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1966 Grain Sorghum Performance Trials

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Grain Sorghum Performance Trials were seeded at nine locations in 1966. Entries in the 1966 trials included varieties presently grown by farmers, newer varieties not yet widely used and new strains still undergoing evaluation. The trials were under supervision of the Crop Performance Testing Activity, Agricultural Experiment Station.

Location of the 1966 Trials

The various entries must be grown under similar environmental conditions to adequately evaluate their performance. The crop adaptation areas in which the trials were located are based upon differences in soil type, elevation, temperature, rainfall and other physical differences. The exact location of these trials and dates of seeding and harvesting are reported in Table 1. Data from soil samples taken at several sites prior to or at time of seeding are presented in Table 2.

Weather and Climatic Conditions

Climatic data for the 1966 grain sorghum growing season are based upon Monthly Climatological Data, U. S. Department of Commerce and from reports of the substation superintendents at the Northeast and South Central Research Farms.

Seeding of the grain sorghum trials began on May 23 and was finished by June 1. Soil moisture varied from excellent to poor. Germination was quite rapid and uniform at all but two locations, Cottonwood and Platte. Conditions were unfavorable at the Cottonwood site until late in the season, resulting in immature plants at time of harvest. The trial was of little value and not harvested.

Precipitation was adequate for uninterrupted growth at the remaining locations. It was high in August, normally the month when rainfall is limited and growth is seriously retarded.

The assistance of the following named individuals is acknowledged: A. O. Lunden of the Agronomy Department; Substation supervisors Bernard Beer, Albert Dittman, Lloyd Dye, Jake Fredrikson, Harry Geise, Frank Holmes, Quentin Kingsley, Herb Lund, Burton Lawrensen, and Lenis Nelson; and farmer-cooperator Melvin Hoffman.

TABLE 1. THE LOCATION OF TRIALS AND DATES OF SEEDING AND HARVESTING OF GRAIN SORGHUM PERFORMANCE TRIALS, SOUTH DAKOTA, 1966

County	Location and post office	Date Seeded	Date Harvested
Brookings	Agronomy Farm, Brookings	May 24	October 5
Charles Mix	Melvin Hoffman, 6N, 2 1/2 E, Platte	May 24	October 3
Clay	Southeast Research Farm, Beresford	May 25	October 7
Codington	Northeast Research Farm, Watertown	June 1	September 27
Hyde	Central Substation, Highmore	May 27	September 28
Jackson	Range Field Station, Cottonwood	May 26	*
Lyman	South Central Research Farm, Presho	May 26	October 4
McPherson	North Central Substation, Eureka	June 1	September 29
Spink	Redfield Development Farm, Redfield	May 23	September 30

*Plants immature at harvest time, not harvested.

Temperatures of 100 degrees or more occurred early in July. Generally, temperatures were below normal the other months. Cooler temperatures have an adverse effect on sorghum development but fortunately the killing freeze did not occur until very late September or early October and much of the material had ample opportunity to reach physiological maturity before growth was stopped.

Evidence of the favorable growing season can be noted in most of the tables. Moisture samples taken on September 20 and 21 indicated many entries still contained excessive amounts of moisture. However, the test weights of the grain harvested within two weeks following the sampling date are generally above 56 pounds per bushel, the test weight of No. 1 grain sorghum.

Lodging was not severe at the time the plots were harvested. Strong winds in early October could have caused serious lodging in varieties that had matured and begun to dry down.

TABLE 2. SOIL CLASSIFICATION, LABORATORY ANALYSIS OF SOIL SAMPLES TAKEN PRIOR TO SEEDING GRAIN SORGHUM TRIALS AND FERTILIZER APPLIED FOR 1966 CROP YEAR

Location and area	Soil classification	Laboratory analysis org. mat.	P lbs/A	K lbs/A	pH	Fertilizer applied N lbs/A	P2O5 lbs/A	method
Brookings, D3	Vienna loam	4.0	98	171	7.3	81	39	plowed down
Platte, C2	Reliance-like si lm	3.2	62	533	7.3	6	13	liquid starter
Beresford, E	Kranzburg si cl lm	3.1	78	533	6.4	33	35	disced under
NE Farm, D2	Krnazburg silt loam	3.6	53	192	6.4	60	40	disced under
Highmore, B2	Williams loam	2.1	42	287	6.0	fallowed ground		
Cottonwood, B3	Pierre clay	2.3	72	533	7.0	fallowed ground		
Presho, B3	Pierre clay	3.3	20	533	7.7	44	20	plowed down
Eureka, B2	Williams loam	3.4	15	394	7.6	24	16	disced under
Redfield, C1	Boetia-Harmony si cl lm	3.1	86	533	7.2	40	0	disced under

Hybrid Entry Procedure

Grain sorghum hybrids offered for sale in South Dakota during 1966 or being produced for distribution in 1967 were eligible for entry. A closed-pedigree hybrid was entered by permanent name and number under which it was sold by the parent company only. Varieties entered maintained minimum laboratory germination of 80 percent as required by South Dakota Certification Standards. A nominal fee was charged for each entry in each area except grain sorghum developed by State and Federal Experiment Stations and entered by the South Dakota Experiment Station.

Experimental Procedure

Each trial consisted of four replications and within each replication plots of individual entries were randomly located. Two trials, Platte and Redfield, were hand planted with a small garden planter. The Platte trial was on listed ground and the Redfield trial in 21-inch row spacings. The remaining trials were seeded in 40-inch rows, 2 rows at a time, with a cone planter mounted above runner-type corn planter units. The plots were two rows wide and row lengths varied with range dimensions at each location.

