.0	43.1	53.6	35.0
Otter				97.0	43.0		35.0
Holden	24.0	72.6		88.7	41.9	56.8	36.0
Dupree	23.6	77.1		96.8	40.9	59.6	34.0
SD 124					39.0		34.0
Kelsey		59.1		117.3	38.4		35.0
Clintland 64	17.5	48.7		86.3	37.8	47.6	35.0
Russell					37.7		34.0
O'Brien	23.1	60.5		92.2	37.2	53.3	36.5
SD 1541					36.9		34.5
Brave	30.7	71.3		93.5	36.6	58.0	32.0
Nodaway 70					36.5		38.0
Pettis				95.7	35.4		37.0
Clintford	17.7	65.9		90.1	33.5	51.8	38.0
Santee	25.3	72.1		86.3	33.1	54.2	35.0
Multi M 70					32.4		34.5
Jaycee	18.3	58.8		93.1	31.4	50.4	35.5
Multi E 70					27.6		37.0
Mean Yield					40.6		

TABLE 30. STANDARD VARIETY RYE TRIALS, SOUTHEAST RESEARCH FARM, 1965-1970

Variety	Average Yield, Bushels per Acre					1970 Test Wt. lb/bu	
	1965	1966	1967	1968	1970		
Von Lochow	21.1	73.8	54.1	58.3	55.8	52.6	55.5
Petkus			53.9	47.1	52.6		56.0
Pearl				47.4	51.6		54.5
Cougar					50.1		53.5
Dakold			38.4	44.7	45.2		57.0
SD 1					42.3		56.5
Adams			31.5	43.4	42.2		56.0
Antelope <sup>a</sup>	40.6	56.0	54.2	57.6	40.3	49.7	56.0
Elk	17.5	65.6	52.0	50.9	40.3	45.3	54.5
Caribou	49.4	59.1	41.1	45.5	33.2	45.7	55.0
Zelder			50.7	67.1	32.0		54.5
Dominant			50.7	57.6	28.6		53.5
Frontier <sup>a</sup>			45.8	55.5	27.8		55.0
Sangaste <sup>a</sup>			52.1	42.1	21.2		52.5
Mean Yield					40.2		

<sup>a</sup> Seeding rates were adjusted to compensate for low germination, but this failed to give satisfactory results.

TABLE 31. STANDARD VARIETY WINTER WHEAT TRIALS, SOUTHEAST RESEARCH FARM, BERESFORD, 1964-1970

Variety	Average Yield, Bushels per Acre						1970
	1964	1966	1967	1968	1970	1964-70	Test Wt. lb/bu
NB 66425					50.8		61.5
Scout 66				38.7	47.9		60.5
SD 66117-1					47.0		61.7
Lancer	37.1	46.1	28.5	40.7	46.3	39.7	61.0
Sturdy					44.1		59.5
Scout	40.7	48.8	30.9	37.7	43.3	40.3	60.0
Winoka		41.7	30.9	37.1	43.1		62.2
Gage	39.2	42.6	39.7	38.7	43.0	40.6	60.0
Trader			29.8	37.0	42.8		60.5
Trapper			32.6	43.9	42.7		60.5
Guide			36.5		41.6		60.0
Hume	34.0	39.1	32.3	31.6	38.8	35.1	61.5
SD 66171					38.0		61.5
Nebred	30.7	44.4	23.4	33.4	36.5	33.7	61.0
Minter	34.6	29.5	24.2	41.4	32.3	32.4	60.0
Froid					32.0		59.3
				Mean Yield	41.9		

