

1969

Missouri Grain Sorghum  
Performance Trials

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## INTRODUCTION

Locations. Grain sorghum performance trials were conducted at four locations in 1969, Fig. 1. They were located at the North Missouri Center near Spickard in Grundy County, on the Earl Page farm near Palmyra in Marion County, on the N. G. Weir farm near Columbia in Boone County, and at the Southwest Center near Mt. Vernon in Lawrence County. A fifth location was planted at the Delta Center near Portageville in Pemis̄cot County but was not harvested due to hail and bird damage.

The test site at the Southwest Center was located on a Gerald soil. This soil is characterized by very slow permeability to water and air, nearly level topography, moderate water storage capacity, a claypan subsoil, medium inherent fertility, and a tendency to be slightly doughy during summer months. These characteristics coupled with a May 1 to September 15 rainfall deficit of 6 to 8 inches resulted in greatly reduced yields (Table 9). The variation, due to soil, at this site was accentuated by the drought. Thus relatively large difference in yield among entries were required for statistical significance.

State production. In 1968, 216,000 acres of grain sorghum were harvested in Missouri with an average yield of 66 bushels per acre. The 1969 estimate of harvested grain sorghum is 214,000 acres and 91.1 percent of the 1960-1969 average. The state-wide 1969 estimate of 64 bushels per acre is 9.7 bushels more than the 10-year average and six bushels less than the 1969 estimated corn yield. These data are summarized in Table 1.

Sorghum vs corn. Comparisons between the yield of corn and grain sorghum at three of the testing sites can be made since these tests were located either in the same field or close proximity (Table 2). These comparisons are only suggestive; planting and cultural factors were not the same for corn and sorghum.

Interpretation of differences in yield. Small yield differences should not be overemphasized since there was considerable inherent variation in the soil at each test site. Special planting arrangements and use of the statistical procedure called analysis of variance, from which the L.S.D. (least significant difference) value is computed, help make valid yield comparisons. The L.S.D. value, found at the bottom of the tables, simply states how much one hybrid must differ from another in yield to be reasonably confident of superior performance.



**FIGURE 1. Outline map showing grain sorghum test locations.**

## ENVIRONMENTAL CONDITIONS

The rainfall and temperature records for May 1 through September 15 at each location are reported in Tables 3 and 4. The temperatures for 1969 ranged from 0.2 to 1.2 degrees below normal at the four successful test sites. The rainfall was lowest at the Mt. Vernon location (12.2 inches) and approximately the same at Spickard, Palmyra, and Columbia (21.5 inches).

## EXPERIMENTAL METHODS

Seed source. All producers and distributors of grain sorghum seed were eligible to enter the tests in 1969. No limit was placed on the number of hybrids any one company could enter. Table 5 lists the seed sources.

Field design. Thirty-six entries were tested at each location in 1969. Individual entries were planted in one-row plots with three replications. The triple lattice field plot design was used to locate plots at random over the test site area to minimize soil and cultural differences. The length of individual plots was 25 feet with a harvested length of 20 feet. The distance between rows was 40 inches at Spickard and 30 inches at Palmyra, Columbia, and Mt. Vernon.

Yield. The heads from each plot were harvested by hand and weighed. The samples were dried in a forced-air drier (105-125 F) for 10-14 days before threshing at all locations except Mt. Vernon. At Mt. Vernon the grain was threshed directly from the field without drying. Acre yields were computed on the basis of threshed grain.

Threshing percentage. Threshing percentage data were determined for one replication of the trial at all locations.

Bloom date. The time from planting to 50% bloom was collected at three locations in 1969. These data are presented in the individual location tables.

Plant height. The average height of the plants, in inches, was determined for each entry. These data are included in the tables for each location.

Head compactness and exsertion. Compactness was graded from 1 to 5; 1 for most compact or tight head, and 5 for the most lax or loose head.

Exsertion is the relative distance that the head base protrudes above the top leaf blade. Grade 1 indicates the least exsertion and grade 5 the greatest.

Off-type heads, tall plants and lodged plants. Off-type heads, tall plants and lodged plants were counted prior to harvest. This data is intended mainly to indicate seed purity and ability of each entry to resist lodging under conditions encountered in each test.

Lodging was a major problem only at the Marion County location. The majority of the lodging was due to root lodging and not from broken stalks.

Test weight. Test weights were determined for all entries at the four locations.

## RESULTS

Acre yields ranged from a high of 159.9 bushels (Table 7) in Marion County to a low of 8.8 bushels at the Southwest Center in Lawrence County (Table 9; see location discussion under Introduction). The average yield (all entries at all locations) was 84 bushels. The highest location average was in Marion County (107.2 bushels) and the lowest was in the Lawrence County test near Mt. Vernon (32.2 bushels).

Data for each location are presented in Tables 6 through 9. The four-location average for the individual hybrids is presented in Table 10.

## PERIOD-OF-YEARS RESULTS

The best basis for selecting a grain sorghum hybrid is on its performance record over several years. In the event that it is necessary to base hybrid selection on only one year's data it is best to use more than one location if such data is available. The four-location average is presented in Table 10. Table 11 gives the data for two-year data at Spickard. The results of two- and three-year periods of testing at Palmyra, Columbia, and Mt. Vernon are presented in Tables 12, 13, and 14.

