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South Dakota

CORN PERFORMANCE

1951 TESTS

CIRCULAR 93
MARCH 1952

AGRONOMY DEPARTMENT
AGRICULTURAL EXPERIMENT STATION
SOUTH DAKOTA STATE COLLEGE
BROOKINGS

SOUTH DAKOTA

Corn Performance Tests, 1951

By G. E. NACHTIGAL and D. B. SHANK[1]

Corn yield trials were conducted again in 1951 by the Agronomy department of the South Dakota State College Experiment Station to supply farmers with information on popular hybrids which are planted extensively in the various agricultural areas of the state. The information obtained in the 1951 yield tests reflects the relative performing abilities of the different hybrids in a cool season. Throughout the season, temperatures averaged several degrees below normal, while moisture was generally excessive. This resulted in a corn crop that was soft and immature. The results are presented in the tables which follow.

Location of the 1951 Tests

Eight agricultural areas have been set up in the state and corn tests were conducted in each of these areas (Fig. 1). In establishing these areas, consideration was given to the effects which various soil types, rainfall, temperature, and elevation have on crop production. At least one corn performance test was located in each area while two performance tests were planted in Areas 1, 3 and 8. The exact location of each test, the cooperator, and the soil type are given in Table 1. Anyone evaluating and selecting a hybrid variety should consult the results of the tests conducted nearest to his farm.

Table 1. Location of the 1951 Tests

District	County	Cooperator	Post Office	Soil Type	Date Planted	Date Harvested
1	Lawrence	Walter Tetrault	Spearfish	Vale silt loam (irrigated)	May 15	---*
1	Lawrence	Walter Tetrault	Spearfish	Weymouth silt loam (dry land)	May 15	Oct. 24
2	Jackson	Range Field Station†	Cottonwood	Pierre clay loam	May 16	Oct. 25
3	McPherson	North Central Station†	Eureka	Williams loam	May 29	Oct. 23
3	Hyde	Central Station†	Highmore	Williams loam	May 24	Oct. 26
4	Brown	Ellis Barnes	Claremont	Bearden silt loam	May 29	Oct. 22
4	Spink	U. S. Bureau of Reclamation	Redfield	Bearden silt loam (irrigated)	May 17	Oct. 16
4	Spink	U. S. Bureau of Reclamation	Redfield	Bearden silt loam (dry land)	May 24	Oct. 17
5	Brookings	Agr. Exp. Station	Brookings	Barnes loam	May 23	Nov. 8
6	Brule	Dale Cook	Chamberlain	Reliance silty clay loam	June 5	Oct. 19
7	Hanson	Alvin Tilberg	Ethan	Barnes silt loam	May 28	Oct. 18
8	Minnehaha	John Muchow	Hartford	Barnes silt loam	May 25	Oct. 29
8	Clay	Leo Trudeau	Vermillion	Kranzburg silt loam	May 26	Oct. 31

*Climatic conditions caused a complete loss of the test.
†Substations of the South Dakota Agricultural Experiment Station.

[1]Assistant Agronomist and Associate Agronomist, respectively, South Dakota Agricultural Experiment Station.

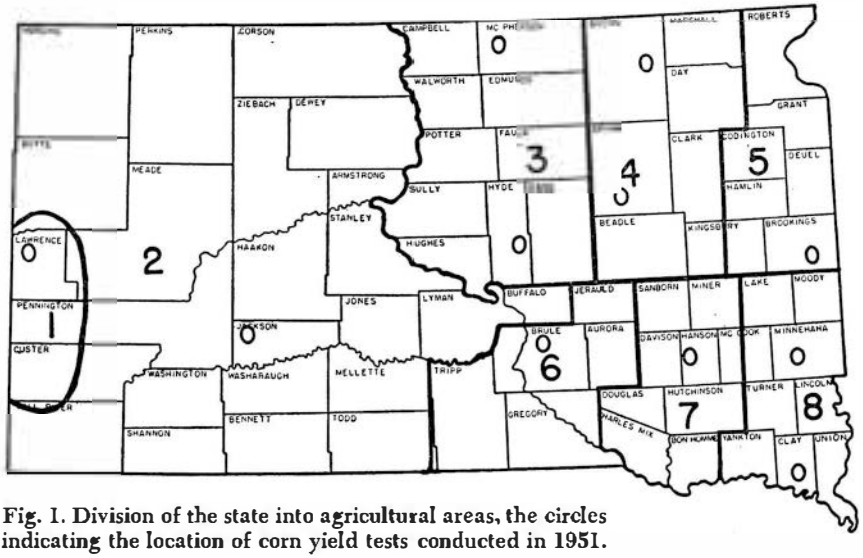


Fig. 1. Division of the state into agricultural areas, the circles indicating the location of corn yield tests conducted in 1951.

Temperature and Rainfall

Temperature and rainfall data are presented in Table 2. Where information was not available for the immediate vicinity of each test plot, reports from the closest station were used. In 1951 the temperature was consistently below average while rainfall was high, resulting in very soft corn. Briefly, month by month the weather for the state was as follows:

May: Temperature and precipitation was about average. Cool, showery weather delayed corn planting in many places.

June: The mean temperature for the state was 6.4 degrees[2] below the average. Snow occurred in the Black Hills on June 1. Precipitation was 1.01 inches above average over the state. Corn developed slowly, especially in late planted fields.

July: Temperatures were below the weekly mean the first seven days and slightly above the rest of the month, resulting in 2.7 degrees below average for the whole month. Precipitation was above average the first two weeks and below, the rest of the month. Corn grew slowly the first part of July because of the cool weather.

August: The first two weeks were warm while the last two were cool. Temperatures for the month were 2.7 degrees below average while rainfall was 1.64 inches above average. Brookings had the most rain with 8.29 inches for the month. Corn grew fairly well during this month.

