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1954 South Dakota Corn Performance Tests

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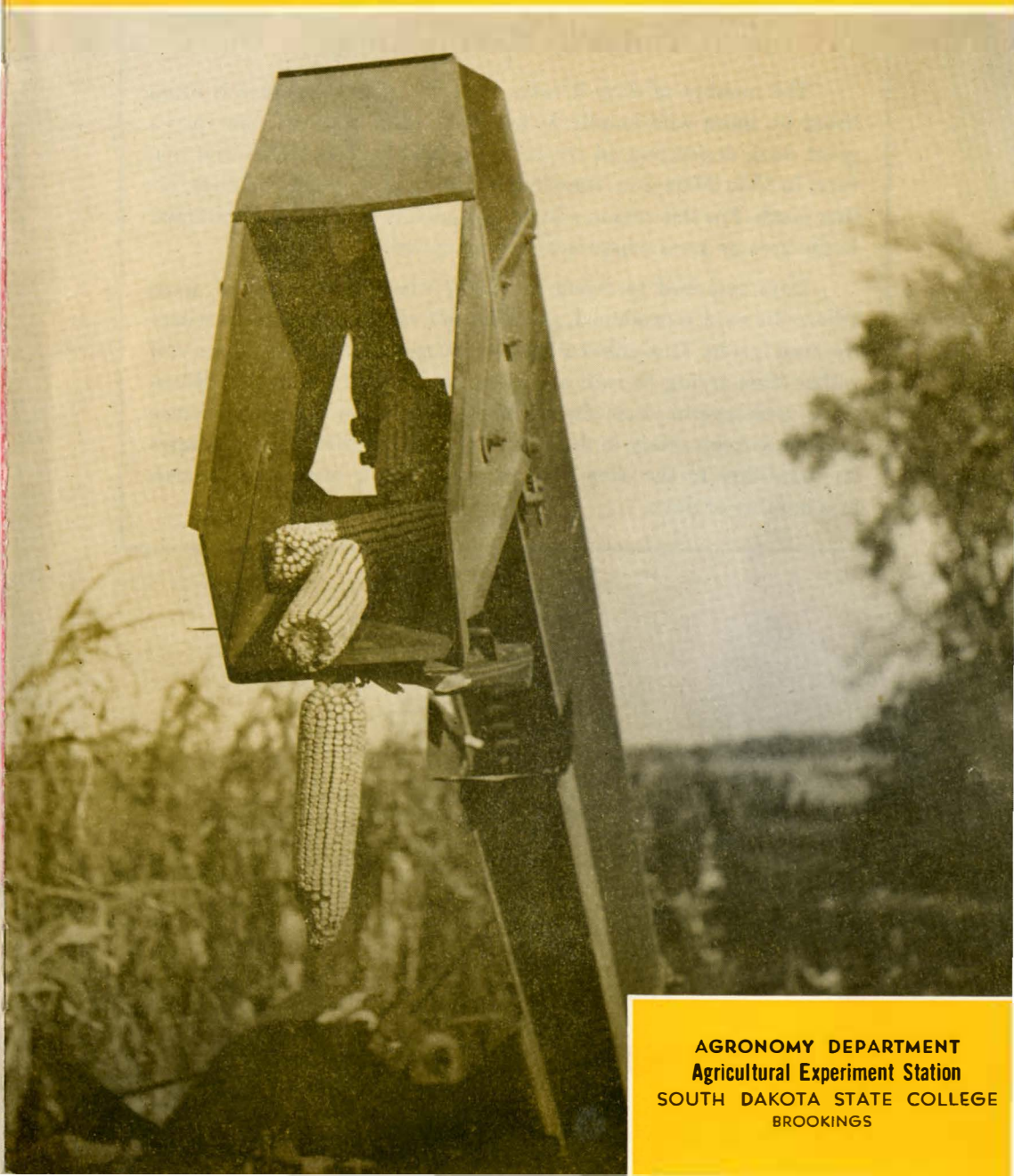

AGRONOMY DEPARTMENT
Agricultural Experiment Station
SOUTH DAKOTA STATE COLLEGE
BROOKINGS

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 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, 1954

By D. E. KRATOCHVIL and D. B. SHANK[1]

As in previous years corn yield trials were conducted by the Agronomy Department of the South Dakota Agricultural Experiment Station. Results of these trials supply farmers and ranchers with current information on popular hybrids being grown extensively in the various agricultural areas of the state. The trials were replicated plots planted and harvested in an accepted procedure with an unbiased analysis made of the data. Methods used in selection of entries, planting, harvesting, and analyzing will be presented under separate headings.

Yields of hybrids within the trials of 1954 reflect the relative performing ability of the entries during a season which had normal or slightly below normal temperatures during May and June. The July average temperature was above normal for the state, except the area near Pukwana. At Spearfish this above normal trend reached 5.4 degrees and at Vermillion it was 3.4 degrees. The Sioux Falls area was the only one to show normal or above rainfall for this above normal temperature period. Some areas had a 1- to 2-inch below normal rainfall. The lack of sufficient rainfall carried into August in most areas.

Yields in general were not as high in most trials as they were last year. Harvesting in the northern half of the state was delayed by poor corn drying weather. Killing frost occurred in many northern areas September 21. However, late varieties in these areas were unable to dry down sufficiently for cribbing and considerable corn was damaged by high moisture content in the crib or had to be artificially dried. Harvesting of the trials was done during October. Results of these trials are presented in the tables which follow.