The harvested grain was taken from two ten-foot sections of each row in each individual plot. The heads were put into cloth bags as harvested, identified, returned to the Main Station and allowed to air dry in a pole shed for several weeks. Prior to threshing the bags were placed in driers for several days. The average moisture in samples taken following threshing was just over eight percent. Yields were calculated on the basis of 100 pound units per acre. Three replications were harvested for yield determinations and the fourth was left for observational purposes.

It was decided that moisture samples taken at time of harvest were not as reliable and informative as samples that would be taken just prior to the normal first-frost date. These figures and the test weight of the grain would indicate maturity more realistically.

A route was established and moisture samples were taken from all plots on September 20 and 21, save Brookings which was taken on September 23. Ten to twelve heads, enough for a 400-500 gram sample, were cut from each entry, placed in a polyethylene bag, tagged and sealed tightly. Upon returning to the Main Station the samples were threshed, cleaned and moisture percentages determined with an electronic moisture meter. The upper limit of the meter was 35 percent moisture. Material above this level is indicated as 35.1+ in the tables and normally would indicate material of late maturity for this area. Killing frost did not occur until early October and the high test wieghts indicate many entries were physiologically mature but the cool, wet, frost-free growing period had not allowed the material to begin drying down to levels safe for storage.

A bird repellant was used on all but one of the trials, and little damage was evident on that trial. The trials are put out to determine maximum potential of the entries. The birds do not damage all sorghums equally. The repellant is not harmful to the birds but is bitter to the taste and discourages continual picking. Seed and forage so treated is unfit for food or feed so treatment is limited to fields planted for seed production or experimental use.

Measurements of Performance

Variations in soil fertility, slope and stands may cause varieties of equal potential to yield differently. Mathematical determinations were made to determine whether yield differences were caused by variations in environment or were true varietal differences. Small yield differences have no significance. If the trials were found not to be statistically different a notation, N.S., is shown under the table. Where 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 at the five-percent level.

As an example of Duncan's Test, note in Table 4 that varieties accompanied by the same lower case letter under the right hand column are not statistically different in 1966 yields. In the case of this table, under prevailing environmental conditions, Colo. 606, NK 125 and all entries in descending order through T-E 44 were not statistically different from each other in yield. The above example holds true for all the tables having significant differences in 1966 yields.

Discussion of Results

Many areas of South Dakota are normally too hot and too dry for corn production. Grain sorghums are grown extensively in these areas. In 1966, conditions were somewhat reversed with the greater quantities of precipitation and cooler temperatures occurring during the latter part of the summer.

Conditions were favorable for seedbed preparation and planting of sorghum in late May and early June. If soil moisture was adequate, germination was uniform though possibly slow because of the cool temperatures. In some cases the extended period of cooler temperatures caused losses of stand. Where germination was normal, the plants made reasonable growth. Precipitation was limited around the state until mid-July. The drouth extended into mid-August in many areas. Rainfall was widespread in mid-August but some fields were beyond reasonable recovery. Where crops capable of recovery after drouth, as grain sorghum, received the August rains, growth resumed and yields were quite surprisingly large. A delay of killing frosts until late September or early October was also beneficial as maturity was attained by many varieties slowed by the cooler temperatures accompanying the rainy periods.

The ability of sorghum to produce in areas too hot and too dry for corn was evident at Brookings in 1966. Rainfall was below normal in July and part of August. Precipitation data show that over 3 inches fell in August but over 2 inches of this fell in a downpour of short duration and much of the moisture was lost to run-off. The yields though equal to corn in the area were of somewhat poorer quality than at other sites.

Even though the general area suffered from drouth, the trial at Platte produced some excellent yields of good quality. Generally, the early maturing entries suffered most from the drouth whereas those of later maturity were able to make excellent use of the rains that began in mid-August. Yields ranged from 64.4 down to 26.4 (100#/A).

The trial at the Southeast Farm was very good, as were yields of most row crops in that area. Yields ranged from a respectable low of 43.6 to an excellent 70.9 (100#/A).

TABLE 3. TEMPERATURE AND PERCIPITATION DATA FOR THE 1966 GRAIN SORGHUM GROWING SEASON IN SOUTH DAKOTA

		Temperature, degrees F			Precipitation, inches		
Location	Month	Mean average	Departure from normal	Average departure	Month total	Departure from normal	Total departure
Brookings	May	52.3	-5.3		1.31	-1.48	
1E	June	65.6	-1.5		5.21	1.26	
	July	75.0	1.8		1.39	-0.76	
D3	August	66.3	-4.9		3.01	0.04	
	Sept.	58.6	-2.7	-2.5	1.35	-0.68	-1.62
					12.27		
	Last freeze 32° - May 11				First frost 30° - Sept. 15		
Platte	May	58.8	0.0		0.99		
	June	70.8	1.7		2.89		
	July	82.2	5.4		2.72		
C2	August	71.4	-3.4		4.36		
	Sept.	63.5	-1.0	0.5	1.53		
					12.49		
	Last freeze 25° - May 13				First frost 32° - Oct. 1		
Centerville	May	57.9			1.20		
6SE	June	70.0			2.82		
	July	76.9			6.72		
E	August	68.4			3.58		
	Sept.	60.6			4.78		
					19.10		
	Last freeze 30° - May 13				First frost 27° - Oct. 5		
NE Farm	May	49.2			0.77		
	June	64.0			1.88		
	July	73.3			2.19		
D2	August	64.8			4.59		
	Sept.	58.2			1.53		
					10.96		
	Last freeze 32° - May 19				First frost 30° - Sept. 14		
Highmore	May	55.8	-1.4		0.95	-1.38	
1W	June	67.7	0.9		2.50	-1.04	
	July	78.6	4.1		3.65	1.67	
B2	August	68.9	-3.9		3.83	1.79	
	Sept.	61.2	-1.4	-0.3	2.25	0.94	-1.98
					13.18		
	Last freeze 26° - May 13				First frost 26° - Oct. 1		
Presho	May	57.9			0.61		
11S	June	68.2			3.13		
	July	78.9			2.17		
B3	August	68.6			4.51		
	Sept.	64.9			1.21		
					11.63		
	Last freeze 25° - May 13				First frost 32° - Sept. 15		