[2]Figures and monthly climatological information were obtained from the same Weather Bureau reports used in setting up Table 2.

Table 2. Temperature and Precipitation Data for the 1951 Corn Growing Season*

Station and District	Month	Temperature in Degrees F. Average	Departure From Normal	Average Departure	Precipitation in Inches Month Total	Season Total	Departure From Normal	Total Departure	Frost-free Days†
Spearfish	May	53.9	—0.5		1.53		—1.76		
	June	54.9	—8.5		4.74		+0.95		
(1)	July	68.6	—2.5		1.69		—0.49		
	August	66.8	—2.4		3.77		+2.15		
	Sept.	54.1	—6.2	—4.0	2.65	14.38	+1.03	+1.88	112
Cottonwood	May	58.6	+2.0		1.51		—1.14		
	June	59.6	—7.6		4.64		+1.98		
(2)	July	71.6	—3.4		2.41		+0.41		
	August	70.0	—2.5		3.51		+1.91		
	Sept.	56.5	—5.7	—3.4	2.21	14.28	+1.20	+43.6	106
Eureka	May	56.5	+1.2		2.96		+0.66		
	June	59.1	—5.8		4.92		+1.56		
(3)	July	68.4	—3.6		3.42		+1.14		
	August	66.7	—2.7		2.85		+0.68		
	Sept.	54.5	—5.1	—3.2	2.00	16.15	+0.53	+4.57	137
Highmore	May	55.8	—0.7		2.84		+0.24		
	June	59.7	—5.9		2.96		—0.35		
(3)	July	70.3	—3.4		1.51		—0.84		
	August	68.8	—2.9		3.59		+1.53		
	Sept.	56.4	—6.0	—3.8	0.12	11.02	—1.27	—0.69	136
Aberdeen	May	57.5	+0.2		2.45		—0.62		
	June	59.4	—7.1		3.94		—0.16		
(4)	July	69.2	—3.6		2.63		—0.33		
	August	66.4	—3.9		2.20		—0.61		
	Sept.	54.9	—5.6	—4.0	0.33	11.55	—1.58	—3.30	134
Redfield	May	57.7	‡		3.01		‡		
	June	59.7	‡		4.56		‡		
(4)	July	69.2	‡		0.97		‡		
	August	67.7	‡		3.53		‡		
	Sept.	55.2	‡		0.48		‡		112
Brookings	May	58.6	+1.8		3.35		+0.44		
	June	61.5	—4.6		4.96		+1.11		
(5)	July	68.6	—3.3		2.27		—0.16		
	August	67.1	—2.8		8.29		+5.61		
	Sept.	53.2	—7.7	—3.3	1.68	20.55	—0.34	+6.66	134
Pukwana	May	58.1	+0.5		‡		‡		
	June	64.1	—5.4		‡		‡		
(6)	July	71.2	—6.3		2.56		+0.80		
	August	69.8	—5.2		4.23		+2.21		
	Sept.	57.8	—7.1	—4.7	1.58		+0.18		134
Mitchell	May	59.1	+0.1		4.56		+1.35		
	June	‡	‡		‡		‡		
(7)	July	70.3	—4.2		4.04		+0.98		
	August	70.0	—2.0		1.75		—0.85		
	Sept.	56.3	—6.9		1.55		—0.57		152
Sioux Falls	May	58.7	0.0		4.37		+0.64		
	June	62.2	—5.8		7.94		+3.57		
(8)	July	70.8	—2.6		2.73		—0.42		
	August	69.2	—1.9		2.16		—0.97		
	Sept.	56.1	—6.2	—3.3	3.40	20.60	+0.74	+2.08	134
Vermillion	May	62.1	+0.9		4.65		+1.09		
	June	66.4	—3.9		7.22		+3.17		
(8)	July	73.6	—2.8		2.42		—0.74		
	August	72.0	—1.9		8.19		+5.21		
	Sept.	60.4	—4.9	—2.5	3.04	25.52	—0.12	+8.61	147

*Information presented was taken from Monthly Climatological Data, U. S. Dept. of Commerce, Weather Bureau, Huron, South Dakota.

†Number of days between 32°, or below, in the spring and 32°, or below, in the fall.

‡No figures available.

September: Temperatures for the month averaged the second lowest since 1890. Killing frosts occurred in the central part of the state on September 24 and over most of the state on September 28. During the last week the state average temperature was 15 degrees below the mean. Cool temperatures throughout May, June, July, August and early September delayed corn development. The frosts in September killed the corn, much of which was not yet dented in many fields.

October continued to have below-average temperatures and above-average precipitation. November also had temperatures 3.5 degrees below average. These lower temperatures reduced the drying of corn after frost had killed it.

Selection of Entries

In order to select entries for the tests, a survey was conducted to ascertain those hybrids which were purchased most by farmers in the agricultural area represented by each test. Information was obtained on the hybrids of those companies which registered their corns with the South Dakota State Department of Agriculture. The survey included recommendations by representatives of the corn companies producing and registering the hybrids, and lists submitted by county agents located in the areas where the tests were conducted. Facilities permitted testing only the most widely used hybrids.

Method of Planting and Harvesting

Planting. Each group of entries was planted in four or five replications. Within these replications, plots of individual hybrids were located at random. Each plot consisted of two rows, 10 hills long, or the equivalent if the corn was drilled rather than checked. Planting was done at the rate of three kernels per hill for the check plots, one per hill for the drilled plots. Where tests were located with farmer cooperators they received the same fertilizer applications and cultural treatments as did their corn. Planting dates are given in Table 1.

Harvesting. The tests were picked at the time general harvesting was going on in the surrounding area. The corn from each plot was picked separately and weighed. After weighing, samples for moisture determination were taken on three replications of the plots. This was accomplished by selecting 12 ears at random, taking a one-inch cross section from the middle of each ear by means of a machine built for this purpose, and placing the 12 cross sections in a paper bag. The samples were weighed when taken in the field, then they were oven-dried at 105 degrees C. in the laboratory, reweighed and the moisture percentages determined. Harvesting dates are given in Table 1.

