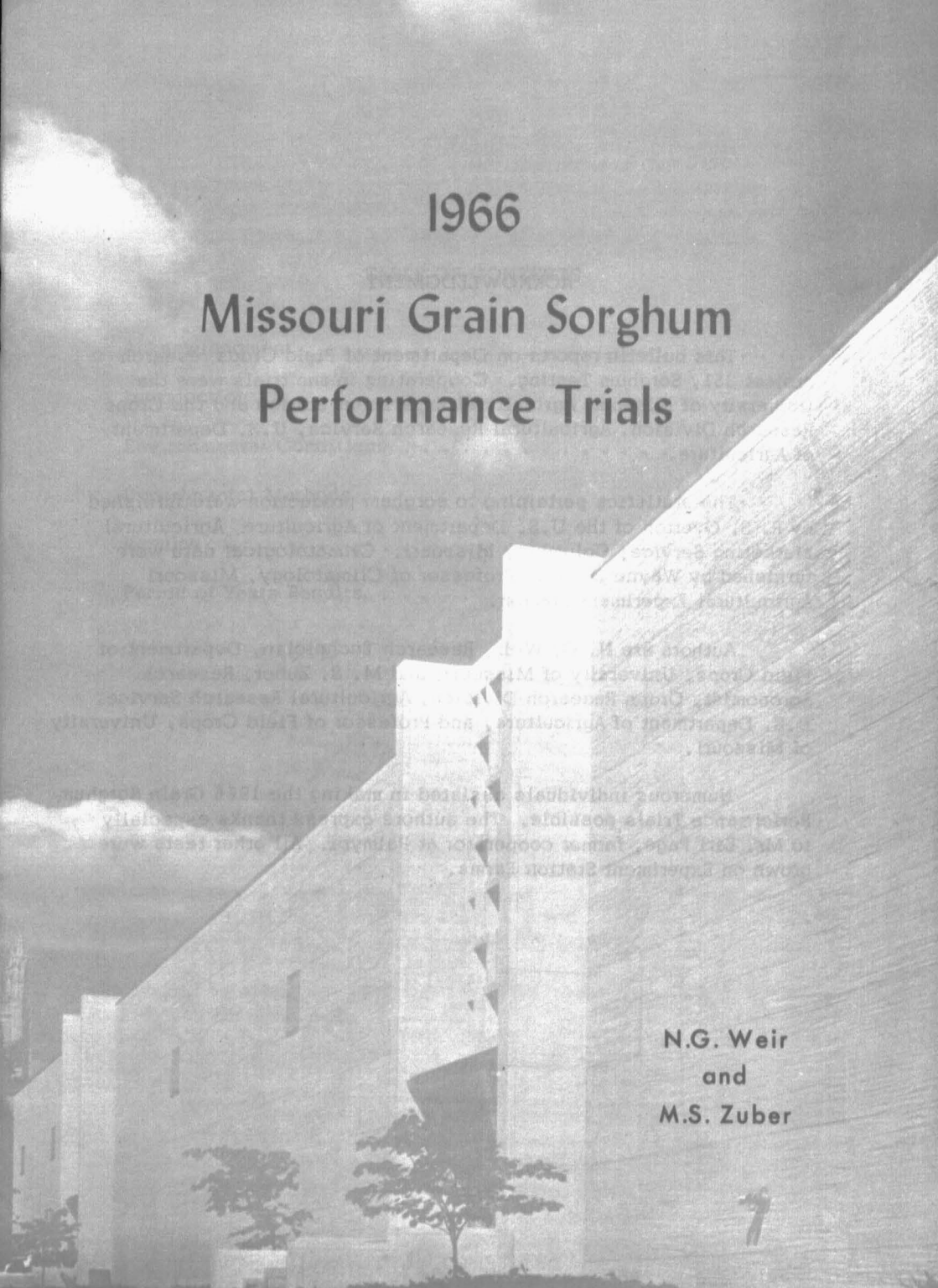
1966

Missouri Grain Sorghum Performance Trials



N.G. Weir
and
M.S. Zuber

Special Report 81
March, 1967

University of Missouri
Agricultural Experiment Station

ACKNOWLEDGMENT

This bulletin reports on Department of Field Crops research project 351, Sorghum Testing. Cooperating in the trials were the University of Missouri Agricultural Experiment Station and the Crops Research Division, Agricultural Research Service, U.S. Department of Agriculture.

The statistics pertaining to sorghum production were furnished by R. S. Overton of the U.S. Department of Agriculture, Agricultural Marketing Service, Columbia, Missouri. Climatological data were furnished by Wayne Decker, Professor of Climatology, Missouri Agricultural Experiment Station.

Authors are N. G. Weir, Research Technician, Department of Field Crops, University of Missouri; and M. S. Zuber, Research Agronomist, Crops Research Division, Agricultural Research Service, U.S. Department of Agriculture, and Professor of Field Crops, University of Missouri.

Numerous individuals assisted in making the 1966 Grain Sorghum Performance Trials possible. The authors express thanks especially to Mr. Earl Page, farmer cooperator at Palmyra. All other tests were grown on Experiment Station Farms.

TABLE OF CONTENTS

Acknowledgment 2

Introduction 4

Environmental Conditions 5

Experimental Methods 5

Results 7

Period of Years Results. 7

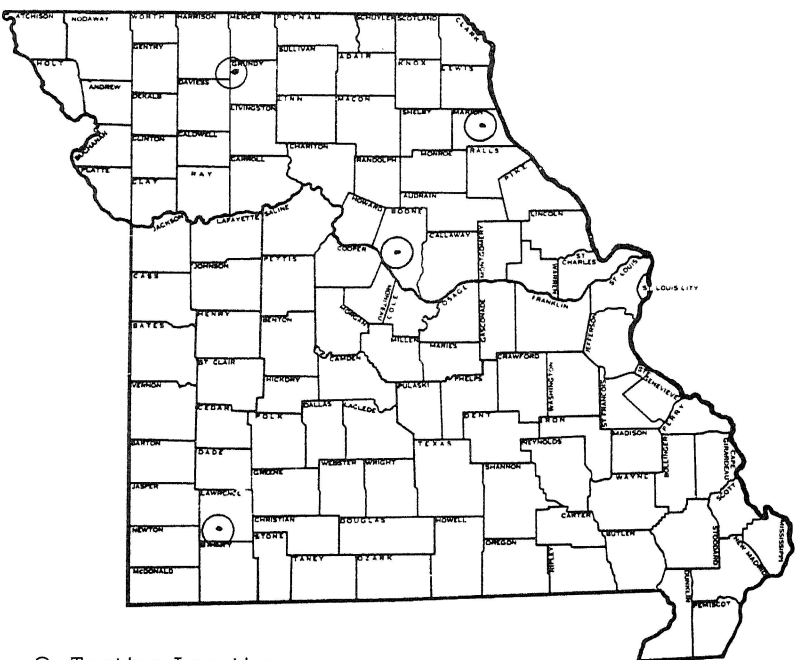
1966

GRAIN SORGHUM PERFORMANCE TRIALS

N. G. Weir and M. S. Zuber

INTRODUCTION

Grain sorghum performance trials were conducted at 4 testing sites in 1966. These were located at the North Missouri Research Center near Spickard, a farmer cooperator's field near Palmyra (northeast Missouri), the Bradford Research Farm near Columbia and the Southwest Missouri Research Center near Mt. Vernon. Due to severe bird damage at three locations the test at Palmyra was the only one harvested. The average yield per acre was 81.3 bushels, ranging in yield from a low of 36.5 bushels to a high of 127.4 bushels.



