1-1965

1964 Corn Performance Trails

J. J. Bonnemann
South Dakota State University

CIRCULAR 166
JANUARY 1965

1964 Corn Performance Trials

AGRONOMY DEPARTMENT
AGRICULTURAL EXPERIMENT STATION
SOUTH DAKOTA STATE UNIVERSITY, BROOKINGS

1964 South Dakota Corn Performance Trials

J. J. Bonnemann, Assistant Agronomist

Agricultural Experiment Station
South Dakota State University
Brookings, South Dakota

The trials reported herein have been conducted under the supervision of the Crop Performance Testing Activity, Agricultural Experiment Station since 1961. The performance records of corn hybrids harvested in 1964 are reported and two-, three-, and four-year averages of yield and moisture are also included where available.

The primary purpose of the tests is to supply farmers and those associated with agriculture with information on the relative performance of the hybrids entered, when grown under similar environmental conditions. Data included are acre grain yield in bushels, moisture percentage of ear corn at harvest, performance score and other related agronomic data.

When choosing hybrids for use in this state one should refer to the trials conducted nearest the area in which the hybrid is to be planted.

Location of the 1964 Trials

The data are presented in the tables following the text. The exact location of the trials, soil types, and dates of seeding and harvesting are given in Table 1. Trial sites located with off-station cooperators were classified as to soil type by personnel of the Soil Conservation Service.

The trials were planted in the areas marked on the South Dakota map, page 7. The number of entries in each test ranged from 33 to 58 hybrids.

Weather and Climatic Conditions

Table 2 shows the climatic data for the 1964 growing season based upon reports of Monthly Climatological Data, U. S. Department of Commerce and the supervisor of the Northeast Research Farm. The Area D4 trial was within two miles of the recording location east of Parkston.

Temperatures of 32^{o} or lower were recorded at every station by September 27. However, damage to the corn, if any, appeared only on the very tips of the leaves.

The assistance of D. B. Shank, D. W. Beatty and Station Supervisors Albert Dittman, Lloyd Dye, Q. S. Kingsley, Herb Lund, Jake Frederikson and L. A. Nelson is gratefully acknowledged. The help of Willard Konrad and Beryl Pranger, off-station cooperators, is also appreciated.

TABLE 1. LOCATION AND SOILS TYPES OF THE 1964 CORN PERFORMANCE TRIALS

District Area	County	Location	Post Office	Planted	Harvested
B2	McPherson	North Central Substation	Eureka	May 21	Oct. 12
C1	Spink	Redfield Devel. Farm	Redfield	May 22	Oct. 9
C2	Charles Mix	Beryl Pranger, 4 1/2 N	Platte	May 19	a
D2	Codington	NE Research Farm, 15N	Watertown	May 20	Oct. 20
D3	Brookings	Agronomy Farm	Brookings	May 27	Oct. 16
D4	Hutchinson	Willard Konrad, 4E, 1S	Parkston	May 18	Oct. 14-5
E	Clay	SE Research Farm, 6W, 3S	Beresford	May 8	Oct. 22

	Soil type
B2	Williams loam
C1	Boetia-Harmony silty clay loam
C2	(Reliance-like) clay loam
D2	Kranzburg silt loam
D3	Vienna loam
D4	Houdek loam
E	Kranzburg silty clay loam

a - not harvested; poor stand

October was very dry and a killing frost did not occur until mid-October. This was beneficial because much of the corn that had been greatly retarded by the mid-summer drouth would have shown very high moisture in the ear corn had a killing frost occurred the last week in September.

Moisture was limited and temperatures extremely hot during the critical periods of tasseling and silking, probably reducing seed set of some hybrids entered. However, for the period of May through October the temperatures were below average, which allowed better performance than would be expected with the limited availability of moisture.

The trial planted in Charles Mix county was not harvested because of severe variations in stand. The data for the Area D4 trial is presented primarily for the moisture content of the entries. The severe moisture stress caused soil variations in the field not usually noticeable to the cooperator or apparent at the time soil classification was made in early May. Similar conditions occurred in the C1 trial at Redfield but were not as severe.

Hybrid Entry Procedure

Hybrids are entered at the discretion of the participating commercial concerns and they designate the locations where their hybrids are to be tested. Only hybrids that had been registered with the South Dakota State Department of Agriculture prior to March 1, 1964 were eligible for entry. In 1965 and ensuing years the deadline will be February 1. A nominal fee was charged for each entry in each area except entries included by Experiment Station personnel. Either closed or open-pedigree hybrids were eligible to be entered only once in each area.

A listing of the entries and the areas in which they were planted is included in Table 12.

TABLE 2. PRECIPITATION AND TEMPERATURE FOR THE 1964 CORN GROWING SEASON OF SOUTH DAKOTA

Location and district	Month	Precipitation, inches: Month total	Precipitation, inches: Departure from normal	Precipitation, inches: Total departure	Temperature in degrees F.: Month mean temp.	Temperature in degrees F.: Departure from normal	Temperature in degrees F.: Average departure
Eureka	May	2.95	0.36		57.2	1.1	
	June	9.59	5.76		65.3	0.3	
Area B2	July	2.37	-0.08		72.6	0.2	
	Aug.	0.80	-1.61		66.3	-4.4	
	Sept.	0.74	-0.58		56.8	-3.3	
	Oct.	T	-0.97		46.8	-0.8	
		16.45		2.88			-1.2
	Last freeze 32° - May 31				First frost 29° - Sept. 11		
Redfield	May	2.40			60.6		
6E	June	1.72			69.0		
	July	2.67			77.3		
Area C1	Aug.	2.14			69.4		
	Sept.	0.61			60.3		
	Oct.	0.09			48.3		
		9.63					
	Last freeze 32° - June 3				First frost 29° - Sept. 20		
NE Farm	May	1.07	-1.52		58.2	2.2	
15N	June	3.62	-0.21		62.9	-1.0	
	July	2.01	-0.44		68.1	-4.2	
Area D2	Aug.	4.22	1.79		65.4	-3.6	
	Sept.	0.93	-0.39		55.7	-4.2	
	Oct.	0.04	-0.93		44.3	-3.0	
		11.89		-1.50			-2.3
	Last freeze 29° - June 2				First frost 27° - Sept. 11		
Brookings	May	2.55	-0.24		59.4	1.8	
1E	June	2.86	-1.09		66.6	-0.3	
	July	3.02	0.87		73.4	0.2	
Area D3	Aug.	4.19	1.22		66.2	-5.0	
	Sept.	1.65	-0.38		56.9	-4.4	
	Oct.	T	-1.22		46.0	-3.5	
		14.27		-0.84			-1.9
	Last freeze 31° - June 2				First frost 32° - Sept. 11		
Parkston	May	1.25	-1.55		63.6		
5E	June	2.79	-1.02		71.1		
	July	1.64	-0.76		79.9		
Area D4	Aug.	1.88	-0.98		70.3		
	Sept.	1.82	-0.40		62.2		
	Oct.	T	-1.16		51.5		
		9.38		-5.87			
	Last freeze 32° - May 31				First frost 32° - Sept. 20		
SE Farm	May	2.10			63.7		
	June	6.29			70.1		
Area E	July	3.02			77.2		
	Aug.	2.32			68.9		
	Sept.	3.07			62.3		
	Oct.	0.20			51.2		
		17.00					
	Last freeze 31° - May 31				First frost 30° - Sept. 27		