Measuring Performance

Yield. The yield reported for each hybrid or variety in each test is the average obtained for all replications, expressed in bushels per acre on the basis of 15.5 percent moisture. All yields were computed from the field weights which had been corrected according to the moisture content of the individual entries. At the bottom of each table of results (Tables 3-14 inclusive) is given the minimum amount for the 1951 tests by which two entries must differ in yield in order for that difference to be considered statistically significant.

A slight amount of variation can occur between entries of equal performance potential because of field conditions such as variations in soil type, stand, and slope. Therefore, mathematical determinations have been made to establish what difference it is necessary to have between two entries before it can be said that there is a true difference between them rather than a chance variation. For example, in Brookings County (Table 10), a difference of 4.4 bushels per acre in the yield of two entries is required before it can be said that one has a superior yielding ability over the other. This difference, required for significance, varies from test to test, depending upon amount of chance variation within each.

Also, at the bottom of the yield column in each table appears the average yield of all entries.

Moisture content. The moisture content at harvest is given for each entry in the tables. This is the amount of moisture in the ear corn expressed in percentage. At the bottom of the moisture percentage column in each table appears the average moisture content of all entries. Moisture content is directly related to maturity, and because maturity is of primary consideration in South Dakota, these figures are very important when an evaluation of the various entries is made.

Performance score. Each entry in the various tables is ranked on the basis of a performance score. This score was computed for each entry from its 1951 performance record, expressed as a percentage of the average of all entries. In such calculations, yield was weighted 60 percent and dry matter (100 minus percent moisture) 40 percent.

Stand. A reduction in the number of hills below 100 percent is taken to mean that either the seed of an entry is unable to produce a good stand under the environmental conditions prevailing for the test, or that something destroyed either the kernels before germination or the young plants. Thin stands reduce yields and since this work is designed primarily to test yielding potential of the various entries, rather than germination, corrections in yield were made for missing hills according to the formula:

$$CW = FW \left(\frac{H - 0.3M}{H - M} \right)$$

where CW = corrected weight, FW = field weight, H = number of hills per plot and M = number of missing hills. No yield corrections were made

for minor variations in stand, that is, less than three stalks per hill. Also, no corrections were attempted for poor stands in drilled plots.

Lodging. In the Brookings County test, stalk and root lodging figures for 1951 are presented. Stalk lodging is expressed as the percentage of stalks which were broken below the ear at the time of harvest. Root lodging is the percentage of stalks which lodged 30 degrees or more from the perpendicular at the time of harvest.

Results over a period of years. Many of the entries included in the 1951 trials were also tested in previous years. This makes possible the calculation of two-, three-, four- and five-year averages in some cases, and such data are included in many of the tables which follow. These averages are more useful than the results obtained in a single year for determining the value of any hybrid or variety, for in any one year an entry may fluctuate in its relative value because of specific environmental conditions under which the test was conducted. Averages for a period of several years will iron out these environmental variations. A hybrid or variety was included in the averages only when it was the same variety each year and was secured from the same source.

Black Hills Area

Lawrence County. Two tests were planted on farms of Walter Tetrault just northwest of Spearfish. One was on dry land; the other was under irrigation. The irrigated test was so immature that it was used for silage. In the dry-land plots both stands and moisture contents at harvest were quite variable. Damage caused by deer also caused yield reductions for some entries. The dry-land test was planted May 15 and harvested October 24.

Table 3. Area 1 (Lawrence County) 1951 Corn Performance Tests—Results on Dry Land

Hybrid or Variety	Performance Score	Acre Yield Bu.*	Moisture Percent	2-Year Average Yield Bu.	2-Year Average Moisture Percent
United U20A	136.33	30.1	23.9	—	—
Jacques 803	119.12	25.0	28.7	24.5	24.9
Disco 85W	111.96	26.8	42.5	23.6	36.1
Wisconsin 355	109.56	26.8	48.5	24.6	42.8
Sokota 212	105.57	23.1	40.3	—	—
Disco 90W	105.37	26.0	51.3	25.1	43.8
S. Dak. Experimental 10	102.54	24.0	47.8	—	—
DeKalb 43	98.05	22.9	49.9	22.0	38.0
Wisconsin 255	96.98	18.5	35.1	20.6	28.6
S. Dak. 270	95.76	21.4	47.5	18.7	46.4
Sokota 224	95.72	20.9	45.7	20.4	41.0
DeKalb 46	91.25	21.4	53.7	38.4	40.8
Kingscrost KE3	89.54	18.9	46.8	19.2	34.6
DeKalb 41	87.76	18.1	46.3	21.3	32.1
Funk G-188	80.96	16.9	51.2	—	—
DeKalb 56	75.28	16.6	57.9	18.7	46.1
Average of all entries		**22.3**	**45.0**	**23.1**	**37.9**

*Differences in yield of less than 4.9 bushels per acre are not statistically significant.

West River Area

Jackson County. The test in this county was located on the Range Field Station at Cottonwood. Yields obtained were low while moistures were high. One variety, Gehu, gave no yield at all. The others, however, yielded some corn in 1951 which they were unable to do in 1949 and 1950. The test was planted May 16 and harvested October 25.

