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South Dakota Corn Performance Tests, 1957

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1957

corn performance tests



AGRONOMY DEPARTMENT
AGRICULTURAL EXPERIMENT STATION
SOUTH DAKOTA STATE COLLEGE, BROOKINGS

What Is Its Maturity Rating?

The number of days it takes a corn variety to mature is often listed by those who handle hybrid seed corn. Maturity can vary a great deal, depending on where the hybrid is grown. One that matures in 85 to 90 days in Minnehaha County may require 95 days further north. For this reason a hybrid's maturity should be determined in the area or areas where it is recommended.

Days required to reach maturity, when determined in areas where the seed is produced, are often not valid in large areas where the seed is sold. This publication lists the moisture percent at harvest rather than trying to rate a variety on length of time (days) to maturity. When trials over several years show a hybrid has a low enough moisture percent to keep safely in the crib, it is believed this better indicates its suitability to the area than to say it has a maturity of a certain number of days.

South Dakota

Corn Performance Tests, 1957

D. E. KRATOCHVIL, D. B. SHANK, and J. L. BONNEMANN¹

Yield trials on those corn hybrids currently most popular among farmers are conducted each year by the Agronomy Department of the South Dakota Agricultural Experiment Station. The purpose is to supply farmers and ranchers with information on the relative performing ability of the various hybrids when they are subjected to similar environmental conditions such as rainfall, soil moisture, and fertility level. Such information, when used as a guide in selecting hybrids for planting, can aid the farmer in obtaining maximum yields under his field conditions.

In 1957, 14 tests were planted throughout South Dakota. Each contained from 20 to 40 entries planted in replicated plots. Yields, moisture percentages at harvest, and in some cases lodging, were obtained and are presented in the tables in this publication.

Most areas of the state entered the 1957 season with extremely low reserves of subsoil moisture. Above normal rainfall over most of the state during the months of April, May, and June supplied adequate moisture for abundant growth of corn. There were only two stations, Brookings and Vermillion, which were below normal moisture for the entire growing season. Highmore and Cottonwood were considerably above normal with a plus 8.67 and 7.42 inches for the growing season, respectively.

Although adequate moisture was available, corn was retarded in germination and early growth by low temperatures. All areas in which test plots were grown had below normal temperatures for April, May, and June. This below normal temperature was greatest at Vale during May when this station reported an average departure from normal of a minus 4.6 degrees, while Brookings reported an average minus departure of 4.5 degrees for June. July temperatures were near normal, or slightly below, over most of the state; however, the temperatures dropped in August and September so that all stations reported minus departures from normal for both months. The greatest departures were minus 7.5 and 5.2 degrees at Vermillion and Menno, respectively, during September. The low temperatures during August, September, and October resulted in slow maturing of the corn crop over the entire state.

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Frost held off until into October in many areas. This lack of a killing frost coupled with the low temperatures caused the corn crop to dry slowly. Many fields of corn were picked too wet for cribbing, and considerable corn was still in the field in December at which time kernels on some of the ears of varieties that were of a long season maturity for the area were turning brown while still on the stalk.

The moisture content of all test plots harvested was considerably above long time averages. Late maturing hybrids, though producing more weight at harvest time in each test, were carrying so much moisture it would have required ultimate artificial drying to have cribbed such varieties. This year's results would seem to indicate farmers should use extreme care in selecting a hybrid which is adapted to their length of growing season, and refrain from using those hybrids which require excessive length of season to produce cribbable corn.

LOCATION OF THE 1957 TRIALS

Tests were conducted in the eight agricultural areas into which the state has been divided (see figure 1). These eight areas have been established on the basis of soil types, rainfall, temperature, and elevation as they affect crop production. At least one test was located in each area. Two trials were in areas 2, 3, 5, and 8 and three in area 1. The exact location of these trials, the cooperator, soil type, and dates of planting and harvesting are presented in table 1. Anyone evaluating and selecting hybrid varieties should refer to the trials conducted nearest the area in which the hybrid is to be planted.

Table 1. Location of the 1957 Tests

District	County	Cooperator	Post Office	Soil Type	Date Planted	Date Harvested
1	Butte	Newell Irrigation and Dry Land Field Station	Newell	Pierre clay (irrigated)	June 4	Nov. 14
1	Butte	Newell Irrigation and Dry Land Field Station	Newell	Pierre clay (dryland)	June 3	Oct. 29
1	Butte	Al Sheeler	Vale	Vale sandy loam	May 31	Nov. 12 & 13
2	Fall River	Jim Varvel	Oral	Anselmo sandy loam	May 28 & 29	Oct. 30 & 31
2	Jackson	Range Field Station*	Cottonwood	Pierre clay loam	June 3	Oct. 15
3	McPherson	North Central Station*	Eureka	Williams loam	May 29	Oct. 22
3	Hyde	Central Station*	Highmore	Williams loam	May 29	Oct. 21
4	Brown	Robert Schuller	Claremont	Very fine sandy loam	May 10	Oct. 31
5	Codington	Northeast Expt. Farm*	Watertown	Kranzburg silt loam	May 28	Oct. 17
5	Brookings	Agri. Expt. Station	Brookings	Vienna loam	May 24	Oct. 24
6	Brule	Dale Cook	Chamberlain	Reliance silty clay loam	May 30	Oct. 14
7	Hutchinson	Southeast Expt. Farm*	Menno	Bonilla loam	May 27	Oct. 1
8	Minnchaha	Walter Nordstrom	Garretson	Moody silt loam	May 31	Oct. 25
8	Clay	Clarence Dose	Wakonda	Waubay silty clay loam	May 10	Oct. 28

*Substations of the South Dakota Agricultural Experiment Station.