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

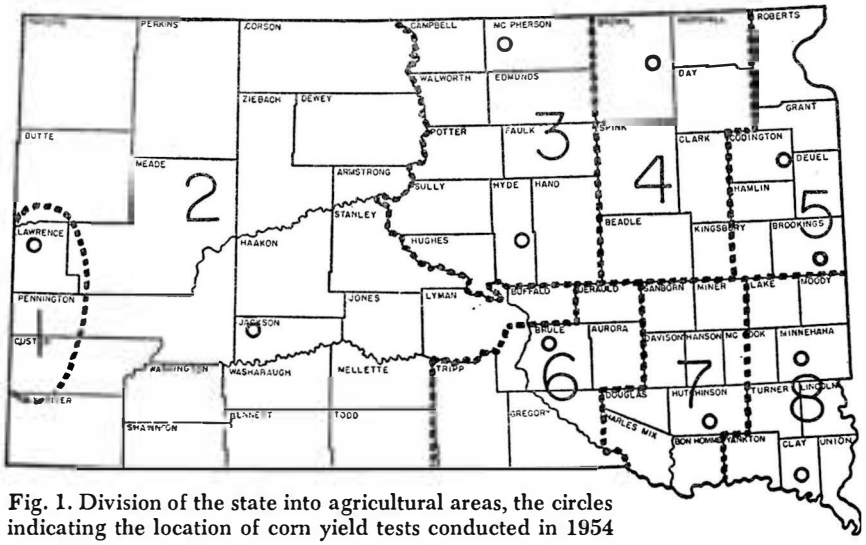

Fig. 1. Division of the state into agricultural areas, the circles indicating the location of corn yield tests conducted in 1954

Location of the 1954 Trials

Tests were conducted in the eight agricultural areas into which the state has been divided (Fig. 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 trial was located in each area. Where it was possible, more trials have been conducted, such as two trials each in Areas 1, 3, 5, and 8. 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.

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 those companies which 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 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 2 rows of 10 hills each, or the equivalent of

the corn was drilled rather than checked. Planting was done at the rate of three kernels per hill for the checked plots, one 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 own 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 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.

Table 1. Location of the 1954 Tests

District	County	Cooperator	Post Office	Soil Type	Date Planted	Date Harvested
1	Butte	Newell Irrigation and Dry Land Field Station	Newell	Orman Clay	May 13	Oct. 8 & 9
1	Butte	Al Scheeler	Vale	Vale fine sandy loam	May 25	Oct. 7 & 8
2	Jackson	Range Field Station*	Cottonwood	Pierre Clay loam	May 21	.....†
3	McPherson	North Central Station*	Eureka	Williams loam	May 17 &18	Oct. 18
3	Hyde	Central Station*	Highmore	Williams loam	May 21 & 22	Oct. 15
4	Brown	Robert Schuller	Claremont	Very fine sandy loam	May 17	Oct. 18
5	Brookings	Agri. Expt. Station	Brookings	Barnes loam	May 20	Oct. 14
5	Codington	Orin Korth	Watertown	Kranzburg silt loam	May 25	Oct. 20
6	Brule	Dale Cook	Chamberlain	Reliance silty clay loam	May 20	Nov. 3
7	Hutchinson	Roy Konrad	Tripp	Loam	May 12	Nov. 4
8	Minnehaha	Neil Jensen	Dell Rapids	Moody silt loam	May 19 & 20	Oct. 25
8	Clay	Clarence Dose	Wakonda	Waubay silty clay loam	May 14	Oct. 28

*Substations of the South Dakota Agricultural Experiment Station.
†Tests not harvested—dried out.

Temperature and Rainfall

The information presented in Table 2 on the 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 closest to his area.

Table 2. Temperature and Precipitation Data for the 1954 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	53.1	—1.3		4.93		+1.64		
	June	63.2	—0.2		2.94		—0.85		
(1)	July	76.5	+5.4		0.95		—1.23		
	Aug.	71.4	+2.2		1.04		—0.58		
	Sept.	62.3	+2.0	+1.6	0.20	10.06	—1.42	—2.44	110
Newell	May	52.8	—2.6		2.70		+0.05		
	June	61.4	—3.1		3.90		+0.66		
(1)	July	75.9	+2.8		0.76		—1.46		
	Aug.	71.6	+1.0		0.95		—0.49		
	Sept.	61.3	+1.3	—0.1	0.35	8.66	—0.87	—2.11	135
Cottonwood	May	54.5	—2.1		3.39		+0.74		
	June	65.8	—1.4		1.89		—0.77		
(2)	July	79.2	+4.2		0.40		—1.60		
	Aug.	74.3‡	+1.8		1.14		—0.46		
	Sept.	64.0	+1.8	+1.4	0.63	7.45	—0.38	—2.47	135
Eureka	May	51.3‡	—4.0		1.54		—0.76		
	June	63.4	—1.5		4.41		+1.05		
(3)	July	74.1‡	+2.1		1.38		—0.90		
	Aug.	69.2	—0.2		2.84		—0.67		
	Sept.	58.2	—1.4	—1.0	2.02	12.19	+0.55	—0.73	124
Highmore	May	53.2	—3.3		0.44		—2.16		
	June	64.7	—0.9		5.08		+1.77		
(3)	July	76.2	+2.5		0.65		—1.70		
	Aug.	71.9	+0.2		1.31		—0.75		
	Sept.	61.3‡	—1.1	—0.2	0.69	8.17	—0.70	—3.54	124
Aberdeen	May	51.1	—6.2		1.55		—1.52		
	June	64.4	—2.1		2.38		—1.72		
(4)	July	73.6	+0.8		0.81		—2.15		
	Aug.	69.6	—0.7		2.37		—0.44		
	Sept.	58.7	—1.8	—2.0	2.67	9.78	+0.76	—5.07	125
Watertown	May	49.8	—5.6		3.10		+0.12		
	June	64.8	0.0		3.74		+0.04		
(5)	July	72.1	+1.6		0.88		—1.80		
	Aug.	68.8	+0.3		1.67		—1.20		
	Sept.	58.6	—0.7	—0.9	2.42	11.81	+0.28	—2.56	125
Brookings	May	51.1	—5.7		2.66		—0.25		
	June	66.5	+0.4		3.28		—0.57		
(5)	July	73.3	+1.4		0.57		—1.86		
	Aug.	68.6	—1.3		2.08		—0.60		
	Sept.	59.5	—1.4	—1.3	3.35	11.94	+1.33	—1.95	125
Pukwana	May	54.5‡	—3.1		1.70		—0.66		
	June	68.4‡	—1.1		7.00		+3.69		
(6)	July	76.7‡	—0.8		0.34		—1.42		
	Aug.	72.5	—2.5		3.39		+1.37		
	Sept.	63.0‡	—1.9	—1.9	1.63	14.06	+0.23	+3.21	133
Tyndall	May	56.6	—3.2		2.20		—1.49		
	June	71.1	+1.8		9.73		+6.08		
(7)	July	78.5	+2.9		1.61		—1.38		
	Aug.	73.4	+0.2		2.46		—0.76		
	Sept.	65.2	+1.4	+0.6	3.43	19.43	+1.33	+3.78	160
Sioux Falls	May	52.7	—5.4		1.84		—1.54		
	June	69.4	+1.4		4.12		—0.13		
(8)	July	76.4	+1.6		3.74		+0.70		
	Aug.	71.5	—0.9		2.27		—1.01		
	Sept.	62.5	+0.1	—0.6	4.33	16.30	+1.40	—0.58	131
Vermillion	May	57.0	—4.2		2.91		—0.65		
	June	72.5	+2.2		7.03		+2.98		
(8)	July	79.8	+3.4		2.78		—0.38		
	Aug.	§	§		1.93		—1.05		
	Sept.	66.3	+1.0	§	2.27	16.92	—0.89	+0.01	160

