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1968 Small Grain Variety Trials

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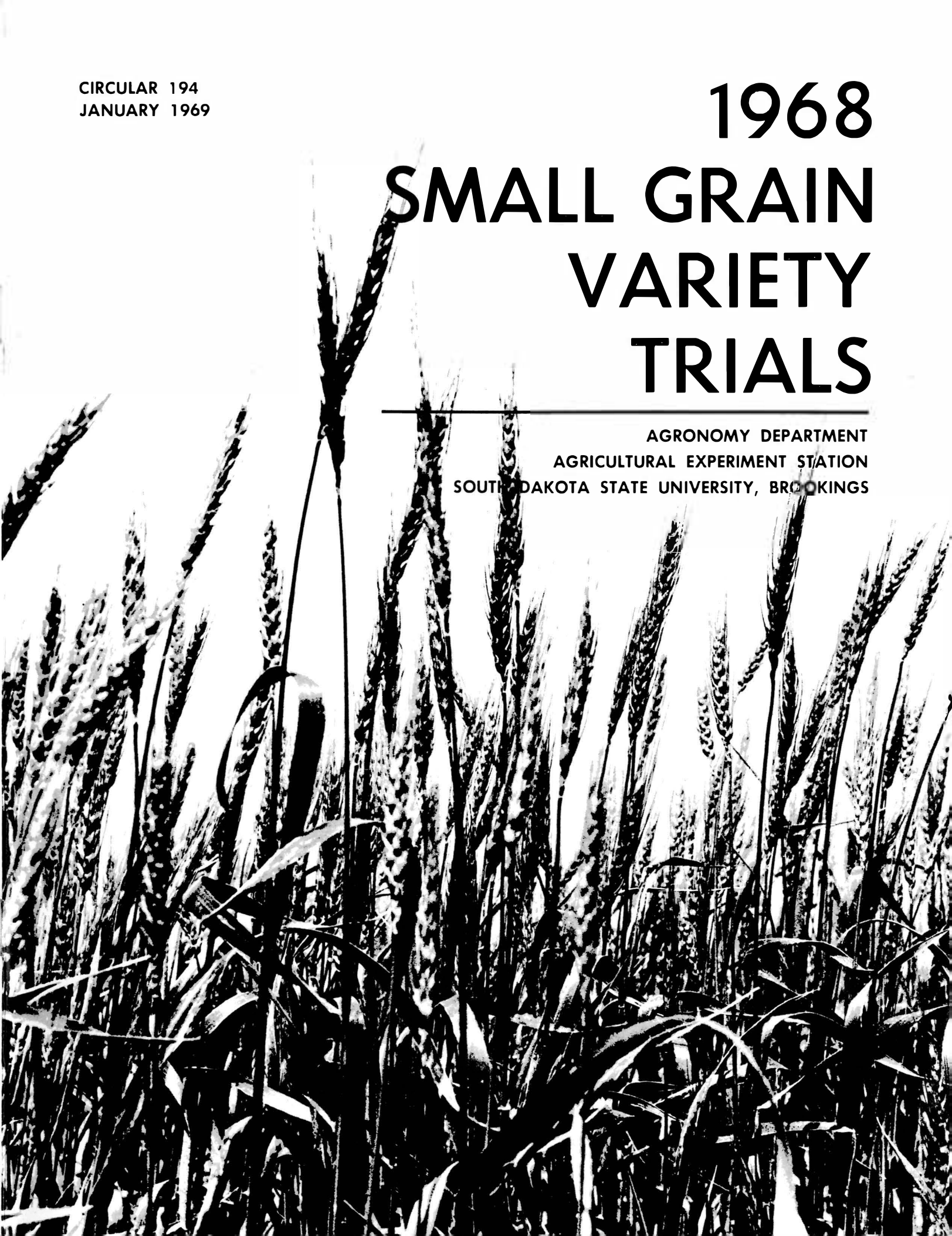
1968 SMALL GRAIN VARIETY TRIALS

AGRONOMY DEPARTMENT
AGRICULTURAL EXPERIMENT STATION
SOUTH DAKOTA STATE UNIVERSITY, BROOKINGS



LISTING OF SMALL GRAIN TABLES

Standard Variety Small Grain Trials
1964-1968

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Variety tests with small grains are conducted annually at selected sites throughout South Dakota. The 1968 trails included varieties currently grown by farmers, newer releases not yet in wide use, and experimental strains being evaluated for possible release. Data reported in this circular are grain yields, test weights, available five-year averages and other supplemental data. The trials were conducted under supervision of the Crop Performance Testing Activity, Agricultural Experiment Station.

Location of Trials

Climate, soil and topography generally define certain areas or boundries across the state, but these are not absolute. Small grains are more widely adapted than are row crops in South Dakota. Testing at Brookings alone is insufficient so trials are conducted at up to seven locations with some of the crops. The locations and dates of seeding are presented in Table 1. Results of tests of soil samples taken prior to seeding and the fertilizer applied are listed in Table 2.

Weather and Climatic Conditions

The fall seeding was accomplished in mid-September. The last of March and early April were quite open and field work began in many areas in early April. The spring seedings were accomplished in mid-April in all but the north central part of the state. Excessive rainfall in late April delayed seeding until early May in much of the north central area. Precipitation was limited in May but temperatures were much below normal and growth progressed slowly. The cool temperatures continued into June and precipitation was quite variable.

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TABLE 1. LOCATION OF TRIALS AND DATES OF SEEDING AND HARVESTING, 1968

County	Location and Post Office	Date Seeded	Date Harvested
	Barley		
Brookings	Agronomy Farm, Brookings	April 13	July 22
Clay	Southeast Research Farm, Beresford	April 9	July 19
Codington	Northeast Research Farm, Watertown	April 11	August 1
Hyde	Central Substation, Highmore	April 10	July 25
McPhearson	Northcentral Substation, Eureka	April 25	August 7
Pennington	O. G. and Lavon Shearer Farm, Quinn	April 17	July 29
Perkins	Joe Wunder Farm, Bison	April 8	hailed out
	Flax		
Brookings	Agronomy Farm, Brookings	April 27	August 13
Codington	Northeast Research Farms, Watertown	April 29	August 14
Hyde	Central Substation, Highmore	April 26	August 8
	Oats		
Brookings	Agronomy Farm, Brookings	April 13	July 22
Clay	Southeast Research Farm, Beresford	April 9	July 23
Codington	Northeast Research Farms, Watertown	April 11	August 1
Hyde	Central Substation, Highmore	April 10	July 25
McPherson	Northcentral Substation, Eureka	April 25	August 8
Pennington	O. G. and Lavon Shearer Farm, Quinn	April 17	July 28
Perkins	Joe Wunder Farm, Bison	April 18	hailed out
	Spring Wheats		
Brookings	Agronomy Farm, Brookings	April 13	July 31
Clay	Southeast Research Farm, Beresford	April 9	July 19
Codington	Northeast Research Farm, Watertown	April 11	August 6
Hyde	Central Substation, Highmore	April 10	August 2
McPhearson	Northcentral Substation, Eureka	April 25	August 7
Pennington	O. G. and Lavon Shearer Farm, Quinn	April 17	July 29
Perkins	Joe Wunder Farm, Bison	April 18	hailed out
	Winter Wheat		
Clark	Northeast Research Farm, Garden City	Sept. 21	poor stands
Clay	Southeast Research Farm, Beresford	Sept. 22	July 19
Codington	Northeast Research Farm, Watertown	Sept. 14	poor stands
Hyde	Central Substation, Highmore	Sept. 12	cutworms
Lyman	Southcentral Research Farm, Presho	Sept. 12	July 22
Pennington	O. G. and Lavon Shearer Farm, Quinn	Sept. 7	July 29
	Rye		
Brookings	Agronomy Farm, Brookings	Sept. 20	July 22
Clay	Southeast Research Farm, Beresford	Sept. 22	July 18
Codington	Northeast Research Farm, Watertown	Sept. 14	August 1
Hyde	Central Substation, Highmore	Sept. 12	July 20
Lyman	Southcentral Research Farm, Presho	Sept. 12	July 22

TABLE 2. RESULTS OF LABORATORY ANALYSIS OF SOIL SAMPLES TAKEN PRIOR TO SEEDING SMALL GRAIN TRIALS AND FERTILIZER APPLIED FOR THE 1968 CROP YEAR

Location	Soil Classification	Percent Organic Matter	P	K	pH	Fertilizer Applied		
			Lbs/A				Lbs/A	
Beresford	Kranzburg silty clay loam	3.4	46	682	6.9	plowed down in fall	40	30
Bison	Morton silt loam	2.6	44	648	7.0	Fallowed		
Brookings	Vienna silt loam	3.5	25	181	6.4	plowed down	32	40
Eureka	Williams loam	3.9	140	682	7.1	disced under	27	14
Highmore	Williams loam	2.4	38	507	6.3	disced under	27	14
Quinn	Morton silt loam	2.0	43	533	6.5	disced under	18	46
Watertown	Kranzburg silt loam	3.7	66	404	6.2	plowed down in fall	60	40

Temperatures in many parts of the state were below normal all season. This would normally be considered beneficial for growth but combined with highly variable amounts of precipitation when critical needs arose caused lower yields and poorer quality. Conversely, areas in the southcentral part of the state had limited precipitation and at least normal temperatures. Grain in that area failed to exceed a height of 8 - 10 inches and also yielded very poorly.

Lodging was limited in the trials. Severe lodging occurred in some areas when winds in excess of 100 m.p.h. acompanied storms in late June and early August.