SELECTION OF ENTRIES

To select entries for the tests, a survey was conducted to determine the hybrids most farmers buy in the agricultural area represented by each test. Information was obtained on the hybrids of companies that registered their corn with the South Dakota State Department of Agriculture. The survey included recommendations by representatives of the corn companies producing and registering the hybrids, lists submitted by county agents located in the areas where the tests were conducted, information from the Livestock and Crop Reporting Service, and variety preference as expressed by farmers in general. Facilities permitted testing only the most widely used hybrids.

METHOD OF PLANTING AND HARVESTING

Planting. Each group of entries in each test was planted in four or five replications. Within these replications, plots of individual hybrids were located at random. Each plot consisted of 2 rows of 10 hills each, or the equivalent if the corn was drilled rather than checked. Planting was done at the rate of 3 kernels per hill for the checked plots and 1 per hill for the drilled plots (except under irrigation where planting rate was increased). Tests located with farmer-cooperators received the same fertilizer applications and cultural treatments as did the farmer's corn. Planting dates are given in table 1.

Harvesting. The test plots 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

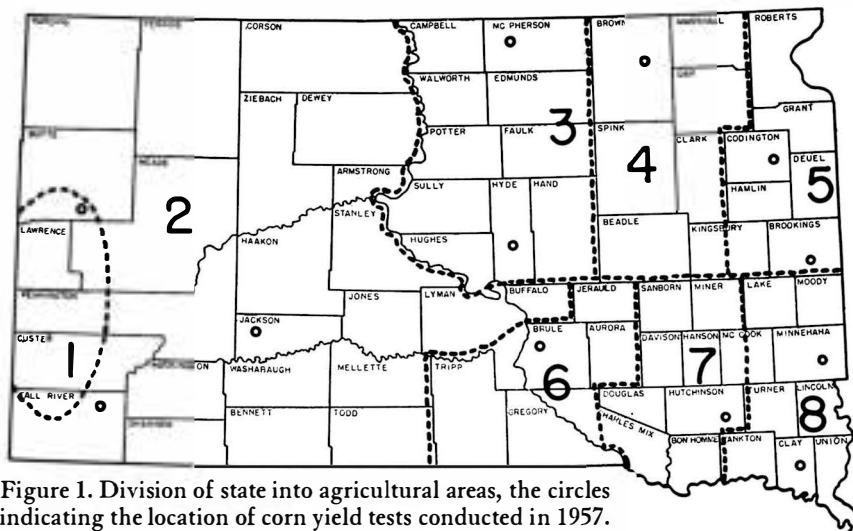


Figure 1. Division of state into agricultural areas, the circles indicating the location of corn yield tests conducted in 1957.

by selecting 12 ears at random, taking a 1-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 102° C. in the laboratory, reweighed, and the moisture percentages determined. Harvesting dates are given in table 1.

TEMPERATURE AND RAINFALL

The information presented in table 2 on climatic conditions at the various stations nearest the corn trials is based on reports of the Monthly Climatological Data, U. S. Department of Commerce, Weather Bureau, Huron, South Dakota. Anyone wishing to know the weather conditions under which the corn test for the area in question was grown should check the information listed for the station closest to the trial.

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% 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 tables 3 through 16 is given the minimum amount for each test by which two entries must differ in yield for that difference to be considered statistically significant.

A slight amount of variation can occur between entries of equal performance potential due to field conditions, such as variations in soil fertility, slope, and stand differences. Therefore, mathematical determinations have been made to establish how great a difference between two entries is necessary before it can be said that it is a true difference rather than a chance variation. For example, in Brookings County (table 12), a difference of 8 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 the amount of chance variation within each.

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

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 percentages. At the bottom of the moisture percentage column appears the average moisture percent 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 rating. Yields for each entry in each test were converted to percentages by comparing them with the average yield of all entries.