⊙ Testing Locations

FIGURE 1.--Outline map of Missouri showing the testing locations for the 1966 grain sorghum trials

The 1966 preliminary estimate of harvested acres of grain sorghum was 81 percent of the 1965 acreage and 61 percent of the 9-year average. The 1966 preliminary estimate of 56 bushels per acre average yield is 8 bushels more than the 48 bushel 9-year average and 6 bushels less than the preliminary estimate for 1966 corn yield. These data are presented in Table 1.

Comparisons between the yields of corn and grain sorghum at 2 of the testing sites for a three year period are made in Table 2. Since these tests were located either in the same field or in close proximity, these comparisons are suggestive. Planting dates and cultural factors were not the same for corn and sorghum at the testing sites.

The problem of growing reliable experimental tests in the presence of large bird populations is presented in Table 3.

ENVIRONMENTAL CONDITIONS

The rainfall and temperature records from May 1 through September 15 at each location are reported in Tables 5A and 5B. Temperatures for 1966 were below normal at all locations for the growing season as a whole. The July heat wave is reflected in the days with temperatures equal to or above 100° F. Rainfall was below average at all locations.

EXPERIMENTAL METHODS

Seed Source

All producers and distributors of grain sorghum seed were eligible to enter the tests in 1966. No limit was placed on the number of hybrids any one company could enter.

Planting Date

The test at Mt. Vernon was planted May 24; Columbia, June 2; Spickard, June 4; and Palmyra, June 23.

Field Design

Entries were planted in 4 plots at each location. Individual plots consisted of 1 row, 25 feet long. The length of the harvested row was 20 feet. Distance between rows was 38 inches at Columbia, 40 inches at Mt. Vernon and Spickard and 30 inches at Palmyra. Plots were located at random over the testing area to minimize soil and cultural differences.

Yield

The heads from each plot were harvested by hand and weighed. Acre yields were computed on the basis of threshed grain.

Threshing Percentage

Threshing percentage data were determined for two replications of the trial located at Palmyra. All threshing percentages were obtained about 2 weeks after harvest. The mean threshing percentage was used for computing yields at Palmyra.

Date of Blooming

No date of blooming data were collected in 1966.

Plant Height

The average height of the plants, in inches, was determined for each entry.

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 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.

Test Weight

Test weights were determined for all entries harvested at Palmyra.

RESULTS

Results of the Columbia, Mt. Vernon and Spickard tests for 1965 are reported in Tables 6 through 8. The 1966 results for the Palmyra location are presented in Table 9. Table 10 summarizes tests for 1965 at the four locations.

PERIOD-OF-YEARS RESULTS

The best basis for selecting a grain sorghum hybrid is on its performance record over several years. Results of tests at Columbia and Mt. Vernon for the 3-year period 1963 through 1965 are summarized in Table 11. A summary of 2 years (1964 and 1965) at the Spickard and Palmyra locations is given in Table 12. In the event that it becomes necessary to make a selection on the performance record for a single year, it is better to use the averages from several locations, such as those presented from 1965 data in Table 10.

TABLE 1.--The average number of acres, total production, average acre yield for grain sorghum and the average acre yield for corn during the 9 year period 1958-1966, 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 in bushels	Average acre yield in bu.	Average of State yield tests in bu.	Average acre yield in bu.	Ave. of State yield tests in bu.
1958	603,000	26,532,000	44	89	54	106
1959	501,000	22,545,000	45	66	53	97
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	230,000	13,110,000	57	90	72	115
1966	187,000*	10,472,000*	56*	81	62*	100
1958-66 Ave.	308,000	14,513,000	48	91	58	105

*Preliminary estimate as of December 1, 1966.

TABLE 2.--Comparative acre yields of grain sorghum and corn at two testing locations in Missouri for the three year period 1963, 1964 and 1965

Testing location	Average Yield in Bu.		Range in Yield from High to Low in Bu.	
	Grain Sorghum	Corn	Grain Sorghum	Corn
Columbia	98.4	96.4	44.7	40.5
Mt. Vernon	64.5	100.4	33.3	47.5

TABLE 3.--Record of Grain Sorghum Tests abandoned due to bird damage of seedlings or mature seed heads in the 4-year period 1963 through 1966

Testing Location	Year			
	1963	1964	1965	1966
Columbia	X	X	X	abandoned
Mt. Vernon	X	X	X	abandoned
Palmyra	abandoned	X	X	X
Spickard	abandoned	X	X	abandoned

X is a test successfully grown and harvested

TABLE 4.--Seed source and name of entries tested in 1966

Entries	Seed Source	Address
Amak R12, Advance 14, Advance 91	Advance Seed Company Division of Ferry-Morse Seed Co., Inc.	P.O. Box 6738 Phoenix, Arizona 85005
Rico, Ranger B*, Jumbo L*	Asgrow Seed Company	P.O. Drawer A San Antonio, Texas 78211
DeKalb E57, F61*, F63, F64	DeKalb Agricultural Association	Route 2 Lubbock, Texas 79415
Frontier Super 400*, 401, 409*, 410E, 413	Frontier Hybrids, Inc.	Box 366 Scott City, Kansas 67871
Pioneer 820, 846, 848	Garst and Thomas Hybrid Corn Company	Coon Rapids, Iowa 50058
Northrup King Savanna*, NK212, NK222, NK275, NK310	Northrup King and Company	1500 Jackson N.E. Minneapolis, Minn. 55413

Taylor Evans Grainmaster A*, Grainmaster, TE66, TE77, TE88	Taylor Evans Seed Company	Box 480 Tulia Texas 79088
Arkansas AKS614	Arkansas Agricultural Experiment Station	Fayetteville, Ark. 72701
Colorado 606*	Colorado Agricultural Experiment Station	Fort Collins, Colo. 80521
Kansas 701, Martin, RS650, RS702	Kansas Agricultural Experiment Station	Manhattan, Kansas 66502
RS619, RS624	Nebraska Agricultural Experiment Station	Lincoln, Nebraska 68503
Oklahoma OK613, OK632	Oklahoma Agricultural Experiment Station	Stillwater, Okla. 74074
RS610, RS625	Texas Agricultural Experiment Station	College Station, Texas 77840

*Hybrids entered in 1966 that were not in earlier tests. Data are presented only in Table 9.