*From *Monthly Climatological Data*, U. S. Department of Commerce, Weather Bureau, Huron, South Dakota.
†Number of days between the last spring temperature of 32° or lower and the first fall temperature of 32° or lower.
‡One or more days of record missing.
§No figures available.

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 Tables 3 through 15 is given the minimum amount for the 1953 tests 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 and 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 11), a difference of 6.1 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 percentage. 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 score. Each entry in the various tables is ranked on the basis of performance rating. This rating was computed for each entry from its 1954 performance record, in which yield was weighted 60 percent and dry matter 40 percent (100 minus percent moisture).

Stand. A reduction in the number of hills below 100 percent means 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, root lodging figures for 1954 and a 2- or 3-year average are presented. They are expressed as the percentage of stalks which lodged 30 degrees or more from the perpendicular at the time of harvest.

Average yields over a period of years. Many of the entries included in the 1954 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 this data gives more information than only one 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 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. 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]. At the Newell Irrigation and Dry Land Field Station the 1954 yield trials were conducted on fall-plowed grain stubble fertilized with 50 pounds of nitrogen and 50 pounds of phosphate per acre just before planting. In early July a band application of 45 pounds of available nitrogen per acre was made on the trial area. The trial was planted May 13 and irrigated three times during the growing season. Table 3 presents the results of these trials.

Al Scheeler Farm. Trials on sandy soil under irrigation were conducted on the Al Scheeler farm near Vale. The field had 45 to 50 pounds of available nitrogen applied in 1953, 60 pounds of anhydrous ammonia (82%) and 125 pounds of 16-16-0 per acre in 1954. The corn was planted May 25 and irrigated four times during the growing season. Table 4 shows the results of these trials.

[2]The work in Butte County was conducted by Joseph J. Boonnemann, Agricultural Research Service, U.S.D.A., U. S. Dry Land and Irrigation Field Station, Newell, South Dakota in cooperation with the South Dakota Agricultural Experiment Station.

Table 3. Area 1 (Butte County) 1954 Corn Performance Tests on Irrigated Land—Clay Soil

Hybrid or Variety	Acre Yield Bu.	Moisture Percent	1954 Yield Bu.†	1954 Moisture Percent	1954 Performance Rating
	4-Year Average				
Sokota S. D. 220	70.6	18.6	67.5	12.4	1
Dekalb 56	69.9	20.1	64.3	13.3	3
Wisconsin 355	61.3	21.4	57.6	13.1	10
S. D. 262	60.5	24.8	56.0	14.1	11
Kingscrost KE3	57.4	16.2	55.3	11.6	13
Average of all entries tested 4 years	**63.9**	**20.2**			
	3-Year Average				
Funk G-18	71.5	18.6	62.2	14.2	5
Funk G-11	60.1	16.7	44.4	11.9	17
Jacques 853J	59.6	16.5	52.6	11.7	16
Average of 8 entries tested 3 years	**63.9**	**16.3**			
	2-Year Average				
S. D. 250	83.7	13.3	65.7	12.8	2
Sokota S. D. 270	75.6	13.5	61.4	13.5	7
Disco 95W	68.3	13.9	59.6	14.5	8
Black Hills Special†	68.1	14.8	53.6	13.5	14
Average of 12 entries tested 2 years	**69.3**	**13.3**			
Master F60A			63.2	14.1	4
Dekalb 55			61.5	12.6	6
Kingscrost KE1			59.2	12.4	9
Gurney 90			55.4	12.9	12
Dekalb 58			53.4	14.2	15
Average			**58.4**	**13.1**	

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

Table 4. Area 1 (Butte County) 1954 Corn Performance Tests on Irrigated Land — Sandy Soil

Hybrid or Variety	1952-54 Average* Acre Yield Bu.	1952-54 Average* Moisture Percent	1954 Yield Bu.†	1954 Moisture Percent	1954 Performance Rating
Funk G-18	114.2	26.2	117.6	23.6	1
Sokota S. D. 270	102.7	28.8	109.9	24.5	2
Sokota S. D. 220	100.8	18.7	103.7	15.2	5
S. D. 262	100.8	26.8	93.6	24.4	7
Dekalb 56	99.6	23.4	101.7	20.3	6
Funk G-11	93.6	20.8	86.0	18.6	12
Wisconsin 355	93.3	23.3	86.7	19.7	11
Jacques 853J	91.6	20.3	82.7	16.5	13
Kingscrost KE3	80.5	14.9	73.9	12.6	15
Average of 9 entries tested 2 years	**97.5**	**22.6**			
S. D. 250			108.5	21.6	3
Dekalb 55			108.4	19.9	4
Master F 60 A			91.3	26.9	8
Disco 95W			88.7	24.1	9
Kingscrost KE1			87.5	15.6	10
Gurney 90			81.4	20.1	14
Average			**94.8**	**20.2**	

*Trial was destroyed by hail in 1953. In figuring the averages, 1953 was ignored.
†Differences in yield of less than 9.8 bushels per acre are not statistically significant.

West River Area

Jackson County. There were no yields obtained in the 1954 trial in this county because of drought. The following table is a summary of available information obtained from tests of previous years.

