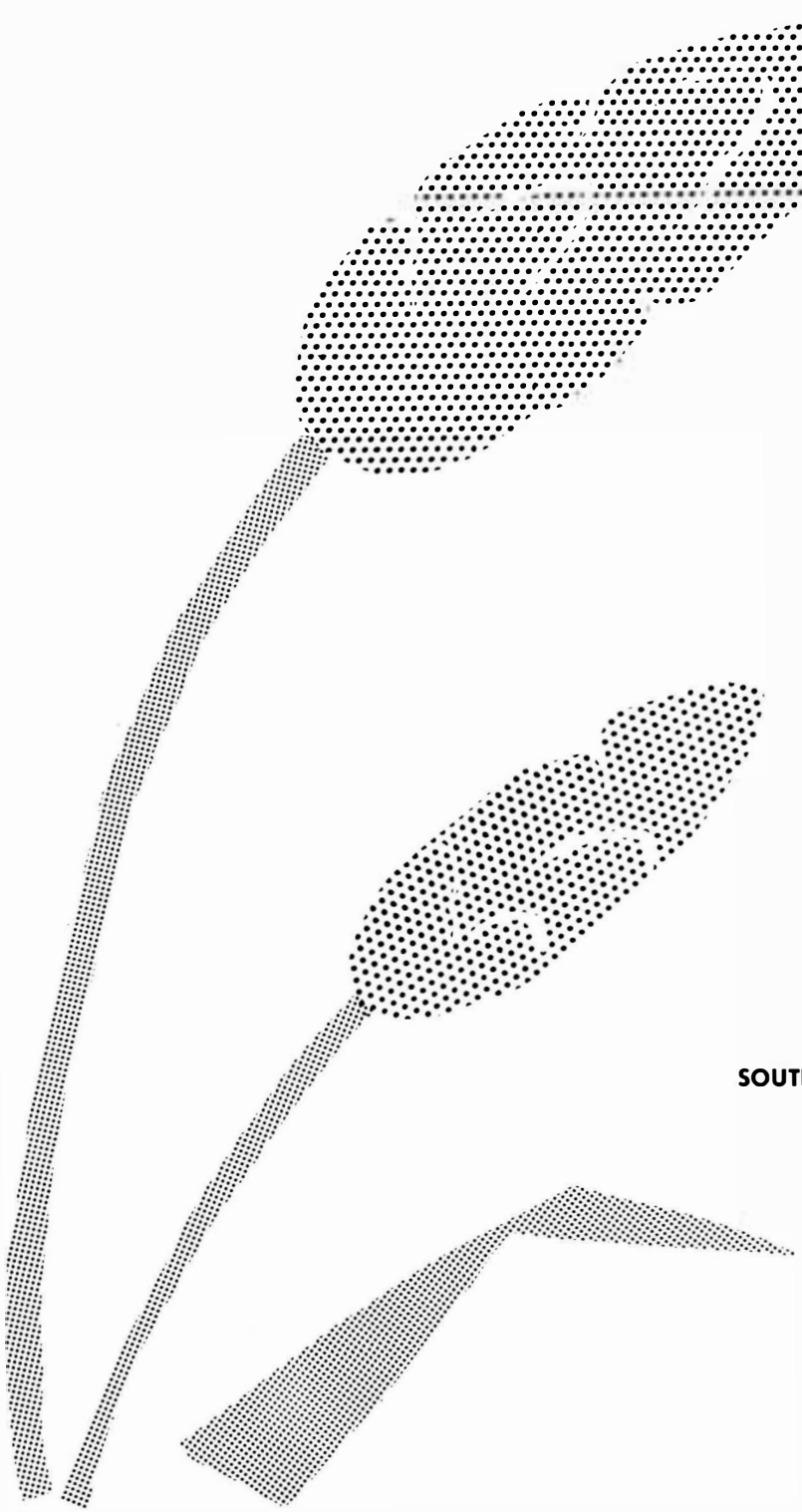
1-1966

1965 Sorghum Performance Trials

J. J. Bonnemann
South Dakota State University

CIRCULAR 175
JANUARY 1966

1965 Sorghum Performance Trials



AGRONOMY DEPARTMENT
AGRICULTURAL EXPERIMENT STATION
SOUTH DAKOTA STATE UNIVERSITY, BROOKINGS

1965 South Dakota Grain Sorghum Performance Trials

J. J. Bonnemann, Assistant Agronomist

Agricultural Experiment Station
South Dakota State University
Brookings, South Dakota

The 1965 Grain Sorghum Performance Trials were seeded at ten locations in South Dakota. Entries in the 1965 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 Performace Testing Activity of the Agricultural Experiment Station.

LOCATION OF THE 1965 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 immediately after seeding are presented in Table 2.

WEATHER AND CLIMATIC CONDITIONS

The 1965 grain sorghum growing season climatic data are reported in Table 3. These data are based upon reports of Monthly Climatological Data, U. S. Department of Commerce, and from reports of the sub-station supervisors at the Northeast (Watertown) and South Central Research Farms.