TABLE 32. STANDARD VARIETY OAT TRIALS, SOUTHEAST FARM, BERESFORD, 1965-1970\*

Variety	Average Yield, Bushels per Acre						1970
	1965	1966	1967	1968	1970	1965-70	Test Wt. lb/bu
Pettis				37.6	82.5		40.0
Nodaway 70					79.2		36.0
Burnett	87.8	69.1	42.7	39.9	79.2	63.7	35.5
Wyndmere		77.1	59.6	42.8	79.0		35.0
SD 1541					78.1		36.5
Garland	101.3	60.1	58.5	28.3	76.9	65.0	35.5
Portal		66.2	55.5	37.8	76.5		36.0
Multi M 70					75.6		38.0
Kota	83.6	72.7	55.7	44.5	74.9	66.3	37.5
Clintland 64	90.8	62.7	82.6	42.7	72.9	70.3	35.5
Holden	92.0	68.7	74.4	28.8	72.2	67.2	35.0
Lodi	81.9	67.0	60.3	43.9	72.2	65.1	32.5
SD 124					72.1		38.0
Jaycee		71.4	61.3	42.8	71.1		36.5
Froker					70.3		34.5
Santee	85.7	66.4	48.7	43.2	70.1	62.8	36.0
Dupree	82.6	77.9	58.8	35.9	69.3	64.9	36.0
O'Brien		68.7	48.9	35.8	69.0		38.0
Clintford	92.8	61.8	68.8	33.4	66.8	64.7	37.5
Kelsey			63.4	45.2	65.6		34.5
Multi E 70					65.3		37.5
Otter					65.1		35.0
Sioux		68.3	56.4	37.1	62.7		33.5
Orbit		75.9	60.5	24.9	61.2		34.0
Dawn		72.0	52.7	39.0	60.4		36.0
Brave	85.6	74.1	51.5	39.2	58.3	61.7	35.0
				Mean Yield	71.0		

\* 1969 trials were hailed out.

TABLE 33. AGRONOMIC DATA FOR STANDARD VARIETY SPRING-SEEDED WHEAT, HIGHMORE, 1970\*

	% Shatter 7/19	% Lodged 7/21 <sup>a</sup>	% Leaf rust 7/15	% Stem rust 7/21	Leaf condition* 7/15 <sup>b</sup>	cm. ht. 7/23
Thatcher		5	100	1	4	88
Sheridan		5	1	0	3	80
Fortuna		1	1	0	4	87
Chris		1	1	0	2	86
Polk	2	1	1	0	3	88
Manitou		1	0	0	2	84
Waldron		1	0	0	4	82
Neepawa		2	10	0	3	83
RL 4220	20	2	0	0	4	87
678-1-6-9		1	1	0	4	72
Wells		1	0	0	3	81
Leeds		1	0	0	3	87
Hercules		2	0	0	4	86
DT 316		2	1	0	2	83
Wisc. 271		3	5	0	4	70
Fletcher		2	5	0	2	62
WS 1809		1	0	0	4	64
WS 1812		3	0	0	3	59
Resner triticales		1	0	0	2	82
Bonanza		46	0	0	4	64
Era		2	0	0	2	69

<sup>a</sup> Mean of 4 replications.

<sup>b</sup> 1 = most leaves are green, 4 = all leaves are dead (3 rep. mean) - Soil moisture good.

Data courtesy D. G. Wells

TABLE 34. WINTER GRAIN DRILL STRIP TRIALS, GARDEN CITY AND WATERTOWN, 1970

GARDEN CITY			WATERTOWN		
Variety	Test Wt. lb/B	Yield B/A	Variety	Test Wt. lb/B	Yield B/A
Winter Wheat			Winter Wheat		
Lancer	57.5	40.8	Winoka	57.5	34.1
Gage	58.0	39.9	Minter	57.0	33.9
Minter	57.5	39.2	Hume	56.0	32.3
Winoka	58.9	37.6	Lancer	56.0	31.9
Trader	57.0	37.6	Trader	56.5	31.2
SD 66171	59.5	36.5	Scout 66	56.0	29.2
Scout 66	58.9	36.5	Gage	54.5	26.4
Hume	57.5	35.3	Omaha	56.0	26.1
Guide	57.0	30.6	Trapper	56.0	25.9
Trapper	57.0	28.2	SD 66171	57.5	24.6
Omaha	56.5	27.4	Guide	55.5	21.9
Rye			Rye		
Pearl	53.5	51.5	Cougar	52.0	57.5
Von Lochow	54.0	51.1	Frontier	52.5	53.3
Frontier	55.0	50.8	Von Lochow	53.5	51.8
Cougar	52.5	41.7	Pearl	49.0	50.6
Caribou	54.5	39.9	Caribou	52.5	40.5