Table 1. The average number of acres, total production, average acre yield for grain sorghum, average acre yield for corn during the 10-year period 1960-1969, and the average acre yield of the state yield tests for both sorghum and corn for the same period.

Year	Grain Sorghum			Corn		
	Acreage	Total Production (bu)	Average Acre Yield (bu)	State Yield Test Average (bu)	Average Acre Yield (bu)	State Yield Test Average (bu)
1960	452,000	20,340,000	45	80	52	102
1961	208,000	9,776,000	47	110	62	109
1962	177,000	7,965,000	45	134	58	111
1963	209,000	10,450,000	50	71	61	117
1964	205,000	9,430,000	46	104	51	95
1965	223,000	13,380,000	60	90	72	115
1966	187,000	10,472,000	56	81	62	98
1967	248,000	14,384,000	58	72	69	103
1968	216,000	14,256,000	66	76	83	100
1969*	214,000	13,696,000	64	84	70	86
Mean	234,000	12,415,000	54	90	64	104

\*Estimated as of December 19, 1969.

Table 2. Comparative acre yields of grain sorghum and corn, and soil test and fertility treatments at testing locations in Missouri, 1969.

Testing Location	Grain Sorghum			Corn			Soil Test				Fertilizer Applied		
	Yield, Bushels/A			Yield, Bushels/A			pH	O. M.	P	K	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O
	Average	High	Low	Average	High	Low	(%)	(lb)	(lb)	(lb)	(lb)	(lb)	(lb)
Spickard	101.6	137.5	65.8	120.7	166.5	81.0	5.3	3.0	176	230	100	100	100
Palmyra	107.2	159.9	38.7	No corn yield trials at this location.			6.0	2.1	93	176	160	96	120
Columbia	97.0	139.2	47.2	71.1	99.4	37.9	6.4	2.4	240	350	150	100	100
Mt. Vernon	32.2	63.1	8.8	52.6	76.7	38.5	6.1	2.3	192	300	100	100	100
Mean	84.5	124.9	40.1	81.5	114.2	52.5							



Table 3. Total rainfall, number of days with rain, and dry periods from May 1 to September 15, 1969 at each of the testing locations.

Testing Location	Total Rainfall Inches	Days with rain					Sept. 1-12	Total	Dry Period*
		May	June	July	Aug.	Sept.			
Spickard	21.42	12	13	8	4	4	41	(7/19-8/14)	
Palmyra	21.36	7	13	12	4	7	43	(7/11-7/26, 7/28-8/20, 8/22-9/6)	
Columbia	21.84	10	16	10	3	9	48	(7/11-7/26, 8/1-8/15, 8/22-9/6)	
Mt. Vernon	12.18	5	11	7	6	6	35	(6/28-7/20, 7/22-8/15)	

\*A dry period is 15 or more consecutive days with less than 0.25 inch of precipitation in any one day.

Table 4. Cooperator, average temperature, departure from normal, and number of days with temperatures of 90 and 100 F or above from May 1 to September 15.

Location	Cooperator	Month	Average Temperatures	Departure from Normal	No. of days above	
					90	100
Spickard	Univ. of Missouri N. Mo. Center	May	63.7	-0.8	0	0
		June	77.7	+3.7	1	0
		July	78.4	-0.4	8	0
		August	75.5	-1.5	3	0
		Sept. 1-15	69.1	+0.2	0	0
Palmyra	Earl Page	May	63.2	-0.3	1	0
		June	68.7	-4.4	3	0
		July	78.2	+0.4	12	0
		August	74.1	-2.0	7	0
		Sept. 1-15	70.9	+2.8	0	0
Columbia	N. G. Weir	May	63.1	-1.3	0	0
		June	68.7	-5.3	2	0
		July	78.6	-0.1	15	0
		August	75.5	-1.7	9	0
		Sept. 1-15	71.8	+2.5	0	0
Mt. Vernon	Univ. of Missouri S. W. Center	May	64.5	0.0	0	0
		June	67.6	-6.6	2	0
		July	80.3	+1.9	17	1
		August	75.9	-2.1	11	0
		Sept. 1-15	70.8	+2.3	1	0

Table 5 . Seed source and name of entries tested in 1969.

Entries	Seed Source
Advance 14, 85, 91	Advance Seed Company, Division of Ferry-Morse Seed Company, Inc. P. O. Box 6738, Phoenix, Arizona 85005
Conlee Top Hand	Conlee Seed Company P. O. Box 7247, Waco, Texas 76710
DeKalb BR-64, E-57, F-61	DeKalb Ag. Research, Inc. Route # 2, Lubbock, Texas 79415
Excel Bird-Go, 733	Excel Seed Company, Box 1629, Plainview, Texas 79072
CoOp SG-30, SG-40	Farmland Industries, Inc. P.O. Box 7305, Kansas City, Mo. 64116
Frontier 409	Frontier Hybrids, Inc. Box 366, Scott City, Kansas 67871
McNair 546, 652	McNair Seed Company, P. O. Box 1132, Plainview, Texas 79072
M. F. A. GS10	M. F. A. Seed Division Marshall, Missouri 65340
FMC Chula, Grande, Oro, Rapido	Niagara Chemical Division FMC Corp., 7301 Pacific Street Room 207 Pacific Plaza Omaha, Nebraska 68114
NK 222G, 280, Savanna, X4041	Northrup - King & Co., P.O. Box 370, Richardson, Texas 75080
Pioneer 820, 828, 845, 846, 850, 866. XB899 BR	Garst & Thomas Hybrid Corn Co. Coon Rapids, Iowa 50058
Warner W-723 Bird Res., W-758 Bird Res.	George Warner Seed Company Box 1448, Hereford, Texas 79045
AKS 614, 663	Arkansas Agricultural Experiment Station Fayetteville, Arkansas 72701
Martin	Kansas State Experiment Station Manhattan, Kansas 66502
RS 690, 703	Nebraska Agricultural Experiment Station Lincoln, Nebraska 68503
S. D. 503	South Dakota State University Brookings, South Dakota 57006

