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1962 Small Grain Variety Trials

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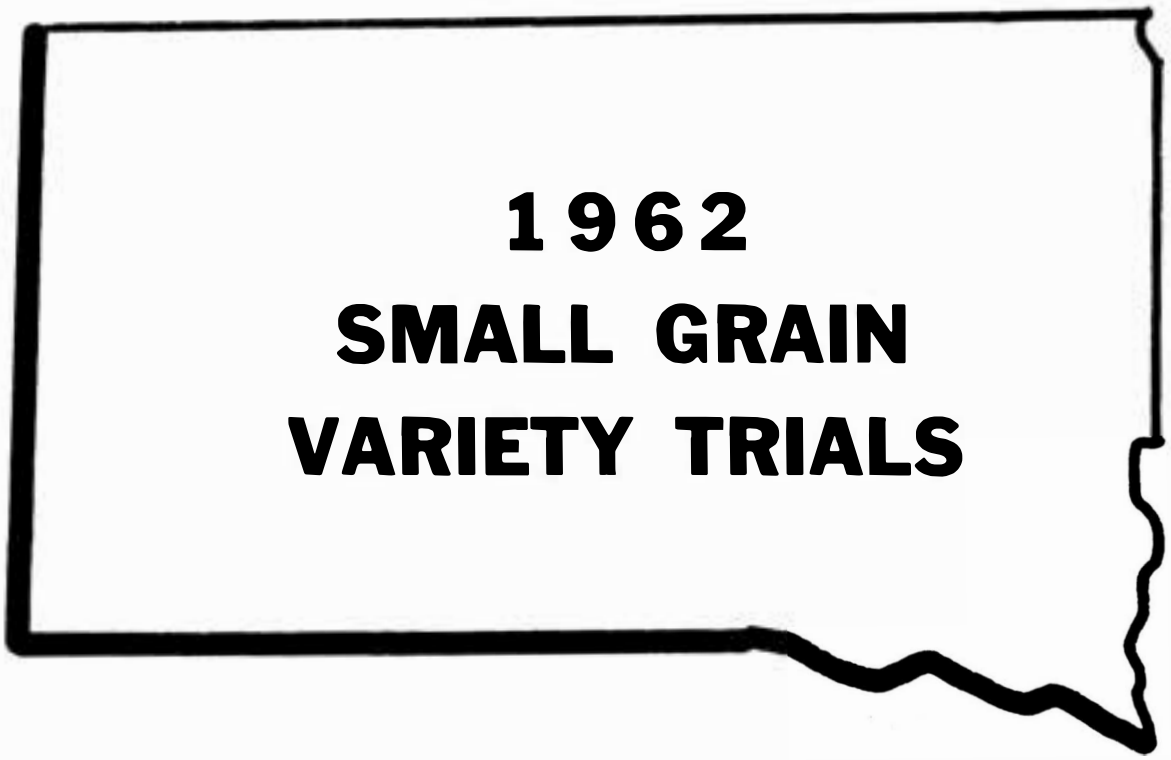

1962
SMALL GRAIN
VARIETY TRIALS

CROP PERFORMANCE TESTING ACTIVITY

AGRICULTURAL EXPERIMENT STATION

SOUTH DAKOTA STATE COLLEGE
BROOKINGS

Standard Variety Trials of Spring Small Grain and Oil Crops in South Dakota 1958 - 1962

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Agricultural Experiment Station
South Dakota State College
Brookings, South Dakota

This pamphlet reports the performance of spring small grain trials harvested in 1962. The testing of standard or newly released varieties of spring and durum wheat, oats, barley and flax was under the supervision of the Crop Performance Testing Activity of Statewide Services, Agricultural Experiment Station in 1962.

Data reported are the acre grain yields, tests weights and five-year averages where available. Tests by the plant breeders also are conducted at Brookings and most of the sub-stations. Promising strains or selections of their material are entered in Standard Variety Trials to determine adaptability and performance of the material before their release and recommendation to farmers and ranchers.

Location of trials

The trials were conducted at the several state and federal stations located within South Dakota. Trials at these locations are exposed to conditions more closely representative of the surrounding counties than would tests made only at the Main Station. The locations of the trials are given in Table 1.

Weather and climatic conditions

Weather conditions in the fall and winter of 1961 and 1962 caused some delay in field preparation and in seeding of 1962 small grains, especially in the eastern and central areas of the state. Late fall rains in eastern and, more especially, east central parts of South Dakota had adequately filled the soil moisture profile. Near record quantities of snowfall contributed to excessive surface water retarding spring operations.

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Table 1. The location of trials and dates of seeding and harvesting of spring and durum wheat, oats, barley and flax trials, 1962

County	Location and Post Office	Date planted	Date harvested
	Spring Wheat and Durum		
Butte	U. S. Newell Field Station, Newell	April 18	August 8
Hyde	Central Substation, Highmore	April 19	August 2
McPherson	North Central Substation, Eureka	April 20	August 15
Brookings	Agronomy Farm, Brookings	April 23	August 13
Clay	Southeast Research Farm, Beresford	April 24	July 24
Codington	Northeast Research Farm, Watertown	April 26	August 14
	Oats		
Butte	U. S. Newell Field Station, Newell	April 18	August 8
Hyde	Central Substation, Highmore	April 19	July 30
McPherson	North Central Substation, Eureka	April 20	August 15
Brookings	Agronomy Farm, Brookings	April 23	July 27
Clay	Southeast Research Farm, Beresford	April 24	July 24
Codington	Northeast Research Farm, Watertown	April 26	Aug. 1 & 3
	Barley		
Butte	U. S. Newell Field Station, Newell	April 18	August 8
Hyde	Central Substation, Highmore	April 19	July 18
McPherson	North Central Substation, Eureka	April 20	August 7
Brookings	Agronomy Farm, Brookings	April 23	July 26
Clay	Southeast Research Farm, Beresford	April 24	July 24
Codington	Northeast Research Farm, Watertown	April 26	August 1
	Flax		
Hyde	Central Substation, Highmore	May 7	August 9
Brookings	Agronomy Farm, Brookings	April 23	August 17
Codington	Northeast Research Farm, Watertown	April 26	---------

In the extreme western portion of the state, there was little surface moisture and practically no subsoil moisture. Except in the western areas of the state field preparations did not begin until mid-April. Seeding of the small grain trials began on April 18 and ended in the southeastern part of the state on April 28. The seeding and harvesting dates are shown in Table 1.

The climate throughout much of the small grain growing season of 1962 was favorable for lush growth. The temperatures, though not too much below normal mean temperatures, were more constant and not subject to periods of excessively hot or depressingly cool temperatures. Rainfall equaled or exceeded normal rainfall at most locations and timely rains fell until late July in adequate amounts. Table 2 reports the weather data of the test sites from April through August.