Seeding of the trials began on May 18. Seeding continued through May and until as late as June 15 at Cottonwood. Adequate soil moisture at all locations favored even germination but continued cool, wet soil conditions delayed rapid emergence. The excessive moisture in June delayed rapid growth after emergence and below average temperatures during all further summer months delayed growth. Some trials were favored with drier periods in late July and August and were beginning to progress nicely when three weeks of drizzle and fog, accompanied by cooler temperatures, developed in early September. The first freezing temperature occurred at many sites as this condition moved out of the area and many of the adapted sorghums were damaged.

Lodging problems became serious in much of the sorghum producing area of South Dakota after the excessively high winds of early October. Lodging was especially noticeable in most entries at Presho and many entries at Highmore. Reports from the south-central area indicated that many farmers had to devise ways to pick up the badly lodged grain from their fields.

The generous assistance of A. O. Lunden is gratefully acknowledged. Much credit is also due Substation Supervisors Bernard Beer, Albert Dittman, Lloyd Dye, Jake Frederikson and Lenis Nelson, Harry Geise, Frank Holmes, Quentin Kingsley, Herb Lund, Carl Erickson and cooperator Norman Lein.

TABLE 1. THE LOCATION OF TRIALS AND DATES OF SEEDING AND HARVESTING OF GRAIN SORGHUM PERFORMANCE TRIALS, SOUTH DAKOTA, 1965

County	Location and post office	Date seeded	Date harvested
Brookings	Agronomy Farm, Brookings	May 26	October 5
Butte	US Newell Field Station, Newell	June 8	September 24
Charles Mix	Norman Lein, 4 1/2 E, Platte	May 18	*
Clay	Southeast Research Farm, Beresford	May 24	October 8
Codington	Northeast Research Farm, Watertown	May 21	October 1
Hyde	Central Substation, Highmore	May 25	October 6
Jackson	Range Field Station, Cottonwood	June 15	September 23
Lyman	South Central Research Farm, Presho	June 2	October 7
McPherson	North Central Substation, Eureka	May 20	October 4
Spink	Redfield Development Farm, Redfield	May 26	October 1

* - Hailed out on June 28

The first killing frost occurred at Eureka on September 5. Other locations escaped damage by freezing until as late as September 24.

The mean temperatures were 11 to 12 degrees below normal in September. This greatly inhibited the physiological progress of the sorghum plant toward maturity and the test weight data in the tables show that few entries attained a test weight of 56 pounds per bushel, the test weight of No. 1 sorghum.

The trial at Platte was not harvested. A severe hail storm passed over the trial site area on June 28 and reduced the plants to very short stubs. Another hail storm passed through the area later in the summer.

Because of the wet soil conditions at Newell and Cottonwood the seed beds could not be prepared until June and the lateness of planting, coupled with below normal temperatures delayed growth throughout the growing season. Heading did not begin until mid-August and the yields were negligible.

TABLE 2. LABORATORY RESULTS OF SOIL SAMPLES TAKEN AT TIME OF SEEDING OF 1965 GRAIN SORGHUM PERFORMANCE TRIALS

Area	County	Texture	Percent O. M.	P (lbs/acre)	K (lbs/acre)	pH
B2	Hyde	Silt loam	1.9	28	281	7.2
B3	Butte	Clay	2.0	37	457	7.4
B3	Lyman	Clay	2.8	8	533	8.0
D2	Codington	Silt loam	3.1	29	144	7.0
E	Clay	Silt loam	3.0	41	446	6.1

HYBRID ENTRY PROCEDURE

Grain sorghum hybrids offered for sale in South Dakota during 1965 or being produced for distribution in 1966 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 hand planted with a small garden planter. Within each replication plots of individual entries were randomly located. The plots were two rows wide and row lengths varied with range dimensions at each location. The dryland trial row widths varied from 36 to 42 inches. The irrigated trial at Redfield was planted in 22-inch rows.

The heads from two rows, ten feet long, were harvested for yield determinations. 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 samples were placed in driers for two days. The average moisture in the samples when weighed following threshing was six percent. Yields were calculated on the basis of 100 pounds per acre. Three replications were harvested for yield determination and the fourth was left for observational purposes.

Samples for moisture percentages in the grain at time of harvest were taken from three replications. The samples were weighed in the field, oven-dried in the laboratory for at least 72 hours at 102° C., reweighed and the moisture percentages calculated. The percentages obtained correlated closely in inverse manner with the test weights of the grain. That is, high moisture was found in the varieties that had low test weights. Only test weights are shown in the tables.

A bird repellent was successfully used on all but one of the trials. The treatment at Highmore was not sprayed on soon enough to prevent major damage to some early maturing entries.

Variations in soil fertility, slope and stands may cause varieties of equal potential to yield differently. Mathematical determinations were made to ascertain whether yield differences were caused by variation in environment or were true varietal differences. Small yield differences have no significance. 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 at the 5% level.