Seeded: 9/19/69 Fert: 60-40-0 #/A  
Area harvested: 2 reps. - 5.5' x 40'

Seeded: 9/20/69 Fert: 60-40-0 #/A  
Area harvested: 2 reps. - 5.5' x 60'

Data furnished by Q. S. Kingsley

TABLE 35. SMALL GRAIN VARIETY DRILL STRIP TRIALS AT THE NORTHEAST RESEARCH FARMS, GARDEN CITY UNIT, 1970

Oats			Barley			Wheat		
Variety	Test Wt. lb/B	Yield, B/A	Variety	Test Wt. lb/B	Yield, B/A	Variety	Test Wt. lb/B	Yield B/A
Kelsey	35.0	91.9	Firlbecks III	47.5	53.1	<u>Spring &amp; Semi-dwarf</u> World Seeds 1809	60.0	40.1
Otter	34.5	86.3	Dickson	47.0	50.7	Bonanza	60.0	37.6
Burnett	39.0	83.6	Primus II	47.0	48.2	Fortuna	60.0	36.0
Froker	37.5	80.3	Larker	47.0	46.8	World Seeds 1812	60.5	35.2
Brave	38.0	79.5	Conquest	45.0	46.4	Era	59.0	35.0
Holden	36.0	78.4	Liberty	46.5	42.1	Neepawa	58.0	33.4
Kota	35.5	76.6				Chris	59.0	33.1
Lodi	35.0	76.0				Sheridan	59.0	32.5
Portal	37.5	75.7				Polk	60.0	32.4
Sioux	37.0	74.7				Manitou	59.0	32.2
Garland	36.5	71.1	Summit	53.0	18.2	Fletcher	59.5	31.8
Clintland 64	36.5	67.6	Linott	53.0	17.4			
Nodaway 70	38.5	47.5	Nored	52.0	17.4			
Jaycee	36.0	40.6	Windom	52.5	16.9	<u>Durum</u>		
			Foster	52.5	16.8	Leeds	62.5	34.1
			Bolley	52.5	15.7	Wells	60.5	32.2
Seeded: 5/4/70 Fert. 60-40-0 lb/A except flax			B-5128	53.0	15.5	Hercules	59.5	28.7
Harvested area: 2 reps., 5.5' x 60'			Norstar	52.5	15.2			
			30-20-0 lb/A					

TABLE 36. SMALL GRAIN VARIETY DRILL STRIP TRIALS AT THE NORTHEAST REASERCH FARMS, WHETSTONE UNIT, 1970

Oats			Barley			Wheat		
Variety	Test Wt. lb/B	Yield, B/A	Variety	Test Wt. lb/B	Yield, B/A	Variety	Test Wt. lb/B	Yield, B/A
						<u>Spring &amp; Semi-dwarf</u>		
Kota	33.5	62.6	Firlbecks III	41.5	40.8	Era	57.5	33.7
Kelsey	32.0	61.1	Larker	40.5	40.7	Polk	57.5	33.6
Portal	33.5	60.9	Conquest	39.5	39.0	Fortuna	58.0	33.4
Garland	32.5	58.2	Dickson	40.5	38.8	Bonanza	56.0	32.9
Holden	31.5	58.0	Liberty	43.0	37.9	Neepawa	55.5	32.8
Nodaway 70	34.0	57.6	<u>Primus II</u>	40.0	37.0	Manitou	55.5	30.7
Sioux	31.0	55.1				Chris	58.0	30.3
Lodi	29.0	54.9		<u>Flax</u>		Waldron	57.5	30.1
Otter	30.0	54.0	Linott	52.0	18.4	World Seeds 1812	57.0	29.1
Brave	32.0	53.3	Foster	52.5	17.1	Fletcher	56.5	27.4
Froker	32.0	51.6	Windom	52.5	16.9	Sheridan	59.5	26.5
Cayuse	27.5	50.9	Summit	53.0	16.7	World Seeds 1809	58.0	17.8
Burnett	32.5	49.7	Nored	53.0	16.6	<u>Durum</u>		
Clintland 64	33.5	45.1	Norstar	52.0	16.1	Wells	58.0	32.5
			Bolley	51.0	16.1	Hercules	57.5	32.2
			R-5128	52.5	13.5	Leeds	59.0	32.1
Seeded: 5/12/70						<u>Triticales</u>		1b/A
Harvested: 8/13/70						Triticales 204 (ICC)	44.5	1070
Fertilizer: 150#/A 20-20-12						Triticales 209 (DOT)	43.5	1050
Data furnished by : Q. S. Kingsley						Resner	43.0	945
Area harvested : 2 reps.. 5.5' x 72'								