Hail damage was severe in some areas such as Perkins County where 40% of the small grain crop was destroyed by two severe storms, one in late June and the other in mid-July. The trial site east of Bison was destroyed by the severe storm July 17th and left growth only 1/2 inch in height.

Freezing temperatures were damaging to some seedings but did not affect others. The flax seeding at Brookings had just broken the ground surface and reseeding was necessary. The flax trail at Watertown also received some minor damage from frost.

Weather data are presented in Table 3 for those sites near regular reporting stations. Data are not available for the Quinn site.

Planting and Harvesting Procedures

Field preparation, fertility level and rotation sequence are generally the same each year at the substations in accordance with recommended practices. The trials at Bison and Quinn were on fallowed land. The fertilizer at Quinn was broadcast in the fall prior to seeding the winter grain. The trails at each location were

TABLE 3. TEMPERATURE AND PRECIPITATION DATA FOR THE SMALL GRAIN GROWING SEASON OF SOUTH DAKOTA FOR 1968

Location	Month	Temperature			Precipitation		
		Mean Average	Departure from Normal	Ave. Departure	Monthly Total	Departure from Normal	Total Departure
		Degrees F.				Inches	
Eureka*	April	43.0	-0.6		3.62	2.27	
	May	50.1	-5.6		1.86	-0.72	
	June	63.9	-1.1		5.88	2.05	
	July	68.2	-4.2		1.49	-0.96	
	Aug.	66.7	-4.0	-3.1	1.79	-0.62	2.02
	Last freeze 32° - May 24				14.64		
Highmore* 1 W	April	45.7	0.3		4.34	2.60	
	May	52.4	-4.8		1.55	-0.78	
	June	66.1	-0.7		5.29	1.75	
	July	71.7	-2.8		4.39	2.41	
	Aug.	68.8	-4.0	-2.4	3.12	1.08	7.06
	Last freeze 30° - May 24				18.69		
Brookings* 2 NE	April	44.1	-1.1		4.94	3.17	
	May	51.2	-6.4		1.52	-1.27	
	June	66.2	-0.9		4.26	0.31	
	July	68.4	-4.8		3.27	1.12	
	Aug.	67.4	-3.8	-3.4	3.66	0.69	4.02
	Last freeze 32° - May 24				17.65		
Centerville* 6 SE	April	50.7			3.16		
	May	55.7			0.92		
	June	73.3			4.62		
	July	73.3			6.43		
	Aug.	73.5			2.16		
	Last freeze 31° - May 20				17.29		
NE Farm 15 N Watertown	April	41.9			3.04		
	May	50.3			2.15		
	June	64.3			3.18		
	July	67.3			2.39		
	Aug.	68.5			1.53		
	Last freeze 32° - May 24				12.29		

* Based upon reports of Monthly Climatological Data, U. S. Dept. of Commerce, Environmental Science Services Administration, Office of the State Climatologist, State University, Brookings, South Dakota 57006.

seeded in a randomized-block design with four replications. Plots were 14 feet long and of four rows one foot apart. The two center rows were trimmed of border effect to 12 feet in length before harvest for yield determinations. A small National 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 sample was returned to the Main Station, dried when necessary and stored in a pole shed until threshed in a Vogel-type nursery thresher. Following threshing, the samples were cleaned, weighed for yield determination and bushel weights recorded.

Measurements of Performance

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

If the trial means were found not to be statistically different, a notation, N. S., is shown under the table. When the trials were found to have statistically significant differences between mean yields, an additional test, Duncan's Multiple Range Test, was run to show individual comparisons between means at the 5% probability level.

As an example of Duncan's Test, observe in Table 5 that varieties accompanied by the same lower case letter under the column Statistical Significance are not statistically different in 1968 yields. In Table 5, under the prevailing climatic conditions of 1968, Larker, Dickson and all entries down through and including Paragon were not statistically different in yield from each other. This example holds true for all tables having significant differences in 1968 yields.

Discussion of Results

A more accurate estimation of a variety's capabilities under variable conditions is obtained from several years data. The 1968 and available five-year averages are presented in tables following the text.

Oats: Only one newly released variety was included in the 1968 oat trials and results were not outstanding. The 1968 year was similar to 1967 in that cool weather prevailed throughout the season and beneficial precipitation came in late June. In many areas where early to mid-season varieties normally produce the higher yields, the later varieties were superior for yield. Some of the newer releases included in the past year or two are later maturing varieties and have produced excellent yields. Normally, recommendations are plausible after three years but with two consecutive years of atypical weather caution must be exercised in looking at the results and choosing a variety. Adequate fertilizer

was applied at all sites. Specific varieties may react differently when fertility levels are low. Some varieties have produced high yields but test weights have been consistently low. Time of maturity, heat tolerance, disease reaction and kernel type also affect yield.

Barley: Yields of barley were very good in some areas. The cool temperatures and adequate precipitation in June especially favored the later varieties. Primus did well where earliness was necessary. A purified line, Primus II, will become available in the next two years. Larker and Dickson are good malting varieties.

Flax: Only flax varieties resistant to all known North American races of flax rusts are currently recommended. Summit and Windom have the highest yields over a five-year period. The newly released variety, Nored, topped all trials in 1968. If late seeding is necessary, it is recommended that one of the early maturing varieties be grown.

Rye: Several new strains continued to perform well in the rye trials since their inclusion in 1967. Other enteries again suffered varying amounts of stand loss from winter killing. Currently recommended winter-hardy varieties are Antelope, Caribou and Frontier.

Durum: Two durums have been much better in performance than other varieties grown. Only two were recommended in 1968 and included in the trials. Leeds has better rust resistance and generally a higher test weight than Wells, the other recommended durum.

Spring Wheat: Spring-seeded wheats in the trials were challenged, yield-wise, by the semi-dwarf entries included in the trials. Quality evaluations are not complete and frequently the semi-dawarfs fall below the hard red spring. Several entries from Mexico and a commercial producer, World Seeds, Inc., were included in the 1968 trials. Entries from both the sources surpassed the standard varieties in most of the trials. Climatic conditions in 1968 were somewhat different than in many years and furthur testing will continue.

Winter Wheat: Lancer and Scout continued to perform well in the major portion of the winter wheat producing areas. The variety Gage has been satisfactory in the southcentral area and the lower areas around the Black Hills. A new hardy selection named Winoka was released to growers this fall and is adapted to all winter wheat areas.

Varietal recommendations on each of the small grains and specific areas of recommendation are shown on the back cover of this circular.

TABLE 4. STANDARD VARIETY SPRING-SEEDED WHEAT TRIALS, AGRONOMY FARM, BROOKINGS, 1964-1968

Variety	Average Yields, bushels per acre						1968 Test Wt.	Statistical
	1964	1965	1966	1967	1968	1964-68	lb/bu	Significance
Tobari 66*					31.3		61.0	a
6W01493 †					31.0		61.0	a
6W02188 †					29.5		61.0	ab
Wells ‡	27.0	45.7	47.0	45.9	29.1	38.9	61.0	abc
Inia 66*					28.8		61.0	abc
Red River 68 †					28.7		61.0	abc
Polk §		38.5	40.1	36.5	25.2		61.5	bcd
Leeds ‡			46.9	48.2	24.9		61.0	bcd
6W01503 †					24.6		54.5	cd
Sheridan §	26.5	43.4	38.6	42.9	24.3	35.1	60.0	cd
Jaral 66*					23.6		60.0	de
Waldron §					22.2		58.0	def
Fortuna §			40.3	39.7	21.9		59.0	def
Ciano 67*					21.2		58.5	defg
Thatcher §	18.6	27.2	39.0	34.7	21.1	28.1	56.0	defg
Chris §	32.7	46.7	36.8	41.3	19.0	35.3	59.0	efgh
Manitou §		37.0	41.7	46.4	18.6		59.5	efgh
Rushmore §	21.6	32.0	34.7	35.8	18.3	28.5	58.0	fgh
Shorty §					16.4		53.0	gh
Crim §	24.7	36.3	4.15	37.2	14.9	30.9	58.0	h
Justin §	18.8	35.3	40.1	38.9	14.4	29.5	57.0	h
			Mean yield		23.3			

* Mexico † World Seeds, Inc. ‡ durum § hard red spring

TABLE 5. STANDARD VARIETY BARLEY TRIALS, AGRONOMY FARM, BROOKINGS, 1964-1968

Variety	Average Yields, bushels per acre						1968 Test Wt.	Statistical
	1964	1965	1966	1967	1968	1964-68	lb/bu	Significance
Larker	53.6	76.1	66.1	81.6	50.7	65.6	51.0	a
Dickson		80.4	70.7	80.3	50.6		49.5	ab
Trophy	48.5	74.9	69.8	78.4	48.5	64.0	49.0	abc
Conquest			73.9	84.1	47.7		48.0	abc
Liberty	55.7	76.1	71.4	73.7	46.5	64.7	48.5	abc
Mich. 308					46.5		51.5	abc
Centennial					45.6		49.0	abc
Primus			74.5	83.3	45.6		50.0	abc
Paragon					44.9		48.0	abc
Galt			72.8	84.0	43.9		48.0	bcd
CI 11864			69.7	74.7	42.3		48.5	cd
Firlbecks III				74.1	37.0		48.5	d
			Mean yield		45.8			