Table 5. Area 2 (Jackson County) 1953 Corn Performance Tests

Hybrid or Variety	2-Year Average*		1953		
	Acre Yield Bu.	Moisture Percent	Yield Bu.†	Moisture Percent	Performance Rating
S.D. 250	16.6	21.9	22.1	12.5	4
S.D. 224	13.4	25.9	21.4	11.3	5
S.D. 400	12.9	30.6	18.4	12.1	13
Sokota S.D. 262	12.5	28.4	18.7	11.6	10
Funk G-9	12.4	34.4	18.8	12.9	11
S.D. 212	12.1	27.1	20.8	12.0	6
S.D. 270	11.9	27.1	18.8	12.0	9
Disco 85W	11.2	22.0	17.8	11.3	15
Rainbow Flint	10.8	23.7	15.8	11.8	21
Funk G-1A	10.6	31.9	17.6	12.5	16
Kingscrost KE3	9.9	19.2	18.1	11.1	14
Average of 11 entries tested for 2 years	**12.2**	**26.6**			
Sokota S.D. 220			25.9	11.0	1
Master F 32			25.0	11.6	2
Kingscrost KE1			22.3	10.7	3
Gurney 90			20.6	11.2	7
Dekalb 58			19.5	12.2	8
F.U. 4417			18.5	11.7	12
Wisconsin 355			17.4	11.5	17
Disco 90W			17.2	11.4	18
Dekalb 62			17.1	11.1	19
Jacques 803			16.0	11.1	20
Gurney 85			14.2	12.0	22
Gehu			4.1	13.9	23
Average			**18.5**	**11.8**	

*Two-year averages are of the 1951 and 1953 crops. Drought eliminated the 1952 trials.
†Differences in yield of less than 6.9 bushels per acre are not statistically significant.

North Central Area

McPherson County. This trial was conducted at the North Central Station at Eureka as in years past. Eureka received nearly normal seasonal moisture but was below normal during the critical months of July and August. Yields for 1954 averaged higher than 5-year averages. The plot was planted May 17 and 18 on plowed under grass sod heavily manured. Harvesting was performed October 18.

Table 6. Area 3 (McPherson County) 1954 Corn Performance Tests

Hybrid or Variety	Acre Yield Bu.	Moisture Percent	1954 Yield Bu.*	1954 Moisture Percent	1954 Performance Rating
	5-Year Average				
Hansmann	37.7	32.8	40.1	34.6	10
Wisconsin 240	36.9	27.5	35.5	27.8	13
Sokota S.D. 220	36.9	32.6	43.0	27.5	2
Nodak 304	36.4	30.9	38.3	29.9	11
Wisconsin 355	35.4	38.0	37.6	38.9	20
Dekalb 46	35.1	34.3	38.6	31.4	12
Dekalb 56	30.6	42.6	32.2	44.4	27
Silver King	27.2	42.3	34.7	40.9	25
Average of 8 entries	**34.5**	**35.1**			
	4-Year Average				
Pioneer 388	37.7	33.6	46.7	31.5	1
Average of 9 entries tested 4 years	**34.7**	**33.1**			
	3-Year Average				
Master F21	34.7	20.8	35.8	29.5	15
Disco 90-W	34.6	27.5	36.2	38.0	22
Average of 11 entries tested 3 years	**36.1**	**23.7**			
	2-Year Average				
Jacques 853 J	44.5	22.1	39.2	28.3	7
Nodak 301	42.9	21.6	38.4	27.3	8
Kingscrost KE3	42.1	18.9	33.3	24.0	16
Average of 14 entries tested 2 years	**42.4**	**24.8**			
S.D. 250			44.1	32.3	3
Funk G-11			41.7	30.8	4
Disco 80-W			40.6	30.5	5
Kingscrost KE7			38.4	24.9	6
Pride PN16A			39.6	32.4	9
Tomahawk 4			38.4	36.2	14
Jacques 855-J			36.9	34.8	17
Funk G-18			39.7	44.2	18
Cargill 90-N			35.8	34.0	19
Haapala 358			35.7	35.4	21
Trojan C-59			35.2	37.0	23
Farmers 223			37.1	46.9	24
Gurney 95			33.3	40.0	26
United Hagie UH28			31.5	44.6	28
Average			**37.8**	**34.2**	

*Differences in yield of less than 7.8 bushels per acre are not statistically significant.

North Central Area

Hyde County. Environmental and soil variations resulted in erratic results between replications and entries so the 1954 yields are not included in the table. Yields at Highmore did average considerably below normal due to the severe drought through July, August, and September.

Table 7. Area 3 (Hyde County) 1953 Corn Performance Tests

Hybrid or Variety	Acre Yield Bu.	Moisture Percent	1953 Yield Bu.*	1953 Moisture Percent	1953 Performance Rating
	5-Year Average				
S.D. 224	34.5	21.1	63.1	11.6	5
S.D. 212	33.0	20.3	58.1	12.5	13
S.D. 400	32.7	26.7	65.0	14.1	3
Average of 3 entries	**33.4**	**22.7**			
	4-Year Average				
Sokota S.D. 220	40.0	17.0	62.4	12.0	8
Sokota S.D. 270	39.7	22.0	68.9	13.1	1
Pioneer 377A	37.3	25.4	64.2	13.6	4
Rainbow Flint	36.9	21.6	59.9	14.6	12
S.D. 262	34.1	25.6	63.3	13.4	7
Falconer	25.7	16.5	38.5	11.1	25
Average of 9 entries tested 4 years	**35.5**	**22.0**			
	3-Year Average				
Kingscrost KS4	42.0	21.2	63.1	12.5	6
Tomahawk 4	39.5	23.9	61.2	13.9	10
Pioneer 388	34.5	20.8	56.1	10.3	14
Disco 90W	33.5	22.5	52.8	13.4	22
Average of 13 entries tested 3 years	**38.6**	**21.3**			
	2-Year Average				
Funk G-18	40.4	12.8	60.8	12.6	9
Dekalb 58	40.2	12.3	55.6	12.3	18
Pride D36	34.2	13.8	53.7	12.1	21
Peavey 355	34.0	15.6	56.8	14.3	17
Average of 17 entries tested 2 years	**39.8**	**13.2**			
S.D. 250			65.1	11.7	2
Trojan C54			60.7	12.8	11
Van Tassel V44			56.7	13.0	15
Jacques 907			57.5	15.6	16
Gurney 95			56.1	13.9	19
Disco 100W			55.8	13.4	20
Dekalb 65			54.3	17.9	23
Cargill 90N			48.4	13.2	24
Average			**58.3**	**13.2**	

*Differences in yield of less than 5.8 bushels per acre are not statistically significant.