TABLE 5A.--Total rainfall, number of days with rain, and dry periods from May 1 through September 15, 1966 at each of the testing locations

Testing location	Total rainfall in inches	Days with rain					Total	Dry Periods*
		May	June	July	Aug	Sept. 15		
Columbia	13.85	8	8	6	4	3	29	(5/18-6/2)(6/27-7/14)(8/11-9/2)
Mt. Vernon	15.47	13	5	11	12	3	44	(5/19-6/7)(6/15-7/14)(8/23-9/15)
Spickard	16.21	8	13	9	8	2	40	(6/29-7/14)(8/22-9/15)
Palmyra	17.32	9	9	4	4	4	30	(6/14-7/18)(8/12-9/3)

*A dry period must have at least 15 consecutive days with less than 0.25 inch of precipitation in any one day. The beginning date is the day after 0.25 inch or more rainfall and the ending date is the day before 0.25 inch or more rainfall.

TABLE 5B.--Average temperature, departure from normal, the number of days with temperatures of 90° F or more, and 100° F or more at each of the testing locations from May 1, through September 15, 1966

Location	Cooperator	Average Fahrenheit temperature	Departure from normal	No. of days with temperatures 90° F or more		No. of days with temperatures 100° F or more
				1966	Ave.	1966
Columbia	Univ. of Mo. Bradford Farm	71.1	-2.2	27	39	4
Mt. Vernon	Univ. of Mo. Southwest Research Center	71.7	-2.0	37	25	6
Palmyra	Earl Page	70.7	-1.6	24	42	6
Spickard	Univ. of Mo. North Research Center	69.7	-3.6	23	42	2

Table 6. 1965 performance record for the sorghum test conducted in Boone County, near Columbia, Missouri. Planted June 17, 1965. Harvested November 18, 1965 (Exp. S70).

Entry	Acre yield bu.	Threshing %	Plants per 25 ft. row no.	Lodged plant %	Head: Compactness 1-5	Head: Exsertion 1-5	Per 25 ft. row: Off-type heads no.	Per 25 ft. row: Tall plants no.	Plant height ins.	Test weight lbs.	Planting to 50% blooming days
AMAK R12	113.7	75.4	105.0	2.9	2.8	2.5	0.3	0.5	52.8	57.4	71.8
DEKALB F64	107.9	73.2	90.0	1.7	4.3	3.3	0.0	0.5	58.3	59.0	71.0
DEKALB F63	107.4	71.4	113.7	0.7	3.0	2.8	0.0	0.0	58.5	56.6	75.3
AKS 614	105.8	70.5	105.2	6.4	4.5	2.3	3.8	0.5	53.3	56.9	69.8
T-E GRAINMASTER	105.6	74.1	101.7	0.5	2.5	2.8	4.0	1.3	51.5	55.9	73.8
NORTHRUP-KING NK275	101.8	71.3	85.5	1.5	2.8	2.0	0.0	0.0	51.5	56.6	71.5
EXCEL 707	100.5	74.4	91.7	1.1	2.8	2.3	0.0	0.5	54.0	56.3	71.8
TAYLOR-EVANS TE77	100.3	75.3	107.5	3.3	3.0	4.0	0.3	0.5	63.5	56.6	77.3
RS625	99.7	74.0	99.5	0.5	3.8	2.8	0.3	0.8	50.3	57.1	70.8
PIONEER 820	99.6	72.9	90.2	10.0	3.5	2.3	0.0	0.0	55.3	57.4	75.0
ASGROW RICO	99.3	72.2	102.7	0.2	2.3	2.8	0.0	0.3	49.0	56.3	72.0
PIONEER 848	98.1	73.8	84.5	0.9	4.5	2.5	0.8	0.8	49.8	59.1	73.0
TAYLOR-EVANS TE88	97.8	73.2	83.7	0.6	2.0	3.0	1.5	0.5	57.3	56.5	74.8
RS610	97.8	72.4	78.2	0.3	2.8	2.8	0.3	0.5	53.5	56.8	71.5
NORTHRUP-KING NK212	97.1	72.2	93.0	0.5	2.5	2.3	0.3	0.0	51.5	56.5	70.8
KAN701	96.7	72.4	108.0	4.6	1.3	3.8	0.0	0.0	59.8	55.9	78.0
ADVANCE 14	95.8	73.4	91.0	0.8	4.5	3.5	0.0	0.3	55.0	57.4	71.8
PIONEER 846	95.5	73.4	85.2	4.4	3.3	2.3	0.3	0.3	51.8	57.4	73.8
PAYMASTER UTE	95.4	75.4	105.7	0.2	1.8	2.5	0.0	0.3	49.8	59.6	73.0
DEKALB E57	95.1	71.9	98.0	0.3	5.0	2.3	0.0	0.0	53.3	56.0	72.0
OK632	94.7	69.8	80.2	10.0	5.0	4.3	0.3	0.0	58.5	56.9	74.0
NORTHRUP-KING NK310	94.4	66.1	93.7	0.0	2.5	2.5	0.5	1.0	57.8	51.4	83.0
ASGROW SPIKE	93.4	71.9	90.0	0.0	1.8	2.5	0.0	0.3	51.5	57.4	76.5
RS619	92.0	74.0	91.7	0.0	3.0	3.3	0.3	0.5	49.8	58.0	72.8
ASGROW TRIPLE T	91.5	71.3	85.2	0.9	1.0	2.3	0.3	0.3	58.3	57.5	77.5
FRONTIER 413	91.5	72.7	74.2	0.3	1.5	2.0	0.0	0.0	54.0	56.9	76.8
PAYMASTER KIOWA	90.8	73.6	93.7	1.6	2.8	3.0	0.8	0.3	57.0	57.8	73.3
RS624	89.6	72.1	82.2	0.0	2.0	2.3	2.8	0.3	48.0	56.1	73.8
PAYMASTER APACHE	89.3	74.2	99.2	0.8	1.8	3.0	0.3	0.3	56.3	56.6	75.8
RS626	89.0	70.7	108.5	0.5	2.8	2.5	0.5	0.3	49.0	55.0	71.5
NORTHRUP-KING NK222	86.8	71.2	96.2	0.0	4.8	2.8	0.0	0.3	46.0	58.3	71.0
PIONEER 861	86.4	72.2	97.0	0.3	4.5	2.8	0.5	0.3	49.3	58.5	70.8