In the interpretation of Duncan's Test, those entries accompanied by the same lower case letter on the right side of the table do not differ significantly in yield. As an example of Duncan's Test, note in Table 8 that the varieties Advance 22, Colo. 606 down through NK 227 and T-E 44 are accompanied by the lower case letter "a". These twelve varieties in descending order are not significantly different in yield from each other. All other varieties below T-E 44 are significantly lower than Advance 22. These statements hold true only for this trial under conditions that prevailed during the 1965 cropping season. Results of one year do not present as true a picture as do average results of three or more years at the same location.

DISCUSSION OF RESULTS

Grain sorghums are grown extensively in areas of the state too hot and too dry for corn. In 1965, widely varying conditions were noted across the state. Heavy amounts of precipitation were recorded across the state at the time the seed beds were being or should have been prepared for sorghum. Planting was delayed in the western part of the state until mid-June. Early varieties are available that can still be seeded in mid-June and perform satisfactorily under climatic conditions that can usually be expected from then through September. In some central areas moisture shortages did occur in July and August. Generally, moisture was adequate but below normal temperatures slowed the progress of grain sorghum in these areas. The month of September was detrimental to normal progress toward physiological maturity. Three weeks of fog, drizzle or rain and sub-normal temperatures stalled progress of crops standing in the field. As these abnormal conditions departed the area, a killing frost occurred and prohibited further progress toward maturity.

The Eureka trial progressed from one adverse condition to another and the result was lower yields of very poor quality grain. A late frost at emergence was detrimental to the stand. Moisture was limited the following three months and delayed rapid growth. A freeze occurred early in September followed by three weeks of fog, drizzle and rain that further delayed the drying of the frost damaged heads.

Seedbed conditions were good when the Highmore trial was planted. However, temperatures dropped and germination was slow. Moisture was adequate through June and July but temperatures were not warm enough to promote rapid sorghum growth. August was dry with some extremely warm days, however the mean monthly temperature was below normal. The Highmore trial was not treated with bird repellent as early as it should have been and severe damage occurred to some entries, as noted in the table.

The heavy clay soils in the central and western B3 area could not be worked, either physically or conscientiously, from early May until mid-June. The trial at Newell was "mudded-in" June 8 and beset by adverse weather the remainder of the season. Moisture was above and temperatures were below their long time averages all summer followed by an early heavy snow on September 16. Only the early varieties had headed and the yields were negligible. Because the yields are of no value no data are reported.

The trial at Cottonwood was not planted until June 15. Conditions were more favorable than at Newell and temperatures were high enough in July and August to permit all the entries to head, some quite late. The yield data are presented as a matter of record and indicate the lateness of the season and the poor quality of the grain. The Newell results were much poorer than these.

The B3 trial at Presho was somewhat better. Seeded in early June, moisture supplies for the early entries were adequate and temperatures were nearer to the normals. However, the absence of moisture in August and some extremely warm days were detrimental to some of the entries of late maturity. The highest yield was 34.0 (100 lbs/A). This is more than double the mean yield of the trial, 16.8.

The irrigated trial at Redfield produced quite satisfactory yields. The cool weather during September delayed maturation, especially of the later maturing entries. Test weights of some of these late entries would possibly have been higher with normal September weather. Yields averaged 49.2 (100 lbs/A).

TABLE 3. TEMPERATURE AND PRECIPITATION DATA FOR THE 1965 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
Eureka	May	55.5	- 0.6		4.74	2.15	
	June	63.7	- 1.3		1.25	-2.38	
	July	71.2	- 1.2		1.19	-1.26	
B2	Aug.	69.1	- 1.6		2.10	-0.31	
	Sept.	47.3	-12.8	-3.5	2.23	0.91	-0.89
					11.51		
	Last freeze 29° - May 28				First frost 29° - Sept. 5		
Highmore	May	58.9	1.7		5.12	2.79	
1W	June	66.6	- 0.2		3.50	-0.04	
	July	73.6	- 0.9		1.72	-0.26	
B2	Aug.	72.1	- 0.7		1.08	-0.96	
	Sept.	51.5	-11.1	-2.2	4.46	3.15	4.68
					15.88		
	Last freeze 27° - May 28				First frost 25° - Sept. 24		
Cottonwood	May	57.3	- 0.1		5.40	2.69	
2E	June	66.5	- 0.6		3.44	0.46	
	July	73.5	- 2.1		1.11	-0.43	
B3	Aug.	72.4	- 1.4		1.30	-0.06	
	Sept.	51.5	-11.5	-3.1	1.49	0.47	3.13
					12.74		
	Last freeze 31° - May 28				First frost 26° - Sept. 17		
Newell	May	52.9	- 2.5		6.25	3.76	
2NW	June	62.9	- 1.5		3.80	0.61	
	July	70.3	- 2.9		2.49	0.73	
B3	Aug.	69.0	- 2.2		1.30	0.02	
	Sept.	48.4	-12.0	-4.2	1.34	0.20	5.32
					15.18		
	Last freeze 31° - May 11				First frost 26° - Sept. 19		
Presho	May	58.1			4.97		
11S	June	66.7			3.03		
	July	74.0			1.53		
B3	Aug.	70.5			1.06		
	Sept.	52.6			2.73		
					13.32		
	Last freeze 28° - May 28				First frost 30° - Sept. 23		
Redfield	May	62.2			4.63		
6E	June	69.2			4.33		
	July	73.9			0.68		
C1	Aug.	72.3			1.12		
	Sept.	54.4			3.59		
					14.35		
	Fast freeze 27° - May 28				First frost 23° - Sept. 24		