Table 6. 1969 performance record for grain sorghum hybrids and varieties included in the yield trial conducted in Grundy County at the North Missouri Center near Spickard, Missouri. Planted May 20, 1969. Harvested November 11, 1969.

Entry	Acre Yield (bu)	Thresh- ing (%)	Heads in 25 ft. (no)	Lodged Plants (%)	Heads		Per 25 ft. row		Plant Height (in)	Test Weight (lb)	Planting to 50% Bloom (days)
					Com- pactness (1-5)	Exser- tion (1-5)	Off-Type Heads (no)	Tall Plants (no)			
M. F. A. GS10	137.5	77.8	119	3.7	4.7	3.0	0.7	0.0	55.7	57.5	68
DeKalb BR-64	128.6	80.0	149	2.3	4.7	3.3	1.7	0.0	69.7	57.0	73
Excel Bird-Go	127.8	79.1	147	13.7	4.7	2.3	0.7	0.0	68.3	58.5	71
AKS 663	122.7	74.8	135	7.7	5.0	3.0	0.0	0.0	63.0	57.0	73
N. K. X-4041	122.4	75.6	125	10.0	4.0	3.3	1.7	0.0	64.0	56.0	68
AKS 614	121.8	80.0	179	3.3	4.3	3.3	2.0	0.0	62.7	57.0	64
Conlee Top Hand	120.8	78.2	137	1.7	4.7	3.3	1.7	0.3	55.0	56.5	69
Frontier 409	120.0	75.6	154	3.3	4.3	3.3	2.7	1.3	64.0	59.5	69
Excel 733	116.9	78.5	123	5.7	4.3	2.3	1.7	2.7	52.3	55.0	67
Co-Op SG40	115.4	76.7	108	3.0	4.7	2.0	3.7	0.7	52.0	56.0	71
FMC Oro	112.5	76.7	132	1.7	4.7	3.7	1.7	1.0	53.3	56.0	69
Pioneer 845	112.1	76.5	126	2.0	3.0	3.7	1.7	1.7	64.7	58.0	69
Pioneer XB899BR	110.7	76.7	156	10.3	5.0	3.3	0.3	0.0	61.7	56.5	67
N. K. Savanna	106.9	79.8	159	6.0	5.0	4.3	1.3	1.0	60.0	57.5	64
N. K. 222G	104.1	76.7	123	0.7	4.7	3.3	1.3	0.0	54.7	57.0	69
DeKalb E-57	102.6	77.2	110	1.3	5.0	2.7	0.0	0.0	58.3	57.0	70
McNair 546	102.0	70.5	151	3.0	4.0	3.7	4.3	4.0	58.0	57.0	70
Pioneer 846	101.1	76.4	115	0.7	4.0	3.3	0.7	0.0	60.7	57.0	68
FMC Chula	101.1	77.7	123	3.3	3.0	3.7	1.7	0.0	57.7	56.5	65
RS 690	100.0	76.0	139	0.7	2.0	3.0	0.7	1.3	53.3	56.5	69
RS 703	99.5	77.5	108	1.0	2.3	2.7	4.7	0.7	64.0	58.0	70
Advance 91	97.0	74.7	113	6.7	3.3	2.0	3.0	2.0	56.3	55.0	72
Advance 14	94.8	76.4	129	1.0	4.7	4.0	1.3	1.0	60.0	55.0	65
FMC Grande	94.1	73.0	125	1.7	3.3	2.3	3.0	0.7	59.3	56.5	68
Pioneer 866	93.7	77.6	122	1.3	2.3	3.3	2.0	1.7	61.3	58.0	65
N. K. 280	93.0	78.2	136	1.0	2.3	3.3	1.3	0.3	60.0	56.5	65
McNair 652	92.6	75.0	130	2.0	4.7	4.0	2.7	0.7	63.7	57.5	69
Pioneer 850	90.0	73.9	125	2.3	3.7	2.7	4.0	2.0	56.0	55.0	70
Pioneer 820	87.9	68.3	122	2.0	4.0	3.0	2.7	0.7	59.7	55.0	72
FMC Rapido	85.6	75.8	114	3.7	4.3	3.3	4.0	2.0	48.3	54.0	65
DeKalb F-61	83.4	69.1	116	1.0	4.7	3.0	1.7	0.0	60.7	57.0	71
Advance 85	74.5	64.3	135	2.0	2.7	3.7	1.0	0.0	67.7	54.5	69
Pioneer 828	73.8	64.4	131	1.3	2.7	2.7	2.0	0.3	67.3	57.0	70
Co-Op SG 30	72.7	66.2	122	1.7	2.3	2.3	0.0	0.0	66.0	56.5	73
Martin	72.4	72.9	121	2.7	3.7	3.0	3.0	0.3	57.7	58.0	67
S. D. 503	65.8	74.7	151	5.0	1.7	4.0	4.3	4.3	64.7	55.0	63
Average	101.6	75.1	131	3.3	3.8	3.1	2.0	0.8	60.0	56.6	69

Differences in yield between any two entries of less than 10.2 bushels per acre are not considered significant.