FRONTIER 401	86.2	71.8	82.0	0.0	4.0	3.0	0.0	0.3	46.0	57.3	70.5
MFA GS8	86.2	71.1	87.7	6.0	1.8	3.0	0.0	0.8	56.0	55.5	77.0
FRONTIER 400C	85.8	72.4	62.7	2.0	2.8	2.8	0.5	0.3	55.3	56.6	72.0
FRONTIER EXPGX601	85.5	72.7	88.5	7.9	1.3	3.0	0.0	0.0	55.3	55.8	77.3
RS650	85.4	73.2	81.2	1.8	2.0	2.3	0.0	0.3	50.5	57.5	73.3
OK613	84.5	66.8	82.5	1.8	4.8	4.3	0.0	0.0	55.5	56.8	71.5
MFA GS9	83.9	72.1	61.0	0.4	2.5	2.5	0.0	0.5	56.5	56.1	75.3
DEKALB F65	83.4	70.9	76.7	0.7	2.8	2.5	0.5	0.5	47.3	55.9	73.3
FRONTIER EXPGX600	82.5	71.1	97.7	0.5	2.3	2.8	0.0	0.8	52.3	56.5	74.3
RS702	82.3	68.4	92.0	1.1	3.5	2.0	0.0	0.5	50.5	55.3	78.0
RS640	81.3	70.6	73.7	0.3	3.3	2.3	0.0	0.3	44.0	57.0	71.5
ADVANCE 91	80.9	69.0	83.5	0.3	3.3	2.3	0.0	0.5	49.8	55.5	77.8
TAYLOR-EVANS TE66	80.4	71.4	80.7	0.0	3.3	2.8	0.5	0.5	47.8	56.3	71.8
NORTHRUP-KING NK255	74.1	69.4	65.2	0.0	4.8	2.0	0.0	0.0	45.8	56.9	70.5
FRONTIER 410E	73.3	70.4	63.5	5.9	2.8	2.3	0.3	0.3	45.5	55.0	72.0
MARTIN	70.0	72.4	79.7	2.8	3.3	3.0	0.0	0.3	53.0	59.3	73.5
Mean	91.8	72.0	89.0	1.8	3.0	2.7	0.4	0.4	52.6	56.8	73.7

Differences in yield between any two entries of less than 13.4 bushels per acre are not considered significant.

Table 7. 1965 performance record for sorghum test conducted in Lawrence County, near Mt. Vernon, Missouri. Planted June 1, 1965. Harvested October 28, 1965 (Exp. S71).

Entry	Acre yield bu.	Threshing %	Plants per 25 ft. row no.	Lodged plants %	Head: Compactness 1-5	Head: Exsertion 1-5	Per 25 ft row: Off-type heads no.	Per 25 ft row: Tall plants no.	Plant height ins.	Test weight lbs.	Planting to 50% blooming days
NORTHRUP-KING NK275	95.5	70.7	94.2	0.5	2.8	1.3	0.3	0.8	51.3	55.1	59.3
DEKALB F63	90.2	70.6	95.2	0.0	3.5	3.0	0.0	0.5	56.3	56.9	64.0
PAYMASTER APACHE	88.9	72.4	87.7	0.0	2.3	2.0	0.0	0.8	55.5	57.0	63.3
DEKALB F64	87.7	70.1	89.7	0.6	5.0	3.8	0.0	0.0	58.8	58.5	59.3
ASGROW RICO	87.6	72.5	112.2	0.2	3.3	3.0	0.0	0.0	52.8	54.9	59.8
NORTHRUP-KING NK212	86.0	71.6	99.7	0.5	2.8	3.3	0.0	0.0	56.8	56.8	59.3
PIONEER 820	85.2	70.4	95.2	0.0	4.5	3.3	0.0	0.0	52.5	57.1	65.8
NORTHRUP-KING NK222	83.8	73.3	102.0	0.0	5.0	3.0	0.5	0.5	48.8	56.6	57.8
ASGROW SPIKE	83.6	68.2	111.2	0.0	3.0	2.3	0.0	0.3	50.0	56.8	63.3
TAYLOR-EVANS TE88	83.5	70.0	93.0	0.0	2.8	3.5	0.5	1.0	56.3	56.9	62.3
TAYLOR-EVANS TE77	82.1	68.3	116.0	0.2	2.5	3.5	0.0	0.3	60.0	55.0	64.8
RS610	81.7	73.5	82.5	0.0	4.0	4.0	0.0	0.0	59.3	57.4	59.0
PIONEER 861	81.6	70.1	98.0	0.0	5.0	2.8	0.0	0.0	47.8	56.9	58.3
EXCEL 707	81.6	70.5	82.2	0.0	3.3	1.5	0.3	0.5	50.3	55.4	60.5
PIONEER 848	81.2	71.4	89.2	0.0	5.0	3.3	0.0	0.5	46.5	56.4	61.5
AMAK R12	80.8	68.9	93.2	0.0	3.3	3.3	0.0	0.8	55.5	55.5	62.5
T-E GRAINMASTER	80.4	68.9	106.2	0.2	2.3	2.5	0.0	1.3	56.3	55.5	64.3
PAYMASTER UTE	78.6	74.0	92.5	0.3	4.3	2.5	0.0	1.0	50.5	58.0	61.0
FRONTIER 413	78.5	70.3	73.5	0.0	3.3	1.8	0.8	1.3	54.3	57.8	66.3
ADVANCE 91	78.2	70.0	97.2	0.0	4.0	2.0	0.0	0.5	50.5	54.3	64.3
OK632	78.2	69.1	94.2	0.0	4.8	4.5	0.3	0.3	58.8	56.1	65.0
FRONTIER 401	77.7	70.5	79.5	0.0	5.0	1.8	0.0	0.0	45.0	55.6	57.5
FRONTIER EXPGX601	77.3	68.5	93.0	0.0	2.0	3.0	0.0	0.8	55.0	56.3	66.0
ADVANCE 14	76.0	70.0	90.5	0.0	5.0	3.5	0.0	0.0	53.8	56.8	60.3
RS625	75.9	69.8	95.0	0.0	4.8	2.3	0.0	1.0	50.5	55.8	59.8
RS702	75.8	68.2	101.5	0.0	4.3	2.0	0.0	1.0	47.5	57.0	63.8
ASGROW TRIPLE T	75.4	70.2	95.7	0.0	2.5	2.8	0.0	0.0	58.5	57.4	66.3
MFA GS8	75.4	71.0	87.2	0.0	2.3	2.5	0.0	0.3	56.5	55.6	64.8
PAYMASTER KIOWA	75.4	69.7	94.2	0.0	4.8	4.3	0.0	0.3	58.0	56.1	60.0
DEKALB E57	75.1	67.2	95.0	0.0	5.0	2.8	0.0	0.0	54.3	57.4	60.0
PIONEER 846	74.8	69.7	89.7	0.0	4.8	3.3	0.0	0.5	53.5	56.4	63.0
OK613	73.9	67.2	91.7	0.0	5.0	4.5	0.0	0.3	54.5	54.6	63.5