TABLE 6. STANDARD VARIETY OAT TRIALS, AGRONOMY FARM, BROOKINGS, 1964-68

Variety	Average Yields, bushels per acre						1968 Test Wt.	Statistical
	1964	1965	1966	1967	1968	1964-68	lb/bu	Significance
Orbit			112.8	127.4	67.5		32.0	a
CI 8178		101.1	71.8	109.6	62.8		37.0	ab
Sioux			118.0	109.0	62.1		34.0	ab
Kelsey				115.5	57.2		37.0	bc
Burnett	77.8	108.9	99.8	110.8	55.4	90.5	35.0	bcd
Rodney	70.7	124.0	77.7	105.1	50.8	85.7	35.0	cde
Clintland 64	76.9	103.9	75.8	121.8	49.6	85.6	34.0	cdef
Garland	75.8	121.8	100.0	100.3	46.8	88.9	34.0	cdefg
Lodi	78.8	90.3	113.4	105.5	46.2	86.8	33.0	defgh
Santee	67.0	66.5	75.8	114.9	45.8	74.0	32.0	defghi
Holden	76.3	134.2	104.1	112.0	44.3	94.2	34.0	efghij
Wyndmere			100.3	103.7	43.6		31.0	efghijk
Portal			98.5	121.8	43.0		33.0	efghijk
Coachman	76.5	112.3	95.3	110.1	41.2	87.1	36.0	efghijk
Multiline M68				112.4	40.7		33.0	efghijkl
Clintford	67.3	90.3	86.2	110.3	40.1	78.8	36.0	efghijkl
Dupree	79.2	111.1	96.7	111.8	39.7	87.7	31.7	fghijkl
Jaycee			94.7	109.4	39.1		35.0	fghijkl
Tyler	72.6	107.6	93.1	114.8	37.3	85.1	32.0	ghijkl
Pettis					35.4		34.0	hijklm
Brave	72.1	126.7	105.3	123.1	34.6	92.4	34.0	ijklm
O'Brien			103.0	101.8	33.3		33.0	jklm
Tippecanoe	68.7	81.7	73.1	99.4	32.4	71.1	33.0	klm
Multiline E68				103.8	29.5		32.0	lm
Dawn			86.1	108.9	24.8		26.0	m
				Mean yield	44.1			

TABLE 7. STANDARD VARIETY SPRING-SEEDED WHEAT TRIALS, NORTHEAST RESEARCH FARM, WATERTOWN UNIT, 1964-1968

Variety	Average Yields, bushels per acre						1968 Test Wt. lb/bu	Statistical Significance
	1964	1965	1966	1967	1968	1964-68		
Tobari 66*					39.1		59.0	a
6W01493 †					38.7		57.5	ab
Waldron §					37.5		58.0	abc
Inia 66*					36.6		60.0	abcd
Red River 68 †					36.5		58.2	abcd
Jaral 66*					35.0		59.0	abcd
6W02188 †					34.9		61.0	abcd
Chris §	32.3	44.5	23.3	39.7	34.3	34.8	58.5	abcde
Fortuna §			19.7	44.1	33.9		59.0	abcde
Ciano 67*					33.9		57.5	abcde
Sheridan §	23.8	42.0	18.2	35.8	33.8	30.7	60.0	abcde
6W01503 †					33.5		49.7	abcde
Leeds ‡			29.0	44.6	33.5		61.5	abcde
Polk §		42.9	29.4	38.1	33.0		61.7	abcde
Wells ‡	33.5	39.4	30.1	43.3	32.6	35.8	59.5	bcde
Manitou §		38.0	23.4	41.3	31.9		58.5	cde
Justin §	24.0	28.8	23.8	38.9	30.3	29.2	58.0	de
Crim §	29.1	28.0	21.0	42.7	27.4	29.6	54.0	e
Rushmore §	27.6	24.1	22.8	40.7	27.2	28.5	58.0	e
Shorty §					27.2		50.5	e
Thatcher §	23.8	18.0	25.1	37.6	17.5	24.4	56.2	ef
			Mean yield		32.8			

* Mexico † World Seeds, Inc. ‡ durum § hard red spring

TABLE 8. STANDARD VARIETY BARLEY TRIALS, NORTHEAST RESEARCH FARM, WATERTOWN, 1964-1968

Variety	Average Yields, bushels per acre						1968 Test Wt. lb/bu	Statistical Significance
	1964	1965	1966	1967	1968	1964-68		
Liberty	54.9	70.1	31.4	70.8	55.2	56.5	45.0	1968 yield
Larker	50.3	67.8	24.2	61.2	52.7	51.2	42.2	means
Primus			25.4	67.3	51.3		45.0	not
Mich. 308					50.8		48.0	statistically
Centennial					50.5		43.2	different
Trophy	48.8	74.3	20.1	60.7	50.4	50.9	42.2	
Galt			23.1	55.7	48.2		42.0	
CI 11864			18.7	68.5	46.4		41.2	
Paragon					43.4		42.0	
Conquest			25.8	66.7	43.1		43.2	
Firlbecks III				59.5	41.4		41.4	
Dickson		73.7	14.7	48.5	39.6		42.2	
			Mean yield		47.7			
					N.S.			

TABLE 9. STANDARD VARIETY OAT TRIALS, NORTHEAST RESEARCH FARM, WATERTOWN UNIT, 1964-1968

Variety	Average Yields, bushels per acre						1968 Test Wt. lb.bu	Statistical Significance
	1964	1965	1966	1967	1968	1964-68		
Burnett	73.5	104.8	60.3	101.7	83.2	84.7	34.0	a
Holden	79.8	124.6	54.5	83.3	77.7	84.0	33.0	ab
Multiline E68				101.1	77.6		35.0	abc
CI 8178		121.4	48.5	99.0	76.5		32.0	abcd
Dupree	74.7	115.0	48.1	91.0	75.6	80.9	31.0	abcd
Clintford	74.7	100.9	58.8	104.1	72.8	82.3	37.0	abcde
Jaycee			47.1	100.1	69.4		32.0	abcdef
Sioux			51.4	99.4	68.4		30.0	abcdef
Tippecanoe	67.6	106.3	48.2	102.5	67.5	78.4	35.0	bcdef
Brave	75.5	118.5	47.1	99.6	66.9	81.5	32.0	bcdef
Clintland 64	80.1	121.9	49.4	108.5	66.1	85.2	34.0	bcdef
Santee	68.9	122.8	53.0	101.0	66.0	82.3	33.0	bcdef
Wyndmere			48.7	80.7	65.6		32.0	bcdef
Orbit			51.4	104.7	65.1		30.0	bcdef
Lodi	69.0	96.0	52.0	83.5	65.0	73.1	31.0	bcdef
Portal			54.2	101.9	64.7		33.0	bcdef
Garland	71.9	120.4	52.5	76.4	64.7	77.2	33.0	bcdef
Kelsey				101.9	64.1		32.0	bcdef
Tyler	68.6	119.9	43.5	91.8	63.3	77.4	33.0	bcdef
Coachman	69.7	110.4	40.9	93.4	63.1	75.5	34.0	bcdef
O'Brien			48.6	104.9	62.4		35.0	bcdef
Multiline M68				93.8	62.3		34.0	cdef
Pettis					60.9		35.0	def
Rodney	58.3	98.5	47.3	86.7	58.0	69.8	30.0	ef
Dawn			41.9	86.8	54.1		34.0	f
				Mean yield	67.2			

TABLE 10. STANDARD VARIETY SPRING-SEEDED WHEAT TRIALS, SOUTHEAST RESEARCH FARM BERESFORD, 1964-1968

Variety	Average Yields, bushels per acre						1968 Test Wt.	Statistical
	1964	1965	1966	1967	1968	1964-68	lb/bu	Significance
Waldron*					37.5		60.0	a
Crim*	21.4	30.9	32.6	24.5	35.7	29.0	61.5	ab
Shorty*					34.0		59.0	abc
Wells †			34.0	41.7	33.9		61.2	abcd
Chris*	27.1	34.7	32.8	33.6	32.1	32.1	60.0	bcd
Tobari 66 ‡					31.9		61.2	bcd
Rushmore*	19.4	27.3	30.5	27.7	31.7	27.3	60.5	bcd
Thatcher*	19.0	21.8	26.4	24.3	30.4	24.4	60.5	bcd
Manitou*		36.9	31.9	37.1	30.3		61.0	bcd
Polk*		38.2	35.1	33.0	29.5		61.2	cde
Sheridan*	24.4	34.3	30.1	28.2	29.1	29.2	61.0	cde
Justin*	17.0	20.7	29.9	28.6	28.8	25.0	59.7	cde
Leeds †			31.8	29.1	28.5		61.0	cde
Red River 68 §					28.2		61.0	de
Fortuna*			32.6	22.8	23.3		59.2	e
			Mean yield		31.0			

*hard red spring † durum ‡ Mexico § World Seeds, Inc.