Experimental Procedure

The entries included in each test were planted in five or six replications. One replication was planted for public observation and no yield data were taken from this area. Plots of individual hybrid entries were located at random within each replication. The size of the plot depended upon the space available, soil type and other related factors. All plots were two rows wide. The Area C1, C2 and D4 trials were planted as drilled corn to conform with farm practices. The Area B2, D2, D3 and E trials were hill planted. All drilled plots were 27 feet long. The B2 and D3 trials were 6 hills deep in 42-inch rows. The D2 trials was 10 hills deep, the E trial was 8 hills deep, both in 40-inch rows.

The seeding rates were approximately equivalent to the following kernels per acre; B2, 7,100; C1, 10,750; C2, 10,200; D2, 11,750; D3, 10,660; D4 13,060 and E, 15,700.

At the Southeast Research Farm (Area E), Diazinone was used for corn rootworm control. It was also used by the cooperator at Parkston while Thimet was used at the Platte trial. Atrazine was applied at the Southeast Research Farm for grassy weed control but was not as effective as in other years because precipitation was limited for some time after planting.

The test plots were hand picked separately and weighed. Samples for moisture determination were taken on three replications of the plots. The samples were oven dried at 102° C. in the laboratory for at least 48 hours, reweighed and the moisture percentages determined.

Measurements of Performance

Yield The yield reported for each hybrid in each test is the average obtained from field weights of all replications expressed as bushels per acre of No. 2 corn at 15.5 percent moisture. Variations in slope, soil fertility and stand may cause varieties of equal potential to yield differently. Mathematical determinations have been made to ascertain whether differences are caused by variations in the environment or were true varietal differences.

At the bottom of each yield table is given the minimum yield by which two hybrids must differ for the difference to be considered statistically significant at the five percent level. In other words, the chances are 95 out of 100 that the difference is real, and resulting from a true hybrid difference, rather than by chance or accident. If the trials were found to have statistically significant differences between mean yields an additional test, Duncan's Multiple Range Test, was run on the means.

In the interpretation of Duncan's Test, those hybrid mean yields adjacent to the same vertical line are not statistically different in yield. In Table 3, Pioneer 391, SD Exp. 43 and all entries down through Pioneer 388 and KE 435 are not statistically different in yield from each other. All other varieties below KE 435 are significantly lower than Pioneer 391. The above statements hold true only for conditions that prevailed during the 1964 cropping season. One-year results do not present as true a picture of yield differences as do average results of three or more years at the same location.

Moisture Content The tables present the moisture content of each entry, expressed as percent of moisture in the ear corn at harvest. Moisture content is inversely related to corn maturity, and because maturity is of primary consideration in South Dakota, these figures are very important when evaluating the various entries.

Performance Rating The two primary results, grain yields and moisture percentages, are used for determination of this rating. Because of the importance of these two factors for sound, dry corn, this rating further aids in determining not only the yielding abilities of the entries but also how moisture affects the overall determination of the value for production of sound corn without additional drying or delayed harvest.

Yields for each entry in each test were converted to percentages by comparing them with the average yield of all entries. 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 rankings that appear in the tables were calculated as follows;

$$\frac{(\text{Yield percentage} \times 6) \text{ plus } (\text{moisture percentage} \times 4)}{10}$$

Stand When missing hills occur at least two possibilities may be indicated: the seed of the entry was unable to produce a good stand under the environmental conditions prevailing for that trial, or something destroyed the young plants. Because this work is designed primarily to test the yield potential of the varieties, corrections in yield were made for missing hills according to the formula:

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

where; CW - corrected weight, FW - field weight, H - number of hills planted per plot, and M - number of hills missing. No corrections were attempted for drilled plantings or for minor stand variations, that is fewer than three stalks per hill.

Lodging Root lodging and stalk breakage were variable during 1964. The climatic environment created conditions more conducive to lodging at some locations than others. Lodging at some locations was almost non-existent. Where lodging or breakage was a probable deterrent to higher yields and ease of harvesting, the percentages for 1964 are shown in the tables. In mid-August, almost two inches of precipitation accompanied by high velocity winds contributed to high root lodging at the Northeast Research Farm trial.

The very dry period of late September and October permitted many entries to dry down and become rather brittle. Excessively high winds occurred during the first part of October, causing many dropped ears. Dropped ears were noted and the percentages are reported in the tables.

All percentages reported are calculated by combining the total number of plants lodged, or ears dropped, in all replications of an entry. R.L. or S.B. indicates the plants Root Lodged or Stalks Broken. E.D. indicates the percentage of Ears Dropped.

Average Yield Over a Period of Years Data are presented for entries which have been in the trials up to four years, 1961-1964. In any one year an entry may fluctuate in its relative value compared to other years because of specific environmental conditions under which the trial was conducted. Averages for a three-year or longer period level out these environmental variations.

Corn Performance Trials have been conducted on a fee basis since 1961. Therefore, comparisons of trials prior to 1961 are not made in this publication.

Use of the Presented Tables In the mid-western corn belt yield is generally given first consideration, moisture being of secondary or lesser consideration. In South Dakota conditions are generally quite different. Many of the crop-adaptation areas have conditions common to the northern plains; limited frost-free growing periods, limited precipitation and high temperatures.

Present northern plains conditions still require that corn hybrids yield satisfactorily and produce corn that can be stored without additional costly handling. The performance score provides information on both these factors in a weighted fashion.

In choosing a hybrid one should first check those yielding best. Then one can look for the entries with below average moisture. Having done this, compare those that are both above average in yield and below-average in moisture. The results will generally be similar to that calculated by the performance score.

It is sound practice to plant more than one hybrid. Maturity, yield, quality and standability all merit consideration when buying seed corn. When planting a new hybrid the acreage should be limited until its adaptability to the environment on the particular farm is known.