Table 4. Area 2 (Jackson County) 1951 Corn Performance Tests

Hybrid or Variety	Performance Score	Acre Yield Bu.*	Moisture Percent
S. Dak. Experimental 9	169.29	11.0	31.2
United U26	148.91	9.4	35.4
DeKalb 56	124.25	7.4	38.2
Sokota 400	117.40	7.4	49.0
Jacques 901J	106.62	5.6	33.9
Rainbow Flint	106.48	5.7	35.5
S. Dak. 262	105.76	6.2	45.2
Iowa 4417	103.49	6.4	51.6
DeKalb 41	100.86	4.5	23.9
Sokota 224	98.79	5.3	40.5
Funk G-9	95.14	5.9	55.9
Disco 85W	94.98	4.5	32.7
S. Dak. 270	94.46	5.0	42.1
Pride PN16	76.85	3.5	43.8
Kingscrost KE2	76.85	2.4	24.5
Sokota 212	75.75	3.4	42.2
Funk G-1A	72.95	3.6	51.3
Kingscrost KE3	67.33	1.7	27.3
Silver King	64.20	2.0	36.9
Average of all entries		**5.3**	**39.0**

*Differences in yield of less than 3.5 bushels per acre are not statistically significant.

North Central Area

McPherson County. A test is conducted each year on the North Central Station located at Eureka, South Dakota. This is the northernmost test and the corn in 1951 was extremely wet, running up to 70 percent moisture for some entries at harvest time. The plots were planted May 29 and harvested October 23.

Table 5. Area 3 (McPherson County) 1951 Corn Performance Tests

Hybrid or Variety	Performance Score	Acre Yield Bu.*	Moisture Percent	2-Year Average		3-Year Average		4-Year Average		5-Year Average	
				Yield Bu.	Moisture Percent	Yield Bu.	Moisture Percent	Yield Bu.	Moisture Percent	Yield Bu.	Moisture Percent
Wisconsin 240	129.03	35.8	42.5	38.1	38.0	36.1	33.3	35.7	30.0	34.4	29.7
Agsco 301	126.70	39.3	51.6	38.0	45.9						
Jacques 851	118.87	36.0	52.9								
United U20A	116.63	34.3	51.8								
Nodakhybrid 201	112.01	31.7	51.3	32.2	42.4	32.1	35.5	32.9	33.1	32.1	31.5
Wisconsin 255	109.81	29.2	48.6	30.4	43.3	28.1	38.1	28.2	34.9	27.4	33.7
Cargill 84N	109.44	34.0	58.3								
Nodakhybrid 304	108.84	32.1	55.2	36.2	44.8	35.0	38.9	34.1	34.8		
Cargill 85N	108.07	33.0	57.7	34.8	49.2						
Kingscrost KE2	106.16	30.9	55.5	32.1	47.5						
Hansmann	105.66	30.9	56.0	37.3	46.9	36.1	39.6	37.4	35.8		
Wisconsin 355	100.54	31.7	62.6	35.7	54.4						
Haapala 400	100.09	32.4	64.4								
Pride B17A	98.05	32.5	66.6								
DeKalb 46	95.39	31.1	66.5	33.6	54.1						
S. Dak. Experimental 10	94.00	28.9	63.6	31.5	52.0						
Sokota 212	92.44	29.5	66.3	31.0	59.2	30.7	51.2	30.5	48.7	29.1	47.2
Pioneer 388	90.32	29.2	67.8								
Pride PN 16	85.61	28.1	70.3								
Agsco 275	84.66	25.2	65.6	31.5	53.0						
Funk G-188	81.67	26.0	70.1	27.4	57.9	26.1	48.7	26.4	43.5	25.4	42.3
Sokota 204	76.66	23.1	69.4	25.6	61.2	26.1	54.2	26.8	49.1	25.7	48.1
DeKalb 56	73.38	21.9	70.3	22.7	64.9						
Silver King	73.08	21.7	70.2	24.1	61.9	25.0	52.7	26.8	47.1	25.1	46.2
Average of all entries		**30.4**	**60.6**	**31.9**	**51.6**	**30.6**	**43.6**	**31.0**	**39.7**	**28.5**	**39.8**

*Differences in yield of less than 3.8 bushels per acre are not statistically significant.

North Central Area

Hyde County. The test located on the Central Station at Highmore was planted May 24 and harvested October 26. The corn was not as wet at harvest as in some of the other tests.

Table 6. Area 3 (Hyde County) 1951 Corn Performance Tests

Hybrid or Variety	Performance Score	Acre Yield Bu.*	Moisture Percent	2-Year Average		3-Year Average†		4-Year Average†		5-Year Average†	
				Yield Bu.	Moisture Percent	Yield Bu.	Moisture Percent	Yield Bu.	Moisture Percent	Yield Bu.	Moisture Percent
Rainbow Flint	121.56	43.2	34.6	33.2	29.4	—	—	—	—	—	—
S. Dak. Experimental 10	117.22	38.3	27.5	34.6	22.7	—	—	—	—	—	—
Sokota 270	111.74	38.4	36.2	32.5	32.1	—	—	—	—	—	—
DeKalb 56	110.51	37.3	35.0	30.2	30.2	28.7	26.0	25.2	24.5	25.5	25.0
Kingscrost KS4	109.81	38.2	38.6	—	—	—	—	—	—	—	—
Disco 95W	107.36	37.0	39.0	29.2	32.3	27.1	29.1	21.9	27.9	—	—
Funk G-13	105.90	34.5	34.2	28.6	28.2	—	—	—	—	—	—
Sokota 224	105.67	35.9	38.5	30.4	31.9	28.4	27.6	26.4	25.5	26.1	25.8
Jacques 901J	105.59	35.0	36.1	—	—	—	—	—	—	—	—
Sokota 212	104.55	33.4	33.2	28.6	28.2	29.5	25.0	26.2	24.0	26.2	24.4
Falconer	104.02	31.3	28.1	24.5	22.2	—	—	—	—	—	—
Pioneer 388	103.16	34.1	37.3	—	—	—	—	—	—	—	—
Disco 90W	102.59	33.9	37.6	—	—	—	—	—	—	—	—
Pioneer 377A	100.54	35.3	44.7	31.1	35.5	—	—	—	—	—	—
Tomahawk 4	97.88	33.1	42.6	—	—	—	—	—	—	—	—
Funk G-1A	95.68	33.0	45.7	28.7	38.3	27.1	33.0	23.0	32.1	26.3	31.9
DeKalb 65	94.68	31.1	41.9	28.3	32.5	28.6	28.4	24.5	26.3	25.1	26.3
Sokota 400	93.55	29.4	48.7	26.0	40.8	24.9	35.4	22.6	33.0	24.9	33.0
United U28A	87.33	30.0	50.1	—	—	—	—	—	—	—	—
Imperial Canada 355	85.98	24.6	37.0	—	—	—	—	—	—	—	—
Cargill 87N	84.88	22.9	33.9	—	—	—	—	—	—	—	—
Haapala 354	80.66	20.2	32.8	—	—	—	—	—	—	—	—
S. Dak. 262	80.46	24.5	45.2	24.4	37.5	—	—	—	—	—	—
Average of all entries		**32.8**	38.5	**29.3**	**31.6**	**27.8**	29.2	**24.3**	**27.6**	**25.7**	27.7