Table 2. Temperature and Precipitation for the 1957 Corn Growing Season*

Station and District	Temperature in Degrees F.				Precipitation in Inches				Frost Free Days†
	Month	Average	Departure From Normal	Average Departure	Month Total	Season Total	Departure From Normal	Total Departure	
Newell (1)	May	54.5	-0.9		3.56		+0.98		
	June	61.5	-2.7		3.07		-0.16		
	July	73.9	+0.4		2.53		+0.78		
	Aug.	70.9	-0.3		1.60		+0.33		
	Sept.	57.7	-2.9	-1.28	1.18	11.94	+0.05	+1.98	139
Vale (1)	May	52.0	-4.6		4.52		+1.83		
	June	63.6	-1.6		2.68		-0.80		
	July	74.4	+0.4		2.20		+0.32		
	Aug.	71.2	-0.2		1.74		+0.47		
	Sept.	57.4	-3.5	-1.90	.70	11.84	-0.47	+1.35	149
Hot Springs (2)	May	53.7	-3.1		5.65		+2.61		
	June	62.8	-3.5		3.33		+0.32		
	July	74.2	-1.1		1.33		-0.79		
	Aug.	72.6	-0.6		1.19		-0.52		
	Sept.	58.4	-4.4	-2.54	1.29	12.79	-0.04	+1.58	119
Cottonwood (2)	May	55.0	-2.3		5.14		+2.57		
	June	64.7	-2.1		5.43		+2.53		
	July	75.8	-0.1		1.63		+0.24		
	Aug.	73.4	-0.3		3.33		+2.08		
	Sept.	60.3	-2.7	-1.50	.99	16.52	0.00	+7.42	171
Eureka (3)	May	53.7	-2.6		3.91		+1.51		
	June	62.7	-2.4		3.51		-0.51		
	July	74.1	+1.3		3.61		+1.24		
	Aug.	68.8	-1.8		4.06		+1.86		
	Sept.	56.5	-3.7	-1.84	2.75	17.84	+1.45	+5.55	153
Highmore (3)	May	54.8	-2.4		5.29		+3.11		
	June	64.4	-2.3		4.38		+0.67		
	July	74.4	-0.5		5.00		+3.20		
	Aug.	71.7	-1.1		2.82		+0.83		
	Sept.	58.3	-4.5	-2.16	2.07	19.56	+0.86	+8.67	165
Aberdeen (4)	May	54.0	-3.5		4.95		+2.71		
	June	63.4	-3.4		4.05		+0.01		
	July	75.8	+1.9		2.50		-0.11		
	Aug.	69.9	-1.7		1.29		-0.87		
	Sept.	57.1	-3.9	-2.12	1.60	14.39	+0.17	+1.91	160
Watertown (5)	May	52.5	-3.6		5.68		+2.88		
	June	63.3	-2.5		2.75		-1.06		
	July	75.3	+2.7		.46		-2.38		
	Aug.	68.7	-1.4		3.47		+0.82		
	Sept.	56.4	-3.7	-1.70	1.98	14.34	+0.05	+0.31	133
Brookings (5)	May	54.2	-3.4		4.52		+1.87		
	June	62.9	-4.5		4.00		+0.01		
	July	75.8	+2.1		.97		-1.09		
	Aug.	69.0	-2.3		1.90		-1.00		
	Sept.	56.9	-4.7	-2.56	1.35	12.74	-0.75	-0.96	125
Pukwana (6)	May	56.4	-3.2		4.11		+1.75‡		
	June	63.0	-3.3		3.37		+0.06‡		
	July	76.8	-0.6		.88		-0.88‡		
	Aug.	73.0	-1.8		2.37		+0.35‡		
	Sept.	60.0	-4.7	-2.72	2.12	12.85	+0.72‡	2.00	132
Menno (7)	May	57.7	-2.3		5.17		+1.93		
	June	67.1	-3.0		5.57		+1.29		
	July	77.3	+0.6		4.49		+2.11		
	Aug.	73.2	-0.8		1.52		-1.54		
	Sept.	59.6	-5.2	-2.14	1.92	18.67	-0.06	+3.73	152
Sioux Falls (8)	May	56.0	-2.1		4.89		+1.51		
	June	66.7	-1.3		5.41		+1.16		
	July	78.6	+3.8		2.80		-0.20		
	Aug.	71.1	-1.3		3.76		+0.48		
	Sept.	59.1	-3.3	-0.84	2.66	19.52	-0.27	+2.68	158
Vermillion (8)	May	57.9	-3.8		4.17		+1.08		
	June	68.7	-2.8		2.37		-1.97		
	July	78.1	+0.6		4.29		+1.15		
	Aug.	72.1	-3.2		1.62		-1.51		
	Sept.	58.7	-7.5	-3.34	3.14	15.59	+0.46	-0.79	148

*From Monthly Climatological Data, U. S. Department of Commerce, Weather Bureau, Huron, S. D.

†Number of days between the last spring temperature of 32° F. or lower and the first fall temperature of 32° F. or lower.

‡Figures not in Climatological Data; Figured from previous year's normal.

Similar calculations were made for moisture at harvest time after first subtracting each moisture content from 100 so that the varieties would be ranked according to their ability to produce sound, rather than soft, corn. The performance rating which appears in the tables for each entry was then found as follows:

$$\frac{6 (\text{Yield percentage}) + 4 (\text{Moisture percentage})}{10}$$

Stand. A reduction in the number of hills below 100% may indicate several things—either that the seed of an entry was 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, 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 planted 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 drill plots.

Lodging. In some tests information is given on lodging. Root lodging is expressed as the percentage of stalks that leaned 30 degrees or more from the perpendicular at the ground level.

Average yields over a period of years. Many of the entries included in the 1957 trials were also tested in previous years. This makes possible the calculation of 2-, 3-, 4-, and 5- year averages in some cases. Averages involving the greater number of years are shown first in the tables, as these data give more information than only 1 year's results. 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 years will tend to iron out these environmental variations.

In the table for any one area test, a hybrid is shown with only two yields no matter how many years it has been included in the trials. The average yield for the total number of years the hybrid has been tested and the results from the current year are shown. These yields are shown in comparison to the average yield of all entries for the current year and total years in which the hybrid was included.

The hybrids having more than one year's results are found in the table in order of the long time average yield and not as to yield or performance rating for the current season. Where hybrids have been in a test only one year they are arranged on the basis of the performance rating. A hybrid or variety was included in the averages only when it was the same variety each year and secured from the same source.

Black Hills Area

Butte County.² Two trials, one irrigated and one on dryland, were carried on at the Newell Irrigation and Dry Land Field Station in 1957. In addition, another irrigated test, located on the Al Sheeler farm near Vale, was run so that results might be obtained on Vale sandy loam as well as on the Pierre clay soils of the Newell Station.

Climatic conditions were not favorable for sound, dry corn. A wet spring delayed planting until about June 1 and a wet fall with frost occurring quite late caused high moisture percentages at harvest time. The monthly mean temperatures were below normal during all months but July.

Butte County (dryland). This test was conducted on the Newell Station on a field which had been planted to a grass trial in 1956 and which had failed. It was Noble-bladed twice, disced, and harrowed before planting corn in 1957. Stands were thinned to 7,500 plants per acre. Planting was completed June 3 and harvesting October 29. Pheasants damaged the corn, selecting the earlier, drier entries in preference to the late maturing, higher moisture content hybrids.

Table 3. Area 1 (Butte County) 1957 Corn Performance Tests on Dryland—Clay Soil

Hybrid or Variety	Acre Yield Bu.	Moisture Percent	1957		
			Yield Bu.*	Moisture Percent	Performance Rating
3-Year Average†					
Sokota S. D. 250	31	31	23	42	1
Sokota S. D. 220	30	23	18	35	2
Blacks Hills Special	26	33	12	40	8
Jacques 853J	25	27	10	41	10
Average of 4 entries tested 3 years	28	29	—	—	—
2-Year Average					
DeKalb 56	16	36	15	39	5
Average of 5 entries tested 2 years	16	36	—	—	—
Pioneer 395	—	—	16	35	3
Pioneer 388	—	—	16	39	4
Kingscrot KC6	—	—	14	39	6
Funk G-18	—	—	15	46	7
Disco 96-WR	—	—	11	40	9
DeKalb 59	—	—	11	48	11
Pfister P. A. G. 28	—	—	8	40	12
Kingscrot KC3	—	—	7	35	13
Funk G-11A	—	—	8	46	14
Average	—	—	13	40	—

*Differences in yield of less than 8 bushels per acre are not statistically significant.