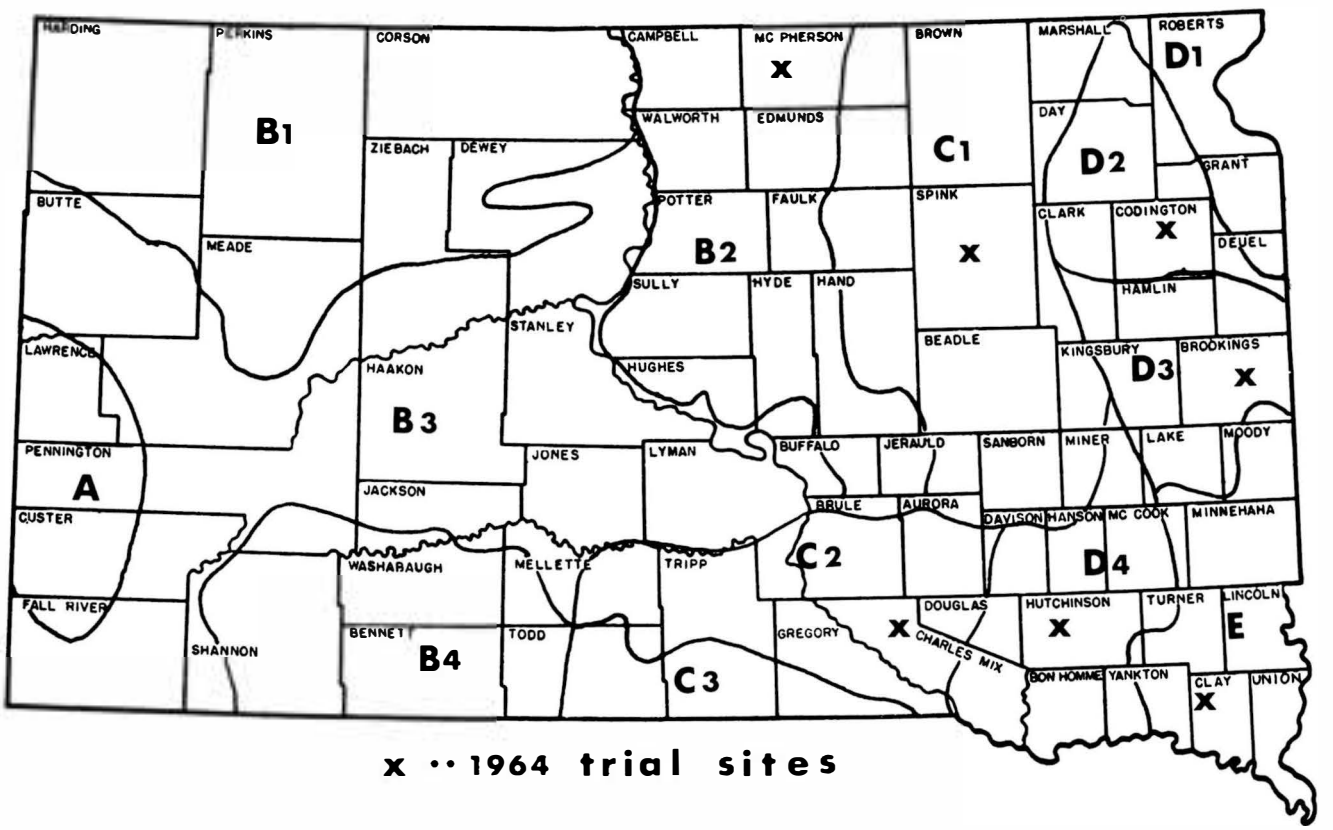
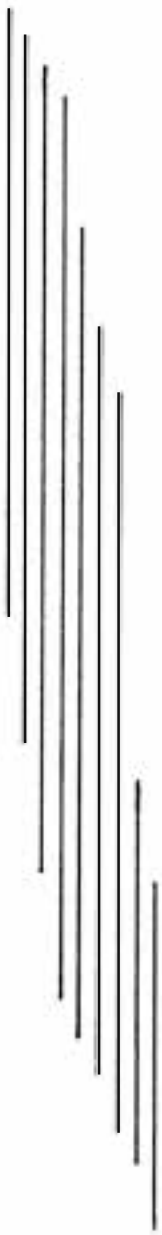


TABLE 3. CORN PERFORMANCE TRIAL, AREA B2, NORTH CENTRAL SUBSTATION, EUREKA, 1964

Variety	Performance rating	Percent * R.L.	S.B.	E.D.	Yield, bu/ac	Percent Moisture	Statistical Significance
Pioneer 391 (4x)	2	1	1	4	35.3	23.3	
SD Exp 43 (4x)	1	1	6	3	35.0	20.5	
SD 240 (4x)	4	2	7	2	34.3	28.5	
Pioneer 3812 (4x)	7	4	3	12	33.4	30.5	
Master F-31A (4x)	6	0	2	6	32.7	25.8	
Pioneer 385 (4x)	13	3	1	2	32.3	31.0	
SD 210 (4x)	5	1	6	17	32.2	22.5	
DeKalb 45 (4x)	3	2	11	5	32.0	18.9	
Cargill 590 (4x)	9	4	12	12	31.7	27.0	
Pioneer 384 (4x)	14	0	1	6	31.5	31.2	
Sokota 225 (4x)	8	0	5	8	30.6	21.8	
SD Exp 44 (4x)	12	1	6	10	30.6	25.2	
Master F-34 (4x)	21	2	0	1	30.6	32.7	
Sokota 215 (4x)	19	2	5	28	30.4	29.1	
Pioneer 388 (4x)	15	5	10	4	30.3	27.7	
Northrup King KE 435(4x)	11	3	13	10	30.2	22.4	
Funks G-10A (4x)	24	6	6	4	30.1	33.4	
SD 250 (4x)	20	1	10	4	30.1	28.5	
SD 220 (4x)	10	0	17	28	30.0	21.7	
Master F-30 (4x)	18	2	2	2	29.9	27.3	
Pioneer 3862 (4x)	17	1	6	12	29.4	25.0	
DeKalb XL-15 (2x)	26	0	1	6	29.4	37.7	
Master F-15 (4x)	16	3	1	3	29.3	24.5	
Sokota 255 (4x)	23	3	1	11	29.2	29.5	
Cargill 577 (3x)	27	1	2	6	28.2	34.9	
Funks G-18A (4x)	28	3	2	4	27.8	36.1	
Pioneer 3854 (4x)	22	0	2	6	27.7	22.8	
Master F-35 (4x)	25	0	10	2	26.3	25.9	
Funks G-15A (4x)	29	0	9	7	25.9	38.5	
DeKalb XL-308 (3x)	30	1	0	4	25.1	38.1	
Northrup King KE 471(4x)	31	3	19	1	23.0	35.0	
DeKalb XL-325 (3x)	33	0	1	0	22.3	46.0	
DeKalb 57 (4x)	32	0	2	2	22.0	40.9	
			Mean		29.7	29.2	