Table 7. 1969 performance record for grain sorghum hybrids and varieties included in the yield trial conducted in Marion County near Palmyra, Missouri. Planted June 10, 1969. Harvested November 5, 1969.

Entry	Acre Yield (bu)	Threshing (%)	Heads in 25 ft. (no)	Lodged Plants (%)	Heads		Per 25 ft. row		Plant Height (in)	Test Weight (lb)	Planting to 50% Bloom (days)
					Compactness (1-5)	Exsertion (1-5)	Off-Type Heads (no)	Tall Plants (no)			
Pioneer 828	159.9	87.6	96	37.1	2.7	2.7	0.0	0.0	73	57.0	66
N. K. X-4041	144.2	77.7	103	0.3	2.7	2.7	0.0	0.0	71	52.0	64
McNair 652	141.9	81.8	99	49.5	3.0	3.7	0.0	0.0	71	58.0	59
Advance 85	131.1	77.4	111	33.6	2.3	4.0	0.7	1.3	78	56.0	62
Pioneer 845	128.6	77.2	88	23.8	2.0	3.7	0.0	0.3	66	58.0	60
Excel Bird-Go	123.5	80.5	98	54.6	4.3	3.0	0.0	0.0	68	57.0	60
DeKalb BR-64	122.5	80.6	102	1.1	4.0	3.3	0.0	0.0	71	53.0	63
Pioneer 846	118.9	75.7	85	0.0	3.0	3.3	0.0	0.0	61	53.5	62
Pioneer 820	118.2	74.5	93	7.7	2.3	3.7	0.0	0.3	66	55.0	64
FMC Grande	118.0	78.7	99	12.8	2.7	2.3	0.0	0.0	64	54.0	60
Pioneer 866	115.2	78.9	95	13.3	2.0	3.0	0.0	0.0	66	57.0	60
Excel 733	115.1	78.0	101	1.6	3.7	2.0	0.0	1.0	55	55.5	62
DeKalb F-61	113.2	78.2	108	1.3	3.3	3.3	0.0	0.3	64	56.0	63
N. K. 280	112.7	78.9	108	6.2	2.3	4.7	0.3	0.3	62	56.0	59
McNair 546	112.0	73.9	114	6.9	4.7	3.3	0.0	1.3	60	54.5	55
Conlee Top Hand	111.9	75.8	100	1.8	3.0	2.3	1.0	1.7	56	54.5	63
Co-Op SG40	111.1	75.8	89	0.4	3.7	2.3	0.0	0.0	59	51.5	60
FMC Oro	109.5	77.3	112	1.1	3.3	2.7	0.7	0.7	63	52.5	62
Frontier 409	107.3	66.3	108	24.2	4.3	3.3	0.7	7.0	62	56.0	58
Advance 91	106.5	76.8	83	2.0	2.3	2.7	0.0	0.0	61	52.5	63
DeKalb E-57	106.4	75.9	92	0.0	3.7	1.7	0.0	0.0	60	54.5	61
Co-Op SG30	104.9	78.7	75	1.8	1.7	3.0	0.0	0.3	65	57.0	62
AKS 663	104.3	72.5	95	0.6	5.0	2.3	0.0	1.3	66	54.0	61
N. K. 222G	104.2	74.0	115	1.2	2.7	3.3	0.0	0.3	55	56.0	63
Pioneer 850	103.4	74.1	78	0.9	2.3	2.7	0.7	1.7	59	52.5	65
RS 703	102.0	78.8	78	6.2	1.7	3.7	0.0	0.3	64	56.5	60
M. F. A. GS10	97.3	81.8	74	0.0	3.0	3.0	0.3	0.7	57	51.5	63
FMC Chula	95.4	68.9	93	3.2	1.3	2.3	0.3	0.7	61	53.0	63
Advance 14	93.7	70.0	97	0.7	4.0	3.3	0.0	0.0	64	53.5	62
AKS 614	90.5	63.9	119	69.9	3.0	4.0	0.0	0.3	63	56.0	59
RS 690	86.6	75.3	95	0.3	2.0	3.0	0.3	1.3	55	55.0	60
N. K. Savanna	86.4	68.6	107	37.5	4.0	3.0	0.0	1.3	59	55.5	58
Pioneer XB899BR	84.0	69.1	94	19.5	3.7	3.0	0.0	0.3	55	55.5	61
FMC Rapido	76.3	79.8	79	0.4	3.3	2.7	0.3	1.3	51	56.0	62
Martin	65.1	67.5	89	12.8	2.3	2.7	0.3	0.0	57	56.0	64
S.D. 503	38.7	57.1	100	1.0	1.0	5.0	0.3	0.7	71	56.0	56
Average	107.2	75.2	96	12.1	2.9	3.1	0.2	0.7	63	55.0	61

Difference in yield between any two entries of less than 14.8 bushels per acre are not considered significant.