†1953-55-57 Data used to determine 2 and 3 year averages; crop failures in 1954-56 due to drought.

²Tests in Butte County (tables 3, 4, 5 and Fall River County (table 6) were conducted as cooperative work between the Agricultural Research Service, USDA, U. S. Irrigation and Dry Land Field Station, Newell, South Dakota and the South Dakota Agricultural Experiment Station.

Black Hills Area

Butte County (irrigated clay soil). The field used for the irrigated test on the Newell Station had been in alfalfa since 1953 and was plowed in the fall of 1956. After discing and leveling, and prior to planting, approximately 70 pounds of available nitrogen as 33-0-0 and 20 pounds of available phosphate as 0-43-0 were drilled into the field. Stands were thinned to 18,000 plants per acre. Planting was performed on June 4 and harvesting on November 14. The corn was irrigated July 13 and 14, August 3 and 4, and on August 22.

Table 4. Area 1 (Butte County) 1957 Corn Performance Tests on Irrigated Land—Clay Soil

Hybrid or Variety	Acre Yield Bu.	Moisture Percent	1957		
			Yield Bu.*	Moisture Percent	Performance Rating
5-Year Average					
Sokota S. D. 250	81	22	86	37	5
Funk G-18	76	25	83	39	11
Sokota S. D. 220	76	19	91	31	1
S. D. 270	76	23	82	39	12
DeKalb 56	72	21	78	35	14
S. D. 262	71	23	84	38	8
Average of 6 entries tested 5 years	75	22	—	—	—
2-Year Average					
Kingscrot KS4	78	33	85	39	9
Pfister P. A. G. 28	77	27	84	32	2
DeKalb 62	75	33	80	40	16
Kingscrot KA3	68	29	74	36	17
Average of 10 entries tested 2 years	75	29	—	—	—
Pfister P. A. G. 32	—	—	84	34	3
Funk G-11A	—	—	86	36	4
Pioneer 388	—	—	83	34	6
Disco 101-A	—	—	88	41	7
Disco 90W	—	—	81	37	10
DeKalb 222	—	—	86	44	13
S. D. 400	—	—	81	41	15
Funk G-26	—	—	78	42	18
Jacques 907J	—	—	69	34	19
DeKalb 59	—	—	72	42	20
Average	—	—	82	38	—

*Differences in yield of less than 8 bushels per acre are not statistically significant.

Black Hills Area

Butte County (irrigated sandy soil). This test was conducted on the Al Sheeler farm located just northwest of Vale, South Dakota. The field was spring plowed following a crop of sugar beets in 1956. Prior to plowing approximately 250 pounds of 24-20-0 and several loads of manure were spread on the field. Stands were 18,000 plants per acre. The corn was planted May 31 and harvested November 12 and 13. The plots were irrigated twice. Damage occurred to the plots in the form of hail which occurred three times, twice being quite severe in its effect, and from raccoons which destroyed the earlier entries to a greater extent than the later maturing ones.

Table 5. Area 1 (Butte County) 1957 Corn Performance Test on Irrigated Land—Sandy Soil

Hybrid or Variety	Acre Yield Bu.	Moisture Percent	1957		
			Yield Bu.*	Moisture Percent	Performance Rating
5-Year Average†					
Funk G-18	115	30	103	32	4
Sokota S. D. 270	108	30	103	31	5
S. D. 262	104	29	95	30	11
DeKalb 56	103	26	89	30	13
S. D. 220	97	23	66	27	18
Average of 5 entries tested 5 years	105	28			
4-Year Average					
S. D. 250	108	27	99	29	10
Average of 6 entries tested 4 years	106	27			
2-Year Average					
Kingscrot KS4	117	27	106	32	2
DeKalb 62	105	28	103	31	6
Kingscrot KA3	98	26	88	30	15
Average of 9 entries tested 2 years	104	25			
Disco 101-A			109	32	1
DeKalb 222			109	36	3
Funk G-26			104	34	7
Sokota S. D. 400			102	33	8
Pioneer 388			99	27	9
Funk G-11A			93	29	12
DeKalb 59			94	36	14
Pfister P. A. G. 32			86	28	16
Pfister P. A. G. 28			72	28	17
Jacques 907J			40	26	19
Average			93	30	

*Differences in yield of less than 10 bushels per acre not statistically significant.

†Data for the 5-year average was taken from the years 1952, 54, 55, 56, 57.

West River Area

Fall River County. This test was on the farm of Jim Varvel, located 1½ miles northeast of Oral. Corn followed corn in this case. The field was spring plowed and 120 pounds of nitrogen in the form of anhydrous ammonia were applied prior to planting. Stands were 18,000 plants per acre. Planting was done May 28 and 29 and harvesting on October 30 and 31. The plots were irrigated four times. Hail seriously damaged the plants once in late June.

Table 6. Area 2 (Fall River County) 1957 Corn Performance Tests on Irrigated Land—Sandy Loam

Hybrid or Variety	Acre Yield Bu.	Moisture Percent	1957		
			Yield Bu.*	Moisture Percent	Performance Rating
2-Year Average					
S. D. 420 (Exptl. #13)	121	30	102	42	1
Sokota S. D. 604	119	29	93	42	8
DeKalb 410	118	27	94	41	5
Pioneer 349	114	29	88	42	13
Kingscrost KO4	114	31	88	43	15
Kingscrost KS5	114	27	91	39	7
S. D. 622 (Exptl. #19)	112	31	88	43	16
Disco 101-A	111	26	91	38	4
Pioneer 377A	107	24	92	36	3
S. D. 270	100	25	80	37	17
Average of 10 entries					
tested 2 years	113	28	—	—	—
DeKalb 409	—	—	98	39	2
Funk G-11A	—	—	89	36	6
Pfister P. A. G. 277	—	—	95	44	9
Funk G-18	—	—	87	38	10
Pfister P. A. G. 234	—	—	90	42	11
Jacques 1053JA	—	—	86	39	12
Cargill 102N	—	—	86	41	14
Pioneer 373	—	—	82	42	18
Average	—	—	90	40	—

*Differences in yield of less than 10 bushels per acre not statistically significant.