CV-12.3% L.S.D.(.05) 5.1

R.L. - Root lodging
S.B. - Stalks broken
E.D. - Ears dropped

(2x) - Single cross
(3x) - Three-way cross
(4x) - Double cross

TABLE 5. AREA D2 CORN PERFORMANCE TRIAL, NORTHEAST RESEARCH FARM, WATERTOWN, 1961-1964

Variety	Performance Rating	Percent R.L.	Percent S.B.	Percent E.D.	Yield, bu/ac	Percent Moisture
Sokota 225 (4x)	1	24	3	23	45.5	19.7
SD Exp 39 (4x)	4	57	1	6	43.9	25.4
SD 240 (4x)	6	47	1	5	43.4	26.9
Northrup King PX 35 (2x)	7	61	1	1	42.9	30.1
Pioneer 3854 (4x)	2	26	2	6	42.8	18.0
Cargill 644 (4x)	3	22	5	5	42.8	21.4
SD 220 (4x)	5	34	0	12	42.4	21.0
Sokota TS-50 (2x)	8	21	1	2	41.2	25.1
Pioneer 3862 (4x)	9	8	4	4	39.5	21.0
Northrup King KE 475 (4x)	11	31	5	6	39.4	23.8
Pioneer 385 (4x)	18	9	2	4	39.2	30.5
SD 210 (4x)	10	50	3	12	39.0	21.6
Cargill 590 (4x)	12	33	1	8	38.9	23.1
United-Hagie 138B (2x)	25	55	1	3	38.7	37.7
Northrup King PX 487 (3x)	15	20	2	3	38.5	26.0
Pioneer 3812 (4x)	14	23	3	8	38.4	24.8
Sokota 255 (4x)	13	36	0	9	38.2	22.9
Northrup King KE 449 (4x)	16	21	3	4	38.2	26.0
SD 248 (3x)	17	56	0	1	37.8	25.9
Master F-34 (4x)	22	36	1	1	37.1	29.0
DeKalb 59 (4x)	23	32	1	2	37.1	31.4
SD 250 (4x)	19	40	2	8	36.9	23.6
Sokota 215 (4x)	20	33	1	21	36.8	23.6
Master F-30 (4x)	21	23	1	5	35.7	23.4
DeKalb 57 (4x)	26	7	1	2	35.4	29.3
Funks G-10A (4x)	30	60	1	11	35.0	29.4
Master F-70 (4x)	31	29	1	2	34.9	30.7
Funks G-15A (4x)	24	41	3	8	34.7	25.4
Northrup King KE 471 (4x)	27	40	2	1	34.7	27.9
DeKalb XL-325 (3x)	36	51	1	0	34.5	35.3
Funks G-17A (4x)	35	71	1	2	34.0	31.6
Pioneer 3681 (4x)	29	28	1	4	33.8	25.8
Master F-31A (4x)	28	49	1	6	33.2	23.7
Pioneer 384 (4x)	32	23	1	9	33.1	27.0
DeKalb XL-15 (2x)	40	58	1	4	33.0	37.5
Master F-35 (4x)	33	65	1	4	32.4	24.9
Pioneer 388 (4x)	34	27	2	0	32.4	26.0
DeKalb XL-308 (3x)	39	32	1	8	32.3	33.2
Pioneer 3658 (4x)	41	39	1	7	32.0	37.5
Northrup King PX 481 (3x)	37	24	1	3	31.9	28.5
Funks G-18A (4x)	38	49	1	1	31.6	30.2
United-Hagie 3H39 (3x)	43	40	26	0	30.9	40.8
Master F-80 (4x)	42	9	1	1	29.4	33.0
Funks G-4390 (2x)	46	14	1	1	28.8	39.2
United-Hagie 3H30 (3x)	45	51	0	0	27.7	33.5
Northrup King KE 497 (4x)	44	18	0	2	26.7	29.3
United-Hagie 130 (2x)	47	62	4	1	22.7	44.6
				mean	35.9	28.2

CV - 6.6% L.S.D. (.05) 6.6

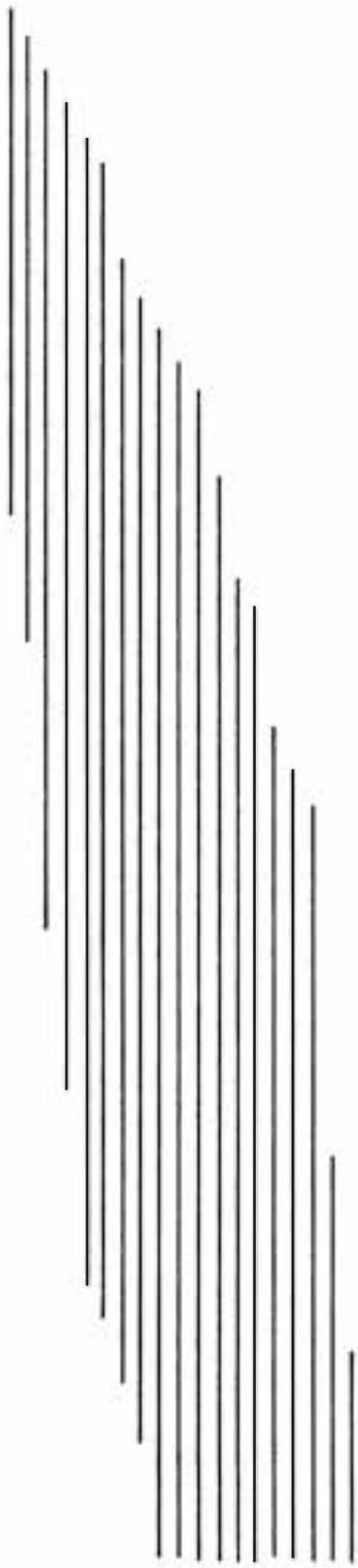
R.L. - Root lodged S.B. - Stalks Broken E.D. - Ears dropped

TABLE 6. TWO-, THREE-, AND FOUR-YEAR AVERAGE YIELDS AND MOISTURE PERCENTAGES OF ENTRIES IN THE AREA D2 TRIAL

Variety	Yields, bu/ac 1961-64	Yields, bu/ac 1962-64	Yields, bu/ac 1963-64	Percent Moisture 1961-64	Percent Moisture 1962-64	Percent Moisture 1963-64
Cargill 590		57.9	60.2		33.0	27.6
DeKalb 57			62.9			31.5
DeKalb 59			61.7			32.1
Funks G-10A			63.1			31.4
Funks G-17A			62.9			33.9
Funks G-18A			60.6			32.1
Master F-30			57.5			26.0
Master F-31A			54.2			26.6
Master F-34			61.4			30.0
Master F-35			55.2			27.3
Master F-70			60.8			34.1
Pioneer 3658			63.5			36.7
Pioneer 3812			63.5			27.8
Pioneer 384	57.5	54.7	58.4	36.4	34.7	28.9
Pioneer 385		61.1	65.3		36.8	31.1
Pioneer 3862		54.8	58.3		30.4	23.7
Pioneer 388	53.8	52.2	54.2	33.8	31.9	26.9
Sokota 215			56.5			27.6
Sokota 225			59.3			23.7
Sokota 255		57.1	63.1		35.3	29.4
SD 210	54.3	51.3	54.3	31.0	29.0	24.3
SD 220	55.7	53.5	56.7	30.7	28.4	24.2
SD 240	58.6	58.8	65.0	36.4	34.8	30.2
SD 250	59.3	58.6	63.8	35.1	32.8	26.9
SD Exp 39		62.8	67.2		32.1	28.2