Eureka	May	54.1	-2.0		0.83	-1.76	
	June	66.2	1.2		2.11	-1.72	
	July	75.7	3.3		2.98	0.53	
B2	August	66.0	-4.7		3.37	0.96	
	Sept.	58.4	-1.7	-0.8	0.69	-0.63	-2.62
					9.98		
	Last freeze 28° - May 13				First frost 32° - Sept. 14		
Redfield	May	55.9			1.08		
6E	June	68.1			2.93		
	July	78.4			5.28		
C1	August	68.0			5.65		
	Sept.	60.2			2.14		
					17.08		
	Last freeze 30° - May 13				First frost 30° - Oct. 1		

Conditions at planting time were excellent at Watertown. However, limited rainfall in the early part of the season and cooler temperatures later in the growing period retarded growth. Few of the entries had less than 35 percent moisture on September 20 and the test weight of the harvested grain indicates that the material was not of the highest quality. Yields ranged from 34.1 to 23.2 (100#/A).

Conditions at Highmore were favorable during most of the growing season resulting in yields of good quality grain. Yields ranged from 51.6 down to 38.6 (100#/A).

The Presho trial started rather slowly but conditions improved and the yields were quite satisfactory. Most of the entries were near maturity by September 21, and test weights of the harvested grain were exceptionally high.

The Eureka trial survived several periods of adverse weather. Limited rainfall in May and June coupled with above normal June and July temperatures slowed progress. Ample rain was received in August but the accompanying cooler temperatures delayed heading by at least two weeks. Only two entries were below 35 percent moisture by September 20 and the test weight indicate many were still quite immature at harvest.

The narrow row trial at Redfield was irrigated twice and produced satisfactory yields, however, they were not much better than some dryland trials. Cool weather after planting delayed early growth and reduced some of the advantages irrigation may have provided. Yields ranged from 51.4 down to 30.6 (100#/A).

The Grain Sorghum Performance Trials have been supervised by the Crop Performance Testing Activity since 1962. During this period several entries have been included every year and have not varied greatly in rank from year to year. In making selections of hybrids to plant, factors other than yield should be also considered. Several of these factors are standability, maturity, head type, quality, disease resistance, insect resistance and adaptability to combine harvesting.

A summary of the entries tested and the companies submitting them is presented in Table 20.

TABLE 4. 1966 GRAIN SORGHUM PERFORMANCE TRIAL, AREA D3, AGRONOMY FARM, BROOKINGS

Variety	Percent moisture 9/23/66	Test Wt. lb/bu	Yield 100#/A	Statistical significance
Colo. 604	28.9	58.0	55.4	a
NK 125	29.4	55.0	53.6	ab
SD 451	23.6	56.0	50.6	abc
Pawnee	31.9	59.0	50.0	abcd
Nebr. 504	30.0	56.0	49.6	abcd
Colo. 606	29.5	54.0	49.1	abcde
NK 115	20.5	55.0	49.0	abcde
T-E Grainmaster A	35.1+	54.0	48.4	abcde
NK 133	30.0	55.0	47.6	abcde
PAG 304	20.5	57.0	47.4	abcde
T-E 44	33.7	53.0	47.2	abcde
RS 610	35.1+	53.0	46.5	bcde
DeKalb DD-50	35.1+	52.0	45.9	bcde
SD 441	17.3	56.0	45.4	bcde
SD 503	25.1	55.0	44.1	cdef
DeKalb B 32	31.9	57.0	43.5	cdef
NK 222	35.1+	52.0	42.4	cdef
T-E 44C	30.5	56.0	41.9	cdef
Colo. 585	32.6	58.0	41.3	cdef
Pioneer 885	31.9	54.0	41.2	def
Comanche	35.1+	54.0	39.6	ef
Pioneer 872	35.1+	50.0	39.4	ef
Pioneer 872A	35.1+	52.0	39.4	ef
Sokota P-50	19.9	55.0	34.1	f
Mean			45.5	

C.V. = 11.5%

+Electronic moisture meter only calibrated to 35 percent. Sign indicates moisture in grain was above 35.