West River Area

Jackson County. With rainfall total 7.4 inches greater than normal for the period of May 1 to September 30, yields of corn at the Range Field Station were excellent. This was the first year since 1953 that corn has successfully produced a crop at this station. The corn was planted June 3 and harvested October 15, at which time the moisture content of all varieties was very high. Certain hybrids were found to have been injured considerably by coons. It will be noted that the coon damage appears to have been on the earlier maturing varieties and probably accounts for their lower yields in comparison to later varieties.

Table 7. Area 2 (Jackson County) 1957 Corn Performance Tests

Hybrid or Variety	Acre Yield Bu.	Moisture Percent	1957		
			Yield Bu.*	Moisture Percent	Performance Rating
3-Year Average†					
Sokota S. D. 270	30	42	67	41	2
S. D. 262	25	44	63	42	5
Sokota S. D. 400	26	47	65	43	4
Average of 3 entries tested 3 years	36	44	—	—	—
2-Year Average†					
S. D. 220	30	21	33§	32	16
Average of 4 entries tested 2 years	39	26	—	—	—
Disco 101A	—	—	67	40	1
Funk G-26	—	—	63	40	3
Funk G-21A	—	—	64	44	6
Pioneer 383	—	—	61	40	7
S. D. 250	—	—	61	40	8
DeKalb 222	—	—	59	44	9
Pfister P. A. G. 44	—	—	56§	39	10
DeKalb 59	—	—	54	42	11
Kingscrot KA3	—	—	42§	39	12
Disco 96-WR	—	—	42§	39	13
Jacques 907J	—	—	40§	38	14
Kingscrot KC6	—	—	40§	38	15
Gehu‡	—	—	—	—	—
Rainbow Flint‡	—	—	—	—	—
Average	—	—	55	40	—

*Differences in yield of less than 13 bushels per acre are not statistically significant.

†3-year averages are from 1951, 1953, and 1957 tests. The 2-year averages are from the 1953 and the 1957 tests.
Drought eliminated the 1952, 54, 55, and 56 crops.

‡These two varieties were completely damaged by coons.

§These varieties were slightly damaged by coons.

North Central Area

McPherson County. Above normal rainfall and below normal temperatures for the corn growing season existed at the North Central Station in 1957. The corn trials were planted May 29 on land following small grain which had received 160 pounds of 16-20-0 fertilizer per acre preceding the small grain and 10 tons of manure before the corn. The moisture content of the corn was above 5-year averages at harvest time which was October 22. Yields were exceedingly high for this area with later varieties showing the highest yields reflecting the longer than normal growing season. Frost was not received at this station until October 17.

Table 8. Area 3 (McPherson County) 1957 Corn Performance Tests

Hybrid or Variety	Acre Yield Bu.	Moisture Percent	1957		
			Yield Bu.*	Moisture Percent	Performance Rating
5-Year Average					
Pioneer 388	43	25	65	36	5
Sokota S. D. 220	40	24	58	35	15
Wisconsin 240	37	21	55	31	16
DcKalb 46	37	23	55	33	18
Nodak 301	36	24	51	33	24
Average of 5 entries tested 5 years	39	23	—	—	—
4-Year Average					
Sokota S. D. 250	39	32	71	42	2
Kingscrot KE7	32	24	50	32	23
Average of 7 entries tested 4 years	35	26	—	—	—
3-Year Average					
S. D. Exptl. #18	37	24	62	34	6
Nodak 305	36	25	57	33	14
Pfister P. A. G. 28	36	28	61	36	10
S. D. Exptl. #17	33	22	60	34	8
S. D. 210 (Exptl. #16)	33	22	51	32	22
Gurney 85	31	26	56	35	20
Average of 13 entries tested 3 years	34	25	—	—	—
2-Year Average					
Funk G-18	49	37	69	42	4
Pfister P. A. G. 32	45	30	64	37	7
S. D. AES 101	38	18	48	25	21
Agasco Mordlen 77	34	19	43	26	25
Average of 17 entries tested 2 years	42	27	—	—	—
DcKalb 59	—	—	76	42	1
Pioneer 390	—	—	67	39	3
Disco 95-W	—	—	65	41	9
S. D. Exptl. #16A	—	—	59	33	11
Funk G-11A	—	—	59	36	13
Cargill 530	—	—	58	35	12
Haapala H-340	—	—	61	42	17
Jacques 955J	—	—	59	39	19
Average	—	—	59	35	—

*Differences in yield of less than 9 bushels per acre are not statistically significant.

North Central Area

Hyde County. The Hyde County plots on the Central Station at Highmore rotate with small grain. Fertilizer practices call for 200 pounds of 16-20-0 mixed fertilizer per acre before small grain and 100 pounds 16-20-0 and 10 tons of manure per acre previous to corn. Soil moisture and seedbed were excellent on May 29 when the trials were planted. With 8.7 inches above normal rainfall for the growing season the yields at this station were considerably above 5-year averages. Moisture content of the corn at harvest, October 21, was above average but was lower at this station than other stations in 1957.