TABLE 7. CORN PERFORMANCE TRIAL, AREA D3, AGRONOMY FARM, BROOKINGS, 1964

Variety	Performance Rating	Yield bu/ac	Percent Moisture	Statistical Significance
Cargill 577 (3x)	2	94.0	31.5	
Pioneer 3622 (4x)	4	93.7	35.7	
SD 248 (3x)	1	91.5	27.3	
Northrup King PX 35 (2x)	8	90.5	35.2	
Pioneer 385 (4x)	3	89.9	30.3	
Pioneer 376 (4x)	17	89.7	38.5	
Northrup King PX 530 (3x)	9	89.5	35.5	
DeKalb 224 (4x)	7	89.2	32.7	
Minn. 313 (3x)	6	88.9	30.7	
Pioneer 3658 (4x)	12	87.6	34.4	
Northrup King KM 555 (4x)	21	86.8	35.7	
Pioneer 368-A (4x)	16	86.7	34.9	
DeKalb 59 (4x)	13	86.6	33.4	
United-Hagie 130 (2x)	26	86.5	38.8	
United-Hagie 126 (2x)	5	85.8	26.7	
Pioneer 3775 (2x)	15	85.8	33.1	
DeKalb 222 (4x)	23	85.5	35.7	
Sokota TS-50 (2x)	11	84.4	29.5	
Funks G-15A (4x)	25	84.0	35.5	
Cargill 666 (4x)	27	84.0	36.5	
Cargill 680 (4x)	37	83.8	40.7	
SD Exp. 41 (4x)	19	83.7	31.9	
DeKalb XL-45 (2x)	28	83.3	35.9	
Pioneer 3681 (4x)	14	83.2	29.5	
United-Hagie 138B (2x)	48	83.2	45.2	
Sokota 255 (4x)	10	82.5	27.2	
Funks G-17A (4x)	22	82.4	31.9	
SD 250 (4x)	20	82.2	30.2	
Northrup King PX 487 (3x)	24	81.8	32.0	
Master F-70 (4x)	32	81.8	35.5	
Disco 101-A (4x)	31	81.6	34.8	
Funks G-4390 (2x)	39	81.4	38.2	
Funks G-18A (4x)	29	81.3	34.0	
Northrup King KE 497 (4x)	30	81.3	34.0	
DeKalb XL-325 (3x)	40	81.0	38.1	
Master F-80 (4x)	33	80.9	34.5	
SD 270 (4x)	18	80.2	27.5	
Disco 108AA (4x)	36	79.7	35.7	
Sokota 407 (4x)	41	79.7	37.1	
Disco 1030 (4x)	47	79.3	39.5	
Sokota 405 (4x)	38	78.5	34.6	
SD 240 (4x)	34	78.4	32.1	



continued next page

TABLE 7 (Continued)

Variety	Performance Rating	Yield bu/ac	Percent Moisture	Statistical Significance
Minn. 515 (4x)	35	78.3	33.8	
Sokota 407A (4x)	44	78.2	36.8	
Master F-84 (4x)	43	78.1	36.5	
Funks G-37 (4x)	42	77.3	35.3	
United-Hagie 3H39 (3x)	50	76.3	38.1	
Pioneer 362 (4x)	53	76.1	42.7	
Minn. 519 (4x)	46	75.4	34.1	
Northrup King PX 481 (3x)	45	74.1	32.1	
Master F-90 (4x)	54	73.9	43.0	
Northrup King KM 567 (4x)	51	73.5	37.1	
SD 400 (4x)	49	71.4	31.9	
Master F-34 (4x)	52	70.8	34.3	
		Mean 82.5	34.6	

CV - 7% L.S.D. (.05) 7.9

2x - single cross 3x - three way cross 4 x - double cross

TABLE 8. TWO-, THREE- AND FOUR-YEAR YIELD AND MOISTURE PERCENTAGE AVERAGES OF HYBRIDS ENTERED IN THE AREA D3 TRIAL FROM 1961-1964

Variety	Yield, bu/ac			Percent Moisture		
	1961-64	1962-64	1963-64	1961-64	1962-64	1963-64
Cargill 577		96.6	101.3		29.4	28.4
Cargill 666			98.5			33.7
Cargill 680		96.4	101.8		36.2	36.1
DeKalb 59		91.7	94.8		30.5	29.0
DeKalb 222		96.1	100.2		32.4	31.9
Disco 101A	89.5	87.2	89.9	31.5	32.3	31.6
Disco 1030			95.5			35.6
Disco 108AA		89.7	92.1		32.1	31.2
Funks G-17A			93.4			30.9
Funks G-18A			90.4			31.1
Master F-70			92.4			32.3
Master F-80			90.9			32.5
Pioneer 362	93.4	92.0	95.9	37.0	37.6	37.5
Pioneer 3658			100.6			29.9
Pioneer 368-A			99.8			32.0
Pioneer 376	99.0	98.8	102.2	33.5	33.8	34.0
Pioneer 3775		91.8	96.7		32.8	31.8
Pioneer 385			95.8			27.8
Sokota 255		86.2	89.7		26.9	25.1
Sokota 407		92.5	97.0		32.8	32.5
United-Hagie 3H39			91.1			34.4
SD 240	80.3	82.1	84.9	28.2	28.4	28.3
SD 248			96.7			24.7
SD 250	85.0	83.9	96.4	27.4	27.0	26.5
SD 270	86.3	85.0	90.3	27.5	27.4	25.6
SD 400		82.3	86.1		29.8	28.6
SD EXP 41			92.8			27.2