*Differences in yield of less than 5.4 bushels per acre are not statistically significant.
†No test was harvested in 1949. Therefore, the three-year averages are for 1951, 1950, and 1948, the four-year averages are for 1951, 1950, 1948, and 1947; the five-year averages are for 1951, 1950, 1948, 1947, and 1946.

North James River Area

Brown County. Ellis Barnes continued to be the cooperator in this area. His farm is located three or four miles west of Claremont. Planting was done May 29 and harvesting on October 22.

Table 7. Area 4 (Brown County) 1950 Corn Performance Tests

Hybrid or Variety	Performance Score	Acre Yield Bu.*	Moisture Percent	2-Year Average		3-Year Average		4-Year Average		5-Year Average	
				Yield Bu.	Moisture Percent	Yield Bu.	Moisture Percent	Yield Bu.	Moisture Percent	Yield Bu.	Moisture Percent
Pioneer 388	119.16	49.1	39.6	—	—	—	—	—	—	—	—
Trojan B45	111.89	41.3	33.2	40.9	27.3	—	—	—	—	—	—
Wisconsin 416	111.11	45.7	43.5	42.7	38.7	48.0	33.8	47.4	31.8	48.8	32.3
Disco 95W	109.37	44.8	44.0	39.7	42.0	46.7	35.7	45.4	34.0	44.7	34.3
DeKalb 56	108.60	43.2	41.7	43.5	38.0	49.8	33.0	49.1	30.6	48.1	31.0
Agsco 301	108.08	39.1	33.8	39.8	28.8	—	—	—	—	—	—
S. Dak. Experimental 10	107.08	40.4	37.9	—	—	—	—	—	—	—	—
Funk G-188	106.93	40.3	37.9	—	—	—	—	—	—	—	—
Kingscrost KE1	105.47	38.3	36.6	—	—	—	—	—	—	—	—
Pioneer 382	102.75	41.0	45.1	40.1	38.5	—	—	—	—	—	—
Funk G-13	102.58	40.5	44.3	43.0	36.8	—	—	—	—	—	—
Sokota 212	102.37	39.7	42.9	37.8	37.6	43.9	33.0	41.9	30.8	43.0	31.7
Kingscrost KS3	101.75	43.1	50.9	—	—	—	—	—	—	—	—
Pride B17A	101.12	39.6	44.4	37.4	38.4	—	—	—	—	—	—
Haapala 400	100.45	38.4	42.8	39.6	37.3	—	—	—	—	—	—
Jacques 906J	100.02	36.4	39.2	—	—	—	—	—	—	—	—
S. Dak. Experimental 9	98.49	39.4	47.6	41.1	40.9	49.5	34.3	—	—	—	—
Cargill 90N	97.91	36.5	42.3	—	—	—	—	—	—	—	—
S. Dak. 262	97.09	38.3	46.8	—	—	—	—	—	—	—	—
Kingscrost KS4	96.01	39.4	51.0	—	—	—	—	—	—	—	—
Sokota 224	93.59	36.3	47.8	39.3	41.5	46.2	36.0	45.0	32.9	46.0	32.7
United U32	92.98	38.9	54.1	—	—	—	—	—	—	—	—
Sokota 270	91.53	36.0	50.0	—	—	—	—	—	—	—	—
DeKalb 65	90.25	35.4	50.5	38.4	44.3	45.6	36.9	46.7	33.0	48.1	33.1
Disco 100W	85.00	33.4	53.5	37.6	48.0	—	—	—	—	—	—
Pfister 52	82.47	33.7	57.6	—	—	—	—	—	—	—	—
Pfister 56	77.35	31.3	59.6	—	—	—	—	—	—	—	—
Average of all entries		39.2	45.1	40.1	38.4	47.1	34.7	45.9	32.2	46.5	32.5

*Differences in yield of less than 4.1 bushels per acre are not statistically significant.

North James River Area

Spink County. Two tests were conducted on the Redfield Development Farm in cooperation with the Bureau of Reclamation. This farm is about six miles east of Redfield. One experiment was on dry land, the other under irrigation. The dry-land plot was fertilized with 10 tons of manure and 100 pounds of 10-20-0 per acre. It was planted May 24 and harvested October 17. The irrigated test received 20 tons of manure and 200 pounds of 10-20-0 per acre. It was planted May 17 and harvested October 16.