Table 2. Temperature and Precipitation Data for the 1962 Small Grain Growing Season of South Dakota

		Temperature			Precipitation		
Location	Month	Mean average	Departure from normal	Ave. departure	Month total	Departure from normal	Total departure
		Degrees F.				inches	
Brookings 1/	April	43.0	-2.2		2.14	+ .37	
1 E	May	59.6	+2.0		4.10	+1.31	
	June	64.9	-2.2		4.76	+ .81	
	July	68.1	-5.1		7.29	+5.14	
	August	68.3	-2.9	-2.1	.93	-2.04	+5.59
Last Freeze May 1 - 31°					19.22		
Highmore 1/	April	46.7	+1.3		.99	- .75	
1 W	May	59.0	+1.8		6.18	+3.85	
	June	64.7	-2.1		4.02	+ .48	
	July	68.8	-5.7		4.88	+2.90	
	August	70.2	-2.6	-1.5	5.02	+2.98	+9.46
Last Freeze May 1 - 30°					21.09		
Eureka 1/	April	43.8	+0.2		.38	- .97	
	May	56.2	+0.1		3.61	+ .75	
	June	63.8	-1.2		3.66	- .17	
	July	66.4	-6.0		6.18	+3.73	
	August	69.4	-1.3	-1.6	1.14	-1.27	+2.07
Last Freeze May 1 - 30°					14.97		
Newell 1/	April	46.8	+2.7		1.03	- .62	
2 NW	May	55.2	-0.2		8.60	+6.11	
	June	62.6	-1.8		4.85	+1.30	
	July	66.9	-6.3		4.02	+2.26	
	August	68.5	-2.7	-1.7	.88	- .40	+8.65
Last Freeze May 1 - 29°					19.38		
NE Farm	April	41.3			2.41		
15 N	May	55.6			9.26		
Watertown	June	62.8			4.45		
	July	67.3			6.29		
	August	66.9			1.14		
Last Freeze April 30 - 31°					23.55		
SE Farm	April	45.6			1.81		
6W,3S	May	64.0			4.34		
Beresford	June	67.6			5.98		
	July	71.6			5.72		
	August	71.6			3.60		
Last Freeze April 19 - 30°					21.45		

1/ These are based upon reports of Monthly Climatological Data, U. S. Dept. of Commerce, Office of State Climatologist, State College, Brookings, S.D.

Stands were quite uniform in most trials. Abnormal amounts of precipitation throughout the growing season favored the expression of maximum plant heights and generous tillering. The rank growth was subject to lodging when rains and accompanying winds continued late into the small grain growing season. Only the dryland trial on the Newell Field Station was erect at harvest time. All other trials had lodged, the degree depending upon the variety. Even varieties normally having strong straw were lodged.

Estimates of yield by mid-June were very optimistic. However, the continuing precipitation provided conditions favorable to diseases, which developed rapidly. The result was one of the highest losses of wheat due to stem rust in several years. Test weights of wheat in the low forties were not uncommon. Oats, barley and flax also had low test weights in most trials.

Planting and Harvesting Procedures

Planting. The entries in each trial were planted in four replications. The plots were seeded with a specifically designed planter with double-disc openers mounted on an Allis-Chalmers "G" tractor. The plots were 4 rows one foot apart, and 16 feet long.

Harvesting. Two center rows, 13 feet long, were harvested for yield determinations. A small National mower, equipped with a catching basket, was used to cut the grain. All downed grain and loose heads were gleaned from the harvested area before the sample was bagged. The samples were returned to the Main Station for threshing in a small Vogel-type nursery thresher. Following threshing the samples were cleaned, weighed for yield determination, and test weighed for bushel weights.

Measurements of Performance

Yield. The yield reported for each variety or selection in each test is the average obtained from grain weights of all replications, generally four, expressed as bushels per acre. Because of variations caused by unequal soil fertility, slope, and stands, entries of equal potential may yield differently. Mathematical determinations have been made to ascertain whether yield differences were caused by variations in environment or were true varietal differences.

At the bottom of all yield tables is given the minimum amount in each test by which two entries must differ in yield for the difference to be considered statistically significant at the 5 per cent level. If the trials were found to have statistically significant differences between mean yields an additional test, Duncan's Multiple Range Test, was run on the means.

As an example of Duncan's Test (Table 4) vertical lines on the right side of the table indicate those variety yields adjacent to the line which are statistically alike. In the instance of this table, under environmental conditions which prevailed during 1962, and, considering both spring wheat and durum, Langdon, CI 13242, CI 13340, Pembina, Lakota, CI 13162, Spinkcota, Selkirk and Wells were not significantly different in yield from each other. In this same table under the same circumstances one may check across to determine which durums were significantly superior to others and the same may be done for spring wheat. The tables from all trials having significant differences are read the same as the above. It must be remembered that results from only one year do not present as true a picture of yield differences as average results of three or more years at the same location.

The 1962 average yield of all entries is found at the bottom of the yield columns in each table.

Discussion of results

Preparation of the land, adequate fertility levels and rotation sequence are the same each year in accordance with practices established some time ago. The following tables present the results of 1962 as well as five-year averages where available. These 1958-1962 averages present a truer indication of a variety's capabilities under varying temperature and moisture conditions. A brief summary for each crop is presented below.

Spring Wheat Favorable growing conditions during 1962 permitted the varieties of medium to late maturity, most resistant to present races of stem rust, to perform satisfactorily. Selkirk and Pembina were generally in the upper one-fourth to one-third of all trials. Selkirk has also performed well over the past few years as the three-year averages in the table indicate. Pembina has not been available for the period of time Selkirk has been available but has performed equally as well as Selkirk and has some milling qualities more desirable than Selkirk. In years when drier conditions prevail, especially in western areas of the state Rushmore and Lee are still quite satisfactory. These two are susceptible to race 15B of stem rust. Hence, Canthatch is more suitable from this standpoint. Spinkcota yields were satisfactory but is not acceptable to the milling industry.

Durum Wheat Lakota, Wells and Langdon durums performed quite satisfactorily in 1962 and also for the three years for which data are available. Langdon might be a high risk crop for susceptibility to race 15B of stem rust in 1963.

Oats The cool, wet season of 1962 favored later maturing varieties of oats over most of the state. Crown rust was severe in many areas. Specific oat varieties might react differently than shown in this pamphlet if favorable fertility levels are not maintained. Improved varieties will not react favorably with inadequate fertility. Also maturity, disease reaction, heat tolerance and kernel type should be considered in addition to yield. Some varieties are high yielding but have low test weights making them poor choices from the feeding standpoint.

Varieties deserving attention over the past few years are Burnett, Mo. 0-205, and Andrew in the east central area of the state. Garry and Rodney generally perform well in the northeastern area of especially high lands of the state. Dupree and Osage have performed satisfactorily in eastern areas of the state but Dupree is more adapted to the areas where diseases are not commonly a hazard.