Table 9. Area 3 (Hyde County) 1957 Corn Performance Tests

Hybrid or Variety	Acre Yield Bu.	Moisture Percent	1957		
			Yield Bu.*	Moisture Percent	Performance Rating
5-Year Average					
Sokota S. D. 400	50	17	89	31	6
Sokota S. D. 270	48	17	93	32	1
S. D. 220	47	12	75	23	18
S. D. 262	47	22	89	34	12
Kingscrot KS4	46	18	91	34	9
Pioneer 388	42	14	78	25	16
Pioneer 377-A	42	19	87	31	11
Average of 7 entries tested 5 years	47	17			
4-Year Average					
S. D. 250	55	16	91	33	5
Van V44	45	16	64	29	25
Average of 9 entries tested 4 years	52	17			
3-Year Average					
Funk G-26	47	21	84	31	15
Average of 10 entries tested 3 years	49	18			
2-Year Average					
Disco 101-A	54	22	90	34	10
Tomahawk 4A	50	23	74	31	21
Average of 12 entries tested 2 years	53	21			
Pfister P. A. G. 44			92	31	2
DeKalb 222			94	35	3
Funk G-21A			92	33	4
United Hagie UH201			90	32	7
DeKalb 59			90	32	8
Haapala H135A			86	33	13
S. D. Exptl. #25			85	32	14
Farmer 205			80	27	17
Gurney 100			82	32	19
Jacques 1003J			76	30	20
Cargill 102N			77	37	22
Masters F32			67	27	23
Peavey PV97			65	27	24
Average			83	31	

*Differences in yield of less than 8 bushels per acre are not statistically significant.

North James River Area

Brown County. Yields in this trial were equal to 5-year averages. Low temperatures and only slightly above average rainfall made the growing season near normal in this area; however the damp, cool fall drying period prevented corn from reaching average moisture content at harvest time. The test was planted May 10 and harvested October 31.

Table 10. Area 4 (Brown County) 1957 Corn Performance Tests

Hybrid or Variety	Acre Yield Bu.	Moisture Percent	1957		
			Yield Bu.*	Moisture Percent	Performance Rating
5-Year Average					
Kingscrot KS4	66	21	76	29	5
Sokota S. D. 270	66	21	67	27	18
Sokota S. D. 250	64	18	69	27	13
Pioneer 388	62	18	66	23	14
DeKalb 58	62	24	72	25	6
Average of 5 entries tested 5 years	64	20	—	—	—
4-Year Average					
Funk G-18	66	21	72	27	11
Disco 101A	63	23	72	30	12
Average of 7 entries tested 4 years	64	21	—	—	—
3-Year Average					
Pfister P. A. G. 44	64	19	74	29	10
United Hagie UH26	61	17	74	25	4
Kingscrot KB4	63	21	70	30	15
Tomahawk 4A	57	20	60	27	20
Average of 11 entries tested 3 years	62	19	—	—	—
2-Year Average					
Jacques 1053J	70	22	81	30	3
Pfister P. A. G. 32	61	20	71	24	9
Funk G-26	52	23	45	29	7
Peavey PV97	45	22	34	29	22
Average of 15 entries tested 2 years	64	22	—	—	—
DeKalb 236	—	—	81	27	1
Pioneer 383	—	—	78	25	2
S. D. Exptl. #26	—	—	73	27	8
Haapala H135A	—	—	69	29	16
Farmer 205	—	—	66	24	17
Cargill 102N	—	—	68	31	19
Gurney 85	—	—	58	26	21
Average	—	—	68	27	—

*Differences in yield of less than 8 bushels per acre are not statistically significant.

Northeast Area

Codington County. The test in Codington County was on the Northeast Experimental Farm, 15 miles north of Watertown. Climatic conditions were nearly normal at this station except for cool temperatures during May and June and cool, wet weather the later part of September and through October. The season resulted in above average yields with late hybrids which usually fail to mature having the higher yields in 1957. Fertilizers containing 60 pounds of available nitrogen and 40 pounds of P_2O_5 were applied previous to the corn planting. Planting was done on May 28 and harvesting on October 17.

Table 11. Area 5 (Codington County) 1957 Corn Performance Tests

Hybrid or Variety	Acre Yield Bu.	Moisture Percent	1957		
			Yield Bu.*	Moisture Percent	Performance Rating
4-Year Average					
Pioneer 388	45	25	55	32	1
Sokota S. D. 220	44	25	53	36	3
Sokota S. D. 250	43	29	53	41	8
Average of 3 entries tested 4 years	44	26			
3-Year Average					
S. D. 210 (Exptl. #16)	51	21	49	36	6
S. D. Exptl. #18	47	21	46	35	15
Farmer 205	47	29	44	41	23
Disco 101-A	47	31	53	47	14
S. D. Exptl. #17	41	21	47	35	11
Peavey PV355	41	24	37	40	26
Average of 9 entries tested 3 years	46	24			
2-Year Average					
Pfister P. A. G. 32	52	30	52	40	5
Average of 9 entries tested 2 years	48	29			
DeKalb 62			58	43	2
Pfister P. A. G. 44			56	43	4
Haapala H366			53	42	7
Disco 96-WR			53	43	9
Kingscrot KS4			54	48	10
DeKalb 59			55	49	12
Kingscrot KS3			52	45	13
Funk G-21A			53	48	16
Pioneer 390			47	39	17
A. E. S. 101			38	23	18
Funk G-26			51	47	19
Tomahawk 4A			50	45	20
United Hagie UH305			53	50	21
Gurney 100			48	47	22
Jacques 957JA			42	45	24
Van V54			41	45	25
Cargill 530			32	37	27
Average of 27 entries tested 1 year			49	42	

*Differences in yield of less than 7 bushels per acre are not statistically significant.

Northeast Area

Brookings County. Yields in this test were very similar to those in 1956; however they were slightly above 5-year averages. The moisture content at harvest for most hybrids were nearly double those in 1956. This would seem to reflect the below normal temperatures of May, June, August, and September with .91 inches below normal rainfall for the growing season. It will be noted that longer season hybrids produced highest yields but with the late fall and the cool, wet weather they had trouble in drying to a moisture content safe for cribbing. A rotation of 2 years small grain, 1 year corn is employed. Fertility is maintained on these plots by 150 pounds of 16-20-0 mixed fertilizer each year previous to small grain and 10 tons of manure previous to corn. Planting was done on May 24 and harvesting on October 24.