North James River Area

Brown County. Yields from this test were excellent even though the weather information available indicates 5 inches below normal rainfall. The land had been in corn the previous season but 170 pounds of 33-0-0 and 86 pounds of 16-20-0 per acre were applied in 1954. The plot was planted May 17 and harvested October 8.

Table 8. Area 4 (Brown County) 1954 Corn Performance Tests

Hybrid or Variety	Acre Yield Bu.	Moisture Percent	1954 Yield Bu.*	1954 Moisture Percent	1954 Performance Rating
5-Year Average					
Pioneer 382	53.5	24.3	71.0	23.5	1
S.D. 224	48.2	26.2	62.0	27.1	14
Disco 95-W	47.0	27.0	59.9	28.8	19
Average of 3 entries	**49.6**	**25.8**			
4-Year Average					
Pioneer 388	58.4	21.4	66.0	24.2	5
Sokota S.D. 270	56.7	25.6	66.5	28.0	8
Kingscrost KS4	54.8	26.1	68.6	28.5	4
Sokota S.D. 262	54.0	23.8	63.5	26.3	11
S.D. 220	49.5	20.0	59.7	21.9	13
Kingscrost KE1	45.5	19.8	56.4	22.9	20
Average of 9 entries tested 4 years	**52.9**	**23.0**			
3-Year Average					
Dekalb 58	57.7	16.8	65.0	27.9	10
Agsco 501	48.6	16.9	51.4	28.0	27
Average of 11 entries tested 3 years	**56.3**	**16.0**			
2-Year Average					
S.D. 250	67.6	18.9	67.5	23.8	2
Pfister P.A.G. 33	63.7	19.8	64.4	24.3	9
Tomahawk 4	61.5	21.5	60.9	26.9	16
Pride B17A	56.3	20.6	56.4	27.0	23
Average of 15 entries tested 2 years	**62.4**	**20.2**			
Funk G-18			69.0	26.7	3
Disco 101-A			67.9	30.0	6
Master F41A			63.0	21.5	7
Jacques 957JA			63.6	26.7	12
Farmers 223			62.8	29.7	15
Haapala 375			57.8	21.5	17
Dekalb 55			60.0	27.4	18
United Hagie UH30A			62.5	35.9	21
Cargill A95N			57.6	27.5	22
Gurney 95			56.6	28.9	24
Funk G-11			55.3	26.9	25
Trojan D-69			56.0	30.3	26
Average			**61.9**	**26.7**	

*Differences in yield of less than 6.0 bushels per acre are not statistically significant.

North James River Area

Spink County. No tests were conducted in Spink County in 1954; however the information from tests of previous years is presented in the following tables for use in this area.

Table 9. Area 4 (Spink County) 1953 Corn Performance Tests—Results on Non-Irrigated Land

Hybrid or Variety	Acre Yield Bu.	Moisture Percent	1953 Yield Bu.*	1953 Moisture Percent	1953 Performance Rating
	3-Year Average				
Pioneer 377A	56.1	30.9	68.4	11.6	3
Kingscrost KS6	52.6	31.5	65.8	12.2	4
Sokota S.D. 400	49.5	34.3	69.2	12.5	2
S.D. 224	48.3	29.3	59.1	11.4	11
Sokota S.D. 270	47.6	31.5	57.5	11.6	13
Dekalb 56	45.7	28.2	55.2	11.3	15
Kingscrost KE3	38.8	22.6	49.1	10.5	17
Average of 7 entries	**48.4**	**29.8**			
	2-Year Average				
S.D. 250	56.7	25.4	68.9	10.8	1
S.D. 262	51.3	28.6	62.3	11.4	9
Average of 9 entries tested 2 years	**52.0**	**27.7**			
Funk G-1A			65.1	12.2	5
Pfister P.A.G. 33			65.0	12.0	6
Cargill 90N			64.1	12.2	7
Dekalb 58			62.4	11.1	8
Pioneer 382			60.4	11.4	10
S.D. 220			57.8	11.5	12
Pride PN21			56.7	12.5	14
Disco 95W			53.1	12.0	16
Van Tassel V54			47.4	12.4	18
Average			**60.4**	**11.7**	

*Differences in yield of less than 11.4 bushels per acre are not statistically significant.
†No results were obtained on non-irrigated land in 1952. Therefore, 2-year averages are for 1953 and 1951; 3-year averages are for 1953, 1951, and 1950.

North James River Area

Spink County. Test on irrigated land for 1953.

Table 10. Area 4 (Spink County) 1953 Corn Performance Tests—Results on Irrigation

Hybrid or Variety	Acre Yield Bu.	Moisture Percent	1953 Yield Bu.*	1953 Moisture Percent	1953 Performance Rating
	4-Year Average				
Pioneer 377A	82.0	26.0	68.1	13.2	5
Sokota S.D. 400	80.1	27.1	69.8	12.5	3
Sokota S.D. 270	80.0	25.5	69.4	13.5	4
S.D. 224	79.9	24.8	63.5	12.2	7
Kingscrost KS6	76.1	25.7	63.4	13.9	8
Dekalb 56	70.6	23.3	46.5	12.0	17
Kingscrost KE3	59.9	21.0	41.7	10.9	18
Average of 7 entries	**75.5**	**24.8**			
	3-Year Average				
S.D. 220	85.1	17.1	74.2	11.6	1
S.D. 250	77.9	19.5	64.4	11.9	6
Average of 9 entries tested 3 years	**75.2**	**20.2**			
	2-Year Average				
Funk G-1A	79.4	14.6	70.5	14.0	2
Pioneer 382	71.4	14.5	54.2	12.8	15
Dekalb 58	68.7	14.6	61.0	12.0	10
Cargill 90N	67.4	13.2	60.1	12.8	11
S.D. 262	67.1	14.1	62.9	12.9	9
Disco 95W	65.1	14.0	57.3	12.8	12
Average of 15 entries tested 2 years	**72.7**	**14.1**			
Pfister P.A.G. 33			57.0	12.7	13
Van Tassel V54			51.2	13.3	16
Pride PN21			41.2	13.3	16
Average			**60.6**	**12.6**	

*Differences in yield of less than 16.8 bushels per acre are not statistically significant.