Barley Larker and Trophy, two newly released malting barleys were included in the 1962 tests. Larker proved superior to Trophy in most trials during 1962. Traill and Trophy have had comparable yields during the past two years. Larker and Trophy have had comparable yields during the past two years. Larker and Trophy have generally been superior to Traill in test weight and kernel plumpness. Liberty barley again performed quite satisfactorily in most areas of the state.

Flax Arny flax ranked high in yield at Brookings and Highmore, the only sites at which flax tests could be harvested, because it did not lodge. Normally Arny does not do well from late seeding while Marine does because of greater earliness. Marine is earlier and should be planted if late seedings are necessary. The new release, Windom, rated well in the Brookings trial in 1962 and over the period of 4 years. The recommended varieties of B-5128, Bolley and Redwood, though not yielding exceptionally high in 1962, rate high in the long-time averages.

Table 3. Standard Variety Spring Wheat and Durum Trials, Agronomy Farm, Brookings, 1958-1962[a]

Variety	1958	1960	1962	1958-62[b]	1962 test wt.	Statistical significance[c]
	Average yield.		bu/acre		lb/bu.	
Langdon	28.6	40.6	32.2	33.8	54	
CI 13162	24.5		27.2		56	
Lakota	29.3	40.7	25.8	31.9	55	
CI 13340			24.5		50	
Wells	29.5	38.9	24.5	31.0	50	
Lathrop			23.5		51	
Selkirk	29.0	39.1	22.3	30.1	49	
Pembina		40.1	22.0		49	
Sentry	25.5		21.5		54	
Lee	23.3	37.3	21.5	27.4	52	
Spinkcota	29.9	32.7	21.3	28.0	57	
Mida	27.6	34.9	21.1	27.9	49	
CI 13242			19.1		49	
CI 13466			18.4		51	
CI 13349			18.4		50	
Justin			17.6		50	
Rushmore	26.8	37.9	17.5	27.4	49	
Ramsey	30.8	33.2	16.9	27.0	50	
Canthatch	28.5	31.3	16.4	25.4	49	
Yuma	23.9	29.7	16.2	23.3	50	
Thatcher	29.5	29.2	15.0	24.6	47	
CI 13465			12.4		55	
Ceres	28.2	20.4	11.0	19.9	42	
Conley	27.8	27.2	8.2	21.1	39	
Marquis	25.8	13.0	7.3	15.4	32	
	Mean Yield		19.3			
LSD .05	3.8	3.3	4.7			

a 1959 and 1961 data not available
b Three-year average
c Using Duncan's Multiple Range Test at the 5% level.

Table 4. Standard Variety Spring Wheat and Durum Trials
Northcentral Substation, Eureka, 1958-1962[a]

Variety	1958	1960	1962	1958-62[a]	1962 Test wt. lb/bu.	Statistical significance[b]
	Average yield, bu/acre					
Langdon	47.2	14.3	34.2	31.9	58	
CI 13242			33.1		57	
CI 13340			32.2		54	
Pembina			30.9		57	
Lakota	46.9	16.8	30.6	31.4	53	
CI 13162			29.8		58	
Spinkcota	40.5	14.0	29.5	28.0	59	
Selkirk	38.4	13.5	29.0	27.0	55	
Wells	49.2	12.4	27.2	29.6	56	
Lee	45.4	14.2	26.6	28.7	56	
Thatcher	29.7	14.3	25.7	23.2	55	
Mida	37.0	12.6	25.5	25.0	57	
Ramsey	43.5	13.8	25.4	27.6	58	
Rushmore	33.0	15.0	24.5	24.2	56	
Justin			24.3		57	
CI 13465			23.4		55	
Canthatch	32.6	15.2	21.8	23.2	56	
Conley	28.9	10.5	17.9	19.1	51	
Ceres	31.1	13.0	9.6	17.9	50	
Marquis	27.3	14.5	2.9	14.9	29	
	Mean Yield		25.2			
LSD .05	5.2	NS	7.5			

a 1959 and 1961 data not available, three year average
b Using Duncan's Multiple Range Test at 5% level.

Table 5. Standard Variety Spring Wheat and Durum Trials,
Northeast Research Farm, Watertown, 1958-1962[a]

Variety	1958	1960	1962	1958-62[a]	1962 Test wt. lb/bu.	Statistical significance[b]
	Average yield, bu/acre					
Lakota	27.8	27.3	41.2	28.8	53	
CI 13340			40.5		55	
Wells	31.7	30.0	38.3	33.3	57	
Langdon	31.8	25.9	36.6	31.4	58	
Lathrop			36.6		55	
CI 13162	30.6		35.7		57	
Ramsey	23.0	25.3	23.9	24.1	56	
Spinkcota	29.8	26.8	23.4	26.6	59	
CI 13242			23.1		53	
Selkirk	23.5	25.7	22.4	23.9	52	
Pembina			21.4		51	
Rushmore	17.1	22.4	20.7	20.1	54	
Lee	25.7	31.3	18.8	25.3	55	
Justin			18.8		55	
Mida	22.3	26.2	18.7	22.4	54	
CI 13465			18.0		55	
Canthatch	17.5	21.4	16.4	18.4	56	
Ceres	15.6	12.6	15.8	14.7	50	
Thatcher	13.1	13.1	14.1	13.4	54	
Conley	14.2	16.7	10.7	13.9	44	
	Mean yield		24.8			
LSD .05	4.2	5.7	4.9			

a- 1959 and 1961 data not available, three-year average
b- Using Duncan's Multiple Range Test at 5% level

Table 6. Standard Variety Spring Wheat and Durum Trial, Dryland, U. S. Newell Field Station, Newell, 1957-1962[a]

Variety	1957	1959	1960	1962	1957-62[a]	1962 Test wt.	Statistical significance[b]
	Average yield, bu/acre					lb/bu.	
Langdon				40.1		64	
Ramsey				39.5		65	
Wells				38.5		63	
Lakota				37.3		62	
Mida	16.0	0.6	12.2	36.8	16.4	62	
CI 13162	20.3	0.6	13.4	35.7	17.5	60	
CI 13242			14.2	35.3		59	
CI 13340				33.5		60	
Selkirk	19.7	0.4	12.9	33.5	16.6	57	
CI 13465			12.2	32.0		60	
Justin				31.8		59	
Lee	18.5	0.2	11.8	30.5	15.3	61	
Spinkcota	17.0			29.1		62	
Pembina			12.4	27.7		59	
Rushmore	15.3		13.3	25.2		58	
Conley	14.0	0.6	12.0	23.8	12.6	59	
Thatcher	19.4	0.9	12.6	23.7	14.2	57	
Canthatch			10.9	23.5		58	
Ceres	15.2	0.8	11.6	12.8	10.1	48	
Marquis		0.9	11.3	7.4		40	
Mean yield				29.9			
LSD .05	NS			NS	6.1		

a - Four-year average: 1958-hailed out: 1961-drought, no crop.
b - Using Duncan's Multiple Range Test at the 5% level.