NE Farm	May	54.9			6.08		
15N	June	62.6			3.66		
of	July	69.3			2.34		
Watertown	Aug.	67.0			2.63		
D2	Sept.	47.0			4.33		
					19.04		
	Last freeze 27° - May 29				First frost 29° - Sept. 24		
Brookings	May	56.9	- 0.7		5.06	2.27	
2NE	June	65.1	- 2.0		4.04	0.09	
	July	69.7	- 3.5		0.89	-1.26	
D3	Aug.	67.2	- 4.0		1.20	-1.77	
	Sept.	50.2	-11.1	-4.3	5.01	2.98	2.31
					16.20		
	Last freeze 30° - May 28				First frost 29° - Sept. 24		
Centerville	May	63.8			6.02		
6SE	June	69.8			6.87		
	July	72.9			2.99		
E	Aug.	71.3			3.06		
	Sept.	54.8			6.75		
					25.69		
	Last freeze 32° - May 28				First frost 28° - Sept. 24		

Seedbed conditions at Watertown were excellent at planting time. However, a driving rain just after planting caused some washing and crusting of the soil. Germination was somewhat uneven because of the washing and depth of soil over the seed. Cooler than average temperatures hindered growth, resulting in lower yields of poor quality grain. Yields averaged 17.1 (100 lbs/A).

Conditions at Brookings were favorable for sorghum until September. The reduced test weight of some of the later entries can be attributed to three weeks of cool, damp and foggy weather that delayed progress toward well filled grain, especially of the later maturing entries. The mean yield for the trial as 30.5 (100 lbs/A).

The trial at the Southeast Research Farm was satisfactory, all things considered. Heavy rains kept the soil cool, slowing emergence and growth. Temperatures were cool and humidity high most of the summer. The fog and drizzle of September slowed growth even more and the results indicate the adverse effect upon the grain. The mean yield for the trial was 38.6 (100 lbs/A).

The Grain Sorghum Performance Trials have been supervised for the past four years by the Crop Performance Testing Activity. A number of entries have been in the trials for that time and do not shift widely in rank from year to year. In making selections of hybrids to plant, factors other than yield should also be considered. Several of these factors are standability, maturity, head types, quality, disease resistance, insect resistance and adaptability to combine harvesting. A summary of the entries tested and companies submitting them is presented in Table 12.

TABLE 4. 1965 GRAIN SORGHUM PERFORMANCE TRIAL, NORTH CENTRAL SUBSTATION, EUREKA

Variety	Height, inches	Test wt. lb/bu	Yield, 100#/A 1965	Yield, 100#/A 1963-65	Statistical significance
SD 502	36	45.0	13.2		a
NK 125	36	46.0	12.9	16.4	ab
NK 120	34	46.0	12.4	21.4	abc
NK 115	35	48.0	11.8		abc
SD 441	39	51.0	11.3	15.8	abcd
Excel 202	36	46.5	11.1		abcd
PAG 275	30	52.0	10.9		abcde
Pronto	35	50.0	10.8		abcde
Pawnee	35	49.0	10.6		abcdef
NK 133	35	39.5	10.5		abcdef
Nebr. 504	38	41.5	10.4		abcdef
RS 501	46	43.5	10.3	14.1	abcdef
TE 44	30	36.5	9.9		abcdefg
Colo. 585	37	49.5	9.9		abcdefg
DeKalb B-32	34	42.0	9.6		abcdefg
PAG 304	27	38.5	9.1		bcdefgh
Shorty 33	32	42.0	8.7		cdefghi
SD 451	34	42.5	7.3	12.2	defghij
Frontier GX 375	32	29.5	6.9		efghijk
SD 503	36	42.0	6.8	13.1	efghijk
Frontier GX 104	34	21.0	6.4		fghijk
Pioneer 872	33	28.5	5.6		ghijk
SD 102	34	45.0	5.1	10.7	hijk
Tasco	36	31.0	4.5		ijk
Frontier 401	34	31.5	4.4		ijk
PAG Exp. 3637	36	27.5	3.9		jk
Pioneer 865	32	17.0	3.4		jk
Pioneer 885	36	18.0	3.4	10.5	jk
Comanche	34	21.5	3.1		jk
PAG 430	33	24.5	2.9		jk
Frontier 388	35	31.0	2.8		k
		Mean yield	8.1		