TABLE 5. TWO-, THREE-, FOUR-, AND FIVE YEAR AVERAGE YIELDS OF GRAIN SORGHUM HYBRIDS ENTERED IN THE AREA D3 TRIAL AT BROOKINGS, 1962-1966

Variety	Average yields, 100 pounds per acre			
	1962-66	1963-66	1964-66	1965-66
DeKalb B-32				40.0
NK 125	43.8a	48.0a		42.3
NK 133			44.9	42.6
NK 222	39.0	42.6	35.6	37.9
Comanche				32.3
Pawnee				42.6
PAG 304				39.6
Pioneer 885		41.6	34.6	36.0
Pioneer 872				33.7
T-E 44			38.7	39.3
RS 610	42.7	47.1	39.4	40.0
Nebr. 504				43.2
Colo. 585				37.9
Colo. 604				43.1
Colo. 606				39.6
SD 441	39.3	41.9	38.0	38.4
SD 451	42.1	45.7	40.9	40.7
SD 503	46.3	49.9	42.8	39.6

a not entered in 1964

TABLE 6. 1966 GRAIN SORGHUM PERFORMANCE TRIAL, AREA C2, MELVIN HOFFMAN FARM, PLATTE

Variety	Height inches	Percent moisture 9/21/66	Test Wt. lb/bu	Yield 100#/A	Statistical significance
T-E Grainmaster A	42	24.8	59.0	64.4	a
Pawnee	45	18.6	60.0	60.0	ab
Pioneer 872A	39	26.4	60.0	57.0	abc
PAG 430	40	32.9	59.0	56.3	abcd
DeKalb DD-50	40	25.6	59.0	56.0	abcde
Sokota 510	43	23.2	59.0	54.9	abcdef
Pioneer 872	39	24.8	59.0	54.1	abcdef
Colo. 606	44	20.8	60.0	53.5	abcdefg
Ute	38	23.9	60.0	52.7	bcdefgh
Pioneer 885	39	22.6	60.0	52.6	bcdefgh
RS 610	39	26.4	59.5	51.1	bcdefghi
SD 503	43	19.5	58.0	50.8	bcdefghi
NK 222	37	28.7	60.0	49.1	bcdefghi
Nebr. 504	44	18.6	59.0	49.1	bcdefghi
T-E 44	31	14.4	57.0	48.8	bcdefghi
T-E Exp 22128	45	18.7	58.5	48.8	bcdefghi
Colo. 585	50	18.0	59.0	48.0	cdefghi
Kiowa	38	28.0	58.0	47.4	cdefghi
PAG 400	39	18.5	59.0	45.8	cdefghi
SD 451	45	17.1	57.0	45.0	cdefghi
T-E Exp 07128	48	18.0	59.0	44.7	cdefghi
Colo. 604	44	20.1	59.0	44.3	defghi
PAG 304	34	18.1	58.0	44.3	defghi
Tasco	41	27.4	57.0	44.3	defghi
NK 133	36	18.2	60.0	43.9	defghi
NK 120	40	19.1	57.0	43.6	efghi
T-E 44C	40	17.4	57.5	42.6	fghi
Rico	39	30.9	57.0	42.6	fghi
Comanche	37	21.3	59.0	42.3	fghi
NK 125	41	15.5	56.0	40.4	ghij
T-E Exp 22120	40	19.2	58.0	39.4	hij
T-E Exp 07120	39	17.0	59.0	38.8	ij
NK 115	36	15.1	56.0	26.4	j
Mean				48.0	

C.V. = 14.4%

TABLE 7. TWO-, AND THREE-YEAR AVERAGE YIELDS OF GRAIN SORGHUM HYBRIDS ENTERED IN THE AREA C2 TRIAL AT PLATTE FROM 1963-1966

Variety	Average yields, 100 lbs/acre	
	1963-66a	1964-66a
NK 133		42.6
Comanche		42.4
Kiowa		46.1
Pawnee		48.8
Ute		48.0
PAG 304		38.1
PAG 430		50.3
Pioneer 885	48.9	51.8
Pioneer 872		53.9
T-E 44		43.3
RS 610	48.4	37.8
Colo. 604		40.4
Colo. 606		47.5
SD 451	36.5	39.2
SD 503	41.4	44.3

a 1965 not included, hailed out

TABLE 8. 1966 GRAIN SORGHUM PERFORMANCE TRIAL, AREA E, SOUTHEAST RESEARCH FARM, BERESFORD

Variety	Height inches	Percent moisture 9/20/66	Test Wt. lb/bu	Yield 100#/A	Statistical significance
Frontier 400B	48	33.2	58.5	70.9	a
RS 610	47	30.0	59.0	70.0	ab
Pioneer 846	49	35.1+	60.0	69.4	abc
DeKalb DD-50	47	34.6	58.0	69.2	abcd
T-E Grainmaster A	47	25.3	59.0	68.9	abcde
Rico	50	35.1+	57.0	68.0	abcdef
Frontier S 400	44	24.6	59.0	67.0	abcdefg
PAG 430	45	21.6	59.0	66.5	abcdefgh
NK 227	48	29.3	59.0	66.1	abcdefghi
T-E 44	42	22.4	59.0	65.9	abcdefghij
Frontier 401	45	24.5	59.0	65.4	abcdefghijk
Sokota 510	46	28.7	59.0	65.1	bcdefghijkl
Colo. 606	54	32.3	60.0	65.1	bcdefghijkl
Ute	44	25.0	61.0	64.9	bcdefghijkl
NK 222	45	29.0	60.0	63.9	cdefghijklm
Kiowa	50	30.7	59.5	63.7	cdefghijklmn
NK 212	45	29.4	59.5	63.6	cdefghijklmn
Pioneer 872	46	28.2	59.0	63.4	cdefghijklmn
Frontier 388	42	29.7	59.5	63.0	defghijklmn
Pioneer 885	45	25.1	59.5	62.5	efghijklmn
Tasco	50	27.7	57.5	62.3	fghijklmn
DeKalb C44b	50	32.0	57.0	62.1	fghijklmn
Frontier 375	45	23.6	59.0	62.1	fghijklmn
SD 451	51	19.2	57.0	60.4	ghijklmn
Comanche	45	20.7	59.0	59.9	hijklmno
Excel 202	50	24.5	58.5	59.5	ijklmnop
Excel 303	43	25.4	58.5	59.3	jklmnop
PAG 304	39	23.4	59.0	58.6	klmnop
Pawnee	51	24.3	60.0	58.4	lmnop
Nebr. 504	49	21.4	60.0	57.9	mnopq
NK 133	44	27.3	60.0	56.8	nopq
Curry M520	47	20.7	60.0	52.9	opqr
Excel 202A	43	22.4	57.0	52.5	pqr
Colo. 604	50	22.5	60.0	51.1	qr
T-E 44C	46	24.6	59.5	51.0	qr
SD 503	46	27.4	59.0	49.4	rs
Colo. 585	50	20.7	60.0	43.6	s
Mean				61.6	