Table 12. Area 5 (Brookings County) 1957 Corn Performance Tests

Hybrid or Variety	Acre Yield Bu.	Moisture Percent	Root Lodging Percent*	1957		
				Yield Bu.†	Moisture Percent	Performance Rating
5-Year Average						
Disco 101-A	76	22	4	81	31	7
S. D. 250	75	22	3	80	30	8
Sokota S. D. 270	75	25	8	80	31	9
S. D. 262	74	23	13	73	28	19
Sokota S. D. 400	74	25	7	78	30	12
Kingscrot KS4	72	25	8	81	31	11
Tomahawk 14	72	24	6	76	32	20
Pioneer 388	70	20	—	68	22	22
Average of 8 entries tested 5 years	73	23	—	—	—	—
3-Year Average						
Haapala H-130	69	25	14	77	37	24
Kingscrot KS5	64	24	2	74	35	25
Average of 10 entries tested 3 years	67	22	—	—	—	—
2-Year Average						
Pfister P. A. G. 62	86	24	4	84	32	4
Funk G-26	84	23	1	82	30	6
Jacques 1053 JA	83	24	4	81	34	13
Average of 13 entries tested 2 years	84	22	—	—	—	—
Funk G-24A	—	—	—	90	35	1
Cargill 655	—	—	—	85	30	2
DeKalb 222	—	—	—	85	34	3
Pfister P. A. G. 55	—	—	—	82	30	5
Pioneer 377-A	—	—	—	78	29	10
Van V81	—	—	—	83	38	14
United Hagie UH 36A	—	—	—	83	39	15
Farmer 205	—	—	—	73	26	16
S. D. Exptl. #25	—	—	—	73	27	17
DeKalb 59	—	—	—	76	31	18
Gurney 100	—	—	—	74	31	21
Master F73	—	—	—	75	33	23
Average	—	—	—	79	31	—

*No root lodging data taken in 1957, figures represent data from previous years.

†Differences in yield of less than 8 bushels per acre are not statistically significant.

South Central Area

Brule County. Below normal temperatures plus above normal moisture during May resulted in such a poor stand on this trial area that at harvest time the yields were not sufficient to make comparative yields between hybrids. The data in the following table is a summary of information obtained from tests of previous years through 1956.

Table 13. Area 6 (Brule County) 1956 Corn Performance Tests

Hybrid or Variety	Acre Yield Bu.	Moisture Percent	1956		
			Yield Bu.*	Moisture Percent	Performance Rating
5-Year Average†					
DeKalb 410	49	23	52	10	15
S. D. 250	46	18	46	7	25
S. D. 262	45	21	58	9	4
Farmer 223	44	22	54	14	14
S. D. 270	41	20	44	7	27
Sokota S. D. 400	41	21	48	11	23
Average of 6 entries tested 5 years	44	21	—	—	—
4-Year Average†					
Pioneer 388	50	12	57	10	6
Average of 7 entries tested 4 years	49	12	—	—	—
3-Year Average†					
Gurney 100	49	16	52	11	16
Average of 8 entries tested 3 years	52	14	—	—	—
2-Year Average†					
Pioneer 383	65	13	55	9	9
Vinton V-14	64	19	59	13	5
DeKalb 248	61	16	51	12	20
Funk G-26	49	16	43	12	28
Average of 12 entries tested 2 years	56	15	—	—	—
Pfister P. A. G. 57	—	—	72	11	1
Cornhusker 83	—	—	63	18	2
Trojan F-99	—	—	60	14	3
Haapala H130	—	—	59	16	7
Jacques 1108J	—	—	57	13	8
Sokota S. D. 604	—	—	56	16	11
Cargill 105N	—	—	54	9	10
Funk G-30A	—	—	54	14	12
Tekseed 45A	—	—	54	15	13
Turner N14A	—	—	53	14	17
Curry C-57	—	—	53	15	18
Kingscrot KS4	—	—	51	10	19
United Hagie UH 41A	—	—	50	14	21
Disco 101-A	—	—	48	11	22
Tomahawk 42	—	—	48	14	24
Pfister P. A. G. 62	—	—	45	8	26
Beeghly Ia. 4376	—	—	43	16	29
Average	—	—	53	12	—

*Differences in yield of less than 16 bushels per acre are not statistically significant.
†1955 test is not included in the average.

South James River Area

Hutchinson County. The test in Hutchinson County was on the Southeast Experimental Farm, 4 miles east of Menno. Climatic conditions were favorable at this station in 1957. Rainfall totaled 3.7 inches above normal for the corn growing season and temperatures were near normal except for May, June, and September. The low September temperatures (5.2 degrees below normal) resulted in high moisture content corn which dried very slowly, preventing corn picking until late October and into November in this area. Alkali spots within the plot area eliminated two of the four replications planted; therefore the results in the following table for 1957 are based on only two replications and any conclusions drawn should be made with this in mind. The plots were located on land which grew small grain in 1956. Fertilizer applied consisted of 60 pounds of nitrogen and 40 pounds of available P₂O₅ per acre. The test was planted May 27 and harvested October 1.