Table 8. 1969 performance record for grain sorghum hybrids and varieties included in the yield trial conducted in Boone County near Columbia, Missouri. Planted June 10, 1969. Harvested November 13, 1969.

Entry	Acre Yield (bu)	Thresh- ing (%)	Heads in 25 ft. (no)	Lodged Plants (%)	Heads		Per 25 ft. row		Plant Height (in)	Test Weight (lb)	Planting to 50% Bloom (days)
					Com- pactness (1-5)	Exser- tion (1-5)	Off-Type Heads (no)	Tall Plants (no)			
Co-Op SG40	139.2	71.9	66	0.0	5.0	2.0	1.0	0.0	46	57.0	75
N. K. 280	123.4	76.1	77	0.0	5.0	3.3	2.7	0.0	48	56.0	71
McNair 652	120.9	75.0	64	0.0	5.0	3.3	1.7	0.7	53	56.0	74
Advance 85	118.5	73.9	93	0.0	3.7	3.7	2.0	1.7	59	55.0	73
RS 690	117.5	77.8	82	0.0	3.0	1.7	1.0	0.3	44	56.5	70
Pioneer 820	117.0	74.2	79	0.0	3.0	3.3	0.7	0.3	49	55.5	76
Pioneer 866	111.8	75.0	81	0.0	2.7	2.7	2.3	0.0	55	58.0	71
N. K. X-4041	110.4	74.0	60	0.3	3.3	2.7	0.0	0.0	62	54.5	84
M. F. A. GS10	109.4	73.8	57	0.0	5.0	2.3	0.0	0.0	45	57.0	75
AKS 663	103.2	65.2	75	1.7	5.0	3.0	1.7	0.3	54	56.0	75
Excel 733	102.3	68.4	71	0.0	5.0	2.0	1.0	0.0	44	56.5	73
RS 703	101.5	79.5	64	0.0	3.7	3.0	0.7	0.0	49	57.0	72
Frontier 409	100.7	71.1	70	0.3	5.0	2.3	1.0	0.0	45	54.5	69
FMC Oro	100.7	72.6	80	0.0	4.3	3.0	1.0	0.0	43	55.5	76
Pioneer 850	99.5	74.0	75	0.3	3.7	2.3	0.7	0.0	49	56.0	76
Conlee Top Hand	99.3	79.4	58	0.0	4.7	3.0	2.0	0.7	45	55.0	77
Excel Bird-Go	97.6	68.1	66	3.0	5.0	3.3	4.0	0.0	53	57.0	70
Pioneer 846	96.2	71.0	81	0.7	4.0	4.0	1.7	0.0	54	55.0	72
FMC Grande	95.8	74.6	67	0.0	4.0	3.3	1.3	0.7	49	53.5	75
Advance 91	94.4	68.4	83	0.3	3.7	2.3	0.7	0.0	50	53.0	76
Pioneer XB899BR	94.3	63.4	27	0.0	5.0	4.0	0.0	0.0	44	53.5	77
Co-Op SG30	93.0	71.7	57	0.0	3.7	2.7	2.3	0.3	48	52.0	76
N. K. 222G	92.1	74.2	81	0.0	4.3	3.7	0.0	0.0	47	56.0	71
Advance 14	91.1	66.2	61	0.0	5.0	3.3	0.7	0.7	47	55.0	77
S. D. 503	89.8	76.9	56	0.3	3.0	3.7	5.3	0.0	53	55.5	69
FMC Rapido	88.7	70.4	78	0.0	4.0	2.3	3.7	0.0	45	55.0	73
DeKalb E-57	88.0	61.5	83	0.0	5.0	3.3	0.3	0.0	50	54.5	75
DeKalb F-61	87.9	76.5	82	0.0	4.0	2.7	1.0	0.3	53	57.0	72
Pioneer 828	87.8	73.3	82	1.0	3.3	3.0	1.0	0.0	55	57.0	78
Pioneer 845	85.7	72.5	75	2.3	3.0	3.7	0.0	0.0	57	55.5	74
FMC Chula	80.5	65.5	56	0.0	3.0	3.3	2.3	1.3	44	55.0	76
AKS 614	79.9	68.3	62	0.0	5.0	3.0	1.7	0.0	47	56.5	72
N. K. Savanna	77.8	64.7	77	1.0	5.0	3.3	4.0	0.0	44	55.0	69
McNair 546	75.3	60.3	68	0.0	5.0	3.3	1.3	0.3	45	54.0	69
DeKalb BR-64	72.0	74.0	59	0.0	5.0	4.0	1.7	0.7	53	53.0	75
Martin	47.2	63.2	33	0.0	3.3	3.3	0.7	0.3	47	57.0	77
Average	97.0	71.3	69	0.3	4.2	3.0	1.5	0.2	49	55.4	74

Difference in yield between any two entries of less than 25.6 bushels per acre are not considered significant.