TABLE 9. AREA D4 CORN PERFORMANCE TRIAL, WILLARD KONRAD FARM, PARKSTON, 1962-64

Variety	Performance Score	Percentage R.L.	S.B.	E.D.	Yield, bu/ac 1964	62-64	63-64	Percent Moisture 1964	62-64	63-64
Funks G-4390 (2x)	1	0	1	4	76.4			21.4		
Northrup King KM 589 (4x)	2	0	1	3	64.1			22.7		
DeKalb XL-45 (2x)	3	0	1	0	63.6			22.7		
Pioneer 3510 (2x)	5	0	0	0	63.6			30.2		
Pioneer 3291 (4x)	6	0	0	1	63.4			29.7		
SD 620 (4x)	4	0	0	2	62.2			24.2		
Northrup King PX 66 (2x)	7	0	0	2	61.4			25.8		
Northrup King KT 623A (4x)	9	0	1	1	60.0			32.5		
DeKalb 415A (4x)	8	0	3	4	58.0			23.0		
Pioneer 3418 (4x)	11	0	0	2	57.3			27.3		
Royal Iowa 5087 (4x)	10	0	0	1	56.9			26.1		
Pioneer 3414 (4x)	13	0	0	7	56.3			27.6		
SD Exp 45 (4x)	14	0	1	1	56.2			28.1		
DeKalb 441 (4x)	12	0	1	1	55.6		81.6	25.7		24.5
SD Exp 46 (4x)	15	0	0	3	51.9			20.7		
Funks G-62 (4x)	18	1	1	10	48.3			26.5		
Minn. 515 (4x)	16	0	2	5	48.2			23.5		
Sokota 625 (4x)	17	0	0	3	48.1	70.5	96.6	25.5	25.6	24.4
Sokota 645 (4x)	19	0	0	1	47.8	78.4	81.7	28.4	27.2	26.9
GreenAcres 462 (2x)	23	0	0	3	45.2			29.6		
Pioneer 362 (4x)	21	0	1	3	44.9	73.6	77.6	24.0	22.5	21.3
Sokota 463 (4x)	20	0	0	1	44.8			22.8		
Funks G-83 (4x)	27	1	1	1	44.4			30.9		
Pioneer 354 (4x)	25	0	1	4	42.1		75.7	23.9		22.7
Minn. 519 (4x)	22	0	2	3	42.0			21.1		
Northrup King KM 579 (4x)	24	1	1	2	41.9			22.3		
Master F-102 (4x)	26	0	1	7	41.7		70.4	23.8		21.4
Cargill 458 (4x)	28	1	1	6	41.3			24.8		
Nebr. 202 (4x)	30	0	1	3	40.3	62.8	61.7	25.1	23.3	23.1
Sokota MS-75 (2x)	29	0	0	3	40.1			24.1		

Disco 112-A (4x)	30	0	1	1	37.9			28.7		
Master F-80 (4x)	31	1	1	7	37.7		66.0	21.2		20.4
Iowa 5063 (4x)	34	0	0	2	37.0	72.0	72.0	26.6	24.6	23.9
GreenAcres 446 (4x)	38	0	0	0	36.5	71.2	74.5	33.2	30.6	30.4
Northrup King KT 612 (4x)	35	1	1	4	36.4			28.7		
United-Hagie 52B (4x)	40	0	0	2	36.4		77.4	34.1		30.2
DeKalb 3x3 (3x)	37	0	0	2	35.7	74.1	78.0	30.5	26.7	27.4
Minn. 313 (3x)	32	0	0	2	35.3			21.4		
Funks G-4582 (2x)	39	0	0	2	35.1			29.9		
United-Hagie 152A (2x)	44	0	2	2	35.0			36.2		
DeKalb 441A (4x)	42	0	2	2	34.9			32.8		
Disco 1090 (4x)	36	0	1	3	34.7		70.6	25.6		23.5
GreenAcres 004 (4x)	41	1	0	2	34.3		73.4	31.2		28.7
Pioneer 328 (4x)	43	0	0	1	34.3	76.8	77.1	33.6	29.7	29.4
Northrup King KT 623 (4x)	46	0	0	1	32.1			34.9		
Northrup King KT 6 (4x)	47	0	1	1	31.7			34.2		
Funks G-4401 (2x)	45	1	0	3	31.0			29.9		
United-Hagie 1500 (2x)	49	0	0	5	30.3			31.4		
GreenAcres 003 (4x)	50	0	1	1	29.7		68.1	30.9		28.3
Sokota 619 (4x)	48	0	0	1	28.5	64.8	67.5	26.6	22.7	22.7
Funks G-76 (4x)	52	0	1	4	28.3			29.0		
Pioneer 3558 (2x)	53	0	0	1	27.4		79.2	31.4		26.1
SD 420 (4x)	51	0	0	5	27.1	61.9	61.7	25.0	23.7	22.9
United-Hagie 146 (2x)	54	0	0	1	21.3			28.2		
United-Hagie 142 (2x)	55	1	0	0	21.1			41.8		
Master F-90 (4x)	56	0	0	2	11.8		51.0	35.2		27.8
			Mean		42.7			27.8		

CV - 43 %

These data are presented as a matter of record. Drought conditions caused a coefficient of variation so high that statistical differences found are unreliable.

R.L. - Root lodging
S.B. - Stalks broken
E.D. - Ears dropped

(2x) - Single cross
(3x) - Three-way cross
(4x) - Double cross

TABLE 10. AREA E CORN PERFORMANCE TRIAL, SOUTHEAST RESEARCH FARM, BERESFORD, 1961-1964

Variety	Performance Score	Percent R.L.	Percent S.B.	Percent E.D.	Yield, bu/ac 1964	Yield, bu/ac 61-64	Yield, bu/ac 62-64	Yield, bu/ac 63-64	Percent Moisture 1964	Percent Moisture 63-64	Statistical Significance
Pioneer 3306 (2x)	3	0	1	3	109.9				24.3		
Cargill 277 (3x)	1	1	1	1	109.2				21.6		
Pioneer 3291 (4x)	4	0	1	2	108.0				22.9		
Pioneer 3558 (2x)	2	1	0	4	103.3			113.4	14.9	16.5	
United-Hagie 1500 (2x)	8	0	1	6	102.7				21.5		
Northrup King PX 66 (2x)	5	0	0	7	102.1				18.8		
Pioneer 3418 (4x)	7	0	0	5	101.8				19.8		
SD 622 (4x)	9	0	0	3	100.1	98.9	102.5	99.3	20.4	20.7	
DeKalb XL-361 (3x)	16	0	0	1	99.1				25.5		
Funks G-4390 (2x)	6	0	2	8	98.9				14.6		
United-Hagie 1580 (2x)	10	0	0	10	98.2				21.6		
DeKalb 441 (4x)	14	0	1	5	96.1			101.2	20.1	19.2	
SD Exp 45 (4x)	15	0	4	7	96.0				20.7		
Sokota 645 (4x)	12	0	1	7	95.7		107.4	102.4	19.1	20.8	
United-Hagie 147 (2x)	31	0	0	6	94.1				29.3		
Sokota 619 (4x)	11	1	1	1	93.8		104.9	98.7	16.5	17.2	
Pioneer 3414 (4x)	13	0	2	12	93.7				16.5		
Minn. 417 (4x)	17	1	1	3	93.2				18.1		
Pioneer 321 (4x)	30	0	3	2	92.4			104.9	26.4	25.9	
DeKalb XL-362 (3x)	27	0	2	3	92.0				24.5		
United-Hagie 152A (2x)	26	0	2	4	91.5				23.8		
United-Hagie 158 (2x)	25	0	0	21	91.0			105.9	23.0	24.0	
Northrup King KT 623 (4x)	19	0	1	5	90.7				19.4		
DeKalb 441A (4x)	20	0	1	6	90.5				20.2		
Funks G-4582 (2x)	29	1	1	4	90.3				23.0		
SD 620 (4x)	22	0	1	9	89.3		97.1	94.9	19.6	20.6	
Iowa 5063 (4x)	21	0	1	4	88.6		104.6	97.2	17.8	18.7	
Minn. 301 (3x)	18	0	1	2	88.5				12.7		
Pioneer 328 (4x)	32	1	0	1	88.2	100.1	104.7	98.8	22.1	22.9	
DeKalb XL-65 (2x)	35	1	1	2	87.7				22.4		
Master F-102 (4x)	28	0	1	8	87.4			93.2	18.7	18.0	
Sokota MS-75 (2x)	23	0	1	2	86.9				16.7		
Nebr. 202 (4x)	24	1	4	4	86.5		95.8	87.6	16.6	18.5	
DeKalb 3X1 A (3x)	34	0	1	12	86.2				19.8		
DeKalb 3X1 (3x)	43	1	0	5	86.0		109.8	99.1	26.5	24.4	