+Electronic moisture meter only calibrated to 35 percent. Sign indicates moisture in grain was above 35.

C.V. = 5.6%

TABLE 9. TWO-, THREE-, FOUR-, AND FIVE-YEAR AVERAGE YIELDS OF GRAIN SORGHUM HYBRIDS ENTERED IN THE AREA E TRIAL AT BERESFORD, 1962-1966

Variety	Average yields, 100 pounds per acre			
	1962-66	1963-66	1964-66	1965-66
Rico				50.5
Tasco				47.9
DeKalb C44b		45.9	45.5	54.9
Excel 202				53.1
Frontier 388	43.9a	43.5a	42.8a	
Frontier 401		44.2a	43.6a	
Frontier 400B				56.9
NK 133			43.6	50.9
NK 212			45.8	54.9
NK 222	46.5	44.9	45.9	52.7
NK 227	47.3	45.9	45.7	55.9
Comanche	42.9b		41.5	50.5
Kiowa			42.4	53.3
Pawnee			39.8	47.4
Ute			39.7	48.5
PAG 304			39.6	47.2
PAG 430			45.5	55.1
Pioneer 846			44.9	55.5
T-E 44			45.7	56.2
RS 610	49.6	47.3	47.7	57.5
Nebr. 504		49.8c		51.8
Colo. 585				38.0
Colo. 604				44.4
Colo. 606			41.9	49.6
SD 451	43.3	41.9	43.1	52.3
SD 503	44.0	41.2	40.1	45.4

a not entered in 1965
b not entered in 1963
c not entered in 1964

TABLE 10. 1966 GRAIN SORGHUM PERFORMANCE TRIAL, AREA D2, NORTHEAST RESEARCH FARM, WATERTOWN UNIT

Variety	Height inches	Percent moisture 9/20/66	Test Wt. lb/bu	Yield 100#/A	Statistical significance
T-E Exp 22128	46	35.1+	54.0	34.1	a
SD 451	45	35.1+	55.0	33.8	ab
T-E Exp 07128	46	35.1+	57.0	33.0	abc
NK 120	41	34.5	54.0	32.3	abcd
Pawnee	44	34.7	57.0	31.4	abcde
T-E 44C	43	35.1+	55.0	31.1	abcde
NK 133	41	35.1+	54.0	30.8	abcde
T-E Exp 22120	40	35.1+	55.0	30.8	abcde
Excel 202A	42	35.1+	54.0	30.5	abcde
Nebr. 504	44	35.1+	55.0	30.0	abcde
DeKalb B 32	42	35.1+	55.0	30.0	avcde
SD 441	48	31.9	55.0	29.7	abcde
NK 115	42	33.1	54.0	29.6	abcde
T-E Exp 07120	42	35.1+	56.0	29.5	abcde
SD 503	47	35.1+	54.0	29.3	bcde
NK 125	44	35.1+	52.0	29.2	bcde
Colo. 585	47	35.1+	56.0	28.0	cdef
PAG 304	35	35.1+	54.0	27.2	def
PAG 400	44	35.1+	54.0	26.9	ef
Pioneer 885	40	35.1+	52.0	23.2	f
Mean				30.0	

C.V. = 9.2%

+Electronic moisture meter only calibrated to 35 percent. Sign indicates moisture in grain was above 35.

TABLE 11. TWO-, THREE-, FOUR-, AND FIVE-YEAR AVERAGE YIELDS OF GRAIN SORGHUM HYBRIDS ENTERED IN THE AREA D2 TRIAL AT WATERTOWN, 1962-1966

Variety	Average yields, 100 pounds per acre			
	1962-66	1963-66	1964-66	1965-66
DeKalb B-32			22.9	24.7
NK 115			27.7	27.5
NK 120	27.7	31.6	27.4	27.5
NK 125	25.8	30.1	26.8	25.8
NK 130			26.7	25.7
Pawnee			25.9	25.5
PAG 304			20.7	22.2
Pioneer 885				15.8
Nebr. 504				23.5
Colo. 585				22.8
SD 441	25.7	27.7	24.0	25.4
SD 451	25.8	28.9	25.0	25.8
SD 503	28.4	32.0	25.7	26.2