FRONTIER EXPGX600	73.5	69.6	95.5	0.0	3.5	3.0	0.0	0.8	50.8	55.8	61.3
AKS 614	73.2	69.1	107.7	1.9	5.0	4.0	0.3	1.5	61.5	57.6	58.0
FRONTIER 400C	72.1	69.4	76.7	0.3	4.3	3.3	0.5	2.3	53.0	56.4	58.0
NORTHRUP-KING NK255	70.9	69.4	71.5	0.0	4.8	1.8	0.8	1.0	43.0	55.8	58.0
MFA GS9	69.7	68.7	83.5	0.0	4.3	3.8	0.8	1.8	57.8	56.9	64.3
RS624	68.3	69.3	89.0	0.0	3.3	2.5	0.3	1.3	51.0	56.5	61.5
RS650	67.6	67.8	84.2	0.0	2.5	3.0	0.3	1.0	52.0	56.5	61.5
RS626	67.1	71.4	84.0	0.0	3.0	3.0	0.8	1.3	47.0	55.1	58.3
DEKALB F65	66.4	66.8	82.7	0.0	3.0	2.8	0.0	0.5	53.3	54.4	63.0
NORTHRUP-KING NK310	65.8	64.1	117.0	0.0	3.3	1.8	0.0	1.0	58.8	56.6	68.3
KAN701	63.4	63.0	112.2	0.0	2.3	3.8	0.0	0.8	61.3	56.5	66.3
RS619	61.9	68.5	91.7	0.3	4.8	2.5	0.5	1.3	51.0	56.3	59.5
TAYLOR-EVANS TE66	59.2	67.0	81.7	0.9	3.3	1.0	0.0	0.8	44.3	53.4	62.8
FRONTIER 410E	59.1	64.9	86.5	0.0	3.8	1.8	0.0	0.5	44.8	54.6	60.3
RS640	58.7	64.3	71.0	0.4	3.5	1.3	0.0	0.8	42.8	55.1	64.0
MARTIN	56.0	66.9	107.7	0.0	4.8	3.5	0.0	0.0	56.0	58.0	61.3
Mean	75.8	69.3	92.9	0.1	3.8	2.8	0.1	0.7	53.0	56.2	61.9

Differences in yield between any two entries of less than 18.0 bushels per acre are not considered significant.

Table 8. 1965 performance record for the sorghum test conducted in Grundy County, near Spickard, Missouri. Planted June 4, 1965. Harvested November 2, 1965 (Exp. S72).

Entry	Acre yield bu.	Threshing %	Plants per 25 ft. row no.	Lodged plant %	Head		Per 25 ft row		Plant height ins.	Test weight lbs
					Compactness 1-5	Exsertion 1-5	Off-type heads no.	Tall plants no.		
AKS 614	99.9	68.1	100.2	0.2	5.0	3.8	5.0	1.8	51.0	59.0
AMAK R12	97.4	66.9	107.5	0.0	2.3	3.5	0.0	0.3	52.3	57.3
TAYLOR-EVANS TE 88	92.7	68.8	88.0	0.0	1.3	3.0	1.5	0.8	50.8	57.8
DEKALB F63	88.2	66.2	89.0	0.0	2.5	1.8	0.0	0.3	47.0	56.6
PIONEER 820	88.1	65.5	90.0	0.0	3.3	3.0	0.0	0.0	48.3	58.1
PAYMASTER KIOWA	87.9	69.9	90.5	0.0	3.8	3.8	0.8	0.3	51.3	59.0
ADVANCE 91	87.2	65.1	101.2	0.0	3.8	1.8	0.0	0.0	44.8	56.8
EXCEL 707	86.6	63.4	99.2	0.3	3.0	2.5	0.5	0.0	49.5	57.1
PIONEER 846	85.4	63.8	92.7	0.0	4.0	4.0	0.0	0.8	49.0	58.4
FRONTIER EXPGX601	85.3	66.8	89.0	0.0	1.0	1.8	0.0	0.3	46.8	57.0
ASGROW TRIPLE T	85.0	69.4	103.7	0.0	1.0	2.3	0.3	0.5	50.5	58.8
TAYLOR-EVANS TE77	83.9	64.6	102.0	0.0	1.5	2.8	0.0	0.3	49.3	57.4
PIONEER 848	83.7	66.9	93.7	0.0	4.8	3.5	0.0	0.3	46.8	58.5
DEKALB F64	83.4	66.5	94.5	0.0	5.0	4.5	0.0	0.0	54.5	60.0
PAYMASTER APACHE	83.4	65.1	104.7	0.0	1.5	2.0	1.0	0.8	48.8	57.4
T-E GRAINMASTER	82.9	66.9	94.5	0.5	3.0	3.0	2.0	0.8	50.0	56.5
ADVANCE 14	81.8	64.0	107.7	0.0	5.0	4.3	0.0	0.3	51.5	57.6
FRONTIER 401	81.6	66.1	77.2	0.0	4.8	2.8	1.0	0.8	42.8	57.3
MFA GS8	80.9	65.9	87.7	0.0	1.5	2.0	0.5	1.8	47.3	57.4
FRONTIER 413	80.2	67.9	76.0	0.0	2.3	1.3	0.0	0.3	47.5	58.5
TAYLOR-EVANS TE66	79.7	67.0	94.2	0.3	3.3	1.5	0.0	0.0	44.3	56.5
FRONTIER 410E	79.0	64.6	66.7	0.4	2.8	1.0	0.3	0.8	41.3	57.0
NORTHRUP-KING NK310	78.8	61.7	102.0	0.0	3.0	1.8	0.3	1.8	52.3	56.7
PAYMASTER UTE	78.6	68.4	100.2	0.2	2.8	3.0	0.5	1.5	45.0	59.5
RS702	77.6	63.3	94.2	0.0	2.3	1.5	0.0	0.8	47.5	58.9
RS625	77.5	65.6	95.0	0.5	4.8	2.8	0.0	0.8	47.0	57.0
NORTHRUP-KING NK212	77.4	62.6	99.5	0.0	2.8	3.5	0.8	0.3	51.3	56.8
RS610	77.0	65.7	84.5	0.0	2.8	4.8	0.3	0.5	53.0	57.9
NORTHRUP-KING NK275	76.8	65.5	72.0	0.3	2.8	1.5	0.0	1.0	47.0	55.0
OK613	76.8	64.2	102.2	0.0	5.0	4.0	0.0	0.5	50.0	57.1
ASGROW SPIKE	76.4	65.5	101.0	0.0	1.3	1.5	0.0	0.3	45.3	57.4