TABLE 37. CHARACTERISTICS OF WHEAT VARIETIES TESTED OR BEING GROWN IN SOUTH DAKOTA

Variety	Parentage	Released	Maturity	Straw Strength	Plant Height	Milling	Yielding Ability	Disease Reaction			Winter Hardiness				
						& Baking Qualities		LR	SR	WSM	SW	NW	SE	NE	
Winter Wheat															
Bison	Chiefkan x Oro-Tenmarq	Kan. '56	M-early	Strong	S-MT	Excel.	High	S	S	Tol.	G	P	F	P	
Gage	Ponca x Mediterranean-Hope-Pawnee	Nebr. '63	Early	Strong	Short	Good	High	R	R	S	G	P	G	P	
Guide	Cheyenne <sup>2</sup> x (Kenya x Mentena)	Nebr. '68	Early	Strong	Short	Excel.	Good	S	R	S	G	P	P	F	
Lancer	Turkey-Cheyenne x Hope-Cheyenne <sup>2</sup>	Nebr. '63	M-early	Strong	Short	Excel.	High	S	R	S	G	F	G	P	
Minter	Minturki <sup>2</sup> x Hope	M&SD '48	Late	Poor	M-tall	Excel.	Good	S	R	S	G	F	G	F	
Nebred	Selected from Turkey	Nebr. '38	Medium	Poor	S-MT	Excel.	Good	S	S	S	G	F	G	P	
Omaha	Pawnee x Nebred	Nebr. '60	Early	Medium	Short	Good	High	S	S	S	G	P	G	P	
Scout 66	(Nebred-Hope-Turkey)x(Cheyenne-Ponca)	Nebr. '66	Early	Medium	Short	Excel.	High	S	R	Tol.	G	P	F	P	
Scoutland	Selection from Scout	Nebr. '70	M-early	Medium	S-MT	Excel.	High	S	R	Tol.	G	P	F	P	
Trader	Warrior x (Selkirk x Cheyenne <sup>2</sup> )	Nebr. '68	Medium	Medium	M-tall	Good	Good	S	R	S	G	F	F	P	
Trapper	Warrior x (Selkirk x Cheyenne <sup>2</sup> )	Nebr. '68	Medium	Medium	M-tall	Good	Good	S	R	S	G	F	F	P	
Winkoa	Winalta selection	S.D. '69	Medium	Medium	M-tall	Excel.	Good	S	R	S	G	F	F	F	
Spring Wheat															
Chris	Ftn-Thatcher <sup>3</sup> x (K58 x Nth) x Thatcher <sup>2</sup>	Minn. '65	Medium	Medium	M-tall	Excel.	High	R	R						
Fortuna	Rescue-Chinook x (Frontana x K58-Nth)	N.D. '66	Early	Good	M-tall	Good	High	R	R						
Manitou	(Tc-Ftn x Canthatch) x (Tc <sup>6</sup> x PI 170925)	Can. '65	M-early	Fair	M-tall	Good	High	MR	R						
Polk	M2824 <sup>2</sup> x II-50-72	Minn. '68	Medium	Fair	Medium	Excel.	High	R	R						
Rushmore	Rival x Thatcher	S.D. '49	Early	Good	M-tall	Good	High	S	MR						
Selkirk	(McMurachy-Exchange) x Redman	Can. '55	M-early	Good	M-tall	Fair	Good	S	R						
Sheridan	(Frontana x II-44-29) x Pilot	Mnt.SD '66	M-late	Fair	Tall	Fair	High	R	R						
Waldron	(K388 A x (Lee x Mida) x Justin	N.D. '69	Early	Good	Medium	Good	High	R	R						
Durum															
Hercules	(RL 3097 x RL 3304) x (Stewart x RL 3380)	Can. '68	Early	Good	Short	Good	High	R	R						
Leeds	(Ld 357 <sup>4</sup> x St. 464 - Ld 347) x Wells	N.D. '66	Early	Good	Short	Good	High	R	R						
Wells	Sentry x (Ld 379-Ld357)	N.D. '60	Early	Good	Short	Good	High	R	MR						