Table 7. Standard Variety Spring Wheat and Durum Trial, Central Substation, Highmore, 1958-1962[a]

Variety	1958	1960	1962	1958-62[a]	1962 Test wt.	Statistical significance[b]
	Average yield, bu/acre				lb/bu.	
Wells	48.8	21.5	52.4	40.9	60	
CI 13340			49.9		59	
Lakota	42.9	21.9	47.1	37.3	58	
Langdon	45.1	20.9	45.3	37.1	61	
Pembina		24.5	39.6		58	
Selkirk	33.4	23.1	37.6	31.4	58	
Justin			37.4		59	
Ramsey	40.9	20.8	37.3	33.0	60	
Lee	34.6	24.6	37.2	32.1	58	
CI 13162			36.3		60	
CI 13242			36.1		57	
CI13465			33.8		57	
Mida	35.1	23.4	32.6	30.4	60	
Spinkcota	34.6	24.8	32.4	30.6	61	
Rushmore	30.1	23.4	30.9	28.1	59	
Conley	32.6	14.8	27.2	24.9	57	
Thatcher	28.3	20.5	27.0	25.3	55	
Canthatch	28.4	22.6	26.1	25.7	57	
Ceres	29.0	19.3	22.6	23.6	52	
Marquis	23.3	19.1	10.6	17.7	45	
Mean yield			35.0			
LSD .05	4.7	3.0	8.7			

a- Three-year average: 1959 and 1961 data not available
b- Using Duncan's Multiple Range Test at the 5% level.

Table 8. Standard Variety Spring Wheat and Durum Trials, Southeast Research Farm, Beresford, 1958-1962[a]

Variety	1958	1960	1962	1958-62[a]	1962 Test wt.	Statistical significance[b]
	Average yields, bu/acre				lb/bu.	
Lathrop			10.3		51	
Spinkcota	20.6	25.5	10.1	18.7	56	
CI 13465			8.5		50	
Wells	20.8	39.4	8.3	22.8	48	
Rushmore	20.7	28.2	8.1	19.0	46	
Lakota	25.4	35.9	7.8	23.0	46	
CI 13340			7.6		46	
Pembina		35.1	7.3		42	
CI 13162	20.6		7.2		50	
CI 13242			6.9		45	
Lee	19.7	22.9	6.9	16.5	46	
Canthatch	21.7	25.1	6.5	17.8	48	
Thatcher	22.3	25.0	6.5	17.9	45	
Conley	19.3	18.9	6.4	14.9	42	
Ceres	22.7		5.9		44	
Selkirk	21.4	28.8	5.7	18.6	43	
Langdon	23.9	39.5	4.9	22.8	45	
Mida	22.7	22.0	4.7	16.5	56	
Ramsey	19.2	28.4	4.6	17.4	44	
Justin			4.5		41	
Mean yield			6.9			
LSD .05	2.8	6.9	3.0			

a- 1958 and 1960 data from station formerly at Menno; 1959 and 1961, unavailable

b- Using Duncan's Multiple Range Test at the 5% level

Table 9. Standard Variety Spring Wheat and Durum Trials, Irrigated, U. S. Newell Field Station, Newell, 1957-1962[a]

Variety	1957	1959	1960	1962	1957-62[a]	1962 Test wt.
	Average yields, bu/acre					lb/bu.
Wells				44.2		62
Selkirk	16.4	36.4	41.4	40.7	33.7	59
Pembina		31.8	40.1	39.5		58
Lee	18.3	25.5	41.2	37.8	30.7	58
Justin				36.3		60
Canthatch		36.2	41.6	36.3		58
Rushmore	17.0	30.7	40.2	35.7	30.9	59
CI 13162	20.4	34.5	40.2	35.1	32.6	60
CI 13465			43.0	34.1		58
Mida	17.5	38.3	38.7	33.3	32.0	60
Langdon				30.5		61
Ceres	18.2	40.2	41.7	20.8	30.2	50
			Mean yield	35.4		
LSD .05	3.0	6.2	NS	NS		

a- Hailed out in 1958: 1961 data not available; four year average.

Table 10. Standard Variety Oat Trials, Agronomy Farm
Brookings, 1958-1962.

Variety	1958	1959	1960	1961	1962	1958-62	1962 Test wt. lb/bu.	Statistical significance[a]
	Average yields, bu/acre							
Garland					94.7		34	
Minhafer	59.9	38.0	113.8	98.2	92.3	80.4	35	
Cherokee	57.1	39.5	119.5	90.1	82.0	77.6	34	
Putnam 61				96.1	81.9		35	
CI 7399					81.8		30	
Clinton					81.4		33	
Tonka				97.1	79.2		37	
CI 7440					78.5		32	
Newton					77.6		33	
Shield					76.8		32	
Dodge				86.5	74.6		32	
Goodfield	57.1	21.0	105.6	96.4	73.8	70.8	37	
Waubay	67.7	37.0	120.9	104.2	73.7	80.7	30	
CI 7473			118.4	106.4	73.4		27	
Burnett	73.4	39.5	117.7	113.8	72.1	83.3	29	
Sauk					71.4		27	
Brunker					70.3		33	
Andrew	57.4	40.5	125.1	89.0	70.3	76.5	29	
Dupree	69.5	44.5	124.1	101.4	69.5	81.8	32	
Nodaway				98.9	69.2		33	
Nehawka	56.9	33.5	129.7	100.7	65.9	77.3	31	
Mo. 0-205	73.4	45.5	126.2	98.6	65.7	81.9	32	
Marion	73.4	39.5	117.7	78.0	64.8	74.7	33	
Clintland 60	73.3	31.0	119.1	106.4	64.7	78.9	30	
Minton	80.1	38.5	116.3	113.4	63.9	82.4	29	
Rodney	70.9	34.5	103.9	103.9	63.4	75.3	28	
Portage			121.6	107.4	62.4		32	
Osage					61.0		31	
Ajax					60.1		26	
Garry	68.8	41.0	118.0	111.7	59.5	79.8	26	
Park					58.2		26	
Vikota					54.9		27	
Branch					51.3		25	
Ransom					45.5		27	
James					28.4		39	
				Mean yield	65.0			
LSD .05	9.5	5.9	7.8	15.9	16.4			

a - Using Duncan's Multiple Range Test at the 5% level.

Table 11. Standard Variety Oat Trials, Southeast Research Farm, Beresford, 1958-1962.