TABLE 12. 1966 GRAIN SORGHUM PERFORMANCE TRIAL, AREA B2, CENTRAL SUBSTATION, HIGHMORE

Variety	Height inches	Percent moisture 9/20/66	Test Wt. lb/bu	Yield 100#/A
NK 133	37	33.7	55.0	51.6
Pioneer 885	40	35.1+	57.0	50.2
Frontier 388	43	35.1+	57.0	49.9
NK 120	41	29.5	56.0	49.8
Colo. 585	41	33.6	58.0	49.7
Comanche	37	35.1+	55.0	49.6
T-E 44	39	34.1	56.0	48.4
NK 125	42	28.6	55.5	47.2
PAG 304	39	34.9	57.5	46.7
SD 441	41	27.8	56.0	45.7
DeKalb B-32	42	30.2	57.0	45.7
SD 503	42	35.1+	56.0	45.5
PAG 430	42	35.1+	56.0	45.2
Excel 303	40	31.6	57.0	44.9
Frontier 400B	40	35.1+	54.0	44.4
Frontier S-400	41	35.1+	55.5	43.7
T-E Exp 07128	42	28.0	58.0	43.7
Pawnee	44	32.8	57.0	43.4
T-E Exp 22128	43	32.6	57.0	43.2
Nebr. 504	41	34.2	58.0	43.0
T-E Exp 07120	38	32.6	58.0	41.4
SD 451	40	34.0	56.0	41.3
NK 115	40	18.9	55.5	41.1
Excel 202	43	33.8	57.0	40.8
T-E 44C	36	29.9	57.0	39.0
PAG 400	38	35.1+	57.0	38.7
T-E Exp 22120	40	35.1+	55.0	38.6
Mean				44.9
C.V. = 14.9%				N.S.

+Electronic moisture meter calibrated to only 35 percent moisture. Sign indicates moisture in grain was above 35.

TABLE 13. TWO-, THREE-, FOUR-, AND FIVE-YEAR AVERAGE YIELDS OF GRAIN SORGHUM HYBRIDS ENTERED IN THE AREA B2 TRIAL AT HIGHMORE, 1962-1966

Variety	Average yields, 100 pounds per acre			
	1962-66	1963-66	1964-66	1965-66
DeKalb B-32			25.1	32.6
Excel 202				33.6
Frontier 388	29.3a	25.7a		36.9
NK 115			30.6	33.8
NK 120	33.4	30.8	34.3	37.8
NK 125	33.2	30.5	31.9	35.5
NK 133			29.6	38.2
Comanche			30.1	37.2
Pawnee			23.5	29.0
PAG 304			26.4	35.7
PAG 430			31.0	34.5
Pioneer 885		25.9	30.3	38.9
T-E 44			30.2	36.1
Nebr. 504				32.9
Colo. 585				32.2
SD 441	29.7	27.6	29.4	34.5
SD 451	31.8	29.8	31.8	34.3
SD 503	22.9	16.9	22.1	30.1

a not entered in 1964

TABLE 14. 1966 GRAIN SORGHUM PERFORMANCE TRIAL, AREA B3, SOUTH CENTRAL RESEARCH FARM, PRESHO

Variety	Height inches	Percent moisture 9/21/66	Test Wt. lb/bu	Yield 100#/A	Statistical significance
Colo. 606	42	32.7	61.0	51.0	a
Sokota 510	42	30.6	59.0	47.1	ab
RS 610	42	26.8	58.0	46.8	abc
Pioneer 885	38	32.3	59.0	46.6	abc
Frontier S 400	40	30.8	59.0	44.9	abcd
T-E Exp 22120	40	18.8	59.0	44.4	abcde
Advance 22	44	19.3	59.5	44.3	abcde
Nebr. 504	44	23.2	59.0	42.1	abcdef
Pioneer 872	39	33.3	59.0	41.7	abcdef
Pioneer 872A	38	29.6	59.5	41.0	abcdef
Advance 54	36	22.8	58.5	40.5	abcdef
T-E Exp 22128	46	22.6	57.5	40.3	abcdefg
PAG 304	37	22.2	58.0	40.2	abcdefgh
Frontier 400B	38	35.1+	60.0	39.9	abcdefghi
AMAK R-10	38	28.5	60.0	38.6	bcdefghi
Colo. 604	42	18.3	59.0	38.5	bcdefghi
SD 503	44	23.1	58.0	37.6	bcdefghi
NK 133	41	18.9	59.0	37.5	bcdefghi
DeKalb B-32	43	21.8	59.0	37.1	bcdefghi
Pawnee	44	21.7	59.0	36.8	bcdefghi
Comanche	39	32.3	60.0	36.6	bcdefghi
T-E 44C	45	19.6	58.0	34.8	cdefghi
SD 451	45	21.4	56.0	34.2	cdefghi
Pioneer 865	35	34.2	57.0	32.9	defghi
Frontier 388	39	27.0	59.0	31.7	efghi
T-E 44	36	20.2	58.0	31.6	efghi
T-E Exp 07120	42	18.3	58.0	30.7	fghi
T-E Exp 07128	44	19.4	58.0	29.7	fghi
NK 115	41	17.4	55.0	28.8	fghi
NK 120	42	23.0	57.0	26.5	ghi
Colo. 585	42	19.7	57.0	26.2	hi
NK 125	42	19.1	55.0	26.1	i
Mean				37.7	

C.V. = 18.9%

+Electronic moisture meter only calibrated to 35 percent moisture. Sign indicates moisture in grain was above 35.