Data furnished by D. G. Wells. Abbreviations used: M-early, Medium early S-MT, Short to mid-tall LR, Leaf Rust R, resistant G, good P, poor  
M-late, Medium late M-tall, mid-tall SR, Stem Rust S, susceptible F, fair  
WSM, wheat streak mosaic

TABLE 38. CHARACTERISTICS OF OAT VARIETIES RECOMMENDED FOR SOUTH DAKOTA, 1971

Variety	Parentage	Released	Agronomic Characteristics					Disease Reaction*			
			Yielding Ability	Plant Height	Maturity	Lodging Resistance	Bushel Weight	Stem Rust	Leaf Rust	Smut	Red Leaf
Brave	Putnam x LMJHA	Ill.	'65 High	Medium	Medium	Medium	Medium	MS	MS	R	MS
Burnett	Victoria x Hajira-Banner 2x Colo	Iowa	'57 High	M-tall	Medium	Good	High	MR	MS	R	S
Clintland 64	Cltd <sup>5</sup> x LMJHA 3 x Cltd 2 x Cltn <sup>6</sup> x Grey Alg.	Ind.	'64 Medium	Medium	M-early	Good	High	MR	MR	R	S
Dupree	Anthony x Bond 2x Richland x Fulgham	S.D.	'54 Medium	Short	Early	Medium	Medium	S	S	R	S
Froker	Jaipur 3x Bcn 2x Hawkeye x Victoria 4x Cltd 3x Garry 2x Hawkeye x Victoria	Wisc.	'70 High	Medium	Late	Good	High	MR	MR	R	S
Garland	Clintland 2x Garry x Hawkeye-Victoria	Wisc.	'62 Medium	Medium	High	Good	High	MR	MS	R	S
Holden	Clintland 3x Garry 2x Hawkeye-Victoria	Wisc.	'67 High	Medium	Medium	Good	High	MR	MR	R	S
Kelsey	Vtra 2x Hj-Bnr x Bnr 3x Rxt 4x Bcn 5x Rdy	Can.	'67 V-high	Tall	Late	Medium	Medium	MR	MR	R	S
Kota	Clinton 6 x Landhafer 2x RL2120 ex Garry	S.D.	'69 High	Medium	Medium	Medium	High	MR	MR	R	MS
Lodi	Richland x Bond 3x Garry 2x Hawkeye x Victoria	Wisc.	'64 High	Tall	Late	Good	Medium	MR	MR	R	S
Portal	P.I. 174544 x Clintland 2x Garland	Wisc.	'67 High	Medium	Medium	Good	High	MR	MR	R	S

\* R-resistant, MR-moderately resistant, MS-Moderately susceptible, S-susceptible