Table 8. Area 4 (Spink County) 1951 Corn Performance Tests—Results on Dry Land

Hybrid or Variety	Performance Score	Acre Yield Bu.*	Moisture Percent	2-Year Average Yield Bu.	2-Year Average Moisture Percent
S. Dak. Experimental 10	116.04	47.6	32.0	—	—
Pioneer 377A	112.55	51.2	44.4	49.9	40.6
Funk G-13	109.79	45.3	36.2	—	—
S. Dak. Experimental 9	105.91	44.5	40.1	—	—
Kingscrost KS6	102.83	46.0	47.6	46.0	41.2
DeKalb 56	101.00	42.1	42.2	41.0	36.6
Sokota 224	100.77	43.4	45.2	42.9	38.3
S. Dak. 270	98.41	42.1	45.9	42.7	41.5
DeKalb 240	97.58	44.0	51.0	41.9	47.8
S. Dak. 262	95.89	40.3	45.8	—	—
Kingscrost KE3	94.90	33.2	32.6	33.7	28.6
Wisconsin 355	94.56	35.2	37.2	—	—
DeKalb 46	93.73	33.5	34.9	—	—
Iowa 4316	89.18	40.6	56.0	40.1	52.1
Sokota 400	87.15	36.8	51.1	39.6	45.2
Average of all entries		**41.7**	**42.8**	**42.0**	**41.3**

*Differences in yield of less than 6.8 bushels per acre are not statistically significant.

Table 9. Area 4 (Spink County) 1951 Corn Performance Tests—Results from Irrigation

Hybrid or Variety	Performance Score	Acre Yield Bu.*	Moisture Percent	2-Year Average Yield Bu.	2-Year Average Moisture Percent
S. Dak. Experimental 10	108.34	81.5	27.6	—	—
Pioneer 377A	107.08	85.4	35.0	90.3	37.3
Iowa 4316	106.79	84.0	33.6	82.5	40.8
DeKalb 46	105.90	80.9	30.9	—	—
Sokota 400	105.65	85.1	37.0	86.1	39.0
S. Dak. Experimental 9	103.65	77.5	30.1	—	—
DeKalb 56	101.94	75.0	29.6	70.6	33.8
Sokota 224	99.01	74.9	34.4	79.1	34.7
Funk G-13	98.97	70.7	28.8	—	—
S. Dak. 270	95.99	71.8	35.3	80.3	36.0
Kingscrost KS6	95.82	72.4	36.4	78.2	36.6
S. Dak. 262	94.35	67.9	32.8	—	—
Wisconsin 355	93.62	67.0	32.8	—	—
DeKalb 240	93.32	70.4	37.9	83.0	39.1
Kingscrost KE3	88.97	57.1	27.3	59.2	28.7
Average of all entries		**74.8**	**32.6**	**78.8**	**36.2**

*Differences in yield of less than 14.9 bushels per acre are not statistically significant.

Northeast Area

Brookings County. The test in Area 5 is planted each year on the Agronomy experimental farm, which is located one mile east of the college campus at Brookings. Planting was done May 23 and harvesting November 8.

Table 10. Area 5 (Brookings County) 1951 Corn Performance Tests

Hybrid or Variety	Performance Score	Yield Bu.*	Moisture Percent	Stalk Lodging Percent	Root Lodging Percent	2-Year Average		3-Year Average		4-Year Average		5-Year Average	
						Yield Bu.	Moisture Percent	Yield Bu.	Moisture Percent	Yield Bu.	Moisture Percent	Yield Bu.	Moisture Percent
S. Dak. Experimental 10	118.00	39.3	37.6	6.4	19.5								
Cargill 100N	116.23	40.3	43.1	9.3	8.4	52.3	39.6						
Pioneer 388	119.91	38.2	42.9	8.0	7.6								
Funk G-13	110.33	36.1	40.2	31.1	55.3	51.7	37.8						
Haapala 400	109.08	35.3	40.0	13.8	31.3								
Disco 95W	108.57	37.1	44.7	12.6	6.8								
Jacques 957A	108.02	37.1	45.4	8.1	24.3								
Sokota 212	108.02	35.1	40.9	11.3	51.8	45.3	38.6	39.4	35.9	47.3	33.7	47.9	35.3
Cargill 95N	107.75	35.7	42.6	15.8	24.7								
S. Dak. Experimental 9	107.63	38.3	48.6	3.1	2.2	53.7	40.9	47.5	36.4				
DeKalb 65	106.75	36.2	45.0	12.3	16.2	48.5	39.5	40.5	36.3	50.5	33.8	51.4	34.5
Wisconsin 355	106.53	33.9	40.1	10.4	28.4	45.3	38.8						
Sokota 224	106.39	36.0	45.0	6.2	34.2	49.2	40.0	42.7	36.5	51.7	33.3	51.6	33.3
Kingscrost KS4	102.15	35.1	48.4	3.4	2.9								
Disco 100W	102.01	33.6	45.2	8.4	26.4	43.7	43.2						
Wisconsin 464A	100.57	34.2	48.4	8.0	9.3								
Agsco 501	99.40	30.2	40.9	18.8	45.7								
Funk G-1A	97.69	34.7	53.2	3.2	6.9	47.9	45.9	40.0	42.6	51.5	39.3	51.9	38.6
Pride B45-A	96.85	34.8	54.5	3.7	3.2	48.8	47.8						
Vinton V170	96.77	30.3	44.5	21.1	11.9								
S. Dak. 270	96.46	33.2	51.4	3.7	1.6	47.0	45.6	40.8	41.1				
S. Dak. 262	94.78	32.6	52.2	3.8	27.8	48.6	44.9						
DeKalb 240	94.15	34.2	56.6	7.5	2.2	48.1	49.6	38.5	45.8	50.9	42.3	51.8	42.0
Sokota 400	93.54	32.7	54.0	5.2	4.7	47.2	47.3	39.4	44.0	52.1	40.4	52.4	39.6
Jacques 1055J	91.30	29.2	49.0	9.5	1.0	44.5	44.5						
Pioneer 377A	89.34	32.4	58.7	2.8	4.6	48.6	49.0						
Turner T12A	89.21	31.7	57.1	2.7	1.4								
Farmers 223	88.70	31.5	57.5	5.9	9.4								
Kingscrost KS6	88.28	31.4	57.8	9.0	35.4	46.3	47.6	38.0	43.0	51.0	39.4	51.6	39.2
Pioneer 379A	86.52	29.6	56.0	10.1	20.3	47.3	47.6	38.4	43.7				
Pfister 52	85.52	31.7	62.4	0.9	4.5	46.9	53.1						
Pfister 56	83.32	28.8	58.3	3.2	6.4	45.7	49.3	36.1	46.3				
United U32A	77.33	28.2	64.6										
Average of all entries		**34.1**	**48.9**	**8.2**	**16.7**	**47.9**	**44.5**	**40.1**	**41.1**	**50.7**	**37.5**	**51.2**	**37.5**

*Differences in yield of less than 4.4 bushels per acre are not statistically significant.