Table 14. Area 7 (Hutchinson County) 1957 Corn Performance Tests

Hybrid or Variety	Acre Yield Bu.	Moisture Percent	1957*		
			Yield Bu.†	Moisture Percent	Performance Rating
4-Year Average					
DeKalb 410	51	21	40	41	17
Sokota S. D. 400	48	15	41	20	4
Pioneer 352	48	21	37	34	18
Turner T-48	46	23	44	39	10‡
Average of 4 entries tested 4 years	48	20	—	—	—
3-Year Average					
Tekseed 115	42	23	49	39	5
S. D. 622 (Exptl. #19)	41	24	46	42	9
Sokota S. D. 604	39	23	38	41	23
Disco 108AA	37	21	39	40	19
Gurney 118A	39	33	48	73	7
Funk G-75A	37	27	35	48	26
Farmer 427A	36	36	37	42	25
Average of 11 entries tested 3 years	38	24	—	—	—
2-Year Average					
Pfister P. A. G. 244	32	22	44	30	6
Curry C-49	30	19	44	26	3
Funks G-76	29	24	41	32	12
Jacobson J39	30	29	45	42	10‡
Moews 14	27	25	39	36	15
Renk & Sons R405A	28	28	40	42	21
Average of 17 entries tested 2 years	30	26	—	—	—
Pioneer 329	—	—	53	29	1
Pfister P. A. G. 62	—	—	46	25	2
Green Acres 677	—	—	45	40	8
Tomahawk 43	—	—	41	34	13
Cargill 939	—	—	42	35	14
United Hagie UH47A	—	—	41	42	16
Jacques 1108JA	—	—	37	36	20
Kingscrot KT2	—	—	37	37	22
Vinton V38	—	—	34	33	24
Haapala H257	—	—	31	52	27
Average	—	—	41	38	—

*The 1957 data based on two replications. Alkali spots in the plot prevented using the data from other replications.

†Differences in yield of less than 7 bushels per acre are not statistically significant.

‡These two varieties were tied in their performance scores.

Southeast Area

Minnehaha County. Temperatures were below normal during May, June, August, and September with rainfall 2.7 inches above normal for the growing season. These conditions resulted in above average yields of very wet corn when harvested October 25. The test was on land following small grain. It was planted May 31 and harvested October 25.

Table 15. Area 8 (Minnehaha County) 1957 Corn Performance Tests

Hybrid or Variety	Acre Yield Bu.	Moisture Percent	1957		
			Yield Bu.*	Moisture Percent	Performance Rating
5-Year Average					
United Hagie UH 32A	71	28	75	41	16
S. D. 270	67	22	75	33	4
S. D. 400	64	25	69	36	20
Average of 3 entries tested 5 years	67	25			
4-Year Average					
Pioneer 371	71	25	80	37	3
Sokota S. D. 604	70	31	72	42	17
Average of 5 entries tested 4 years	69	26			
3-Year Average					
Funk G-30A	64	29	74	39	13
Carlson C-6	61	30	73	41	21
Average of 7 entries tested 3 years	63	27			
2-Year Average					
DeKalb 410	77	30	77	39	8
Kingscrest KO4	78	33	73	40	18
Cargill 180	78	33	78	41	10
Tomahawk 22	74	29	72	37	14
Renk & Sons R222A	69	28	70	35	15
Average of 12 entries tested 2 years	74	30			
DeKalb 409			85	40	1
Pioneer 349			81	39	2
Haapala H257			80	41	5
Jacques 1108J			77	39	6
Pfister P. A. G. 62			75	36	7
Farmer 259			75	37	9
Disco 107AA			73	37	11
Moews 14EE			75	40	12
Tekseed 115			74	42	19
Masters F77			66	35	22
Gurney 110			72	43	23
Funk G-24A			71	41	24
Pfister P. A. G. 55			66	35	25
lowealth 90			60	34	26
Average			73	38	

*Differences in yield of less than 11 bushels per acre are not statistically significant.

Southeast Area


Clay County. Weather data for this trial is that taken at Vermillion. These data show the area to have had very low temperatures for May, June, August, and September and 0.79 inches below normal rainfall for the growing season. The plot is approximately 20 miles from Vermillion and crops in the plot area indicated considerably less rainfall had been received than the crops in the Vermillion area. The test was on land following small grain. The yields were considerably less than 5-year averages and would be more so than indicated in the following table except for the very low yields due to drought in 1956 which lowered 3-, 4-, and 5-year averages. Corn from this test was the driest of any trial harvested this fall. The climatic conditions of the area which have existed for the 1956-57 season tended to bring out larger environmental differences. The experimental error was high for the test and large differences between varieties is necessary before one hybrid is really better in performance than another. The plot was planted May 10 and harvested October 28. 

Table 16. Area 8 (Clay County) 1957 Corn Performance Tests

Hybrid or Variety	Acre Yield Bu.	Moisture Percent	1957		Performance Rating
			Yield Bu.*	Moisture Percent	
5-Year Average					
Pioneer 349	66	17	46	21	2
DeKalb 627	65	19	41	24	7
DeKalb 410	63	15	46	19	1
Tomahawk 78	64	20	33	24	19
Pioneer 352	61	18	39	24	9
Farmer 427A	58	18	30	24	27
Sokota S. D. 604	57	18	35	27	17
Average of 7 entries tested 5 years	62	18			
3-Year Average					
Funk G-75A	52	21	39	27	12
Pfister P. A. G. 244	49	18	37	22	13
Green Acres 395	49	22	32	27	23
Curry C-49	45	20	31	27	26
Average of 11 entries tested 3 years	48	19			
2-Year Average					
S. D. 622	48	20	47	26	3
Cornelius C49	43	19	34	26	18
Pfister P. A. G. 277	38	19	37	24	14
Kingscrot KT7	38	21	34	28	22
Albertson C76	36	19	35	26	16
Turner T48	34	24	26	32	31
Average of 17 entries tested 2 years	41	19			
Iowearth AQ			45	24	4
S. D. Exptl. # 24			42	26	5
S. D. Exptl. # 23			41	25	6
Jacques 1158J			40	24	8
Disco 111-AA			38	22	10
Cargill 255			38	24	11
Kingscrot KT9			38	30	15
Haapala H257			32	23	20
Moews 524A			35	31	21
Tekseed 111A			31	26	24
Funk G-76			32	29	25
United Hagie UH52B			32	31	28
Jacobson J39			29	23	29
Vinton V-35			25	25	30
Average			36	26	

*Differences in yield of less than 11 bushels per acre are not statistically significant.