TABLE 15. TWO-, THREE-, FOUR-, AND FIVE-YEAR AVERAGE YIELDS OF GRAIN SORGHUM HYBRIDS ENTERED IN THE AREA B3 TRIALS AT PRESHO, 1962-1966

Variety	Average yields, 100 pounds per acre			
	1962-66	1963-66	1964-66	1965-66
Advance 22				29.6
AMAK R-10				27.2
DeKalb B-32			29.7	25.5
Frontier 388	28.5a	29.4a		24.0
NK 115				26.1
NK 120	34.6b	34.2b	30.6b	
NK 125	30.7	31.4	29.6	25.7
NK 133			31.5	28.2
Comanche	30.2	29.8	26.0	23.8
Pawnee			29.6	25.1
PAG 304			30.1	29.5
Pioneer 865				17.0
T-E 44			30.6	27.4
RS 610	34.0	34.5	31.2	28.8
Nebr. 504				31.2
Colo. 585				19.4
Colo. 604				28.1
Colo. 606				33.2
SD 451	31.5	28.6	28.2	26.8
SD 503	34.3	36.7	35.5	35.8

a not entered in 1964
b not entered in 1965

TABLE 16. 1966 GRAIN SORGHUM PERFORMANCE TRIAL, AREA B2, NORTH CENTRAL SUBSTATION, EUREKA

Variety	Height inches	Percent moisture 9/20/66	Test Wt. lb/bu	Yield 100#/A	Statistical significance
T-E Exp 22120	42	35.1+	54.5	27.3	a
T-E Exp 22128	46	35.1+	55.0	26.6	ab
SD 441	52	32.2	53.0	26.3	abc
PAG 304	37	35.1+	55.0	26.1	abcd
T-E Exp 07128	52	35.1+	56.0	25.3	abcde
Pawnee	47	35.1+	57.0	24.7	abcde
NK 115	42	35.1+	52.0	24.5	abcde
NK 133	44	35.1+	53.0	24.4	abcde
Nebr. 504	43	35.1+	56.5	24.3	abcdef
Excel 202	45	35.1+	55.0	24.3	abcdef
T-E 44C	45	35.1+	53.0	24.1	abcdefg
T-E 44	41	35.1+	49.5	23.9	abcdefg
NK 125	44	35.1+	53.0	23.8	abcdefg
NK 120	42	35.1+	53.5	23.7	abcdefg
SD 503	46	35.1+	55.0	22.1	bcdefgh
T-E Exp 07120	43	35.0	51.0	22.1	bcdefgh
Excel 303	40	35.1+	53.0	21.8	bcdefgh
Frontier S-400	45	35.1+	51.5	21.0	cdefghi
DeKalb B-32	44	35.1+	55.0	20.8	defghi
Colo. 585	46	35.1+	56.0	20.8	defghi
SD 451	46	34.5	53.0	20.4	efghi
Frontier 388	43	35.1+	55.0	20.0	efghi
Pioneer 885	43	35.1+	53.5	18.6	fghi
PAG 430	43	35.1+	51.5	18.5	fghi
Frontier 400B	45	35.1+	51.0	18.4	ghi
Comanche	42	35.1+	49.5	16.9	hi
PAG 400	45	35.1+	50.0	15.5	i
Mean				22.4	

C.V. = 13.3%

+Electronic moisture meter only calibrated to 35 percent moisture. Sign indicates moisture in grain was above 35.

TABLE 17. TWO-, THREE-, FOUR-, AND FIVE-YEAR AVERAGE YIELDS OF GRAIN SORGHUM HYBRIDS ENTERED IN THE AREA B2 TRIALS AT EUREKA, 1962-1966

Variety	Average yields, 100 pounds per acre			
	1962-66	1963-66	1964-66	1965-66
DeKalb B-32			11.0	15.2
Excel 202				17.7
Frontier 388	14.3a	16.9a		11.4
NK 115			15.8	18.2
NK 120	19.9	22.0	16.8	18.1
NK 125	19.8	18.3	16.1	18.4
NK 133			12.2	17.5
Comanche			7.0	10.0
Pawnee			12.5	17.7
PAG 304			12.3	17.6
PAG 430			7.8	10.7
Pioneer 885		12.6	8.1	11.0
T-E 44			12.5	16.9
Nebr. 504				17.4
Colo. 585				15.5
SD 441	19.1	18.4	14.7	18.8
SD 451	16.0	14.3	11.3	13.9
SD 503	16.8	15.4	10.3	14.5

a not entered in 1964

TABLE 18. 1966 GRAIN SORGHUM PERFORMANCE TRIAL, AREA C1, IRRIGATED, REDFIELD DEVELOPMENT FARM, REDFIELD

Variety	Height, inches	Percent moisture 9/20/66	Test Wt. lb/bu	Yield 100#/A	Statistical significance
Colo. 606	59	33.1	59.0	51.4	a
Pioneer 885	50	35.1+	58.0	47.4	ab
AMAK R-10	52	33.1	57.5	46.9	abc
Advance 22	57	29.6	60.0	46.4	abcd
SD 503	50	31.3	58.0	44.6	abcde
Frontier 400B	48	34.7	57.0	44.6	abcde
T-E Grainmaster A	48	35.1+	58.0	44.5	abcdef
RS 610	55	34.1	58.0	44.4	abcdef
DeKalb B-32	46	27.9	59.0	44.3	abcdef
Nebr. 504	52	29.8	59.0	44.0	abcdef
Ute	49	32.3	60.0	43.7	abcdef
T-E 44	54	35.1+	56.0	43.6	abcdef
NK 227	50	35.1+	58.0	43.6	abcdef
Colo. 604	62	30.5	60.0	43.2	bcdef
Frontier 388	46	33.0	59.0	43.1	bcdefg
Pawnee	57	35.1+	59.0	42.5	bcdefg
Kiowa	55	35.1+	58.0	42.3	bcdefg
Frontier S400	47	35.1+	57.0	41.5	bcdefg
NK 133	48	31.3	60.0	39.8	bcdefgh
NK 115	47	26.2	56.0	39.6	bcdefgh
T-E Exp 22128	59	27.5	59.0	39.6	bcdefgh
Pioneer 872	47	32.4	59.0	39.4	bcdefgh
Pioneer 872A	48	35.1+	58.0	39.3	bcdefgh
SD 451	51	31.3	56.0	38.9	cdefgh
PAG 304	44	33.4	58.0	38.3	cdefgh
Frontier 375	46	35.1+	59.0	38.2	cdefgh
NK 222	46	35.1+	58.0	37.9	defgh
T-E Exp 22120	42	31.7	59.0	37.5	defgh
T-E Exp 07120	47	30.2	58.0	37.2	efgh
T-E 44C	48	31.0	57.0	36.8	efgh
Advance 54	45	35.1+	57.0	36.6	efgh
Comanche	47	31.9	57.0	36.4	efgh
T-E Exp 07128	59	32.8	59.0	36.4	efgh
NK 125	51	26.4	55.0	35.4	fgh
PAG 400	50	34.5	57.0	33.4	gh
Colo. 585	63	32.4	59.0	30.6	h
Mean				40.9	