TABLE 11. STANDARD VARIETY BARLEY TRIALS, SOUTHEAST RESEARCH FARM, BERESFORD, 1964-1968

Variety	Average Yields, bushels per acre						1968 Test Wt.	Statistical
	1964	1965	1966	1967	1968	1964-68	lb/bu	Significance
Dickson		70.8	50.3	50.8	32.6		47.0	a
CI 11864			45.4	56.5	31.6		47.5	ab
Primus			47.2	52.7	30.2		49.0	abc
Conquest			46.6	51.3	28.5		46.0	abcd
Paragon					28.2		47.5	abcd
Firlbecks III				44.3	28.1		49.0	abcd
Larker	42.1	68.5	46.3	41.8	27.2	45.2	49.0	bcde
Galt			46.8	53.8	26.0		47.0	cde
Centennial					25.8		50.0	cde
Liberty	41.5	61.9	53.4	52.9	25.7	47.1	46.0	cde
Mich. 308					23.3		50.0	de
Trophy	37.9	63.0	46.3	58.7	21.4	45.5	47.0	e
			Mean yield		27.4			

TABLE 12. STANDARD VARIETY OAT TRIALS, SOUTHEAST RESEARCH FARM, BERESFORD, 1964-1968

Variety	Average Yields, bushels per acre						1968 Test Wt. lb/bu	Statistical Significance
	1964	1965	1966	1967	1968	1964-68		
Kelsey				63.4	45.2		34.0	a
CI 8178		83.6	72.7	55.7	44.5		33.0	a
Lodi	56.7	81.9	67.0	60.3	43.9	62.0	32.5	ab
Santee	45.3	85.7	66.4	48.7	43.2	57.9	33.0	abc
Multiline E 68				74.0	43.0		36.5	abc
Jaycee			71.4	61.3	42.8		36.0	abcd
Wyndmere			77.1	59.6	42.8		33.0	abcd
Clintland 64	46.4	90.8	62.7	82.6	42.7	65.0	32.0	abcd
Rodney	55.0	71.2	51.8	58.6	41.1	55.5	34.0	abcd
Burnett	54.4	87.8	69.1	42.7	39.9	58.8	33.0	abcde
Brave	45.6	85.6	74.1	51.5	39.2	59.2	32.0	abcde
Dawn			72.0	52.7	39.0		33.5	abcde
Portal			66.2	55.5	37.8		30.0	bcde
Pettis					37.6		36.0	bcdef
Tippecanoe	49.6	80.2	67.0	64.1	37.2	59.6	34.0	bcdefg
Sioux			68.3	56.4	37.1		31.0	cdefg
Dupree	58.3	82.6	77.9	58.8	35.9	62.7	34.0	defgh
O'Brien			68.7	48.9	35.8		35.0	defghi
Clintford	42.3	92.8	61.8	68.8	33.4	59.8	32.0	efghi
Multiline M 68				68.6	33.3		32.0	efghi
Coachman	46.1	85.4	70.8	44.8	30.2	55.5	30.0	fghij
Tyler	46.1	87.2	67.5	46.1	29.9	55.4	32.0	ghij
Holden	56.7	92.0	68.7	74.4	28.8	64.1	31.0	hij
Garland	47.8	101.3	60.1	58.5	28.3	59.2	34.0	ij
Orbit			75.9	60.5	24.9		30.0	j
			Mean yield		37.5			

TABLE 13. STANDARD VARIETY SPRING-SEEDED WHEAT TRIALS, CENTRAL SUBSTATION, HIGHMORE, 1964-1968

Variety	Average Yields, bushels per acre						1968 Test Wt. lb/bu	Statistical Significance
	1964	1965	1966	1967	1968	1964-68		
Leeds*			15.8	54.1	56.4		61.0	a
6W02188 †					51.3		59.5	b
Manitou ‡		40.1	16.9	48.4	51.3		58.0	bc
Fortuna ‡			17.6	53.3	51.1		59.0	bc
Wells*	27.5	38.4	15.3	46.0	50.6	35.6	58.0	bcd
6W01503 †					50.0		49.0	bcd
Tobari 66 §					49.8		58.0	bcde
Waldron ‡					48.7		56.0	bcde
Red River 68 †					48.7		58.0	bcde
Polk ‡		41.4	16.0	43.3	47.1		59.5	bcde
Chris ‡	28.1	35.1	16.2	48.9	46.9	35.0	57.0	bcde
Sheridan ‡	26.3	44.3	13.9	41.6	46.6	34.5	59.0	cde
6W01493 †					45.6		58.0	def
Rushmore ‡	25.3	33.2	16.9	38.4	44.7	31.7	57.0	efg
Crim ‡	24.0	33.7	15.9	38.4	40.5	30.5	54.0	fgh
Justin ‡	23.8	37.1	15.0	40.2	40.0	31.2	56.0	fgh
Shorty ‡					39.9		51.5	gh
Thatcher ‡	22.9	26.0	17.3	35.0	38.8	28.0	54.0	h
			Mean yield		47.1			

*durum † World Seeds, Inc. ‡ hard red spring § Mexico

TABLE 14. STANDARD VARIETY BARLEY TRIALS, CENTRAL SUBSTATION, HIGHMORE, 1964-1968

Variety	Average Yields, bushels per acre						1968 Test Wt. lb/bu	Statistical Significance
	1964	1965	1966	1967	1968	1964-68		
Liberty	32.9	81.9	35.5	71.8	78.3	60.1	46.0	a
Mich. 308					75.0		49.5	ab
Larker	39.1	84.4	26.8	69.5	74.2	58.8	48.0	abc
Primus			36.2	85.9	73.4		50.0	abc
Paragon					69.5		46.5	abcd
Conquest			29.9	86.6	68.2		45.0	abcde
CI 11864			22.8	71.8	65.2		45.0	bcde
Galt			28.1	74.9	63.5		44.0	bcde
Firlbecks III				80.9	62.6		46.0	bcde
Trophy	38.6	76.6	21.8	67.8	60.3	53.0	46.0	cde
Centennial					55.8		43.0	de
Dickson		90.4	21.7	61.8	53.4		47.0	e
			Mean yield		66.6			

TABLE 15. STANDARD VARIETY OAT TRIALS, CENTRAL SUBSTATION, HIGHMORE, 1964-1968

Variety	Average Yields, bushels per acre						1968 Test Wt. lb/bu	Statistical Significance
	1964	1965	1966	1967	1968	1964-68		
Wyndmere			44.4	65.2	99.5		37.0	a
Portal			44.1	71.7	98.2		37.0	ab
Brave	60.8	98.7	46.4	92.2	95.7	78.8	38.5	abc
Jaycee			52.7	70.0	93.8		39.0	abcd
Pettis					93.8		40.0	abcd
Tippecanoe	44.7	68.0	40.2	81.0	93.7	65.5	39.0	abcd
Santee	51.0	66.3	51.9	81.2	93.1	68.7	38.0	abcde
Burnett	52.6	85.6	48.8	85.3	92.9	73.0	38.0	abcde
Clintland 64	45.1	74.0	43.7	75.8	92.8	66.3	39.0	abcde
Garland	45.4	108.6	43.0	42.0	91.7	66.1	40.0	abcdef
Tyler	49.0	83.1	42.2	90.8	91.5	71.3	36.0	abcdef
Holden	47.7	106.1	45.9	62.6	90.4	70.5	38.5	abcdefg
Coachman	50.3	80.1	36.9	69.5	89.3	65.2	37.5	abcdefgh
CI 8178		85.8	37.2	69.4	87.4		37.0	bcdefghi
O'Brien			49.8	76.5	86.2		41.0	bcdefghi
Dupree	58.8	87.2	44.2	89.5	84.4	72.8	37.5	cdefghij
Multiline M 68				68.3	81.5		38.0	defghijk
Lodi	59.5	92.2	30.8	61.8	79.8	64.8	33.0	efghijk
Kelsey				79.3	77.6		36.0	fghijk
Orbit			45.8	92.7	76.8		36.0	ghijk
Rodney	59.5	75.8	22.0	71.9	76.0	61.0	35.0	hijk
Sioux			33.1	76.9	74.5		36.5	ijk
Clintford	40.8	70.4	47.0	92.3	71.5	64.4	42.5	jkl
Multiline E 68				68.0	69.8		41.5	kl
Dawn			37.1	80.3	59.7		38.0	l
			Mean yield		85.7			

TABLE 16. STANDARD VARIETY SPRING-SEEDED WHEAT TRIALS, NORTHCENTRAL SUBSTATION, EUREKA, 1964-1968

Variety	Average Yields, bushels per acre						1968 Test Wt. lb/bu	Statistical Significance
	1964	1965	1966	1967	1968	1964-68		
6W01493*					44.0		62.0	a
Fortuna †			17.3	40.8	43.8		62.0	ab
Tobari 66 ‡					42.0		61.0	abc
Chris †	42.6	31.6	14.1	27.2	41.7	31.4	61.2	abc
Jaral 66 ‡					40.4		60.0	abc
6W01503*					40.3		54.5	abcd
Ciano 67 ‡					38.8		60.0	abcde
6W02188*					38.3		62.0	abcde
Inia 66 ‡					37.7		62.0	abcdef
Waldron †					36.9		59.8	bcdef
Sheridan †	45.4	31.6	15.4	20.0	36.9	29.9	61.5	bcdef
Justin †	35.8	24.3	14.6	24.0	36.0	26.9	60.0	cdef
Wells §	48.6	35.8	14.3	29.0	35.6	32.6	63.0	cdef
Manitou †		32.7	17.0	33.5	35.6		61.2	cdef
Red River 68*					35.5		61.8	cdef
Leeds §			16.1	32.3	34.9		64.2	cdef
Polk †		37.0	18.2	28.0	32.8		63.0	defg
Crim †	39.7	30.4	16.7	30.4	32.0	29.8	58.2	efg
Rushmore †	32.4	27.6	18.0	30.2	31.7	28.0	59.5	efg
Shorty †					30.6		53.7	fg
Thatcher †	32.5	21.7	17.1	28.1	26.1	25.1	60.0	g
			Mean yield		36.7			