DeKalb 3X2 A (3x)	39	0	0	5	85.6				21.4	
Pioneer 3304 (2x)	44	0	1	1	84.7				25.2	
Disco 1090 (4x)	36	1	0	5	84.4			93.2	18.0	19.1
Funks G-93 (4x)	41	0	2	5	84.1			97.0	21.1	21.9
Royal Iowa 5087 (4x)	38	0	1	5	83.6				17.3	
Master F-80 (4x)	33	0	1	7	82.8			87.9	14.9	16.1
Northrup King KM 579 (4x)	37	1	1	4	82.6				15.7	
GreenAcres 446 (4x)	51	0	0	1	82.1	98.3	103.5	96.3	27.0	26.6
Northrup King KT 612 (4x)	42	0	1	4	81.8				20.3	
SD 604 (4x)	40	1	1	5	81.0	89.8	91.0	83.3	15.7	17.8
Disco 112-A (4x)	45	1	1	5	80.6	98.3	102.8	94.2	20.6	19.2
Funks G-96 (4x)	49	0	2	4	80.4				23.9	
Cargill 330 (4x)	52	0	1	4	80.0				24.7	
Northrup King KM 589 (4x)	46	0	0	4	78.4				17.8	
GreenAcres Hopi (4x)	54	0	0	2	77.6				29.1	
Funks G-62 (4x)	50	1	0	9	77.0				19.3	
Master F-90 (4x)	47	2	2	2	76.3			82.1	15.4	16.2
United-Hagie 146 (2x)	48	0	2	14	76.3				16.9	
Cargill 969 (2x)	55	1	1	8	71.7				23.1	
Funks G-4401 (2x)	53	1	1	2	71.3				20.0	
GreenAcres 777 (2x)	56	0	2	42	66.1				22.3	
Cargill 950 (2x)	57	0	2	13	64.5				22.0	
DeKalb 805 (2x)	58	1	2	23	60.9				23.5	
			Mean		88.0				20.6	
CV - 16%			L.S.D. (.05)		19.2					

R.L. - Root lodged S.B. - Stalks broken E.D. - Ears dropped

TABLE 11. AREA C1 CORN PERFORMANCE TRIAL, REDFIELD DEVELOPMENT FARM, REDFIELD, 1964

Variety	Performance Score	Percent R.L.*	Percent S.B.*	Yield, bu/ac	Percent Moisture	Statistical Significance
SD 248 (3x)	1	5	0	55.8	24.1	
Sokota 463 (4x)	3	1	0	52.3	37.7	
Pioneer 3812 (4x)	2	1	0	51.9	23.3	
Sokota TS-50 (2x)	4	2	0	47.3	25.1	
SD 270 (4x)	5	1	0	47.0	26.0	
SD Exp 47 (4x)	6	4	0	46.0	28.9	
Pioneer 3622 (4x)	9	1	1	45.8	32.7	
SD 250 (4x)	7	3	0	44.2	24.6	
Pioneer 3681 (4x)	10	1	1	42.3	26.4	
Funks G-18A (4x)	13	4	0	42.2	32.0	
Master F-31A (4x)	8	3	0	42.0	20.8	
DeKalb XL-304 (3x)	11	1	0	40.4	24.4	
Northrup King KE 449 (4x)	12	0	1	39.9	24.9	
Funks G-15A (4x)	16	2	0	39.8	31.8	
Disco 101-A (4x)	17	1	0	39.4	31.5	
SD 240 (4x)	15	5	0	39.3	26.6	
Master F-30 (4x)	14	0	1	38.9	24.2	
Pioneer 385 (4x)	19	4	1	38.6	31.3	
Sokota 407A (4x)	21	0	0	38.3	33.4	
Pioneer 368-A (4x)	23	2	0	37.4	36.7	
Sokota 407 (4x)	22	0	0	36.4	33.4	
Pioneer 3854 (4x)	18	1	0	36.2	24.1	
Sokota 405 (4x)	25	1	0	36.1	35.2	
Disco 1030 (4x)	30	2	0	34.3	36.1	
SD 220 (4x)	20	1	1	34.1	19.9	
Funks G-17A (4x)	27	12	0	33.8	33.0	
Master F-70 (4x)	26	2	0	33.5	32.0	
Northrup King KE 475 (4x)	24	1	2	33.3	25.8	
Funks G-37 (4x)	33	1	0	32.6	35.7	
DeKalb XL-308 (3x)	29	5	1	32.5	30.8	
Master F-34 (4x)	28	2	0	31.7	28.2	
Pioneer 3648 (4x)	35	3	0	31.4	37.7	
Pioneer 3775 (2x)	37	2	0	29.8	37.7	
DeKalb 45 (4x)	31	0	0	29.5	23.7	
DeKalb XL-325 (3x)	38	0	0	29.3	41.7	
Northrup King KE 471 (4x)	34	5	7	29.2	31.0	
DeKalb XL-15 (2x)	36	1	0	29.2	33.8	
Master F-35 (4x)	32	4	0	28.5	23.9	
Funks G-4390 (2x)	39	0	1	28.0	38.8	
Northrup King KE 497 (4x)	40	1	1	20.0	35.2	
		Mean		37.5	30.1	
CV - 24%		L.S.D. (.05)		12.6		

* R.L. - Root lodged S.B. - Stalk broken

TABLE 12. THE CORN HYBRIDS ENTERED FOR TESTING IN THE 1964 SOUTH DAKOTA CORN PERFORMANCE TRIALS AND THE TABLES IN WHICH THE RESULTS APPEAR