PIONEER 861	76.4	63.1	96.2	0.0	5.0	4.5	0.0	0.0	45.8	58.6
DEKALB E57	76.2	64.0	89.0	0.3	5.0	2.8	0.3	0.0	51.3	58.1
OK632	76.1	66.2	85.5	0.0	4.5	4.8	0.3	0.8	53.0	58.0
RS650	75.8	67.3	91.7	0.0	1.8	3.3	0.0	0.0	47.3	58.5
FRONTIER 400C	75.3	67.6	68.7	0.0	3.3	4.5	1.5	0.3	50.0	57.9
DEKALB F65	74.8	65.4	76.7	0.3	2.5	1.8	0.0	0.3	43.8	57.3
KAN701	73.7	63.3	107.5	0.0	1.0	4.0	0.0	0.3	50.5	55.8
FRONTIER EXPGX600	73.3	65.3	93.7	0.0	1.8	2.8	0.0	0.3	45.5	56.0
RS624	72.2	66.7	97.2	0.0	1.5	2.8	2.3	0.8	47.5	58.0
RS640	72.1	66.6	85.0	0.6	3.3	1.3	0.0	0.0	40.8	57.4
MFA GS9	71.5	66.6	69.5	0.0	2.0	3.5	0.8	0.8	49.3	57.0
NORTHRUP-KING NK255	69.3	64.7	72.2	0.0	5.0	1.8	0.3	0.0	43.8	56.8
RS626	67.2	64.2	92.7	0.0	2.3	4.8	0.8	0.5	46.8	56.0
ASGROW RICO	64.1	67.6	86.0	0.0	1.5	2.5	0.0	0.0	48.0	56.8
NORTHRUP-KING NK222	62.2	65.0	89.2	0.3	4.8	3.3	0.5	0.5	45.5	57.5
RS619	60.9	67.4	87.2	0.0	4.0	2.8	0.3	0.5	45.3	57.9
MARTIN	60.5	67.8	101.2	0.0	4.5	3.3	0.0	0.0	47.5	59.6
Mean	78.8	65.8	91.5	0.1	3.1	2.9	0.5	0.5	48.0	57.6

ifferences in yield between any two entries of less than 12.1 bushels per acre are not considered significant.

TABLE 9.--1966 performance record for the sorghum test conducted in Marion County, near Palmyra, Missouri. Planted June 23, 1966. Harvested November 7, 1966 (Exp. S73)*

Entry	Acre yield bu.	Threshing %	Plants per 25 ft. row no.	Lodged plants %	Head		Per 25 ft row		Plant height ins.	Test wt.
					Compactness 1-5	Exsertion 1-5	Off-type heads no.	Tall plants no.		
RS 702	127.4	73.8	91.5	0.0	2.3	2.0	0.0	0.8	52.0	51.5
Arkansas AKS 614	122.2	76.0	82.5	7.9	5.0	4.5	0.8	0.5	53.5	57.0
Northrup King NK212	106.7	73.1	75.7	1.7	3.8	3.3	0.0	0.0	53.5	55.0
Taylor Evans Grainmaster	102.9	75.7	71.0	2.8	3.3	2.8	0.8	0.3	53.0	53.5
DeKalb F64	101.4	68.2	72.2	1.7	5.0	3.3	0.0	0.0	58.5	52.0
Kansas 701	97.7	74.6	69.0	1.1	1.3	4.0	0.0	0.3	54.5	53.5
Northrup King Savanna	97.4	70.5	82.7	10.6	5.0	4.3	0.0	0.0	51.5	57.0
Asgrow Ranger B	96.1	77.8	73.7	1.7	2.3	2.8	0.0	0.0	52.0	58.0
RS 650	92.6	76.5	84.2	1.8	2.8	2.8	0.3	0.0	53.0	58.0
Taylor Evans TE88	91.4	71.5	68.7	4.7	2.3	3.8	1.5	0.0	59.0	52.5
Frontier 409	89.9	54.7	85.7	4.4	5.0	4.5	0.0	0.0	53.8	49.0
Taylor Evans Grainmaster A	89.3	75.5	67.2	4.1	4.0	3.3	0.8	0.3	53.0	55.0
Frontier 413	88.2	75.2	51.7	2.9	1.3	2.3	0.0	0.3	54.5	54.0
Taylor Evans TE77	87.7	73.0	64.7	7.3	1.8	3.3	0.0	0.0	56.5	51.0
Pioneer 820	87.3	74.6	69.5	2.9	5.0	4.5	0.0	0.0	48.8	57.5
Pioneer 848	86.2	74.3	58.2	5.2	3.8	3.5	0.0	0.0	53.5	54.5
RS 625	84.7	67.7	78.0	3.2	5.0	2.5	0.0	0.3	48.0	54.0

RS 610	84.6	78.8	61.7	2.0	4.0	2.8	0.0	0.0	52.5	58.0
Advance Amak R12	83.7	74.9	60.5	3.7	2.5	2.5	0.0	0.0	51.0	55.5
Oklahoma OK632	83.7	74.3	47.7	6.3	4.8	5.0	0.0	0.0	58.5	55.5
Pioneer 846	83.2	74.9	56.2	6.7	5.0	3.0	0.3	0.0	52.0	58.0
DeKalb E57	82.7	70.3	64.0	2.0	5.0	3.0	0.0	0.0	50.5	55.5
Northrup King NK310	78.9	60.8	79.7	0.3	1.3	2.8	0.0	1.3	62.5	35.5
DeKalb F61	78.8	67.2	61.0	0.4	4.8	2.0	0.0	0.0	50.0	52.0
Northrup King NK275	76.8	75.5	56.0	7.6	3.0	2.0	0.8	0.3	51.5	53.5
Oklahoma OK613	72.5	65.3	57.5	5.7	5.0	4.3	0.0	0.0	50.5	56.0
Frontier Super 400	72.3	70.6	62.0	6.5	4.0	4.0	0.0	0.0	51.0	54.0
Asgrow Jumbo L	71.6	52.7	78.7	0.3	1.0	2.5	0.0	0.5	61.0	36.0
DeKalb F63	70.8	66.7	58.2	3.0	3.3	2.5	0.0	0.3	53.5	53.0
Advance 91	70.0	65.4	55.5	0.5	3.0	2.3	0.0	1.5	49.5	46.5
Asgrow Rico	70.0	76.8	61.5	1.6	2.0	2.8	0.0	0.0	52.5	55.0
RS 624	69.5	75.2	62.5	0.8	3.8	2.0	2.0	0.3	47.5	57.0
Advance 14	64.1	65.8	59.7	1.3	5.0	3.8	0.0	0.0	51.5	55.0
Taylor Evans TE66	63.5	69.7	58.7	3.4	3.5	2.5	0.0	0.0	46.0	53.0
Frontier 410E	61.7	66.6	62.7	6.4	3.3	3.0	0.0	0.0	44.3	52.5
Colorado 606	59.3	67.6	49.7	34.7	5.0	4.8	0.0	0.0	56.0	55.0
Northrup King NK222	57.7	69.7	60.7	1.2	5.0	3.5	0.0	0.0	45.0	56.0
Frontier 401	57.0	58.9	67.5	1.9	5.0	3.8	0.5	0.8	48.5	55.5
RS619	54.8	71.0	56.2	2.7	4.8	2.5	0.0	0.5	46.0	57.5
Martin	36.5	68.2	44.0	5.7	4.8	3.5	0.0	0.3	48.5	56.0
Mean	81.3	70.5	65.7	4.2	3.7	3.2	0.2	0.2	52.2	53.6

Differences in yield between any two entries of less than 28.2 bushels per acre are not considered significant.
*The late planting date and the poor stands in some plots should be recognized as contributing factors to low yields of some entries in this test.