Variety	1958[a]	1959[a]	1960[a]	1961	1962	1958-62	1962 Test wt.	Statistical significance[b]
	Average yields, bu./acre						lb./bu.	
Dupree					56.8		31	
CI 7399					54.3		33	
Minhafer	59.2	12.4	77.9	56.2	53.9	51.9	33	
Osage					53.7		31	
Portage			91.0	54.0	50.9		32	
Marion	59.4	7.0	73.7	60.5	50.6	50.2	31	
Tonka				38.1	49.5		36	
CI 7473					48.4		31	
Waubay	55.9	8.5	73.5	40.2	47.1	45.0	32	
Garry	64.1	3.5	81.8	55.2	45.1	49.9	26	
Clintland 60	48.3	4.4	88.2	37.8	44.7	44.7	33	
Dodge					44.1		32	
Andrew	64.1	7.3	89.7	65.5	43.7	54.1	32	
Ransom	62.7	7.4	70.6	46.8	42.2	45.9	31	
Mo. 0-205	69.9	6.9	96.3	56.5	39.0	53.7	31	
Rodney					38.9		30	
Garland					37.3		33	
Nehawka	44.0	14.6	84.7	58.1	36.9	47.7	31	
Burnett	64.9	8.3	89.6	45.5	34.8	48.6	31	
Nodaway				45.1	32.8		33	
			Mean yield		45.3			
LSD .05	NS	4.6	14.3	12.0	12.5			

a - Data from Menno farm; moved to Beresford in 1961
b - Using Duncan's Multiple Range Test at the 5% level

Table 12. Standard Variety Oat Trials, Irrigated, U. S. Newell Field Station, Newell, 1957-1962[a].

Variety	1957	1959	1960	1961	1962	1957-62	1962 Test wt.
	Average yields, bu./acre						lb./bu.
CI 7440					94.0		33
Andrew					79.1		29
Nodaway					78.3		33
Dodge				10.4	76.1		32
Marion	49.1	74.6	88.3	11.6	74.0	59.5	31
Garry	35.7	86.3	97.0	9.3	70.6	59.8	31
Minhafer	43.8	80.2	80.3	8.3	67.6	56.0	29
Clintland 60		67.0	83.6	7.0	67.3		29
Burnett	43.4	88.0	79.9	11.8	66.5	57.9	26
Nehawka		72.8	84.5	7.1	64.1		30
Cherokee					62.3		29
Dupree	50.7	75.4	94.1	9.0	60.5	57.9	29
Portage			86.4	8.2	60.0		30
Mo. 0-205	51.8	82.2	87.3	8.2	59.4	57.8	30
Ransom	36.3	78.2	85.5	10.1	56.8	53.4	32
			Mean yield		69.1		
LSD .05	13.5	12.1	6.4	NS	NS		

a - 1958 crop hailed out

Table 13. Standard Variety Oat Trials, North Central Substation, Eureka, 1958-1962.

Variety	1958	1959	1960	1961	1962	1958-62	1962 Test wt. lb/bu.
	Average yields, bu./acre						
CI 7473			35.4		76.5		32
Minhafer	111.3	31.1	30.4	36.5	72.9	56.4	34
CI 7399			34.6		70.8		32
Ajax					69.6		33
CI 7440					64.8		35
Marion	94.6	41.3	34.1	36.1	63.6	53.9	32
Garland					60.6		32
Waubay	110.2	27.5	30.2	25.8	59.8	50.7	32
Nehawka			32.6	29.1	59.7		32
Clintland 60	108.6	30.1	28.0	24.0	58.7	49.9	34
Mo. 0-205	120.9	19.1	37.2	33.1	58.5	53.8	36
Andrew	110.7	35.8	36.4	33.4	57.9	54.8	32
Burnett	94.3	47.6	33.6	35.8	56.6	53.6	32
Ransom	108.5	27.4	26.8	28.4	56.2	49.5	32
Rodney					54.7		32
Garry	100.4	43.6	32.0	29.5	54.2	51.9	29
Branch					51.6		30
Dodge				23.7	50.6		32
Dupree	115.0	38.4	27.8	38.5	47.4	53.4	31
Tonka				13.1*	41.6		36
			Mean yield		55.1		
LDS .05	16.8	NS	NS	9.5	NS		

*Severely damaged by grasshoppers

Table 14. Standard Variety Oat Trials, Dryland, U. S. Newell Field Station, Newell, 1957-1962[a].

Variety	1957	1959	1960	1961	1962	1957-62[a]	1962 Test wt. lb./bu.	Statistical significance[b]
	Average yields, bu./acre							
Burnett					90.7		38	
Rodney					89.2		40	
Mo. 0-205	56.8	5.9	23.2	a	88.3	43.6	38	
Garry					85.2		38	
Ransom	59.6	6.7	22.5		84.8	43.4	38	
Dupree	59.0	6.0	28.1		83.3	44.1	38	
Marion					82.5		37	
CI 7440					79.7		36	
Minhafer	53.5	3.8	24.6		79.5	40.4	37	
Andrew	51.4	5.4	26.4		78.9	40.5	37	
Dodge					76.8		37	
Cherokee					75.2		37	
Clintland 60		6.5	20.6		73.5		37	
Brunker	50.2	2.9	19.8		72.8	36.4	36	
Nehawka		5.4	22.1		70.1		37	
Tonka					66.3		40	
			Mean yield		79.8			
LSD .05	NS	NS	NS		11.5			

a - Four-year average: 1958 hailed out, 1961 failure due to drought.
b - Using Duncan's Multiple Range Test at the 5% level.

Table 15. Standard Variety Oat Trials, Northeast Research Farm, Watertown, 1958-1962.

Variety	1958	1959	1960	1961	1962	1958-62	1962 Test wt. lb/bu.	Statistical significance[a]
	Average yields, bu./acre							
Minhafer	111.5	23.9	74.8	89.8	93.6	78.7	30	
Garland					91.0		29	
Nehawka				85.4	90.0		29	
Portage				95.5	88.8		30	
Dodge				91.0	88.2		33	
Clintland 60		11.2	58.0	89.4	88.1		30	
CI 7473			73.6	91.0	76.9		28	
Dupree					76.5		26	
Mo. 0-205	107.7	14.1	40.0	99.3	73.1	66.8	26	
Nodaway				92.4	72.0		29	
Tonka				85.5	70.4		32	
Rodney	128.5	20.7	80.0	88.7	70.0	77.6	29	
Burnett	115.3	19.4	73.3	92.5	65.9	73.3	27	
CI 7399			66.0		65.9		24	
Ransom	104.9	15.5	61.9	91.5	64.2	67.6	26	
Branch					61.1		24	
Andrew		16.4	77.9	96.9	61.0		24	
Garry	123.8	19.3	65.9	94.9	60.0	72.8	22	
Marion	107.7		74.8	88.2	57.7		26	
Waubay	101.1		70.6	93.9	56.3		26	
			Mean yield		73.5			
LSD .05	11.3	7.6	NS	8.6	17.2			

a - Using Duncan's Multiple Range Test at the 5% level

Table 16. Standard Variety Oat Trials, Central Substation, Highmore, 1958-1962[a]