* World Seeds, Inc. † hard red spring ‡ Mexico § durum

TABLE 17. STANDARD VARIETY BARLEY TRIALS, NORTHCENTRAL SUBSTATION, EUREKA, 1964-1968

Variety	Average Yields, bushels per acre						1968 Test Wt. lb/bu	Statistical Significance
	1964	1965	1966	1967	1968	1964-68		
Centennial					68.4		46.5	a
Firlbecks III				37.5	67.4		48.5	ab
Dickson		72.1	14.0	38.6	63.1		46.2	abc
Mich. 308					58.5		49.7	abcd
CI 11864			17.3	41.5	55.8		46.0	bcde
Trophy	55.5	76.5	15.2	36.3	54.3	47.6	45.0	cde
Liberty	57.7	83.6	24.1	38.1	52.9	51.3	44.7	cde
Larker	71.5	78.0	27.8	45.7	51.1	54.8	46.7	cde
Paragon					49.5		46.0	de
Conquest			24.0	34.7	47.9		44.7	e
Galt			22.2	43.4	47.8		42.7	e
Primus			27.0	48.9	47.0		46.2	e
			Mean yield		55.3			

TABLE 18. STANDARD VARIETY OAT TRIALS, NORTHCENTRAL SUBSTATION, EUREKA, 1964-1968

Variety	Average Yields, bushels per acre						1968 Test Wt. lb/bu	Statistical Significance
	1964	1965	1966	1967	1968	1964-68		
Lodi	114.4	102.7	12.1	92.1	110.0	86.3	40.0	1968 yield
CI 8178		111.9	13.1	67.7	103.8		39.0	means
Santee	79.6	98.2	25.4	91.2	103.3	79.5	40.0	not
Dupree	92.7	112.8	19.5	84.3	102.4	82.3	39.0	statistically
Wyndmere			25.1	81.2	102.1		40.0	different
Multiline E 68				46.9	101.3		39.0	
Portal			15.1	59.3	99.3		38.0	
Holden	91.7	108.0	18.4	77.6	96.8	78.5	39.5	
Sioux			17.5	79.2	96.3		38.0	
Burnett	109.2	112.1	21.2	74.9	94.4	82.4	38.0	
Tyler	90.7	99.8	22.4	91.0	93.9	79.6	38.0	
Coachman	95.9	102.7	17.0	58.8	91.8	73.2	38.5	
Multiline M 68				86.5	91.6		40.0	
Rodney	112.9	96.3	15.5	64.0	90.7	75.9	38.0	
Tippecanoe	97.9	98.8	19.2	80.9	89.6	77.3	39.0	
Clintford	85.9	102.1	24.5	89.1	87.7	77.9	41.0	
Orbit			12.5	88.3	86.0		38.5	
Dawn			10.5	56.5	85.6		40.0	
Brave	99.9	108.1	25.2	67.6	85.3	77.2	38.0	
Clintland 64	91.9	103.3	17.4	76.1	88.5	75.4	41.0	
Kelsey				73.9	82.7		39.5	
O'Brien			20.2	69.3	77.0		40.0	
Pettis					73.7		40.0	
Garland	82.5	116.4	18.1	73.8	72.9	72.7	41.0	
Jaycee			15.7	78.2	71.2		37.5	
			Mean yield		91.1			
					N.S.			

TABLE 19. STANDARD VARIETY SPRING-SEEDED WHEAT TRIAL, QUINN, 1964-1968

Variety	Average Yields, bushels per acre						1968 Test Wt. lb/bu	Statistical Significance
	1964	1965	1966	1967	1968	1964-68		
Red River 68*					37.0		59.0	a
Tobari 66					36.3		57.7	a
Fortuna			22.9	44.3	34.9		57.0	ab
Leeds			21.3	42.9	32.7		61.0	bc
Waldron					32.4		55.2	bc
Rushmore	27.9	15.7	21.6	29.8	31.9	25.4	59.0	bc
Manitou		23.1	23.8	31.2	29.5		57.0	cd
Polk		21.0	21.0	43.1	28.4		59.2	cde
Justin	28.1	13.2	21.5	34.0	27.4	24.8	57.0	cdef
Crim	23.1	17.1	22.2	33.5	26.9	24.6	55.0	cdef
Shorty					26.3		49.2	cdefg
Chris	27.3	25.1	24.7	37.9	26.3	28.3	55.0	defg
Thatcher	23.0	7.1	21.7	19.9	25.9	19.5	54.5	efg
Wells			24.1	42.5	25.0		54.0	fgh
Sheridan	25.9	28.9	22.6	35.4	23.3	27.2	55.0	gh
			Mean yield		29.6			

*World Seeds, Inc. Mexico hard red spring durum

TABLE 20. STANDARD VARIETY BARLEY TRIALS, QUINN, 1963-1968

Variety	Average Yields, bushels per acre						1968 Test Wt. lb/bu	Statistical Significance
	1963	1964	1965	1967	1968	1964-68		
Primus				65.9	60.2		48.0	a
Galt				63.4	59.0		43.0	ab
Liberty	20.9	13.5	53.4	63.3	56.4	41.5	47.0	ab
Larker	22.1	33.4	53.9	63.1	56.2	45.7	47.0	ab
Centennial					45.7		44.7	abc
Conquest				59.2	45.3		44.0	bc
Mich. 308					45.2		49.0	bc
Paragon					44.8		45.2	bc
Firlbecks III				65.9	44.8		44.0	bc
CI 11864				59.9	44.2		44.0	bc
Dickson			56.5	75.7	35.6		44.2	c
Trophy	21.0	19.5	50.6	69.8	33.9	33.9	44.0	c
			Mean yield		47.6			

TABLE 21. STANDARD VARIETY OAT TRIALS, QUINN, 1964-68

Variety	Average Yields, bushels per acre						1968 Test Wt. lb/bu	Statistical Significance
	1964	1965	1966	1967	1968	1964-68		
Orbit			31.2	126.0	93.3		28.0	a
Burnett	38.4	67.1	44.0	97.8	86.3	66.7	34.0	ab
Brave	43.0	70.8	44.0	110.0	84.1	70.4	32.2	abc
Holden	36.4	77.7	37.8	100.0	83.3	67.0	31.5	abc
Jaycee			44.1	80.3	82.2		33.0	abcd
Garland	42.0	75.6	37.3	89.3	82.0	65.2	32.5	abcde
Portal			33.2	95.5	81.9		31.7	abcde
Clintford	40.1	78.9	38.8	60.2	80.9	59.8	38.0	abcde
Pettis					80.2		38.0	abcde
Dupree	38.5	72.4	33.5	102.7	78.2	65.1	33.0	bcde
Santee	38.6	75.2	40.1	78.1	76.9	61.8	34.0	bcde
Tyler	46.9	76.6	42.8	89.4	75.9	66.3	32.5	bcde
Wyndmere			40.6	101.2	75.2		33.0	bcde
Multiline E 68				62.0	73.3		37.2	bcdef
O'Brien			40.5	81.8	73.2		37.0	bcdef
Sioux			31.5	101.7	72.9		30.5	bcdef
Clintland 64	29.8	75.9	39.9	72.0	71.3	57.8	36.2	bcdef
Multiline M 68				79.4	69.9		35.0	cdef
Coachman	34.2	59.5	33.0	93.2	69.7	57.9	32.0	cdef
Tippecanoe	39.2	65.0	35.2	70.1	69.3	55.8	36.5	cdef
Kelsey				109.5	68.0		28.2	cdef
CI 8178		63.8	38.0	91.7	66.7		32.0	def
Lodi		80.7	35.1	100.1	65.4		27.0	ef
Rodney		48.4	41.1	89.9	57.0		27.0	f
Dawn			40.9	74.0	56.9		34.7	f
			Mean yield		75.0			

TABLE 22. STANDARD VARIETY RYE TRIALS, AGRONOMY FARM, BROOKINGS, 1962-1968

Variety	Average Yields, bushels per acre						1968 Test Wt. lb/bu	Statistical Significance
	1962	1963	1964	1967	1968	1962-68		
Frontier				41.6	42.7		54.7	a
Von Lochow				52.0	38.5		55.0	ab
Antelope	14.9	17.1	25.2	36.5	38.0	26.3	54.7	ab
Pearl					37.7		55.7	ab
Guelzower				55.2	35.6		54.7	abc
Dakold				33.0	34.9		56.3	abc
Dominant				56.2	34.0		54.0	bcd
Pierre	11.0	16.3	30.9	34.1	33.2	25.1	54.0	bcd
Petkus				51.0	32.7		53.7	bcd
Zelder				44.3	32.7		54.2	bcd
Caribou	8.0	22.2	30.7	37.1	31.1	25.8	55.5	bcde
Adams				38.0	30.4		53.7	bcde
Elk	6.6	12.1	35.5	54.7	28.3	27.4	54.0	cde
N.F. #7				34.7	27.6		55.5	cde
7276				36.4	24.7		54.7	de
Sangaste				46.9	24.7		52.3	de
Bonel				28.3	24.6		55.2	de
Tetra Petkus					22.8		52.0	e
Toiva				37.5	22.2		53.0	e
Elbon				27.7	21.7		55.5	e
			Mean yield		30.9			

TABLE 23. STANDARD VARIETY FLAX TRIALS, AGRONOMY FARM, BROOKINGS, 1964-1968

Variety	Average Yields, bushels per acre						1968 Test Wt. lb/bu	Statistical Significance
	1964	1965	1966	1967	1968	1964-68		
Nored		32.1	14.7	28.3	21.8		54.0	a
Linott				30.3	21.0		52.5	ab
Redwood 65			11.9	33.1	20.0		53.5	abc
Bolley	15.2	*	13.6	13.6	19.8		53.0	abcd
Redwood	13.4	30.2	15.6	28.8	19.7	21.5	53.5	bcd
CI 2444				29.7	19.3		53.5	bcd
B-5128	15.7	29.4	12.5	28.8	19.3	21.1	54.0	bcd
Summit	17.0	26.3	13.5	30.6	18.5	21.2	54.0	cd
CI 2290					18.3		53.0	cd
Norland	12.8	28.4	12.2	26.5	17.9	19.6	53.5	cd
Windom	15.1	32.1	18.3	29.8	17.9	22.6	53.5	cd
Noralta			15.6	32.8	17.6		55.0	d
			Mean yield		19.3			