TABLE 5. 1965 GRAIN SORGHUM PERFORMANCE TRIAL, CENTRAL SUBSTATION, HIGHMORE

Variety	Height, inches	Percent lodging	Date headed	Test wt lb/bu	Yield, 100#/A 1965
Asgrow Pronto*	37	8	7/23	53.5	15.1
Asgrow Tasco	36	9	8/1	53.0	24.3
DeKalb Shorty 33	35	12	7/23	56.0	22.5
DeKalb B-32	36	3	7/23	55.5	19.4
Frontier 388	33	3	7/28	56.0	23.8
Frontier 401	31	2	8/2	54.0	19.4
Frontier GX 104	36	22	7/28	54.0	21.0
Frontier GX 375	32	5	7/31	50.5	22.7
Northrup-King 115	35	2	7/20	52.0	26.4
Northrup-King 120	33	2	7/20	53.0	25.8
Northrup-King 125	33	7	7/23	52.5	23.7
Northrup-King 133	34	15	7/23	54.0	24.8
Paymaster Comanche	32	7	7/31	54.0	24.8
Paymaster Pawnee*	35	10	7/22	53.5	14.5
Pfister PAG 275*	34	0	7/22	54.5	17.9
Pfister PAG 304	28	1	7/25	57.0	24.7
Pfister PAG 430	33	1	7/30	53.5	23.8
Pfister PAG Ex. 3637	35	1	7/29	53.5	22.3
Pioneer 885	34	4	7/31	55.5	27.6
Pioneer 872	35	23	7/29	53.5	21.6
Pioneer 865	34	0	8/2	51.0	18.8
Taylor-Evans 44	28	30	7/25	50.0	23.8
RS 501	42	12	7/23	52.0	11.0
Nebr. 504	39	8	7/24	54.0	22.7
Colo. 585*	38	11	7/24	53.0	14.7
SD 102	36	38	7/20	53.5	24.5
SD 441	39	12	7/19	52.0	23.3
SD 451	36	13	7/22	53.5	27.3
SD 502*	35	2	7/23	49.0	9.5
SD 503	40	2	7/23	52.0	14.7
Excel 202	39	11	7/24	56.0	26.4

* - Bird damage was excessive in these entries making statistical analysis invalid. All entries showed evidence of damage but to lesser degree than those with an *.

TABLE 6. 1965 GRAIN SORGHUM PERFORMANCE TRIAL, RANGE FIELD STATION, COTTONWOOD

Variety	Height inches	Date headed	Test wt lb/bu	Yield, 100#/A 1965	Yield, 100#/A 1963-65	Statistical significance
NK 133	28	8/14	50.5	11.1		a
SD 502	34	8/16	51.0	11.1		a
NK 125	33	8/14	49.0	10.9	9.6	ab
SD 503	34	8/16	49.0	10.8	7.8	ab
PAG 275	33	8/11	54.5	10.8		ab
SD 441	40	8/11	51.5	9.2	6.1	abc
Nebr. 504	32	8/15	51.0	9.1		abc
Pronto	30	8/16	48.5	8.8		abc
SD 102	35	8/11	52.0	8.3	5.6	abc
RS 501	38	8/16	53.0	8.3	7.1	abc
Colo. 585	37	8/17	50.0	8.0		bcd
NK 115	33	8/11	52.0	7.9		bcd
T-E 44	25	8/19	47.0	7.5		cde
SD 451	31	8/14	51.0	7.4	7.9	cde
DeKalb-B32	36	8/18	47.0	7.2		cde
PAG 304	26	8/20	48.5	6.9		cdef
Advance 22	32	8/18	49.5	6.8		cdef
Pawnee	30	8/18	51.5	6.8		cdef
NK 222	30	8/23	42.5	4.8		defg
Frontier 388	28	8/25	46.0	4.4		efgh
Amak R10	30	8/23	43.0	4.3		efgh
Frontier GX 104	29	8/25	45.0	3.7		fghi
Comanche	28	8/28	32.0	2.1	2.6	ghi
Rocket A	28	8/27	29.0	2.0		ghi
Pioneer 848	28	8/31	---*	1.1		hi
Pioneer 865	30	8/29	---*	1.0		hi
Frontier GX 375	31	8/30	---*	0.7		i
Frontier 401	28	8/31	---*	0.7		i
Advance 14	30	8/29	---*	0.6		i
		Mean yield		6.3		