VARIETY	TABLE	VARIETY	TABLE	VARIETY	TABLE	VARIETY	TABLE	VARIETY	TABLE
CARGILL 277	10	FUNKS G-10A	3,4,5,6	NORTHRUP KING KE 435	3	PIONEER 3775	7,8,11	SD 210	3,4,5,6
CARGILL 330	10	FUNKS G-15A	3,5,7,11	NORTHRUP KING KE 449	5,11	PIONEER 3812	3,4,5,6,11	SD 220	3,4,5,6,11
CARGILL 458	9	FUNKS G-17A	5,6,7,8,11	NORTHRUP KING KE 471	3,5,11	PIONEER 384	3,4,5,6	SD 240	3,4,5,6,7,8,11
CARGILL 577	3,4,7,8	FUNKS G-18A	3,5,6,7,8,11	NORTHRUP KING KE 475	5,11	PIONEER 385	3,4,5,6,7,8,11	SD 248	5,6,7,8,11
CARGILL 590	3,4,5,6	FUNKS G-37	7,11	NORTHRUP KING KE 497	5,7,11			SD 250	3,4,5,6,7,8,11
		FUNKS G-62	9,10			PIONEER 3854	3,5,11		
CARGILL 644	5,6			NORTHRUP KING KM 555	7	PIONEER 3862	3,4,5,6	SD 270	7,8,11
CARGILL 666	7,8	FUNKS G-76	9	NORTHRUP KING KM 567	7	PIONEER 388	3,4,5,6	SD 400	7,8
CARGILL 680	7,8	FUNKS G-83	9	NORTHRUP KING KM 579	9,10	PIONEER 391	3,4	SD 420	9
CARGILL 950	10	FUNKS G-93	10	NORTHRUP KING KM 589	9,10			SD 604	10
CARGILL 969	10	FUNKS G-96	10	NORTHRUP KING KT 1	a	ROYAL IOWA 5087	9,10	SD 620	9,10
		FUNKS G-4390[b]	5,7,9,10,11					SD 622	10
DEKALB 45	3,4,11	FUNKS G-4401	9,10	NORTHRUP KING KT 6	9	SOKOTA 215	3,4,5,6		
DEKALB 57	3,4,5,6	FUNKS G-4582[b]	9,10	NORTHRUP KING KT 612	9,10	SOKOTA 225	3,4,5,6	SD EX 37	a
DEKALB 59	5,6,7,8			NORTHRUP KING KT 623	9,10	SOKOTA 255	3,4,5,6,7,8	SD EX 39	5,6
DEKALB 222	7,8	GREENACRES 003	9	NORTHRUP KING KT 623A	9	SOKOTA 405	7,11	SD EX 41	7,8
DEKALB 224	7,8	GREENACRES 004	9					SD EX 43	3
		GREENACRES 446	9,10	NORTHRUP KING PX 35	5,7	SOKOTA 407	7,8,11		
DEKALB 415A	9	GREENACRES 462	9	NORTHRUP KING PX 66	9,10	SOKOTA 407A	7,11	SD EX 44	3
DEKALB 441	9,10	GREENACRES 777	10	NORTHRUP KING PX 481	5,7	SOKOTA 463	9,11	SD EX 45	9,10
DEKALB 441A	9,10	GREENACRES HOPI	10	NORTHRUP KING PX 487	5,7	SOKOTA 619	9,10	SD EX 46	9
DEKALB XL-15	3,5,11			NORTHRUP KING PX 530	7			SD EX 47	11
DEKALB XL-45	7,9	IOWA 5063	9,10			SOKOTA 625	9		
				PIONEER 321	10	SOKOTA 645	9,10		
DEKALB XL-65	10	MASTER F-15	3	PIONEER 328	9,10	SOKOTA TS-50	3,5,7		
DEKALB XL-304	11	MASTER F-30	3,4,5,6,11	PIONEER 3291	9,10	SOKOTA MS-75[c]	9,10		
DEKALB XL-308	3,5,11	MASTER F-31A	3,4,5,6,11	PIONEER 3304	10				
DEKALB XL-325	3,5,7,11	MASTER F-34	3,4,5,6,7,11	PIONEER 3306	10	UNITED-HAGIE 3H30	5		
DEKALB XL-361	10	MASTER F-35	3,4,5,6,11			UNITED-HAGIE 3H39	5,7,8		
				PIONEER 3414	9,10	UNITED-HAGIE 138B	5,7		
DEKALB XL-362	10	MASTER F-70	5,6,7,8,11	PIONEER 3418	9,10	UNITED-HAGIE 130	5,7		
DEKALB 3X1	10	MASTER F-80	5,7,8,9,10	PIONEER 3510	9				
DEKALB 3X1A	10	MASTER F-84	7	PIONEER 354	9	UNITED-HAGIE 52B	9		
DEKALB 3X2A	10	MASTER F-90	7,9,10	PIONEER 3558	9,10	UNITED-HAGIE 146	9,10		
DEKALB 3X3	9	MASTER F-102	9,10			UNITED-HAGIE 1500[d]	9,10		
DEKALB 805	10			PIONEER 3618	a	UNITED-HAGIE 152A	9,10		
		MINN. 301	10	PIONEER 362	7,8,9				
DISCO 101-A	7,8,11	MINN. 313	7,9	PIONEER 3622	7,11	UNITED-HAGIE 126	7		
DISCO 1030	7,8,11	MINN. 417	10	PIONEER 3658	5,6,7,8,11	UNITED-HAGIE 142	9		
DISCO 108AA	7,8	MINN. 515	7,9	PIONEER 3681	5,7,11	UNITED-HAGIE 158	10		
DISCO 1090	9,10	MINN. 519	7,9	PIONEER 368A	7,8,11	UNITED-HAGIE 1580[d]	10		
DISCO 112A	9,10			PIONEER 376	7,8	UNITED-HAGIE 147	10		
		NEBR. 202	9,10						

a - Entered in a trial not harvested
b - Special cross
c - Modified single
d - 2x line cross

TABLE 4. TWO- AND THREE-YEAR AVERAGE YIELDS AND MOISTURE PERCENTAGES OF HYBRID ENTRIES INCLUDED IN THE B2 TRIAL FROM 1962-1964

Variety	Yield, bu/ac		Percent Moisture	
	1962-64	1963-64	1962-64	1963-64
Cargill 577	40.8	28.2	31.1	22.8
Cargill 590	41.1	29.2	26.8	23.2
DeKalb 57		22.0		30.0
Funks G-10A		29.2		26.4
Master F-30		27.9		21.4
Master F-31A		29.0		20.1
Master F-34		28.5		28.4
Master F-35		24.6		20.5
Pioneer 3812		29.1		24.0
Pioneer 384	40.3	28.7	28.2	25.3
Pioneer 385	44.1	29.9	29.1	26.2
Pioneer 3862	36.9	28.1	22.4	19.4
Pioneer 388	37.0	26.5	23.6	21.2
Pioneer 391	39.1	32.1	22.7	19.5
Sokota 215		27.6		21.5
Sokota 225		28.7		17.8
Sokota 255	37.2	26.5	32.0	23.4
SD 210	34.1	27.1	21.7	18.0
SD 220	35.6	26.3	22.4	18.0
SD 240	42.8	32.8	26.3	21.9
SD 250	39.9	29.0	27.2	22.9