* seed improperly labeled

TABLE 24. STANDARD VARIETY RYE TRIAL, NORTHEAST RESEARCH FARMS, WATERTOWN UNIT, 1968

Variety	Height, inches	1968 Test Wt. lb/bu	Yield B/A	Statistical Significance
Von Lochow	41	55.0	34.6	a
Guelzower	40	54.5	28.7	b
Pearl	38	54.0	28.2	bc
Dominant	38	55.5	27.0	bcd
Dakold	37	57.0	26.9	bcd
Petkus	38	55.0	26.7	bcd
Caribou	37	55.5	25.6	bcde
Frontier	37	55.0	25.4	bcde
Zelder	39	55.5	25.2	bcde
Antelope	35	54.5	24.2	bcde
Pierre	33	56.5	23.8	cdef
Elk	41	54.0	23.2	cdef
Sangaste	39	54.0	22.4	defg
Adams	38	54.0	21.9	defg
Bonel	40	55.5	21.0	efg
7276	40	55.5	20.8	efg
N.F. #7	40	56.0	20.3	efg
Toiva	40	54.0	19.1	fg
Elbon	40	56.5	17.4	g
Tetra Petkus	42	51.5	8.1	h
		Mean yield	23.5	

TABLE 25. STANDARD VARIETY FLAX TRIALS, NORTHEAST RESEARCH FARMS, WATERTOWN UNIT, 1964-1968

Variety	Average Yields, bushels per acre						1968 Test Wt. lb/bu	Statistical Significance
	1964	1965	1966	1967	1968	1964-68		
Nored		30.4	18.1	19.5	21.8		54.0	a
Linott				19.2	21.7		54.0	a
CI 2290					20.9		53.0	ab
CI 2444				20.8	19.8		54.5	abc
Redwood 65			16.8	22.0	19.7		54.0	abc
Bolley	20.6	*	15.7	20.7	19.5		53.5	abc
Redwood	23.3	29.5	16.3	21.6	19.4	22.0	54.0	abc
Summit	24.0	32.9	17.2	21.7	18.5	22.9	53.5	bc
Norland	18.6	26.5	13.8	22.4	18.4	19.9	54.0	bc
Windom	23.3	33.8	16.6	18.2	18.3	22.0	54.5	c
B-5128	20.4	28.2	14.8	21.2	16.8	20.3	54.0	c
Noralta			15.1	23.3	16.7		54.0	c
			Mean yield		19.3			

* seed improperly labeled

TABLE 26. STANDARD VARIETY RYE TRIALS, CENTRAL SUBSTATION, HIGHMORE, 1964-1968

Variety	Average Yield, bushels per acre						1968 Test Wt. lb/bu	Statistical Significance
	1964	1965	1966	1967	1968	1964-68		
Zelder				59.6	58.2		56.5	a
Von Lochow		61.0	34.8	57.8	53.0		55.5	ab
Petkus				61.2	52.6		55.5	ab
Dominant				65.9	52.3		56.0	abc
Frontier				52.4	48.3		57.5	abcd
Antelope	42.6	42.8	20.6	44.6	47.9	39.7	55.5	abcd
Guelzower				54.0	46.9		57.0	abcde
Caribou	44.3	47.2	23.9	45.5	42.3	40.6	56.5	bcdef
Pearl					41.8		54.5	bcdef
Dakold				32.9	39.3		56.5	cdef
Pierre	44.9	41.0	12.8	31.5	37.5	33.5	56.0	def
Toiva				49.7	37.1		55.5	def
7276				39.4	36.2		56.5	def
Tetra Petkus					35.1		54.5	def
Sangaste				52.9	33.9		56.0	ef
N.F. #7				28.2	33.9		56.5	ef
Elk	43.6	51.8	21.8	62.4	33.7	42.7	55.5	ef
Adams				42.4	33.6		55.5	ef
Elbon				20.1	33.4		57.0	ef
Bonel				23.2	30.6		56.0	f
			Mean yield		41.4			

TABLE 27. STANDARD VARIETY FLAX TRIALS, CENTRAL SUBSTATION, HIGHMORE, 1964-1968

Variety	Average Yields, bushels per acre						1968 Test Wt. lb/bu	Statistical Significance
	1963	1964	1965	1967	1968	1964-68		
Nored					23.5		50.0	a
Windom	8.1	15.3	21.2	21.2	23.4	17.8	49.0	a
Bolley	7.6	16.1	*	21.2	22.9		49.4	ab
Summit	10.4	17.1	23.5	20.5	20.6	18.4	48.0	bc
Linott				21.2	20.4		49.5	c
Redwood 65				18.7	20.2		49.1	c
Noralta				20.1	19.3		48.6	c
Redwood	9.1	11.1	21.0	22.7	19.2	16.6	50.2	c
CI 2290					19.2		48.6	c
B-5128	9.1	11.9	20.2	19.7	18.7	15.9	48.3	c
CI 2444					18.6		49.1	c
Norland	9.4	12.1	16.3	21.4	18.3	15.5	49.6	c
			Mean yield		20.4			

* seed improperly labeled

TABLE 28. STANDARD VARIETY RYE TRIALS, SOUTHEAST RESEARCH FARM, BERESFORD, 1964-1968

Variety	Average Yields, bushels per acre						1968 Test Wt. lb/bu	Statistical Significance
	1964	1965	1966	1967	1968	1964-68		
Zelder				50.7	67.1		55.5	a
Von Lochow		21.1	73.8	54.1	58.3		55.5	ab
Dominant				50.7	57.6		55.0	abc
Antelope	37.8	40.6	56.0	54.2	57.6	51.2	54.5	abc
Guelzower				55.7	55.6		54.0	abcd
Frontier				45.8	55.5		55.0	abcd
Elk	36.5	17.5	65.6	52.0	50.9	44.5	54.0	bcde
Toiva				47.4	50.5		52.5	bcde
7276				32.8	50.1		55.5	bcde
Pierre	33.7	53.6	54.9	34.3	49.5	45.2	55.5	bcde
Pearl					47.4		53.0	bcde
Petkus				53.9	47.1		54.0	bcde
Elbon				28.4	46.9		55.5	bcde
Caribou	39.8	49.4	59.1	41.1	45.5	47.0	54.5	cde
Dakold				38.4	44.7		55.5	cde
Adams				31.5	43.4		53.5	de
Sangaste				52.1	42.1		53.0	de
N.F. #7				31.3	40.3		55.5	ef
Bonel				30.7	37.1		55.5	ef
Tetra Petkus					27.1		50.5	f
			Mean yield		48.7			

TABLE 29. STANDARD VARIETY WINTER WHEAT TRIALS, SOUTHEAST RESEARCH FARM, BERESFORD, 1963-1968

Variety	Average Yield, bushels per acre						1968 Test Wt. lb/bu	Statistical Significance
	1963	1964	1966	1967	1968	1963-68		
Winalta		35.6	42.1	33.5	44.6		58.0	1968 Yield
Trapper				32.6	43.9		58.5	means
Ottawa	13.0	33.6	42.8	33.6	43.5	33.3	59.0	not
Minter	15.8	34.6	29.5	24.2	41.4	29.3	59.5	statistically
Lancer	18.3	37.1	46.1	28.5	40.7	34.1	58.5	different
Scout 66					38.7		58.5	
Gage		39.2	42.6	39.7	38.7		59.0	
Scout		40.7	48.8	30.9	37.7		58.5	
Winoka (CI 14000)			41.7	30.9	37.1		61.0	
Trader				29.8	37.0		57.0	
Shoshoni		37.8	40.8	23.1	36.8		59.0	
Guide					36.5		58.0	
Nebred	9.3	30.7	44.4	23.4	33.4	28.2	58.0	
Hume	17.9	34.0	39.1	32.3	31.6	31.0	58.5	
			Mean yield		38.7			
					N.S.			

TABLE 30. STANDARD VARIETY WINTER WHEAT TRIAL, QUINN, 1967-1968

Variety	Average Yield, B/A 1967	1968	1967-68	1968 Test Wt. lb/bu	Statistical Significance
Scout	53.0	65.3	59.1	61.7	a
Gage	54.2	64.0	59.1	59.6	a
Scout 66		63.9		61.4	a
Lancer	50.9	63.2	57.1	60.1	ab
Nebred	51.5	61.9	56.7	60.4	abc
Shoshoni	50.4	61.0	55.7	59.5	abc
Trader	51.0	59.1	55.1	59.6	abcd
Winalta	49.9	58.9	54.4	60.2	abcd
Ottawa	44.2	58.7	51.5	59.7	abcd
Trapper	45.2	57.9	51.5	60.6	abcd
Winoka (CI 14000)	45.6	50.8	48.2	59.6	bcd
Guide		50.8		58.7	bcd
Hume	49.4	49.8	49.6	60.1	cd
Minter	39.9	46.7	43.3	59.7	d
	Mean yield	58.0			