* - Too small a quantity to measure test weight

TABLE 7. 1965 GRAIN SORGHUM PERFORMANCE TRIAL, SOUTH CENTRAL RESEARCH FARM, PRESHO

Variety	Height, inches	Percent lodging	Date headed	Test wt lb/bu	Yield, 100#/A 1965	Yield, 100#/A 1963-65	Statistical significance
SD 503	41	60	8/8	52.0	34.0	36.3	a
NK 125	40	27	8/7	51.5	25.2	33.1	ab
NK 115	38	41	8/1	53.0	23.3		abc
TE 44	35	7	8/13	50.0	23.1		bc
SD 502	38	43	8/7	52.5	22.2		bcd
RS 501	39	25	8/9	49.0	22.0	35.3	bcde
Pioneer 865	38	0	8/17	43.0	21.0		bcde
Nebr. 504	37	20	8/11	51.0	20.2		bcde
SD 451	38	25	8/4	53.0	19.3	30.1	bcdef
SD 441	45	85	7/30	53.0	18.9	28.6	bcdef
PAG 304	31	1	8/9	52.0	18.8		bcdef
NK 133	40	6	8/8	46.0	18.8		bcdef
PAG 275	36	27	8/1	55.0	18.3		bcdef
Colo. 604	36	5	8/12	51.0	17.7		bcdefg
RS 608	33	0	8/15	49.0	17.4	32.5	bcdefg
SD 102	37	85	7/29	54.5	16.3		bcdefg
Frontier 388	35	0	8/12	50.0	16.3	22.4	bcdefg
Amak R10	33	0	8/16	48.0	15.8		bcdefg
Rocket A	33	0	8/13	49.0	15.7		bcdefg
Colo. 606	35	3	8/13	50.0	15.3		bcdefg
NK 222	34	0	8/14	48.0	15.0		bcdefg
Advance 22	33	16	8/12	49.5	14.8		bcdefg
Advance 14	36	0	8/16	41.0	14.5		bcdefg
Pronto	38	25	8/3	51.0	14.1		bcdefg
DeKalb B-32	35	25	8/8	51.5	13.8		cdefg
Pawnee	36	37	8/7	55.0	13.3		cdefg
Colo. 585	40	2	8/4	48.0	12.5		cdefg
Frontier GX 104	34	1	8/14	47.5	11.9		cdefg
Comanche	33	0	8/18	45.0	10.9		defg
RS 610	34	0	8/15	46.5	10.8	30.4	defg
Frontier 401	34	0	8/17	39.5	10.0		efg
Pioneer 848	33	0	8/19	43.0	7.3		fg
Frontier GX 375	31	0	8/19	39.5	4.8		g
			Mean yield		16.8		

TABLE 8. 1965 GRAIN SORGHUM PERFORMANCE TRIAL, IRRIGATED, REDFIELD DEVELOPMENT FARM, REDFIELD

Variety	Height, inches	Test wt lb/bu	Yield, 100#/A 1965	1964-65	Statistical significance
Advance 22	61	55.5	59.7		a
Colo. 606	63	54.0	57.9		ab
Pioneer 872	51	51.5	57.1		abc
Pawnee	58	57.5	55.8	52.3	abcd
SD 503	56	54.0	55.5	54.0	abcde
Nebr. 504	50	54.0	54.8		abcdef
NK 133	45	55.0	54.2	49.8	abcdef
SD 502	55	53.5	53.7	49.0	abcdef
Amak R10	51	51.0	52.7		abcdef
RS 610	55	50.0	52.7	51.0	abcdef
NK 227	50	51.0	52.7	53.0	abcdef
TE 44	54	51.5	51.5	52.0	abcdefg
Colo. 604	66	55.0	51.0		bcdefg
NK 125	50	53.0	50.6	45.8	bcdefg
RS 501	65	55.5	50.4	49.1	bcdefg
Ute	47	54.0	50.3	40.8	bcdefg
PAG 304	39	56.0	50.2	43.5	bcdefg
SD 451	54	53.0	50.2	45.2	bcdefg
NK 222	48	52.0	49.8		bcdefg
PAG 275	49	56.0	49.6	44.9	bcdefg
Frontier 388	50	52.5	48.8	46.9	cdefg
PAG Exp. 3637	50	51.0	47.6		defgh
Tasco	53	50.5	47.6		defgh
DeKalb B-32	49	54.0	47.4	44.5	defgh
NK 115	44	53.5	47.2	42.2	defgh
Colo. 585	61	56.0	46.8		defgh
Comanche	52	50.0	46.3	42.2	efgh
Frontier GX 104	52	51.0	46.3		efgh
Pioneer 885	51	52.0	46.3	44.7	efgh
RS 608	52	51.0	45.5	43.1	fgh
Rico	52	45.5	45.3		fgh
Advance 14	51	52.0	45.2		fgh
Pioneer 865	46	47.5	42.3		gh
Kiowa	54	48.0	41.9		gh
Frontier GX 375	41	45.0	37.2		hi
Spike	49	37.0	30.1		i
		Mean yield	49.2		