Variety	1958	1959	1960	1961	1962	1958-1962[a]	1962 Test wt. lb./bu.	Statistical significance[b]
	Average yields, bu./acre							
CI 7399			91.1		117.5		33	
Minhafer	93.0	a	70.4	44.8	112.7	80.2	34	
CI 7440					112.1		35	
Garland					110.4		33	
CI 7473			62.1	33.3	106.9		33	
Clintland 60	93.2		42.7	45.6	103.5	71.3	35	
Burnett	97.1		72.2	47.1	98.8	78.8	35	
Dodge				27.6	96.2		35	
Cherokee	87.9		64.6	42.0	93.6	72.0	33	
Rodney					91.2		27	
Nehawka	97.6		76.8	42.9	90.7	77.0	32	
Mo. 0-205	92.7		69.0	41.5	88.7	73.0	33	
Nodaway				46.4	88.3		32	
Dupree	80.5		63.4	40.6	87.6	68.0	32	
Marion	91.0		61.9	37.9	86.7	69.4	32	
Garry	88.4		69.7	35.5	86.0	69.9	27	
Andrew	84.0		84.1	39.0	84.2	72.8	33	
Ransom	84.6		54.8	41.5	77.6	64.6	32	
Tonka				36.7	74.6		36	
Waubay	100.9		73.4	46.7	72.1	73.3	32	
			Mean yield		94.0			
LSD .05	17.6		14.7	6.0	14.9			

a Crop failure in 1959 due to drought, only four-year average
b Using Duncan's Multiple Range Test at the 5% level

Table 17. Standard Variety Barley Trials, North Central Substation, Eureka, 1958-1962.

Variety	1958	1959	1960	1961	1962	1958-62	1962 Test wt.	Statistical Significance[a]
	Average yields, bu./acre						lb./bu.	
Larker				26.6	57.9		45	
Liberty	51.2	17.9	22.2	26.5	46.5	32.9	43	
Otis					40.1		40	
Spartan			29.3		37.8		42	
Plains	56.9	15.4		17.6	37.1		42	
Custer	63.1	18.9		24.4	36.1		41	
Kindred	33.4	18.6	12.0	24.7	35.8	24.9	40	
Parkland	56.2	19.1	14.8		35.6		42	
Feebar	37.8	17.2	8.9	17.7	35.3	23.4	39	
Betzes	53.5	26.3	24.6	27.3	34.5	33.2	41	
Traill	47.1	15.4	13.6	24.3	33.4	26.8	43	
Trophy				26.6	33.3		42	
			Mean yield		38.6			
LSD .05	12.0	9.1	4.6	6.1	10.3			

a - Using Duncan's Multiple Range Test at the 5% level.

Table 18. Standard Variety Barley Trials, Central Substation, Highmore, 1958-1962[a].

Variety	1958	1959	1960	1961	1962	1958-62	1962 Test wt.	Statistical significance[b]
	Average yields, bu./acre						lb./bu.	
Custer	57.6	a		35.7	67.0		43	
Traill	51.2		16.7	22.2	64.4	38.6	46	
Trophy				21.7	61.3		46	
Parkland	60.7		16.8	24.4	57.7	39.9	48	
Liberty	54.1		32.7	28.7	54.0	42.4	46	
Otis					53.0		43	
Larker				24.0	52.7		48	
Plains	53.6			20.9	50.8		45	
Kindred	47.9		14.1	18.0	46.3	31.6	47	
Spartan	37.0		36.7		43.8		46	
Betzes			32.3	20.0	43.0	31.8	46	
Feebar	39.4		33.9	19.0	42.0	33.6	43	
			Mean yield		53.8			
LSD .05	12.0		7.5	6.6	12.6			

a - Four-year averages, 1959 crop lost to drought
b - Using Duncan's Multiple Range Test at the 5% level

Table 19. Standard Variety Barley Trials, Southeast Research Farm, Beresford, 1958-1962[a].

Variety	1958	1959	1960	1961	1962	1958-62	1962 Test wt. lb./bu.	Statistical significance[b]
	Average yields, bu./acre							
Liberty	40.6	15.3	a	35.5	42.3	33.4	42	
Kindred	36.0	2.9			32.1		40	
Larker					31.6		44	
Traill	39.0	5.2			26.3		41	
Trophy					24.8		40	
Plains	30.9	10.0		34.7	21.5	24.3	38	
Custer	43.0	9.3			20.2		34	
Feebar	34.4	6.5			18.0		35	
Otis	39.7	15.6		23.1	17.7	24.0	38	
Parkland					15.4		39	
Spartan	30.4	12.2		24.4	14.4	20.4	38	
Betzes		9.1		22.4	11.8		36	
				Mean yield	23.0			
LSD .05	4.2	5.6		NS	7.4			

a - Data from Menno Station, 1958 and 1959; lost 1960 to windstorm
b - Using Duncan's Multiple Range Test at the 5% level

Table 20. Standard Variety Barley Trials, Northeast Research Farm, Watertown, 1958-1962.

Variety	1958	1959	1960	1961	1962	1958-62	1962 Test wt. lb./bu.	Statistical significance[a]
	Average yields, bu./acre							
Larker				42.7	51.8		41	
Traill	68.0	13.9	37.2	41.8	48.8	41.9	37	
Trophy				45.5	47.2		38	
Parkland	58.6	24.3	27.0	37.4	44.0	38.3	37	
Betzes		14.9	35.1	40.3	43.7		41	
Feebar	69.9	4.5	34.0		41.9		88	
Otis					41.3		43	
Spartan			26.3		38.9		42	
Liberty	52.3	16.2	48.3	41.6	38.2	39.3	35	
Plains	55.4	13.8			38.1		36	
Custer	69.9	14.3			36.4		33	
Kindred	46.0	16.1	27.0	40.2	31.1	32.1	35	
			Mean yield		41.8			
LSD .05	10.0	12.2	10.9	NS	7.7			

a - Using Duncan's Multiple Range Test at the 5% level

Table 21. Standard Variety Barley Trials, Agronomy Farm, Brookings, 1958-1962.

Variety	1958	1959	1960	1961	1962	1958-62	1962 Test wt. lb./bu.	Statistical significance[a]
	Average yields, bu./acre							
Larker				69.0	53.1		44	
Liberty	47.7	20.5	58.7	64.0	51.9	48.6	40	
Feebar	24.5	13.4	54.9	38.7	50.9	36.5	38	
Traill	47.6	18.2	48.5	64.2	49.6	45.6	41	
Plains	23.8	22.0	51.6		48.6		39	
Otis					46.6		39	
Custer	36.1	21.6	69.6	58.7	46.5	46.5	39	
Husky	48.1	12.2	44.6	51.2	45.6	40.3	36	
Swan					41.9		40	
Spartan	39.1	16.3	53.4	38.5	40.8	37.6	41	
Parkland	53.4	19.7	51.9	63.5	39.0	45.5	44	
Trophy				69.7	38.9		40	
Odessa	37.1	11.9	36.8	46.7	38.4	34.1	41	
Betzes				47.3	32.1		36	
Kindred	35.5	12.8	35.0	50.2	31.1	32.9	39	
			Mean yield		43.7			
LSD .05	9.3	7.4	12.9	--	7.8			

a - Using Duncan's Multiple Range Test at the 5% level

Table 22. Standard Variety Barley Trials, U. S. Newell Field Station, Newell, 1962.