South Central Area

Brule County. The test in area 6 was conducted in Brule County in 1951 on the farm of Dale Cook which is three to four miles east of Chamberlain on U. S. Highway 16. In previous years the test in this area has been in Tripp County. Therefore, there are no averages covering periods of two or more years. The test was planted June 5 and harvested October 19.

Table 11. Area 6 (Brule County) 1951 Corn Performance Tests

Hybrid or Variety	Performance Score	Acre Yield Bu.*	Moisture Percent
Farmers 223	119.08	31.2	48.6
Cargill 100N	113.99	25.5	49.5
S. Dak. Experimental 9	111.16	23.8	48.1
Pfister 61	110.06	27.7	58.9
Funk G-68	109.17	27.1	58.3
Sokota 400	108.72	26.4	57.0
S. Dak. 270	106.54	24.4	54.2
Funk G-9	105.27	25.3	57.7
Pride D56	104.23	25.6	59.5
Sokota 224	103.37	22.4	52.4
Kingscrost KS6	102.25	24.0	57.5
S. Dak. 262	101.90	24.1	58.1
DeKalb 410	98.14	24.8	63.6
Disco 107A	97.59	25.3	65.4
Tomahawk 45	96.99	24.9	65.0
Haapala 130	95.07	22.6	61.2
Pioneer 379A	92.04	20.1	58.0
Pioneer 349	91.27	22.0	63.5
Tekseed 115	90.84	24.8	70.9
Funk G-29	85.72	21.7	68.3
United U40	84.14	20.5	66.9
DeKalb 404A	83.80	19.6	64.9
Turner T48	81.63	20.9	70.4
Average of all entries		**24.1**	**60.0**

*Differences in yield of less than 6.6 bushels per acre are not statistically significant.

South James River Area

Hanson County. Alvin Tilberg continued as cooperator for this test. His farm is about eight miles southeast of Mitchell. The test was planted May 28 and harvested October 18.

Table 12. Area 7 (Hanson County) 1951 Corn Performance Tests

Hybrid or Variety	Performance Score	Acre Yield Bu.*	Moisture Percent	2-Year Average		3-Year Average		4-Year Average		5-Year Average	
				Yield Bu.	Moisture Percent	Yield Bu.	Moisture Percent	Yield Bu.	Moisture Percent	Yield Bu.	Moisture Percent
Pioneer 379 A	117.81	47.3	39.0	54.4	32.9						
S. Dak. Experimental 9	114.92	42.4	32.9	53.2	28.1	48.6	26.7				
Funk G–16	114.39	45.4	39.7								
S. Dak. 270	111.07	40.9	35.0	51.2	29.6	46.9	27.9	56.1	26.2		
Funk G–30	110.67	46.7	47.3	52.1	38.9						
Sokota 400	109.95	41.5	37.7	49.1	33.1	43.1	31.0	54.9	30.3	50.5	30.3
Sokota 224	108.54	38.5	33.5	45.8	28.7	40.8	26.4	49.9	24.7	46.3	24.2
Pioneer 349	107.62	44.7	47.3	54.7	39.8						
McCurdy 96	106.30	42.8	45.2								
DeKalb 410	104.89	43.3	48.1	55.6	40.2						
Pfister 281	104.39	44.7	51.6								
Pride B38A	104.35	39.3	40.7								
Vinton V24A	104.06	43.2	49.0								
Kingscrost KR2	103.71	41.0	45.0	52.7	37.9	43.8	36.3	56.8	34.7		
Tomahawk 40	102.60	41.4	47.3	49.4	39.2						
Farmers 427A	102.56	43.4	51.4	51.1	45.2	42.8	40.7	56.5	39.0		
DeKalb 406	99.89	41.2	50.5	50.4	41.4						
United U37A	99.61	38.8	46.0								
S. Dak. 262	98.77	34.6	38.6								
Tekseed 45A	93.76	38.9	54.0								
United U42A	93.58	37.6	51.6								
Kingscrost KY4	90.98	35.3	50.4	49.0	41.5						
Disco 108A	90.61	35.8	51.9								
Disco 107A	85.38	33.4	54.0	46.9	44.4						
Iowa 4297	84.16	32.3	53.4	43.5	43.9						
Funk G-29	83.27	32.5	55.0	45.4	45.1	39.9	41.1	56.9	38.8	52.2	38.3
Jacobsen J20	83.01	30.9	52.1								
Pfister 299	81.85	33.0	59.7	45.0	47.4	40.0	42.9	57.3	39.4		
Turner T48	66.24	22.6	57.6								
Average of all entries		**39.4**	**46.7**	**50.0**	**38.7**	**43.0**	**34.1**	**55.5**	**33.3**	**49.7**	**30.9**

*Differences in yield of less than 4.5 bushels per acre are not statistically significant.

Southeast Area

Minnehaha County. In 1951 this test was moved from its previous location near Garretson to the farm of John Muchow which is nine miles west of Sioux Falls on U. S. Highway 16 and one mile north. The test was planted May 25, quite late because of the wet spring. This coupled with the cool season resulted in excessively high moisture in the fall. Harvesting took place October 29.