Northeast Area

Brookings County. Yields obtained from this trial were slightly above 5-year averages even though there was a severe moisture shortage during July and August. The excellent fertility of the plot area undoubtedly aided the varieties under these conditions. Planting was completed May 20 and harvesting October 14. Root lodging data is presented for the two most recent seasons where the varieties have been entered more than 2 years.

Table 11. Area 5 (Brookings County) 1954 Corn Performance Tests

Hybrid or Variety	Acre Yield Bu.	Moisture Percent	Root Lodging Percent	1954 Yield Bu.*	1954 Moisture Percent	1954 Root Lodging Percent	1954 Performance Rating
5-Year Average							
S.D. 250	70.0	31.1		81.1	29.3	3.0	3
Sokota S.D. 270	67.8	34.8		79.3	33.0	15.1	13
Pioneer 377-A	67.8	42.7		81.3	31.7	8.5	6
Sokota S.D. 262	66.6	33.7		79.1	30.6	13.5	7
Kingscrost KS6	65.2	36.1		77.0	31.2	14.4	15
S.D. 400	63.7	36.3		77.1	33.3	13.2	18
S.D. 224	63.1	30.3		76.4	27.2	6.1	8
S.D. 212	58.9	30.6		68.8	28.8	12.6	26
Wisconsin 355	54.2	30.5		65.6	30.7	6.3	28
Average of 9 entries	**64.1**	**34.0**					
4-Year Average							
Kingscrost KS4	67.1	33.2		75.6	33.6	10.9	23
Pioneer 388	64.4	27.4		78.1	26.8	4.1	4
Disco 95-W	59.9	31.2		67.6	30.7	4.1	27
S.D. 220	59.6	25.2		69.6	23.8	0.0	20
Average of 13 entries tested 4 years	**64.0**	**31.3**					
3-Year Average							
Funk G-6	77.2	28.8	8.1	73.7	34.0	4.4	24
DeKalb 62	75.5	28.2	11.6	78.5	31.3	13.3	12
Pride B38A	73.1	30.6	16.2	76.8	35.1	6.5	22
Master F60A	68.2	26.7	22.6	76.5	30.0	11.6	14
Average of 17 entries tested 3 years	**73.7**	**26.5**	**12.9**				
2-Year Average							
Pfister P.A.G. 44	84.3	27.8	12.2	83.5	31.6	20.5	1
Tomahawk 14	81.8	29.4	5.0	76.7	33.0	6.0	19
Disco 101-A	81.0	28.0	11.4	73.7	30.4	7.6	21
Agsco 341A	68.3	26.2	4.1	70.1	29.5	4.9	25
Average of 21 entries tested 2 years	**78.3**	**27.6**	**8.9**				
Pfister P.A.G. 33				79.5	26.8	9.7	2
United Hagie UH 214				82.7	33.4	4.6	5
Trojan F99				79.2	31.4	9.9	9
Dekalb 58				76.4	27.2	15.4	10
Funk G-26				80.4	33.6	4.9	11
Farmers 259				78.8	35.0	0.0	16
Jacques 1057-J				76.0	31.5	4.6	17
Cargill A100N				65.9	32.7	6.7	29
Average				**76.0**	**30.9**	**8.4**	

*Differences in yield of less than 6.1 bushels per acre are not statistically significant.

Northeast Area

Codington County. To obtain better information for the higher elevation areas in the northeastern part of the state a trial was completed on the Orin Korth farm, 12 miles north of Watertown on U. S. Highway 81. The season's rainfall was below normal and many varieties failed to reach maturity in this area. The earlier varieties produced medium yields of excellent quality corn. Planting was made May 25 and harvesting October 20 and 21.

Table 12. Area 5 (Codington County) 1954 Performance Tests

Hybrid or Variety	1954 Performance Score	Acre Yield Bu.*	Moisture Percent
Sokota S.D. 220	122.67	33.5	32.6
S.D. 270	119.96	35.2	42.0
Agsco 301	117.86	30.1	28.5
S.D. 250	112.36	30.6	38.0
Pioneer 388	111.01	30.5	39.6
Kingscrost KEI	109.85	28.5	34.8
Kingscrost KA4	108.51	29.7	40.6
Jacques 957JA	107.77	29.4	40.7
Haapala 375	106.37	27.3	35.9
DeKalb 58	105.49	28.7	41.7
Gurney 90	103.07	28.4	44.2
S.D. 224	102.65	26.7	39.3
Cargill 90N	98.25	26.3	44.3
Funk G-18	96.44	26.3	46.9
Pride PN 21	96.04	24.7	42.3
S.D. 262	96.01	25.4	44.6
Pioneer 382	96.01	25.4	44.6
Pfister P.A.G. 44	94.47	25.8	48.1
Master F 60A	93.97	24.0	43.0
Farmers 223	93.11	25.6	49.4
Disco 90-W	92.48	23.9	44.8
DeKalb 62	90.37	22.9	44.6
Funk G-6	85.42	22.5	50.4
Tomahawk 4	85.15	21.3	46.9
Trojan D-69	79.29	19.6	49.8
United Hagie UH23	75.34	18.5	51.9
Average of all entries		**26.6**	**42.7**

*Differences in yield of less than 8.1 bushels per acre are not statistically significant.

South Central Area

Brule County. Dale Cook was again cooperator in this area. The trial was planted on plowed under stubble with no fertilizer used. Moisture supply was above normal for all months except July. Moisture percentages were low at harvest showing excellent quality corn. The trial was planted May 20 and harvested November 3.