Table 10. 1965 summary of the grain sorghum tests conducted near Columbia, Mt. Vernon, Palmyra and Spickard, Missouri (Exps. S70, S71, S72 and S73).

Entry	Acre yield bu.	Threshing %	Plants per 25 ft. row no.	Lodged plants %	Head: Compactness 1-5	Head: Exsertion 1-5	Per 25 ft. row: Off-type heads no.	Per 25 ft. row: Tall plants no.	Plant height ins.	Test weight lbs.**	Planting to 50% blooming days*
DEKALB F63	107.2	69.4	101.3	0.2	3.2	2.4	0.1	0.2	54.1	56.7	69.6
AMAK R12	106.7	70.4	107.8	0.7	3.0	3.1	0.1	0.4	54.7	56.7	67.1
TAYLOR-EVANS TE88	103.6	70.7	90.9	0.1	1.9	2.9	1.0	0.8	54.8	57.0	68.5
AKS 614	103.1	69.2	117.7	2.0	4.9	3.6	2.6	1.1	55.7	57.8	63.9
TAYLOR-EVANS TE77	101.2	69.4	111.2	0.8	2.1	3.1	0.1	0.3	57.3	56.3	71.0
EXCEL 707	100.5	69.4	97.7	0.3	3.1	2.2	0.2	0.3	52.1	56.3	66.1
PIONEER 820	100.2	69.6	97.0	2.3	4.1	2.8	0.2	0.1	51.8	57.5	70.4
DEKALB F64	99.7	69.9	94.1	0.5	4.8	4.1	0.1	0.3	57.3	59.2	65.1
NORTHRUP-KING NK275	98.5	69.2	86.0	0.7	3.2	1.9	0.3	1.1	50.1	55.6	65.4
PAYMASTER APACHE	97.5	70.6	100.3	0.2	1.7	2.4	0.5	0.7	52.8	57.0	69.5
T-E GRAINMASTER	97.0	69.9	106.5	0.3	2.7	2.9	2.1	0.9	53.6	56.0	69.0
PIONEER 848	96.3	70.7	94.6	0.2	4.8	3.4	0.2	0.4	48.0	58.0	67.3
ASGROW TRIPLE T	95.3	70.3	96.0	0.3	1.4	2.3	0.1	0.4	55.4	57.9	71.9
NORTHRUP-KING NK212	95.0	68.8	99.9	0.3	2.7	3.4	0.4	0.3	53.6	56.7	65.0
NORTHRUP-KING NK310	94.4	64.0	109.3	0.0	2.9	1.8	0.4	1.2	54.8	54.9	75.6
PIONEER 846	92.9	69.0	94.1	1.0	4.3	3.4	0.4	0.4	51.9	57.4	68.4
PAYMASTER KIOWA	91.9	71.1	97.1	0.4	3.8	3.9	0.6	0.2	56.0	57.6	66.6
ASGROW SPIKE	91.8	68.5	102.6	0.1	1.8	1.9	0.1	0.3	49.0	57.2	69.9
OK632	91.5	68.3	90.5	2.2	4.8	4.2	0.2	0.4	56.1	57.0	69.5
FRONTIER 413	91.1	70.3	78.3	0.1	2.6	1.5	0.2	0.4	51.5	57.7	71.5
FRONTIER EXPGX601	90.6	69.3	92.0	1.9	1.5	2.3	0.0	0.3	51.9	56.3	71.6
ADVANCE 14	90.4	69.1	96.8	0.2	4.9	3.8	0.0	0.1	52.9	57.3	66.0
MFA GS8	90.0	69.3	91.1	1.4	1.8	2.3	0.2	0.8	53.0	56.2	70.9
KAN701	89.3	66.2	110.1	1.2	1.5	3.6	0.0	0.6	57.1	56.0	72.1
ASGROW RICO	88.6	70.7	99.5	0.2	2.2	2.9	0.0	0.1	50.5	56.0	65.9
RS610	88.6	70.5	89.9	0.2	3.1	4.0	0.1	0.4	55.3	57.3	65.3
PAYMASTER UTE	88.0	72.6	100.8	0.2	3.2	2.7	0.1	0.8	48.8	59.0	67.0
DEKALB E57	87.9	67.7	94.9	0.2	5.0	2.5	0.1	0.0	52.0	57.2	66.0
RS702	87.8	66.6	101.9	0.4	3.6	1.8	0.0	0.6	48.0	57.0	70.9
PIONEER 861	87.7	68.4	103.2	0.1	4.7	3.8	0.1	0.1	48.3	58.0	64.5
ADVANCE 91	87.4	68.0	93.0	0.1	4.0	2.1	0.2	0.3	48.2	55.5	71.0

RS625	87.3	69.8	99.0	0.5	4.5	3.0	0.2	0.9	49.4	56.6	65.3
FRONTIER 401	86.0	69.5	82.1	0.0	4.7	2.9	0.3	0.3	45.8	56.7	64.0
FRONTIER EXPGX600	85.7	68.7	100.3	0.1	2.7	2.9	0.1	0.6	49.8	56.1	67.8
MFA GS9	84.9	69.1	75.4	0.2	3.1	3.4	0.6	1.1	54.1	56.7	69.8
DEKALB F65	84.2	67.7	82.5	0.2	2.6	2.3	0.1	0.3	47.8	55.8	68.1
RS624	83.9	69.4	91.9	0.0	2.0	2.6	1.4	0.6	48.9	56.9	67.6
RS650	83.7	69.4	91.0	0.4	1.9	3.1	0.1	0.4	50.5	57.5	67.4
OK613	82.9	66.1	96.5	0.5	4.9	3.9	0.3	0.4	53.1	56.2	67.5
FRONTIER 400C	82.6	69.8	76.9	0.6	3.1	3.8	1.1	1.4	53.8	57.0	65.0
TAYLOR-EVANS TE66	80.4	68.5	92.1	0.3	3.4	2.2	0.1	0.6	46.8	55.4	67.3
FRONTIER 410E	79.7	66.6	81.3	1.2	2.7	1.9	0.3	0.8	44.1	55.5	66.1
RS626	78.8	68.8	105.8	0.1	2.6	3.6	0.9	0.6	47.6	55.4	64.9
RS619	78.6	70.0	96.3	0.4	3.6	3.2	0.4	0.9	48.8	57.4	66.1
NORTHRUP-KING NK222	77.7	69.8	95.2	0.3	4.9	3.4	0.3	0.4	47.1	57.5	64.4
NORTHRUP-KING NK255	77.0	67.8	71.4	0.0	4.8	2.1	0.5	0.3	43.8	56.5	64.3
RS640	76.7	67.2	81.0	0.5	3.1	1.8	0.0	0.6	42.8	56.5	67.8
MARTIN	67.1	69.0	100.9	0.6	4.3	3.5	0.0	0.1	52.3	59.0	67.4
Mean	89.8	69.0	95.1	0.5	3.3	2.9	0.4	0.5	51.3	56.9	67.9