TABLE 31. STANDARD VARIETY WINTER WHEAT TRIAL, SOUTH CENTRAL RESEARCH FARM, PRESHO, 1967-1968

Variety	Average Yield, B/A 1967	1968	1967-68	1968 Test Wt. lb/bu	Statistical Significance
Scout 66		44.4		59.0	a
Gage	48.1	42.9	45.5	58.2	ab
Shoshoni	53.4	40.8	47.1	59.2	abc
Winalta	51.5	40.6	46.1	58.7	abcd
Scout	50.7	40.3	45.5	58.2	abcd
Lancer	48.2	38.8	43.5	59.0	abcde
Trapper	53.0	38.3	45.6	59.2	bcde
Trader	49.9	37.7	43.8	59.2	bcde
Nebred	48.1	34.4	41.2	59.0	cdef
Ottawa	39.8	34.3	37.1	57.5	cdef
Winoka (CI 14000)	49.8	34.1	41.9	60.8	def
Hume	44.9	32.6	38.7	58.5	ef
Minter	47.9	30.2	39.1	58.5	f
Guide		29.9		56.0	f
	Mean yield	37.1			

TABLE 32. STANDARD VARIETY RYE TRIALS, SOUTH CENTRAL RESEARCH FARM, PRESHO, 1967-1968

Variety	Average Yield, B/A 1967	1968	1967-68	1968 Test Wt. lb/bu	Statistical Significance
Zelder	51.1	61.7	56.4	56.5	a
Pearl		58.9		55.5	ab
Dominant	49.2	57.9	53.5	56.5	abc
Von Lochow	48.7	57.0	52.8	57.0	abc
Guelzower	47.5	44.9	51.7	56.0	abc
Frontier	46.9	55.4	51.1	57.0	abcd
Petkus	47.8	51.8	49.8	56.0	bcde
Elk	51.5	50.1	50.8	56.0	cdef
Antelope	39.2	49.0	44.1	56.5	cdef
Caribou	37.9	46.3	42.1	56.5	defg
Dakold	35.3	46.0	40.6	57.0	defg
Toiva	39.9	45.8	42.8	54.0	efg
7276	33.7	45.1	39.4	57.0	efg
Adams	35.7	43.9	39.8	56.5	efg
Pierre	37.8	43.1	40.4	57.0	efgh
N.F. #7	29.1	41.6	35.3	56.5	fgh
Sangaste	41.6	40.6	41.1	54.5	fghi
Elbon	27.5	37.1	32.3	57.0	ghi
Bonel	25.4	33.3	29.3	57.0	hi
Tetra Petkus		31.3		54.5	i
	Mean yield	47.6			

The following data and on page 27 are furnished by H. A. Geise. These data are included as a service to producers and are not a part of the variety testing program.

TABLE 33. OAT VARIETY TRIAL (FORAGE TYPE), SOUTH CENTRAL RESEARCH FARM, PRESHO, 1968

Variety	Date of Heading	Height, Inches	Test Wt. lb/bu	Grain B/A	Silage yield % D.M.	T/A
Lodi	6-29	42	29.4	88.3	43.2	3.3
Ortley	6-29	41	34.4	85.1	46.4	3.0
Garry	6-28	39	30.9	81.8	37.8	3.4
Rodney	7-2	38	30.6	81.1	41.0	3.5

TABLE 34. SPRING SMALL GRAIN VARIETY TRIALS AT THE SOUTH CENTRAL RESEARCH FARM, PRESHO, 1967-68*

Oats				Spring Wheat				Barley			
Variety	Test Wt. lb/bu	1968 Yield, B/A	1967-68 Yield, B/A	Variety	Test Wt. lb/bu	1968 Yield, B/A	1967-68 Yield, B/A	Variety	Test Wt. lb/bu	1968 Yield, B/A	1967-68 Yield, B/A
Pettis	36.6	107.2		Red River 68	56.2	34.6		Otis	48.0	69.4	73.5
Burnett	33.5	107.2	98.1	Crim	53.2	31.6	33.4	Spartan	47.5	64.2	
Dupree	33.5	104.8		Manitou	52.8	30.0	35.0	Primus	47.5	60.7	72.1
Brave	33.8	100.8	104.6	Fortuna	55.8	29.1	36.0	Dickson	43.9	59.8	82.6
Wyndmere	34.0	96.8	105.2	BH 631	54.0	29.1	31.8	Liberty	45.1	50.2	66.4
Tyler	33.8	96.4	103.8	Rushmore	54.1	29.0	29.0	Larker	45.8	48.3	69.6
Tippecanoe	36.0	94.8	102.8	Polk	51.9	28.4	32.2	Paragon	42.1	45.4	
CI 8178	33.1	93.8		Shorty	48.5	27.7		Trophy	43.4	42.2	59.6
Lodi	29.4	88.3	92.2	Pembina	52.4	27.5	27.2	Conquest	44.6	39.2	55.4
Portal	33.4	87.8	96.1	Sheridan	49.6	27.3	31.2				
Holden	33.4	85.8	91.5	BH 632	51.8	27.0	27.6		Mean	53.3	
Ortley	34.4	85.1	84.0	Chris	53.9	25.0	30.7		LSD (.05)	6.6	
O'Brien	36.0	84.4	90.6	Justin	47.5	24.9	25.2				
Garland	34.7	84.1	80.0	Selkirk	43.8	19.9	21.0				
Garry	30.9	81.8	84.0								
Rodney	30.6	81.1	81.0		Mean	27.9					
Clintland 64	34.6	80.7	73.9		LSD (.05)	4.6					
Dawn	33.0	80.1	80.8								
Multiline M68	34.1	79.0			Durum						
Jaycee	33.9	77.4	85.0	Leeds	52.5	15.9	32.0				
Multiline E68	37.5	77.2		Wells	50.6	14.8	26.8				
Clintford	38.1	70.4	78.9	Stewart 63	51.5	13.1	23.2				
				Lakota	49.9	12.6	24.3				
	Mean	88.4									
	LSD (.05)	8.8			Mean	14.1					

Data furnished by H. A. Geise.

* Harvested area was 4 x 25 feet. All yields reported are the average of four replications.

TABLE 35. SMALL GRAIN VARIETY TRIALS AT THE NORTHEAST RESEARCH FARMS, GARDEN CITY UNIT, 1968

Oats

Variety	Test Wt. lb/bu	Yield, B/A
CI 8178	41.0	95.6
Kelsey	38.5	93.4
Lodi	39.0	90.7
Sioux	39.5	88.5
Orbit	38.0	87.3
O'Brien	41.0	83.5
Portal	39.0	82.8
Clintford	41.0	82.0
Clintland 64	39.5	80.3
Burnett	40.5	78.5
Garland	39.5	77.3
Rodney	39.0	76.8
Holden	39.0	76.2
Dawn	38.5	75.5
Brave	40.5	74.4
Ortley	38.0	73.0
Multiline M68	40.5	72.9
Wyndmere	37.5	72.6
Jaycee	39.5	71.3
Tippecanoe	39.5	71.1
Pettis	41.0	69.5
Tyler	37.0	64.3
Multiline E68	40.0	63.7

Harvested area - 5.5 by 75 feet
All yields reported are the average of two replications

Barley

Variety	Test Wt. lb/bu	Yield, B/A
Firlbecks III	51.0	65.1
Trophy	48.5	57.1
Paragon	48.0	56.4
Dickson	49.0	51.4
Conquest	46.5	51.2
Larker	48.5	50.4
Liberty	46.5	44.5
Primus	48.0	34.5

Flax

Variety	Test Wt. lb/bu	Yield, B/A
Nored	50.5	27.9
Windom	51.0	27.8
Linott	52.5	27.0
Summit	51.0	26.6
Norland	51.0	26.5
B-5128	51.0	26.4
Noralta	50.0	25.8
Bolley	50.5	24.0
Redwood	50.5	24.0
CI 2290	50.5	24.0
Caldwell	49.5	20.4

Data furnished by Q. S. Kingsley

Wheat

Variety	Test Wt. lb/bu	Yield, B/A
Spring		
Sheridan	60.0	54.5
Chris	58.5	51.9
Manitou	59.0	51.8
Fortuna	58.0	50.9
Red River 68	59.0	50.2
Polk	60.0	48.1
Justin	57.0	39.3
Rushmore	57.0	38.7
Crim	55.5	37.7
Durum		
Stewart 63	61.5	60.5
Wells	59.0	60.5
Leeds	61.0	56.4
Winter		
Winalta	61.0	43.7
Lancer	61.0	41.8
Trapper	59.5	36.5
Minter	59.5	32.1
Hume	59.5	29.2

Rye

Variety	Test Wt. lb/bu	Yield, B/A
Von Lochow	57.5	34.6
Caribou	57.0	31.2
Frontier	57.0	29.3
Pierre	57.5	29.0