Table 9. 1969 performance record for grain sorghum hybrids and varieties included in the yield trial conducted at the Southwest Center in Lawrence County near Mt. Vernon, Missouri. Planted May 26, 1969. Harvested October 29, 1969.

Entry	Acre* Yield (bu)	Thresh- ing (%)	Heads in 25 ft. (no)	Lodged Plants (%)	Heads		Per 25 ft. row		Plant Height (in)	Test Weight (lb)
					Com- pactness (1-5)	Exser- tion (1-5)	Off-type Heads (no)	Tall Plants (no)		
DeKalb F-61	63.1	68.9	95	0.3	3.0	1.3	0.0	0.0	35	54.0
DeKalb BR-64	55.2	67.2	93	0.0	3.7	2.0	0.0	0.0	38	56.0
Pioneer 820	52.6	68.7	86	0.0	3.0	1.7	0.0	0.0	36	55.0
Excel 733	51.3	64.2	81	3.0	3.7	1.7	0.0	0.0	34	49.0
FMC Rapido	49.9	69.2	84	2.0	3.7	1.3	0.0	0.0	32	48.5
Excel Bird-Go	47.4	64.5	73	20.0	4.3	3.7	0.0	0.0	42	42.0
FMC Chula	45.0	64.2	80	4.0	2.7	1.3	0.0	0.0	35	51.0
N. K. 222G	43.2	62.3	92	0.3	2.7	1.7	0.0	0.0	30	51.5
Frontier 409	41.8	62.8	88	4.3	4.3	2.0	0.0	0.0	31	51.0
N. K. X-4041	38.9	65.7	92	0.0	2.3	2.0	0.0	0.0	42	47.0
Pioneer 845	38.3	64.2	99	13.3	2.3	2.0	0.0	0.0	34	52.5
Pioneer 866	38.2	61.7	80	2.3	2.0	2.7	0.0	0.0	36	55.5
M. F. A. GS10	36.3	61.2	58	0.0	3.3	1.3	0.0	0.0	29	54.5
N. K. 280	35.6	62.8	100	3.3	2.7	2.0	0.0	0.0	30	54.5
RS 690	34.2	64.7	70	0.0	3.0	1.3	0.0	0.0	31	52.0
Conlee Top Hand	34.1	62.5	94	0.0	3.3	1.3	0.0	0.0	28	49.5
McNair 652	31.8	61.7	78	0.3	2.3	2.3	0.0	0.0	31	55.5
RS 703	29.7	61.3	56	0.0	2.0	1.3	0.0	0.0	32	55.0
N. K. Savanna	29.3	62.7	84	14.3	4.3	1.7	0.0	0.0	29	54.0
Pioneer 846	29.3	60.7	93	0.7	2.0	1.0	0.0	0.0	31	56.0
Advance 14	28.2	60.5	96	0.7	2.7	1.3	0.0	0.0	32	54.0
DeKalb E-57	28.0	57.2	90	0.7	3.7	1.0	0.0	0.0	31	57.0
AKS 614	27.3	63.2	93	21.7	3.7	1.7	0.0	0.0	34	49.5
FMC Grande	25.7	56.4	92	9.0	2.3	1.3	0.0	0.0	32	51.5
AKS 663	24.1	57.9	72	0.7	3.0	1.7	0.0	0.0	32	51.5
Pioneer XB899BR	24.8	58.8	46	5.0	4.0	2.3	0.0	0.0	29	46.5
Co-Op SG40	23.7	56.0	62	1.3	2.7	1.0	0.0	0.0	29	51.5
Co-Op SG30	22.0	62.0	59	0.0	1.3	1.7	0.0	0.0	30	53.5
Pioneer 828	21.7	54.7	84	1.0	1.7	1.3	0.0	0.0	35	47.0
FMC Oro	21.4	63.9	94	0.0	2.7	1.0	0.0	0.0	25	50.0
Advance 91	21.0	54.7	77	0.0	2.0	1.0	0.0	0.0	31	49.5
McNair 546	17.6	56.3	85	3.3	4.3	1.0	0.0	0.0	25	51.5
S. D. 503	17.0	57.8	91	12.7	2.7	2.7	0.7	0.7	37	51.5
Advance 85	12.3	55.3	97	0.0	2.3	1.3	0.0	0.3	29	49.0
Martin	9.6	57.2	69	0.0	2.7	1.0	0.0	0.0	26	53.0
Pioneer 850	8.8	53.1	62	0.0	2.0	1.3	0.0	0.0	29	54.0
Average	32.2	61.3	82	3.4	2.9	1.6	0.0	0.0	32	51.8

Difference in yield between any two entries less than 20.4 bushels are not considered significant.

\*See introduction for explanation of low yields.

Table 10. Four-location average for all grain sorghum entries in the 1969 performance trials.