Dryland				Irrigated		
Variety	1962 B/A	Test wt. lb./bu.	Statistical significance[a]	Variety	1962 B/A	Test wt. lb./bu.
Liberty	56.2	47		Traill	81.5	48
Larker	54.2	48		Custer	65.3	46
Betzes	51.6	47		Plains	64.9	47
Plains	49.4	45		Feebar	63.8	44
Otis	48.2	46		Betzes	62.1	48
Spartan	47.6	48		Liberty	61.9	47
Traill	47.5	47		Kindred	53.9	48
Trophy	45.1	47		Spartan	50.2	46
Parkland	44.3	47		Otis	47.3	45
Custer	41.1	43		Trophy	45.7	46
Feebar	37.8	42				
Kindred	33.6	45				
Mean yield	46.4			Mean yield	59.6	
LSD .05	8.4			LSD	NS	

a - Using Duncan's Multiple Range Test at the 5% level

Table 23. Standard Variety Flax Trials, Agronomy Farm, Brookings, 1958-1962.

Variety	1958	1959	1960	1961	1962	1958-62	1962 Test wt.	Statistical significance[a]
	Average Yields, bu./acre						lb./bu.	
Arny	18.6	13.0	20.0	25.3	11.5	17.7	49	
CI 1914		15.3	21.3	27.5	10.1		44	
Windom		13.9	23.4	29.6	9.1		47	
Redwing	17.4	13.3	20.9	23.9	8.9	16.9	46	
Marine	17.0	13.9	20.7	26.9	7.9	17.3	50	
Bison					7.8		47	
Sheyenne	15.6	11.9	18.8	25.1	7.2	15.7	49	
Linda					7.1		43	
Bolley	19.6	13.6	22.7	23.1	7.0	17.2	49	
Redwood	19.6	12.4	21.5	29.2	5.8	17.7	47	
B-5128	19.2	11.4	17.0	28.0	4.6	16.0	47	
Norland	20.7	12.0	14.8	27.3	4.0	15.8	44	
			Mean yield		7.6			
LSD .05	1.0	1.6	4.6	1.9	2.3			

a - Using Duncan's Multiple Range Test at the 5% level

Table 24. Standard Variety Flax Trials, Central Substation, Highmore, 1958-1962[a]

Variety	1958	1959	1960	1961	1962	1958-62	1962 Test wt.	Statistical significance[b]
	Average yields, bu./acre						lb./bu.	
Sheyenne					9.9		50	
Marine	21.5	a	19.2	10.7	9.8	15.3	50	
Arny	22.2		17.1	9.5	9.7	14.6	50	
CI 1914			23.2	10.8	7.5		48	
Bolley	24.2		22.3	10.0	6.9	15.9	49	
B-5128	25.9		16.7	10.5	6.1	14.8	48	
Redwood	23.8		16.9	8.9	6.0	13.9	48	
Redwing	23.4		26.0	10.4	5.9	16.4	49	
Bison					5.5		49	
Windom			17.2	13.0	5.0		48	
Linda	28.2		19.6	10.7	4.7	15.8	47	
Norland	27.1		12.1	7.2	3.6	12.5	47	
			Mean yield		7.6			
LSD .05	0.8		3.5	2.2	3.5			

a - Four-year average, crop lost to drought in 1959
b - Using Duncan's Multiple Range Test at the 5% level

Table 25. Supplemental Agronomic Data for Standard Variety Oat Trials at Brookings and Watertown, South Dakota, 1962.

Variety	Brookings, Lodging (percent)	Watertown % Lodging (4-rep. aver)	Watertown Crown rust a/ %
Andrew	95	29	MR - 65
Burnett	95	15	MR - 40
Clintland 60	95	9	MR - 10
Dodge	60	8	R - t
Dupree	95	75	MS - 65
Garry	85	13	S - 100
Marion	85	55	S - 100
Minhafer	90	13	MR - 70
Mo. 0-205	95	35	S - 100
Nehawka	95	38	MR - 25
Ransom	95	21	MS - 65
Rodney	80	10	MR - 40
Portage	90	11	MR - 25
Tonka	95	14	S - 100
Waubay	25	13	S - 100
Nodaway	35	9	MS - 65
Branch	85	28	MS - 100
Ajax	75		
Osage	75		
Cherokee	70		
Brunker	95		
Park	25		
Goodfield	20		
Clinton	40		
Shield	40		
Sauk	50		
Minton	40		
Putnam 61	60		
Newton	25		
Vikota	95		
James hulless	70		
Garland	25	30	R - 1
CI 7399	50	14	MR - 25
CI 7440	20		
CI 7473	65	29	MR - 25

a/ Crown Rust Reaction
R - Resistant
MR - Moderately Resistant
MS - Moderately Susceptible
S - Susceptible

Table 26. Small grain variety test at the South Central Research Farm, Presho, South Dakota, 1962[a]

Oats[b]			Barley[c]			Spring Wheat[b]		
Variety	Test wt.	Yield	Variety	Test wt.	Yield	Variety	Test wt.	Yield
	lb./bu.	bu./acre		lb./bu.	bu./acre		lb./bu.	bu./acre
Clintland 60	34	76.6	Larker	49	55.3	CI 13162	59	27.1
Nehawka	35	70.6	Liberty	49	52.5	Pembina	57	20.6
Burnett	36	67.8	Trophy	46	50.3	Lakota	56	20.0
CI 7440	34	65.2	Traill	46	48.1	Langdon	56	19.0
Garry	34	65.2	Plains	49	47.5	CI 13465	58	17.1
Mo. 0-205	34	62.7	Otis	40	24.1	Selkirk	55	15.3
Dupree	32	61.7	Betzes	37	22.7	Lee	57	14.6
Dodge	36	60.2	Spartan	40	22.3	Rushmore	57	13.4
Marion	35	57.0				Ramsey	57	13.1
Cherokee	34	57.0				CI 13242	56	13.0
Andrew	34	54.2				Canthatch	55	8.1
Ransom	34	53.9				Ceres	49	3.1
Nodaway	37	52.5						
Portage	35	50.6						
Minhafer	36	48.6						
LSD .05		16.0			3.7			6.5