C.V. = 12.0%
+Electronic moisture meter calibrated to only 35 percent moisture. Sign indicates moisture in grain was above 35.

TABLE 19. TWO AND THREE-YEAR AVERAGE YIELDS OF GRAIN SORGHUM HYBRIDS ENTERED IN THE AREA C1 TRIALS AT REDFIELD, 1964-1966

Variety	Average yields, 100 pounds per acre	
	1964-66	1965-66
Advance 22		53.1
AMAK R-10		49.8
DeKalb B-32	44.4	45.9
Frontier 388	45.6	46.0
NK 115	41.3	43.4
NK 125	42.4	43.0
NK 133	46.5	47.0
NK 222		43.9
NK 227	39.9	48.2
Comanche	40.2	41.4
Kiowa		42.1
Pawnee	49.1	49.2
Ute	41.8	47.0
PAG 304	41.8	42.3
Pioneer 885	45.6	36.9
Pioneer 872		48.3
T-E 44	49.2	47.6
RS 610	48.8	48.6
Nebr. 504		49.4
Colo. 585		38.7
Colo. 604		47.1
Colo. 606		54.7
SD 451	43.1	44.6
SD 503	50.9	50.1

TABLE 20. THE ENTRIES SUBMITTED FOR THE 1966 GRAIN SORGHUM PERFORMANCE TRIALS AND THE TABLES WHERE THE RESULTS APPEAR

Company	Variety	Tables
Advance Seed Company	Advance 22	14,15,18,19
	Advance 54	14,18
	AMAK R-10	14,15,18,19
Asgrow Seed Company	Rico	6,8,9
	Tasco	6,8,9
Curry Hybrids	M-520	8
DeKalb Agric. Assn., Inc.	B-32	4,5,10,11,12,13,14,15,16, 17,18,19
	C-44b	8,9
	DD-50	4,8
Excel Sorghum Company	202	8,9,12,13,16,17
	202A	8,10
	303	8,12,16
Frontier Hybrids Incorporated	375	8,18
	388	8,9,12,13,14,15,16,17,18,19
	S-400	8,12,14,16,18
	400B	8,9,12,14,16,18
	401	8,9
Northrup-King & Company	NK 115	4,6,10,11,12,13,14,15,16, 17,18,19
	NK 120	6,10,11,12,13,14,15,16,17
	NK 125	4,5,6,10,11,12,13,14,15, 16,17,18,19
	NK 133	4,5,6,7,8,9,10,11,12,13, 14,15,16,17,18,19
	NK 212	8,9
	NK 222	4,5,6,8,9,18,19
	NK 227	8,9,18,19
Paymaster Seed Farms	Comanche	4,5,6,7,8,9,12,13,14,15,16, 17,18,19
	Kiowa	6,7,8,9,18,19
	Pawnee	4,5,6,7,8,9,10,11,12,13,14, 15,16,17,18,19
	Ute	6,7,8,9,18,19
Pfister Assoc. Growers	PAG 304	4,5,6,7,8,9,10,11,12,13,14, 15,16,17,18,19
	PAG 400	6,10,12,16
	PAG 430	6,7,8,9,12,13,16,17,18
Pioneer Hi-Bred Corn Company	846	8,9
	865	14,15
	872	4,5,6,8,14,18,19
	872A	4,6,14,18
	885	4,5,6,7,8,10,11,12,13,14,16, 17,18,19
Sokota Hybrid Producers	P-50	4
	510	6,8,14
Taylor-Evans Seed Company	T-E 44	4,5,6,7,8,9,12,13,14,15,16,
	T-E 44C	4,6,8,10,12,14,16,18
	Grainmaster A	4,6,8,18
	Exp 07120	6,10,12,14,16,18
	Exp 07128	6,10,12,14,16,18
	Exp 22120	6,10,12,14,16,18
	Exp 22128	6,10,12,14,16,18
South Dakota Agricultural Experiment Station	RS 610	4,5,6,7,8,9,14,15,18,19
	Nebr. 504	4,5,6,8,9,10,11,12,13,14, 15,16,17,18,19
	Colo. 585	4,5,6,8,9,10,11,12,13,14, 15,16,17,18,19
	Colo. 604	4,5,6,7,8,9,14,15,18,19
	Colo. 606	4,5,6,7,8,9,14,15,18,19
	SD 441	4,5,10,11,12,13,16,17
	SD 451	4,5,6,7,8,9,10,11,12,13,14, 15,16,17,18,19
	SD 503	4,5,6,7,8,9,10,11,12,13,14, 15,16,17,18,19