TABLE 9. 1965 GRAIN SORGHUM PERFORMANCE TRIAL, NORTHEAST RESEARCH FARMS, WATERTOWN UNIT

Variety	Height, inches	Date headed	Test wt lb/bu	Yield, 100#/A 1965	Yield, 100#/A 1963-65	Statistical significance
NK 115	43	8/4	46.0	25.3		a
PAG 275	45	8/4	50.0	24.4		ab
SD 503	58	8/10	43.0	23.1	32.9	abc
NK 120	48	8/4	46.0	22.7	31.4	abcd
NK 125	51	8/9	41.0	22.3	30.4	abcde
SD 441	48	8/4	47.0	21.1	27.1	abcdef
RS 501	59	8/11	41.0	20.8	33.2	bcdefg
NK 133	44	8/15	37.0	20.5		bcdefg
SD 502	54	8/10	40.5	20.0		bcdefg
Pawnee	51	8/9	43.5	19.5		cdefg
DeKalb B-32	49	8/10	43.0	19.4		cdefg
Excel 202	52	8/10	40.0	19.2		cdefg
Pronto	56	8/6	44.0	19.2		cdefg
SD 102	45	8/4	43.0	17.9	22.9	defg
SD 451	52	8/10	42.0	17.7		efg
Colo. 585	54	8/7	44.0	17.5		efg
PAG 304	39	8/10	38.5	17.1		fg
Neb. 504	52	8/10	40.5	17.0		fg
T-E 44	46	8/14	28.5	15.8		gh
Frontier GX 375	41	8/14	22.0	11.5		hi
PAG Exp. 3637	48	8/12	28.0	11.2		hij
Frontier GX 104	47	8/16	16.0	9.7		ij
Frontier 388	50	8/13	33.5	8.6		ij
Pioneer 885	46	8/15	20.0	8.3		ij
Tasco	48	8/14	21.0	8.0		ij
Rico	46	8/17	15.0	6.0		j
		Mean yield		17.1		

TABLE 10. 1965 GRAIN SORGHUM PERFORMANCE TRIAL, AGRONOMY FARM BROOKINGS

Variety	Height, inches	Date headed	Test wt lb/bu	Yield, 100#/A 1965	Yield, 100#/A 1963-65	Statistical significance
NK 133	40	7/28	55.0	37.6		a
Nebr. 504	44	7/27	56.5	36.7		ab
DeKalb B-32	43	7/16	56.0	36.4		ab
SD 502	48	7/29	55.0	35.6		abc
Paymaster Pawnee	44	7/28	58.0	35.1		abcd
SD 503	49	7/30	55.0	35.0	51.9	abcd
PAG 275	42	7/26	56.5	34.7		abcde
Colo. 585	48	7/27	56.0	34.4		abcdef
RS 501	53	7/29	55.0	34.3	47.9	abcdefg
RS 610	45	8/3	53.5	33.4	47.3	abcdefg
NK 222	37	8/4	53.5	33.3	42.6	abcdefg
Pioneer X-2438a	39	7/31	54.0	32.0		abcdefgh
PAG 304	36	7/30	55.0	31.7		abcdefgh
TE 44	38	8/1	51.0	31.4		abcdefgh
SD 441	53	7/23	54.5	31.3	40.7	abcdefgh
NK 125	44	7/30	54.0	31.0		bcdefghi
SD 451	47	7/27	54.0	30.8	44.0	bcdefghi
Colo. 604	46	8/3	54.5	30.7		bcdefghi
Pioneer 885	40	8/2	54.0	30.7	41.7	bcdefghi
RS 608	39	8/6	51.5	30.5	43.3	bcdefghij
Colo. 606	45	8/4	53.5	30.5		bcdefghij
NK 212	42	8/5	51.0	29.9		bcdefghij
Frontier GX 104	41	7/31	53.0	28.4		cdefghij
Pioneer 872	43	8/3	52.5	28.0		defghij
DeKalb C-44b	40	8/3	48.5	27.3		efghij
NK 227	40	8/4	53.0	26.8	45.2	fghij
Pioneer 865	39	8/6	50.0	26.8		fghij
Frontier 388	42	8/1	51.5	26.6		ghijk
Comanche	39	8/6	48.0	25.0		hijk
SD 102	41	7/21	54.0	24.9	33.5	hijk
Rico	43	8/8	46.0	23.3		ijk
Tasco	41	8/6	48.5	22.5		jk
Frontier GX 375	37	8/6	46.0	18.5		k
		Mean yield		30.5		