TABLE 39. CHARACTERISTICS OF FLAX VARIETIES RECOMMENDED FOR SOUTH DAKOTA, 1971

Variety	Parentage	Released	Agronomix Characteristics									Disease Reactions*		
			Yielding Ability	Plant Height	Maturity	Lodging Resis- tance	Seed Size	Flower Color	Oil Con- tent	Oil Con- tent	Rust Race	Wilt	Pasmo	
B-5128	Golden x Rio	N.D.	'43	Medium	Tall	Late	Good	M-L	Blue	Good	Fair	I	MS	S
Bolley	Birio x C.I. 1134	N.D.	'47	Medium	Medium	Medium	Good	Med.	Blue	High	High	I	MR	S
Linott	(Ottawa 77Blx Argentine SL) (Arrow x CI 1975)	Can.	'67	High	Medium	Early	Good	Med.	Blue	High	Good	I	R	MR
Nored	B-5128 x Redson	Minn.	'68	High	M-tall	Late	Good	Med.	Blue	High	Good	I	R	MR
Norstar	Redwood x Crystal	Minn.	'69	Medium	Medium	M-late	Good	Med.	Blue	Good	Fair	I	MR	MS
Summit	C.I. 980 x Zenith	S.D.	'64	High	Medium	Early	Good	Med.	Blue	Med.	Med.	I	R	MS
Windom	Renew x Bison 2x Kota x Redwing 3x Redwood	Minn.	'63	High	Medium	Early	Good	M-S	Blue	Med.	High	I	R	S

\* R-resistant, MR-moderately resistant, MS-moderately susceptible, S-susceptible, I-immune  
Data furnished by D. L. Reeves

TABLE 40. CHARACTERISTICS OF BARLEY VARIETIES GROWN IN THE 1970 TRIALS

Agronomic Characteristics													Disease Reactions		
Variety	Parentage	Released	Yielding Plant		Maturity	Lodging	Resis- tance	Bushel Wt.	Seed Size	Malting Quality	Aluerone Color	SR	SB	S	
			Ability	Height											
Conquest*	Vantage x Jet 2x Vantmore 3x Br. 4635 4x Swan 5x Parkland	Man. '65	Medium	Tall	Medium	Good	Med.	Med.	Good	Blue	R	SR	R		
Dickson*	Traill <sup>2</sup> x Kindred x C.I. 7117-77	N.D. '65	High	Med.	Medium	Good	Med.	Med.	Good	White	R	SR	R		
Firlbecks III	Multi-parent line	Ger. '53	High <sup>I</sup>	Med.	Late	Good	High	M-L	Good	White	S	S	S		
Larker*	Traill x Swan	N.D. '61	High	Med.	Medium	Good	Med.	M-L	Good	White	R	MS	S		
Liberty	LMC-A x Titan	S.D. '57	High	Med.	Medium	Good	Med.	Med.	Poor	White	R	S	S		
Paragon	Brandon 7212 x Parkland <sup>2</sup>	Man. '68	High	Tall	Late	Good	Med.	Med.	#	Blue	R	SR	R		
Primus II*	Reselected from Primus	S.D. '68	High	Med.	Early	Good	High	Med.	#	White	R	S	S		

\* Recommended for 1971

<sup>I</sup> High yielding under irrigation, not recommended for dryland production

# Malting reports favorable, further testing being completed

Conquest and Paragon are blue aleurone types, acceptable for malting in Canada, but primarily for feed in U.S.

Data furnished by P. B. Price

SR = Stem Rust

SB = Spot Blotch

S = Smut

TABLE 41. CHARACTERISTICS OF RYE VARIETIES FOR SOUTH DAKOTA

Variety	Released by	Year	Yielding Ability	Plant Height	Seed Color	Maturity	Lodging Resistance	Bushel Weight	Winter Hardiness
Antelope	Canada	1942	High	Tall	Mixed	Medium	Medium	High	Excellent
Caribou	Canada	1953	High	Tall	Mixed	Medium	Medium	High	Excellent
Cougar	Canada	1967	High	Medium	Green-Tan	Medium	Good	High	Good
Elk	Minnesota	1959	High*	Medium	Green	Late	Medium	Medium	Fair-Good
Frontier	Canada	1965	High	Tall	Blue-grey	Medium	Medium	High	Excellent
Pearl	Denmark	1952	High*	Tall	Brown-green	Late	Medium	Medium	Fair
Von Lochow	Germany	--	High*	M-short	Green	Late	Good	High	Fair

\* High yield potential when winter injury is not serious; severity of South Dakota winter conditions causes proportionate reduction in stands and accompanying low yields.