Table 13. Area 8 (Minnehaha County) 1951 Corn Performance Tests

Hybrid or Variety	Performance Score	Acre Yield Bu.*	Moisture Percent	2-Year Average Yield Bu.	2-Year Average Moisture Percent	3-Year Average Yield Bu.	3-Year Average Moisture Percent	4-Year Average Yield Bu.	4-Year Average Moisture Percent	5-Year Average Yield Bu.	5-Year Average Moisture Percent
S. Dak. Experimental 9	116.80	39.7	36.5	38.1	27.1	44.9	24.2				
Pioneer 377A	114.21	41.1	42.9	41.2	31.8						
Tekseed 31	111.27	40.1	44.5								
Farmers 223	109.83	39.8	45.7								
Tomahawk 14	106.54	36.5	42.7	39.9	32.7						
Pioneer 349	105.56	40.4	52.5	40.7	38.0						
DeKalb 404A	105.00	39.2	50.6	37.1	40.3						
Funk G–6	104.47	36.1	44.5	38.9	32.4						
DeKalb 240	104.39	38.2	49.2	38.2	36.2	40.5	37.3	55.5	31.3	55.9	29.0
Sokota 400	103.03	35.3	44.6	38.7	33.1	41.2	29.5	54.9	28.1	55.7	27.3
Imperial 185	103.01	33.6	40.9								
Sokota 224	102.00	32.5	39.8	39.5	27.9	42.2	24.7	50.8	24.8	51.0	23.4
Kingscrost KS6	101.66	35.5	46.8	36.8	32.5						
Turner T12A	101.35	35.5	47.2								
Cargill 108N	101.11	36.5	49.7								
S. Dak. 270	99.69	33.2	44.3	36.3	31.4	39.3	26.6				
Haapala 130	95.73	35.5	50.7								
S. Dak. 262	98.01	32.3	44.5	35.8	30.6						
Federal 222	97.49	35.7	52.6								
Pride PN51	96.42	34.2	50.7								
Trojan G–98	94.91	35.0	54.4	38.2	38.5						
Trojan F102	94.84	34.0	52.3	33.3	41.4						
Iowa 4417	92.79	32.2	51.0	37.4	36.4	40.7	32.5	54.1	31.6		
Kingscrost KO5	92.68	33.6	54.2								
Pfister 56	91.15	31.1	50.7								
Funk G–30	90.43	32.5	54.7	36.2	41.1						
Pfister 299	89.87	33.5	57.6	34.5	46.6	37.8	40.3	53.8	38.9		
United U36	87.79	32.0	57.0	35.1	42.7	37.6	37.5				
McCurdy 96	86.94	31.0	55.9								
Average of all entries		**35.4**	**48.6**	**37.6**	**35.6**	**40.5**	**31.6**	**53.8**	**30.9**	**54.2**	**26.6**

*Differences in yield of less than 5.7 bushels per acre are not statistically significant.

Southeast Area

Clay County. Leo Trudeau was again the cooperator for the Clay County test. He lives about six miles north of Vermillion on State Highway 19. Corn in these plots were the driest of any harvested in 1951 and yields were quite good for this year. Planting was done May 26 and harvesting was completed on October 31.

Table 14. Area 8 (Clay County) 1951 Corn Performance Tests

Hybrid or Variety	Performance Score	Acre Yield Bu.*	Moisture Percent	2-Year Average		3-Year Average		4-Year Average		5-Year Average	
				Yield Bu.	Moisture Percent	Yield Bu.	Moisture Percent	Yield Bu.	Moisture Percent	Yield Bu.	Moisture Percent
Pioneer 349	113.54	75.4	29.1								
DeKalb 410	112.18	73.7	28.7	67.1	27.3	63.4	27.0	65.2	25.1	61.3	25.2
DeKalb 627	105.06	68.5	32.4	64.3	31.3						
Farmers 427A	104.53	70.1	35.8	63.7	33.8	61.3	32.1				
Pfister 4897	104.33	69.5	35.2								
Kingscrost KT	103.44	65.5	30.4								
McCurdy 96	103.32	64.8	29.5								
Pioneer 347	103.32	65.7	30.9								
S. Dak. Experimental 8	101.66	66.1	34.3	66.9	31.9	62.8	29.8				
Cornelius C40	101.60	64.7	32.2	58.9	31.0						
Pfister 229	100.90	65.1	34.0	57.4	33.3	57.7	31.9				
Farmers Union 4397	100.31	62.5	30.9								
Turner T46	99.89	63.9	33.8	56.8	32.6						
Cargill 110N	99.70	63.0	32.7	59.5	31.3						
Jacobsen J20	99.54	62.7	32.5	58.8	29.7	57.6	28.5	59.9	27.3		
Tomahawk 60	99.38	61.9	31.5								
Sokota 400	99.23	58.3	26.1	56.5	25.7	57.3	24.4	55.7	23.1	56.1	22.9
Tekseed 115	99.08	64.0	35.3	63.1	33.2						
United 41	98.51	62.5	33.9								
Vinton V35	98.00	63.1	35.7	56.7	33.2						
Iowa 4316	97.07	61.1	34.1	59.8	31.2	56.4	30.2	57.8	28.9	54.9	29.3
United U47A	96.33	62.1	36.9								
Iowealth A	95.58	60.6	35.2								
Funk G-29	95.18	61.0	37.1	57.6	33.8	55.9	32.4	58.7	31.6	54.7	31.8
Funk G-16A	93.36	58.5	36.2								
Iowa 306	92.82	56.4	33.8	52.1	31.6	52.3	30.9	54.3	29.8	52.4	29.5
Pride D66	91.50	56.6	35.9	57.1	33.6						
S. Dak. Experimental 11	90.56	56.7	38.1	58.6	32.9						
Average of all entries		63.7	33.3	59.7	31.6	58.3	29.7	58.6	27.6	55.9	27.7

*Differences in yield of less than 8.5 bushels per acre are not statistically significant.