Table 13. Area 6 (Brule County) 1954 Corn Performance Tests

Hybrid or Variety	Acre Yield Bu.	Moisture Percent	1954 Yield Bu.*	1954 Moisture Percent	1954 Performance Rating
	4-Year Average				
Dekalb 410	48.4	26.7	72.9	22.2	3
S.D. 250	45.6	20.8	72.6	16.7	2
Farmers 223	42.1	23.4	49.9	21.3	29
Sokota S.D. 262	41.3	24.0	57.9	19.8	21
S.D. 270	40.4	23.0	61.0	19.2	16
Funk G-68	40.2	25.3	61.7	23.1	19
Sokota S.D. 400	39.7	23.9	57.5	18.6	20
Disco 107-A	35.9	29.6	47.1	28.3	31
Average of 8 entries	**41.7**	**24.6**			
	3-Year Average				
Pioneer 388	47.8	11.9	62.7	15.2	12
Master F84	44.2	15.6	56.7	23.2	24
Average of 10 entries tested 3 years	**46.5**	**14.5**			
	2-Year Average				
Tomahawk 42	56.9	19.2	71.5	25.6	5
Tekseed 45	54.4	19.4	69.9	25.0	8
Gurney 100	47.1	18.7	48.5	26.0	30
Average of 13 entries tested 2 years	**52.4**	**16.8**			
Pioneer 383			74.4	17.2	1
Dekalb 248			71.0	21.1	4
Iowealth 4A			70.7	25.8	6
Vinton V-14			70.1	24.9	7
Trojan F-103			67.0	22.6	9
United Hagie UH 30A			66.3	21.3	10
Jacques 1153J			68.6	26.2	11
Kingscrost KL1			66.5	24.7	13
Turners 551A			67.6	29.2	14
Pfister P.A.G. 71			63.0	21.3	15
S.D. 220			57.9	14.7	17
Cargill A95N			59.5	18.1	18
McCurdy 85L			58.3	20.9	22
Disco 111-A			61.1	29.4	23
Pride PN 55			54.7	21.0	25
Funk G-26			53.8	19.7	26
Moellers 317			53.1	21.7	27
Milford Beeghly IA4297			53.5	25.7	28
Pike 32			35.3	20.4	32
Average			**61.3**	**22.2**	

*Differences in yield of less than 19.3 bushels per acre are not statistically significant.

South James River Area

Hanson County. Although no trial was conducted at this location in 1954 the Hanson County 5-year information through 1953 is presented in Table 14. This information is of value to the northern part of the area.

Table 14. Area 7 (Hanson County) 1953 Corn Performance Tests

Hybrid or Variety	Acre Yield Bu.	Moisture Percent	1953 Yield Bu.*	1953 Moisture Percent	1953 Performance Rating
	5-Year Average				
S.D. 250	54.1	20.2	66.0	10.3	5
Sokota S.D. 270	52.0	27.7	61.7	10.9	13
Kingscrost KR2	50.8	27.0	55.4	16.2	26
Sokota S.D. 400	50.5	23.1	56.6	11.3	20
Funk G-29	48.9	30.0	61.9	15.8	17
Farmers 427A	48.8	30.0	62.3	13.9	14
S.D. 224	46.6	19.9	54.8	10.1	24
Average of 7 entries	**50.2**	**25.4**			
	4-Year Average				
Pioneer 379A	59.7	22.8	65.4	11.0	6
Pioneer 349	58.8	26.0	67.6	12.5	4
Dekalb 410	58.6	26.6	73.1	12.8	2
Dekalb 406	54.5	27.7	57.4	12.9	19
Average of 11 entries tested 4 years	**56.0**	**24.4**			
	3-Year Average				
S.D. 262	51.6	20.5	64.7	11.4	7
Average of 12 entries tested 3 years	**54.1**	**22.4**			
	2-Year Average				
Pride D66	63.8	12.7	65.5	14.4	8
United U32A	61.6	12.1	57.5	13.8	21
Trojan F99	60.5	11.1	63.7	10.9	9
Cargill 108N	58.6	12.4	64.4	13.4	12
Kingscrost KT1	55.5	14.0	56.0	14.1	25
Average of 17 entries tested 2 years	**60.5**	**12.2**			
Jacques 1153J			78.0	11.1	1
Van Tassel V740			69.8	14.8	3
F.U. Iowa 306			65.8	15.5	10
F.U. Iowa 4316			65.9	16.5	11
Funk G-30			61.8	12.9	15
Disco 101A			61.1	14.1	16
Gurney 105			59.5	13.1	18
Disco 108A			58.4	16.3	22
Tomahawk 30			56.0	12.2	23
Average			**62.7**	**13.2**	

*Differences in yield at less than 9.3 bushels per acre are not statistically significant.

South James River Area

Hutchinson County. In 1954 a trial was located on the Roy Konrad farm which is located 1½ miles north of Kaylor. The soil is a loam developed from glacial till. Moisture conditions were above normal for the area. As this was the first time a trial was carried on in this area some varieties entered were too early, which is reflected in the yields and moisture percent in Table 15. Planting was completed May 12 and harvesting November 4. This plot had oats in 1953, corn in 1952, soybeans in 1951, and alfalfa 1947 through 1950. No commercial fertilizer was applied to the 1954 crop.

Table 15. Area 7 (Hutchinson County) 1954 Corn Performance Tests

Hybrid or Variety	1954 Performance Score	Acre Yield Bu.*	Moisture Percent
DeKalb 406	112.11	89.3	17.7
DeKalb 410	111.96	89.1	17.7
Farmers 319	109.14	85.9	18.2
Pioneer 349	109.05	84.8	16.6
Turner T48	107.14	85.0	20.8
Iowa 306	104.95	82.2	20.7
Pride D66	104.83	80.7	18.5
United Hagie UH 39-A	102.70	80.2	22.1
Milford Beeghly IA4376	102.47	80.4	22.8
Pioneer 352	101.76	77.0	18.7
Pfister P.A.G. 57	101.37	75.4	16.9
Kingscrost KR2	100.76	77.1	20.9
Jacobsen J18	100.20	78.3	24.0
Funk G-30A	99.96	76.1	20.9
Gurney 115	99.84	75.7	20.5
Jacques 1153-J	98.45	74.4	21.2
Kingscrost KT1	98.33	74.0	20.8
Sokota S.D. 270	98.14	69.9	14.5
Tomahawk 60	97.84	72.1	18.7
Funk G-33	96.80	72.1	20.8
Trojan F99	96.80	69.2	16.1
Disco 101-A	95.92	68.3	16.4
Sokota S.D. 400	95.83	67.5	15.3
Disco 111-A	94.76	69.3	20.4
Moellers 307	94.57	68.7	19.8
S.D. 262	92.23	61.9	13.5
S.D. 250	91.39	61.1	13.9
Cargill 108N	90.64	63.8	19.8
Iowealth 16A	90.02	61.6	17.5
Average of all entries		**74.9**	18.8

*Differences in yield of less than 15.1 bushels per acre are not statistically significant.