Entry	Acre Yield (bu)	Heads in 25 ft. (no)	Lodged Plants (%)	Heads		Plant Height (in)
				Com- pactness (1-5)	Exser- tion (1-5)	
N. K. X-4041	104.0	95	2.6	3.1	2.7	60
Excel Bird-Go	99.1	96	22.8	4.6	3.1	58
Co-Op SG40	97.4	81	1.2	4.0	1.8	46
McNair 652	96.8	93	13.0	3.8	3.3	55
Excell 733	96.4	94	2.6	4.2	2.0	46
M. F. A. GS10	95.1	77	0.9	4.0	2.4	47
DeKalb BR-64	94.6	101	0.8	4.4	3.2	58
Pioneer 820	93.9	95	2.4	3.1	2.9	53
Frontier 409	92.4	105	8.0	4.5	2.7	50
Conlee Top Hand	91.5	97	0.9	3.9	2.5	46
N. K. 280	91.2	105	2.6	3.1	3.3	50
Pioneer 845	91.2	97	10.4	2.6	3.3	56
Pioneer 866	89.7	94	4.2	2.2	2.9	54
AKS 663	88.6	94	2.7	4.5	2.5	54
DeKalb F-61	86.9	100	0.6	3.8	2.6	53
Pioneer 846	86.4	94	0.5	3.2	2.9	52
FMC Oro	86.0	104	0.7	3.8	2.6	46
N. K. 222G	85.9	103	0.6	3.6	3.0	47
Pioneer 828	85.8	98	10.1	2.6	2.4	58
RS 690	84.6	96	0.2	2.2	2.2	46
Advance 85	84.1	109	8.9	2.8	3.2	58
FMC Grande	83.4	96	5.9	3.1	2.3	51
RS 703	83.2	76	1.8	2.4	2.7	52
DeKalb E-57	81.2	94	0.5	4.4	2.2	50
FMC Chula	80.5	88	2.6	2.5	2.6	50
AKS 614	79.9	113	23.7	4.0	3.0	52
Advance 91	79.7	89	2.2	2.8	2.0	50
Pioneer XB899BR	78.4	81	8.7	4.4	3.2	48
Advance 14	77.0	96	0.6	4.1	3.0	51
McNair 546	76.7	104	3.3	4.5	2.8	47
Pioneer 850	75.4	85	0.9	2.9	2.2	48
N. K. Savanna	75.1	107	14.7	4.6	3.1	48
FMC Rapido	75.1	89	1.5	3.8	2.4	44
Co-Op SG30	73.2	78	0.9	2.2	2.4	52
S. D. 503	52.8	100	4.8	2.1	3.8	56
Martin	48.6	78	3.9	3.0	2.5	47
Average	84.5	94	4.8	3.5	2.7	51



Table 11. Summary of performance records for grain sorghum entries tested at the North Missouri Center near Spickard in 1968 and 1969.

Entry	2-Year Average				
	Acre Yield (bu)	Lodged Plants (%)	Heads		Plant Height (in)
			Com- pactness (1-5)	Exser- tion (1-5)	
DeKalb BR-64	121.5	1.4	4.9	3.0	64
M. F. A. GS10	109.9	2.1	4.7	3.9	50
McNair 546	103.6	1.7	4.5	3.5	53
Frontier 409	102.8	1.7	4.7	3.0	58
AKS 614	99.4	1.9	4.5	3.5	56
Pioneer 845	99.2	1.2	2.7	4.2	59
Advance 91	96.0	3.6	2.5	2.2	54
N. K. 280	94.8	0.5	2.7	3.3	57
DeKalb E-57	94.5	0.9	4.7	3.0	54
McNair 652	88.3	1.4	4.5	4.4	60
Pioneer 820	87.8	1.0	3.5	3.5	56
Pioneer 846	87.7	0.8	4.0	4.2	54
Pioneer 828	87.5	0.9	2.5	2.9	65
DeKalb F-61	86.6	0.7	3.9	2.7	56
Pioneer 866	84.8	1.0	2.2	3.8	56
Martin	62.4	2.1	3.2	3.7	52
Average	94.2	1.4	3.7	3.4	56

Table 12. Summary of performance records for grain sorghum entries tested near Palmyra, Missouri for the period 1967-1969.

Entry	2-Year Average <sup>1</sup>					3-Year Average				
	Acre Yield (bu)	Lodged Plants (%)	Heads		Plant Height (in)	Acre Yield (bu)	Lodged Plants (%)	Heads		Plant Height (in)
			Com- pactness (1-5)	Exser- tion (1-5)				Com- pactness (1-5)	Exser- tion (1-5)	
Pioneer 828	137.1	20.2	2.9	2.9	65	105.8	13.5	3.0	3.2	63
McNair 652	123.9	28.3	3.4	3.4	63	----	---	---	---	--
Pioneer 845	118.2	12.7	2.4	3.9	62	94.5	8.7	2.3	3.6	59
DeKalb BR-64	116.3	2.3	4.1	3.5	65	----	---	---	---	--
Pioneer 846	111.1	0.0	2.9	3.7	56	87.6	0.0	3.1	3.3	55
N. K. 280	110.1	5.7	2.5	4.9	57	84.1	4.0	2.8	4.3	55
Pioneer 866	107.1	7.3	1.9	3.2	60	----	---	---	---	--
Pioneer 820	107.0	4.5	2.2	4.0	60	85.6	3.3	2.5	3.5	58
DeKalb E-57	101.4	1.7	4.2	2.4	55	79.0	1.1	4.4	2.5	55
M. F. A. GS10	102.0	2.2	3.4	2.5	52	----	---	---	---	--
Frontier 409	101.1	14.9	4.7	2.8	57	84.0	9.9	4.8	2.8	56
DeKalb F-61	99.1	1.2	3.5	3.3	56	78.6	0.9	3.9	3.1	56
Advance 91	97.3	2.1	2.2	2.4	55	76.0	1.6	2.4	2.6	54
McNair 546	95.3	4.9	4.9	3.3	54	----	---	---	---	--
AKS 614	91.3	48.4	4.0	3.9	56	80.5	32.2	4.3	3.8	56
Martin	70.4	9.8	2.3	3.5	53	55.8	6.6	3.0	3.7	54
Average	105.5	10.4	3.2	3.4	58	88.9	7.4	3.3	3.3	56

<sup>1</sup>Average of 1968-1969 data.