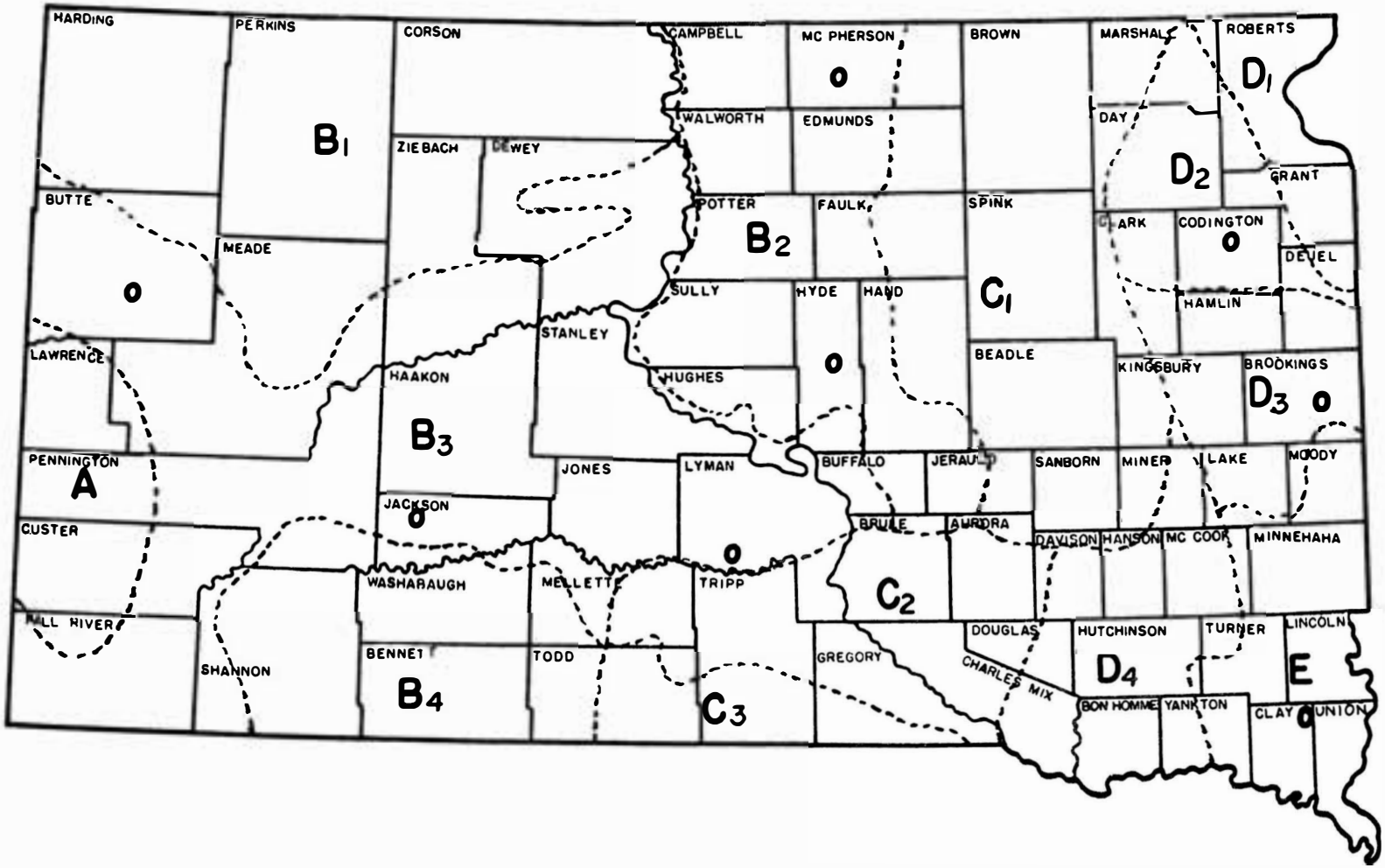
a - These data are included as a service to producers and are not part of the variety testing program. Furnished through courtesy of H. A. Geise.
b - Two replications.
c - Three replications.
Note: Plots harvested with combine. Plot size, 4 feet by 48 feet.

Table 27. Safflower Trial Data from South Central Research Farm, Presho, and Range Field Station, Cottonwood, 1962*.

Variety	Cottonwood	Presho
	Average yields, pounds per acre	
Gila	608.9	374.1
Nebraska 10	847.5	514.5
Pacific #1	719.9	258.5
U. S. 10	724.1	207.6

* Supplemental data not regularly included in testing program.

CROP ADAPTATION AREAS OF SOUTH DAKOTA



O-LOCATIONS OF TRIALS

1963 Recommended spring small grain varieties and areas of best adaptation

Variety	Areas of best adaptation
Spring Wheat	
Canthatch	B1
Justin	B1, B2, C1, D1, D2, D3
Lee #	A, B1, B2, B3, B4
Rushmore	A, B1, B2, B3, B4, C2
Selkirk #	B1, B2, C1, D1, D2, D3
Pembina	B1, B2, C1, D1, D2, D3
Durum	
Lakota	B1, B2, C1, C2, D1, D2, D3
Langdon	B1, B2, C1, C2, D1, D2, D3
Ramsey	B1, B2, C1, C2, D1, D2, D3
Wells	B1, B2, C1, C2, D1, D2, D3
Flax	
Arny	C1, D1, D2, D3
B-5128	C1, D1, D2, D3
B-5128(ss)	C1, D1, D2, D3
Bolley	B1, B2, C1, D1, D2, D3, D4, E
Marine	B1, B2, C1, D1, D2, D3, D4, E
Marine	B1, B2, C1, D1, D2, D3, D4, E
Windom	C1, D1, D2, D3
Barley	
Kindred	C1, D1, D2, D3, B2[a]
Larker	A, B2, C1, D2, D3
Liberty #	State Wide
Plains	State Wide
Traill #	A, B2[a], C1, D1, D2, D3
Trophy	A, B2[a], C1, D1, D2, D3
Spartan	A, B1, B2*, B3, B4, C2, C3

Variety	Areas of best adaptation
Oats	
Andrew #	State Wide
Bonkee	D4, E
Burnett #	C1, C2, D1, D2, D3, D4, E
Clintland 60	D3, D4, E
Dodge	D1, D2, D3, C1[a]
Dupree	B1, B2, B3, B4, C2
Garland	C1, D1, D2, D3
Garry	C1, D1, D2, D3
Minhafer	State Wide
Marion	C1, D2, D3, D4, E
Mo. 0-205	State Wide, except B1
Nehawka	B3, B4, C2, C3
Ortley (7473)	C1[a], D1, D2, D3
Portage	C1[a], D1, D2, D3
Ransom	State Wide
Rodney	D1, D2, D3
CI 7440	B3, B4, C2, C3, B2*

#For both irrigated and dryland
a Southern counties
* Northern counties

Recommendations courtesy of R. A. Cline and
E. E. Sanderson, Associate Extension Agronomist