TABLE 11. 1965 GRAIN SORGHUM PERFORMANCE TRIAL, SOUTHEAST RESEARCH FARM, BERESFORD

Variety	Height, inches	Date headed	Test wt lb/bu	Yield, 100#/A 1965	Yield, 100#/A 1963-65	Statistical significance
DeKalb C-44b	51	8/2	51.0	47.6	40.5	a
Excel 202	56	7/25	54.0	46.6		ab
Taylor-Evans 44	54	7/30	53.0	46.4		abc
NK 212	52	8/1	51.0	46.1		abcd
Nebr. 504	53	7/26	55.0	45.7		abcde
NK 227	51	7/31	53.5	45.6	39.2	abcde
NK 133	47	7/25	55.0	45.0		abcdef
RS 610	51	8/2	50.5	44.9	39.7	abcdef
SD 451	56	7/26	54.0	44.2	35.7	abcdefg
PAG 430	49	7/30	52.0	43.6		abcdefgh
Frontier 400B	53	8/1	50.5	42.8		abcdefghi
Kiowa	52	8/2	50.5	42.8		abcdefghi
RS 608	52	8/2	51.0	41.6	36.1	abcdefghi
Pioneer 846	50	8/4	48.0	41.6		abcdefghi
NK 222	46	8/1	52.5	41.5	38.6	abcdefghi
Comanche	51	8/4	48.5	41.1		abcdefghij
NK 255	46	8/2	50.0	41.1		abcdefghij
SD 503	53	7/28	54.0	40.8	38.5	abcdefghij
SD 502	54	7/28	54.0	40.3		abcdefghij
Pioneer 865	50	8/3	50.0	40.2		abcdefghij
Lindsey 744	52	8/2	49.0	39.2		abcdefghijk
Frontier 400C	55	8/3	49.0	38.9	35.4	abcdefghijk
DeKalb E-57	50	8/2	48.5	38.7		abcdefghijk
Pioneer 848	48	8/7	47.0	38.7		abcdefghijk
Colo. 604	59	7/30	54.5	37.7		bcdefghijk
Pawnee	55	7/25	55.5	36.3		cdefghijkl
PAG 304	40	7/28	54.0	35.7		defghijkl
Lindsey 555	51	8/4	47.0	35.0		efghijkl
Colo. 606	50	8/2	51.1	34.1		fghijkl
Tasco	53	8/4	45.5	33.5		ghijkl
Rico	51	8/4	44.0	33.0		hijkl
Colo. 585	56	7/24	55.0	32.4		hijkl
Ute	48	8/3	48.0	32.0		ijkl
PAG 275	49	7/24	55.0	29.9		jkl
Frontier 400D	51	8/5	45.0	28.3		kl
RS 501	60	7/28	54.0	24.8	33.6	l
Frontier 413	54	8/11	32.5	9.5		m
		Mean yield		38.6		

TABLE 12. THE ENTRIES SUBMITTED FOR THE 1965 GRAIN SORGHUM PERFORMANCE TRIALS AND THE TABLES WHERE RESULTS APPEAR

Company	Variety	Tables
Advance Seed Company	Advance 14	6,7,8
	Advance 22	6,7,8
	Amak R10	6,7,8
Asgrow Seed Company	Rocket A	6,7
	Pronto	4,5,6,7,9
	Rico	8,9,10,11
	Spike	8
DeKalb Agric. Assn. Inc.	Shorty 33	4,5
	B-32	4,5,6,7,8,9,10
	C-44b	10,11
	E-57	11
	C-42	*
Excel Sorghum Company	Excel 202	4,5,9,11
Frontier Hybrids Incorporated	388	4,5,6,7,8,9,10
	400C	11
	400D	11
	401	4,5,6,7
	400B	11
	413	11
	GX 104	4,5,6,7,8,9,10
	GX 375	4,5,6,7,8,9,10
J. C. Robinson Seed Company	Lindsey 744	11
	Lindsey 555	11
Northrup-King & Company	NK 115	4,5,6,7,8,9
	NK 120	4,5,9
	NK 125	4,5,6,7,8,9,10
	NK 133	4,5,6,7,8,9,10,11
	NK 212	10,11
	NK 222	6,7,8,10,11
	NK 227	8,10,11
	NK 255	11
Paymaster Seed Farms	Comanche	4,5,6,7,8,10,11
	Kiowa	8,11
	Pawnee	4,5,6,7,8,9,10,11
	Ute	8,11
Pfister Assoc. Growers	PAG 275	4,5,6,7,8,9,10,11
	PAG 304	4,5,6,7,8,9,10,11
	PAG 430	4,5,11
	Exp. 3637	4,5,8,9
Pioneer Hi-Bred Corn Company	Pioneer 846	11
	Pioneer 848	6,7,11
	Pioneer 885	4,5,8,9,10
	Pioneer 872	4,5,8,10
	Pioneer 865	4,5,6,7,8,11
	Pioneer X-2438a	10
Taylor-Evans Seed Company	TE 44	4,5,6,7,8,9,10,11
South Dakota Agr. Exp. Station	RS 501	4,5,6,7,8,9,10,11
	RS 608	8,10,11
	RS 610	8,10,11
	Nebr. 504	4,5,6,7,8,9,10,11
	Colo. 585	4,5,6,7,8,9,10,11
	Colo. 604	8,10,11
	Colo. 606	8,10,11
	SD 102	4,5,6,7,9,10
	SD 441	4,5,6,7,9,10
	SD 451	4,5,6,7,8,9,10,11
	SD 502	4,5,6,7,8,9,10,11
	SD 503	4,5,6,7,8,9,10,11

* - Trial site destroyed by hail