TABLE 36. CHARACTERISTICS OF WHEAT VARIETIES TESTED OR BEING GROWN IN SOUTH DAKOTA

Variety	Parentage	Released	Maturity	Straw Strength	Plant Height	Milling & Baking Qualities	Yielding Ability	Disease Reaction			Winter Hardiness			
								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^2 x (Kenya x Mentana)	Nebr. '68	Early	Strong	Short	Excel.	Good	S	R	S	G	P	P	P
Hume	Parents were Kharkof, Minter, Nebred, etc.	S. D. '65	Medium	Strong	S-MT	Excel.	High	S	R	S	G	F	G	P
Lancer	Turkey-Cheyenne x Hope-Cheyenne$_2$	Nebr. '63	M-early	Strong	Short	Excel.	High	S	R	S	G	F	G	P
Minter	Minturki$_2$ 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	(Nebred-Hope-Turkey) x (Cheyenne-Ponca)	Nebr. '63	Early	Medium	Short	Excel.	High	S	R	Tol.	G	P	F	P
Trader	Warrior x (Selkirk x Cheyenne^2)	Nebr. '68	Medium	Medium	M-tall	Good	Good	S	R	S	G	F	F	P
Trapper	Warrior x (Selkirk x Cheyenne^2)	Nebr. '68	Medium	Medium	M-tall	Good	Good	S	R	S	G	F	F	P
Winoka	Winalta selection	S.D. '69	Medium	Medium	M-tall	Excel.	Good	S	R	S	G	F	F	F
Spring Wheat														
Chris	Ftn-Thatcher^3 x (K58 x Nth) x Thatcher^2	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					
Justin	(That x K. Farmer) x (Lee x Mida) x Cly	N.D. '63	Medium	Good	M-tall	Excel.	Good	S	R					
Manitou	(Tc-Ftn x Canthatch) x (Tc^6 x PI 170925)	Can. '65	M-early	Fair	M-tall	Good	High	MR	R					
Polk	M2824^2 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					
Spinkcota	(Private breeder) Pres. Sel^2 x Red durum)	S.D. '44	Early	Good	Tall	Poor	High	S	S					
Lee	Hope x Bobin^2--Gaza	Minn. '51	Early	Fair	M-tall	Good	Medium	S	S					
Durum														
Leeds	(Ld 357$^4_8$ x St. 464 - Ld 357) x Well	N.D. '66	Early	Good	Short	Good	High	R	R					
Stewart 63	Stewart^8 x St. 464	Can. '63	Late	Fair	Tall	Excel.	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; M-late, Medium late; S-MT, short to mid-tall; M-tall, mid-tall; LR, Leaf Rust; SR, Stem Rust; WSM, wheat streak mosaic; R, resistant; S, susceptible; G, good; F, fair; P, poor

TABLE 37. CHARACTERISTICS OF OAT VARIETIES RECOMMENDED FOR SOUTH DAKOTA, 1969

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 [5]x LMJHA 3x Cltd 2x Cltn [6]x Grey Alg.	Ind.	'64	Medium	Medium	M-Early	Good	High	MR	MR	R	S
Coachman	Marne [24]x Bvx Gy 2x Ctn 3x Clintland	Mich.	'64	Medium	Medium	Medium	Good	High	MR	MS	MR	MS
Dupree	Anthony x Bond 2x richland x Fulghum	S.D.	'54	Medium	Short	Early	Medium	Medium	S	S	R	S
Garland	Clintland 2x Garry x Hawkeye-Victoria	Wisc.	'62	Medium	M-Short	Medium	Good	High	MR	MS	R	S
Holden	Clintland 3x Garry 2x Hawkeye x 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
Jaycee	Cltd 3x Garry 2x Hawkeye x Victoria 4x Putnam	Ill.	'67	Medium	M-Short	Early	Good	High	MR	MS	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
Rodney	Vtra x Hj-Bnr 2x Vtra-Hj. 3x Roxton	Can.	'54	High	Tall	Late	Good	High	MR	MS	R	S
Sioux	Garry x Rex	Can.	'67	V-High	Medium	Late	Medium	Medium	MR	MS	R	S
Tippecanoe	Clintland 60[2] x Mo. 0-205	Ind.	'64	Medium	Short	Early	Excel.	High	MS	MS	R	S
Tyler	Clintland 60[2] x Mo. 0-205	Ind.	'65	Medium	Short	M-Early	Excel.	High	MS	MS	MS	S

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

TABLE 38. CHARACTERISTICS OF FLAX VARIETIES RECOMMENDED FOR SOUTH DAKOTA, 1969

Variety	Parentage	Released		Agronomic Characteristics								Disease Reaction*		
				Yielding Ability	Plant Height	Maturity	Lodging Resistance	Seed Size	Flower Color	Oil Content	Oil Quality	Rust Race 300	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
Nored	B-5128 x Redson	Minn.	'68	High	M-Tall	Late	Good	Med.	Blue	High	Good	I	R	MR
Redwood	B-5128 x Redson	Minn.	'51	Medium	Medium	M-Late	Fair	Med.	Blue	Good	Med.	I	MR	S
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 Koto 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
Data furnished by R. S. Albrechtsen

TABLE 39. CHARACTERISTICS OF BARLEY VARIETIES GROWN IN THE 1968 TRIALS

Variety	Parentage	Released	Agronomic Characteristics								Disease Reaction		
			Yielding Ability	Plant Height	Maturity	Lodging Resistance	Bushel Weight	Seed Size	Malting Quality	Aluerone Color	SR	SB	S
Conquest*	Vantage x Jet 2x Vantmore 3x Br. 4635 4x Swan 5x Parkland	Man. '65	Medium	Tall	Medium	Good	Medium	Med.	≠	Blue	R	SR	R
Dickson*	Traill[2] x Kindred x C.I. 7117-77	N.D. '65	High	Medium	Medium	Good	Medium	Med.	Good	White	R	SR	R
Larker*	Traill x Swan	N.D. '61	High	Medium	Medium	Good	Medium	M-L	Good	White	R	MS	S
Liberty*	LMC-A x Titan	S.D. '57	High	Medium	Medium	Good	Medium	Med.	Poor	White	R	S	S
Primus*	Brandon 3902 x Liberty x Swan	S.D. '66	High	Medium	Early	Good	High	Med.	≠	White	R	S	S
Centennial +	Lenta x Sanalta	Alta.'65	High[I]	M-S	Late	Fair	High	Med.	≠	White	S	S	S
Firlbecks III +	Multi-parent line	Ger. '53	High[I]	M	Late	Good	High	M-L	Good	White	S	S	S
Galt	Glacier x[2] Newal 2x Husky	Alta.'65	High	M-S	Medium	Good	Medium	M-L	Poor	White	R	S	S
Paragon	Brandon 7212 x Parkland[2]	Man. '68	High	Tall	Late	Good	Medium	Med.	≠	Blue	R	SR	R
Trophy	Traill x Swan	N.D. '61	High	Medium	Medium	Good	Medium	Med.	Good	White	R	MS	S

* Recommended for 1969
\+ Two-row variety
≠ Malting quality reports to date are favorable but final acceptance is being delayed until furthur testing is completed.
I High yielding under irrigation, not recommended for dryland production.
Data furnished by P. B. Price.

SR - Stem Rust
SB - Spot Blotch

TABLE 40. 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	1952	High	Tall	Mixed	Medium	Medium	High	Excellent
Caribou	Canada	1953	High	Tall	Mixed	Medium	Medium	High	Excellent
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 R. S. Albrechtsen.

Varieties Recommended in South Dakota for 1969

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 rainful, 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
Minter	A, B1, B2°, B3, C1°, D4, E
Scout	B3, B4, C2, C3
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.

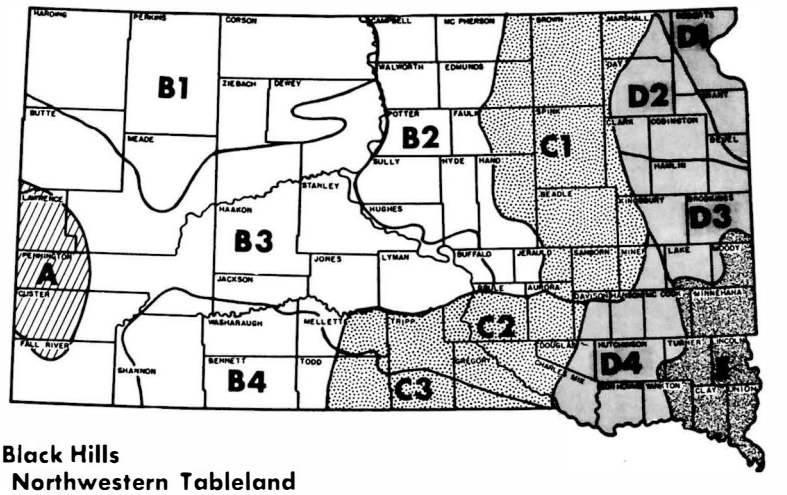
Spring Wheat	
Chris‡	Statewide
Fortuna	B1, B2, C1
Justin	B1, B2†, C1†, D1, D2
Manitou	Statewide
Polk	Statewide
Sheridan	A, B1, B2, B3, C1
Durum	
Leeds	All durum wheat areas
Wells	All durum wheat areas
Oats	
Brave	Statewide
Burnett‡	Statewide
Clintland 64	C2, C3, D2, D3, D4, E
Coachman‡	A, B1, B2, B3, C1, D1, D2, D3
Dupree	B1, B2, B3, B4, C2, C3
Garland	B2, C1, D1, D2, D3, D4, E
Holden	B2, C1, D1, D2, D3, D4, E
Jaycee	C1°, C2, C3, D3, D4, E
Kelsey	B2†, C1†, D1, D2, D3
Lodi	C1†, D1, D2, D3
Portal	B2, C1, D1, D2, D3, D4, E
Rodney	C1†, D1, D2, D3
Sioux	B2†, C1†, D1, D2, D3
Tippecanoe°°	Statewide
Tyler°°	Statewide
Barley	
Conquest	Statewide
Dickson	A, B2, C1, D1, D2, D3
Larker	A, B2, C1, D1, D2, D3
Liberty‡	Statewide
Primus‡	Statewide
Primus II‡	Statewide
Spartan	A, B1, B2°, B3, B4, C2, C3

Conquest, Larker, and Dickson approved for malting; Primus and Primus II not yet approved.

Flax	
B-5128	C1†, D1, D2, D3
Bolley	All flax areas
Nored	All flax areas
Redwood	C1†, D1, D2, D3
Summit	All flax areas
Windom	All flax areas
Rye	
Antelope	Statewide
Caribou	Statewide
Frontier	Statewide

°*Southern counties of this area*
°°*Where straw strength is needed*
†*Northern counties of this area*
‡*For both irrigation and dryland*

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