Data furnished by D. L. Reeves



# Field Crop Varieties Recommended in South Dakota for 1971

By Ralph A. Cline and Elmer E. Sanderson, Extension Agronomists—Crops

Crop adaptation areas of the state, shown on the map, are based on soil type, elevation, temperature, and rainfall. These factors largely determine the type of agriculture within these areas.

Varieties are recommended on the basis of length of growing season, average rainfall, disease frequency, and farming practices. Often an individual farm, due to its location or the management practiced by the operator, may more closely resemble conditions of an area other than the one in which the farm is located. Recommendations listed here should be considered in the light of this information.

## SMALL GRAIN

variety area of best adaptation

### Winter Wheat

Gage	A, B4, C2, C3
Guide	A, B4, C2, C3
Hume	All winter wheat areas
Lancer	A, B2°, B3, B4, C2, C3, D4, E
Scout 66	B3, B4, C2, C3
Trader	A, B2°, B3, B4, C2, C3, D4, E
Trapper	A, B2°, B3, B4, C2, C3, D4, E
Winoka	All winter wheat areas

*Winter wheat production under the high risk conditions of areas B1, B2, and C1 means selecting the most hardy varieties.*

### Spring Wheat

Chris†	Statewide
Fortuna	B1, B2, C1
Manitou	Statewide
Neepawa	Statewide
Polk	Statewide
Sheridan	A, B1, B2, B3, C1
Waldron	Statewide

### Durum

Hercules	All durum wheat areas
Leeds	All durum wheat areas
Wells	All durum wheat areas

### Oats

Brave	A, B1, B2, B3, B4, C3
Burnett‡	Statewide
Clintland 64	C2, C3, D2, D3, D4, E
Dupree	B1, B2, B3, B4, C2, C3
Froker	C1†, D1, D2, D3
Garland	B2, C1, D1, D2, D3, D4, E
Holden	B2, C1, D1, D2, D3, D4, E
Kelsey	B2†, C1†, D1, D2, D3
Kota	Statewide
Lodi	C1†, D1, D2, D3
Portal	B2, C1, D1, D2, D3, D4, E

## Barley

Conquest	Statewide
Dickson	D1, D2
Larker	A, B2, C1, D1, D2, D3
Primus II‡	Statewide

*Conquest, Larker, and Dickson approved for malting.*

## Flax

B-5128	C1†, D1, D2, D3
Bolley	All flax areas
Linott	All flax areas
Nored	All flax areas
Norstar	C1†, D1, D2, D3
Summit	All flax areas
Windom	All flax areas

## Rye

Antelope	Statewide
Cougar	Statewide
Frontier	Statewide

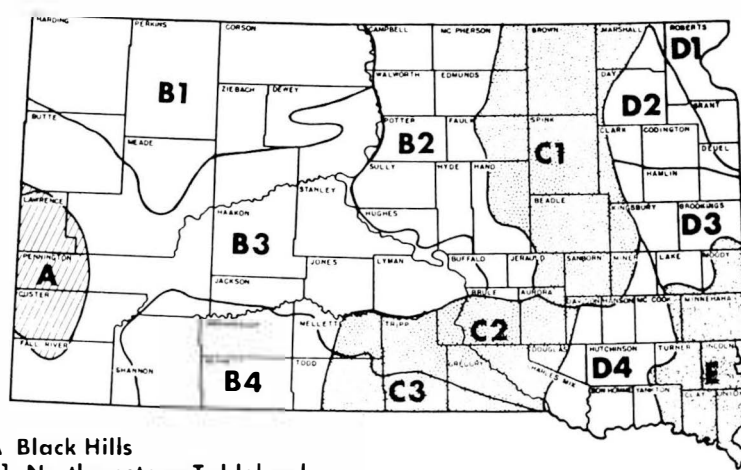
° Southern counties of this area

† Northern counties of this area

‡ For both irrigation and dryland

§ Recommended only for late planting in areas D4 and E.

## 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