Table 13. Summary of 2- and 3-year performance records of grain sorghum entries tested near Columbia, Missouri for the period 1967-1969.

Entry	2-Year Average <sup>1</sup>					3-Year Average				
	Acre Yield (bu)	Lodged Plants (%)	Heads		Plant Height (in)	Acre Yield (bu)	Lodged Plants (%)	Heads		Plant Height (in)
			Com- pactness (1-5)	Exser- tion (1-5)				Com- pactness (1-5)	Exser- tion (1-5)	
McNair 652	103.2	9.3	4.2	3.0	53	----	---	---	---	--
M. F. A. GS10	97.0	7.2	4.7	2.3	44	----	---	---	---	--
N. K. 280	95.3	17.1	3.9	3.2	47	92.0	11.4	3.3	2.8	48
Frontier 409	87.0	25.6	4.9	2.2	44	90.6	17.0	4.7	1.8	46
Pioneer 820	84.3	4.7	2.4	2.8	48	79.5	3.1	2.3	2.4	48
Pioneer 866	84.3	26.5	2.7	2.7	51	----	---	---	---	--
DeKalb E-57	82.5	0.5	4.9	2.8	49	83.0	0.3	4.5	2.6	50
Pioneer 828	79.3	0.9	2.7	2.5	55	72.4	0.6	2.5	2.1	54
DeKalb F-61	78.9	2.0	3.5	2.7	50	76.9	1.3	3.2	2.2	50
Advance 91	78.1	0.3	3.0	2.0	48	78.9	0.2	2.6	1.7	48
DeKalb BR-64	75.9	0.8	4.7	3.4	52	----	---	---	---	--
AKS 614	73.5	34.3	5.0	2.4	45	84.5	22.8	4.8	2.3	48
McNair 546	69.0	22.9	5.0	2.8	41	----	---	---	---	--
Pioneer 845	68.8	28.6	2.7	3.4	54	78.1	19.1	2.4	3.0	55
Pioneer 846	68.8	15.8	3.7	3.2	49	75.3	10.8	3.3	2.7	49
Martin	49.8	0.8	3.0	3.3	46	55.1	0.5	2.5	3.0	47
Average	79.7	12.3	3.8	2.8	48	78.8	7.9	3.3	2.4	49

<sup>1</sup>Average of 1968-69 data.

Table 14. Summary of 2- and 3-year performance records of grain sorghum entries at the Southwest Center near Mt. Vernon, Missouri for the period 1967-1969.

Entry	2-Year Average					3-Year Average				
	Acre Yield (bu)	Lodged Plants (%)	Heads		Plant Height (in)	Acre Yield (bu)	Lodged Plants (%)	Heads		Plant Height (in)
			Com- pactness (1-5)	Exser- tion (1-5)				Com- pactness (1-5)	Exser- tion (1-5)	
DeKalb F-61	72.4	0.2	3.4	2.5	42	85.2	0.1	3.6	2.7	45
DeKalb BR-64	67.0	0.0	3.7	2.5	46	-----	---	---	---	--
N. K. 280	56.7	1.6	3.5	2.6	38	75.8	1.1	3.5	2.7	41
AKS 614	56.4	10.8	4.0	2.2	40	77.2	7.2	4.0	2.4	42
Frontier 409	56.4	2.2	4.3	2.4	36	77.1	1.5	4.2	2.2	39
Pioneer 820	55.6	0.1	3.4	2.0	40	66.3	0.0	3.3	2.0	41
Pioneer 866	53.6	1.2	2.5	2.7	43	-----	---	---	---	--
DeKalb E-57	52.5	0.4	4.4	1.8	39	70.3	0.2	4.5	2.3	43
Pioneer 845	52.0	6.6	2.6	2.5	42	66.2	4.4	2.7	2.6	44
McNair 652	48.7	0.2	3.6	3.0	40	-----	---	---	---	--
M. F. A. GS10	48.0	0.0	3.5	1.6	34	-----	---	---	---	--
Pioneer 846	46.0	0.4	2.6	2.0	37	55.6	0.3	3.0	2.3	40
McNair 546	45.2	1.6	4.5	2.2	33	-----	---	---	---	--
Pioneer 828	45.0	0.5	3.0	2.3	43	65.1	0.3	2.8	2.4	45
Advance 91	34.6	0.0	2.4	1.5	36	47.9	0.0	2.2	1.6	37
Martin	27.1	0.1	3.2	1.8	33	42.5	0.0	3.3	1.9	36
Average	51.1	1.6	3.4	2.2	39	66.3	1.4	3.4	2.3	41

<sup>1</sup>Average of 1968-69 data.