Southeast Area

Minnehaha **County.** The 1954 trials in this county were conducted again on the Neil Jensen farm one-half mile north of Dell Rapids. The test area was fertilized with 200 pounds per acre of 10-20-0 at planting time. Rainfall and temperatures were near normal resulting in excellent yields of good quality corn. Planting was completed May 19 and 20, and harvesting on October 25.

Table 16. Area 8 (Minnehaha County) 1954 Corn Performance Tests

Hybrid or Variety	Acre Yield Bu.	Moisture Percent	1954 Yield Bu.*	1954 Moisture Percent	1954 Performance Rating
	5-Year Average				
Pioneer 377-A	61.3	24.2	81.5	22.2	6
Sokota S.D. 270	58.4	24.8	84.1	25.8	7
Funk G-6	57.6	27.2	77.5	27.8	23
S.D. 250	56.7	22.8	78.7	22.6	11
Sokota S.D. 400	56.0	27.0	76.3	27.3	26
Tomahawk 14	55.8	27.2	73.6	25.4	28
Iowa (F.U.) 4417	55.7	28.7	78.7	25.3	17
Kingscrost KS6	55.4	26.3	77.0	26.8	22
S.D. 262	54.2	25.3	76.0	26.5	25
Average of 9 entries	**56.8**	**25.9**			
	4-Year Average				
Farmers 223	65.2	30.3	85.6	25.9	3
Pfister P.A.G. 56	62.2	29.8	83.0	28.0	10
Average of 11 entries tested 4 years	**61.6**	**28.0**			
	3-Year Average				
United Hagie UH32-A	76.4	27.6	91.9	31.1	2
Average of 12 entries tested 3 years	**70.6**	**22.7**			
	2-Year Average				
McCurdy 96M	76.3	29.6	88.4	30.4	4
Iowa (F.U.) 4542	72.6	26.4	79.9	24.5	12
Average of 14 entries tested 2 years	**73.8**	**25.1**			
Pioneer 371			94.1	27.0	1
Pfister P.A.G. 71			86.7	28.9	5
Dekalb 248			84.5	28.7	8
S.D. Exptl. 13			85.5	30.7	9
Funk G-26			82.8	28.4	13
Vinton V-14			83.4	31.2	14
Dekalb 252			81.9	29.3	15
Pride D56			81.4	28.8	16
Haapala 130			80.9	30.0	18
S.D. 604 (Exptl. 8)			82.1	32.3	19
Jacques 1053JA			80.4	30.1	20
Trojan F-102			81.0	31.0	21
S.D. Exptl. 14			78.9	30.1	24
Gurney 115			80.7	33.5	27
Turner T36			78.9	32.4	29
Disco 111-A			79.2	33.2	30
Cargill 105N			72.9	26.8	31
Average			81.5	28.5	

*Differences in yield of less than 7.3 bushels per acre are not statistically significant.

Southeast Area

Clay County. Yields obtained from the trial on the Clarence Dose farm were below 5-year averages. Precipitation and temperature were near normal. The low yields undoubtedly were due to the severe corn borer infestation which injured all varieties. The plot area had been fertilized with 450 pounds of 16-20-0 per acre at planting. Planting was completed May 14 and harvesting October 28.

Table 17. Area 8 (Clay County) 1954 Corn Performance Tests

Hybrid or Variety	Acre Yield Bu.	Moisture Percent	1954 Yield Bu.*	1954 Moisture Percent	1954 Performance Rating
	5-Year Average				
Dekalb 627	77.1	25.6	75.0	20.1	3
Dekalb 410	74.2	22.0	64.7	17.0	13
S.D. 604 (Exptl. 8)	72.7	24.0	50.9	16.6	40
Farmers 427A	72.0	26.3	58.7	18.7	31
Tekseed 115	71.6	27.5	60.5	20.3	29
Pfister P.A.G. 299	71.5	25.0	61.2	18.4	22
Sokota S.D. 400	65.2	19.6	59.0	15.8	25
Average of 7 entries	**72.0**	**24.3**			
	4-Year Average				
Pioneer 349	80.8	22.2	75.5	20.1	2
Tomahawk 60	73.0	27.6	61.1	19.1	23
Average of 9 entries tested 4 years	**75.6**	**23.2**			
	3-Year Average				
Pioneer 352	80.6	20.9	64.7	20.5	17
Kingscrost KT1	75.6	20.4	64.5	20.7	19
Average of 11 entries tested 3 years	**78.4**	**20.5**			
	2-Year Average				
Tomahawk 78	91.8	20.5	76.3	21.6	1
Kingscrost K3A	89.2	20.6	74.5	21.7	5
Pfister P.A.G. 303	89.2	21.4	73.2	23.1	6
Gurney 118A	88.6	20.6	68.1	23.1	12
Webster 402	75.6	20.9	55.7	23.7	39
Iowa (F.U.) 4542	73.5	14.2	54.9	16.2	36
Average of 17 entries tested 2 years	**82.1**	**18.5**			
Iowealth 16			76.3	23.1	4
Funk G-30A			69.6	18.9	7
McCurdy 96M			69.9	20.3	8
S.D. Exptl. 15			70.7	22.0	9
Illinois 1575			71.8	25.3	10
Illinois 1800			67.6	19.0	11
Illinois 1863			67.5	22.7	14
Indiana 0421			63.1	17.1	15
Minnesota Exptl. 40			62.6	16.3	16
Jacobsen J20A			66.3	23.9	18
Cornelius C40			64.5	20.8	20
Pike 505			65.3	25.6	21
Minnesota Exptl. 4			59.9	17.5	24
Ohio K24			59.6	17.5	26
AES 510			60.2	19.1	27
Iowa 4558			58.7	16.7	28
Cargill 250			60.8	21.4	30
United Hagie UH41A			58.7	19.3	32
G5408 x G5415			60.0	22.0	33
Indiana 1405			59.0	20.1	34
Ohio M15			55.9	16.4	35
AES 610			55.1	17.5	37
Turner T49			57.6	22.3	38
Ohio 5305			47.7	17.1	41
Pride B38A			48.2	19.0	42
Average			**63.2**	**19.9**	

*Differences in yield of less than 10.4 bushels per acre are not statistically significant.