* Two locations only
** Three locations only

Table 11. Summary of performance records for grain sorghums tested near Columbia and Mt. Vernon, Missouri for the 3-year period of 1963, 1964 and 1965.

Hybrid	Acre yield bu.	Threshing %	Plants per 25 feet row no.	Lodged plants %	Head		Per 25 feet row		Plant height ins.
					Compactness 1-5	Exsertion 1-5	Off-type heads no.	Tall plants no.	
Taylor-Evans TE88	91.9	73.6	99	0.9	2.2	2.5	0.6	0.6	48
Taylor-Evans TE77	88.7	72.7	111	1.5	2.2	2.7	0.1	0.2	50
RS 610	88.6	73.1	97	2.1	2.5	2.9	0.1	0.1	49
Pioneer 846	88.2	72.7	108	2.1	3.4	2.5	0.2	0.2	46
Pioneer 820	86.7	73.4	106	2.3	3.0	2.4	0.1	0.1	47
DeKalb F63	85.1	71.8	92	0.3	2.7	2.2	0.0	0.2	48
Paymaster-Apache	84.9	73.3	103	0.2	1.8	2.4	1.1	0.3	47
Advance 14	84.0	71.3	106	0.5	3.4	2.8	0.0	0.3	48
Northrup-King 310	83.7	67.2	108	0.1	2.5	1.7	0.6	0.5	49
Frontier 401	83.5	72.3	97	1.7	4.1	2.2	7.8	0.2	42
Taylor-Evans TE66	82.4	71.6	89	1.1	3.0	1.9	0.1	0.3	42
Pioneer 848	81.0	72.1	112	1.4	4.0	2.2	0.1	0.4	44
Asgrow-Triple T	80.7	72.6	109	1.1	7.6	2.1	0.1	0.2	50
Pioneer 861	80.5	70.8	119	2.3	4.1	2.8	0.1	0.2	45
RS 650	80.4	72.3	102	3.7	2.0	2.4	0.3	0.2	46
RS 625	78.7	71.5	112	2.9	3.9	2.4	0.1	0.4	44
RS 624	78.6	72.2	98	1.7	2.1	2.4	1.5	0.4	45
Okla 632	78.5	71.7	97	2.3	3.7	3.1	0.1	0.1	51
Kan 701	78.1	71.3	112	1.0	1.8	2.7	0.0	0.3	50
Okla 613	78.0	69.1	105	0.6	4.1	3.1	0.1	0.2	48
Paymaster-Kiowa	77.7	73.5	104	8.3	3.1	2.8	2.4	0.3	48
RS 619	76.7	72.8	108	3.8	3.6	2.6	0.1	0.5	45
RS 626	76.6	69.9	117	3.1	2.9	2.5	0.3	0.5	46
Paymaster-Ute	76.1	74.3	107	2.7	2.9	2.2	0.0	0.3	44
RS 640	75.4	70.1	91	1.5	3.0	1.8	0.1	0.2	40
Martin	67.7	72.5	120	2.9	3.5	2.8	0.0	0.2	46
Mean	81.2	71.9	105	2.0	3.0	2.5	0.6	0.3	46

Table 12. Summary of performance records for grain sorghum tested near Spickard and Palmyra, Missouri for the 2-year period of 1964 and 1965.

Hybrid	Acre yield bu.	Threshing %	Plants per 25 feet row no.	Lodged plants %	Head		Per 25 feet row		Plant height ins.
					Compactness 1-5	Exsertion 1-5	Off-type heads no.	Tall plants no.	
Asgrow-Triple T	121.8	73.5	99	1.5	1.3	1.9	0.1	0.4	53
Taylor-Evans TE88	121.6	72.3	95	0.5	1.7	2.3	0.8	0.8	51
Pioneer 820	121.0	72.0	104	0.0	3.5	2.4	0.2	0.1	49
DeKalb F63	120.8	71.2	90	1.4	2.9	1.9	0.1	0.1	52
Taylor-Evans TE77	119.3	70.6	109	0.5	1.4	2.3	0.0	0.6	52
AMAK R12	118.7	72.5	117	0.1	2.5	2.6	0.0	0.1	54
Northrup-King 310	117.8	67.0	109	0.0	2.5	1.6	0.5	0.9	52
Ark AKS 614	117.7	71.2	120	1.2	4.6	2.9	3.5	1.1	52
Pioneer 846	116.7	72.0	106	0.1	3.8	3.3	0.6	0.4	51
Frontier 413	116.1	74.9	85	0.4	2.6	1.2	0.1	0.1	50
Paymaster-Apache	115.6	71.9	107	0.9	1.5	2.2	1.6	0.6	50
DeKalb F64	114.7	72.5	106	0.1	4.2	3.9	0.2	0.3	58
Taylor-Evans Grainmaster	114.6	71.7	103	0.1	2.5	2.8	2.6	0.9	52
Northrup-King 275	113.8	72.2	87	0.7	3.0	2.0	0.3	1.1	48
Kan 701	112.5	69.7	102	0.3	1.6	2.6	0.0	0.4	54
MFA GS8	112.1	72.5	103	0.3	1.6	1.9	0.3	0.7	48
Pioneer 848	111.4	72.6	113	0.0	4.2	3.3	0.0	0.4	46
Okla 632	109.6	71.0	97	0.1	4.2	3.3	0.4	0.5	54
DeKalb F65	108.1	70.9	88	0.3	2.1	1.8	0.0	0.2	46
DeKalb E57	108.1	70.7	94	0.6	5.0	2.7	0.1	0.1	52
RS 650	107.9	72.8	99	0.9	1.5	2.8	0.2	0.2	49
Advance 14	107.8	71.2	102	0.1	4.4	3.4	0.1	0.1	52
Taylor-Evans TE66	107.8	72.8	99	0.1	3.0	2.3	0.1	0.4	46
Paymaster-Kiowa	107.3	73.9	104	0.5	3.1	3.4	3.4	0.1	53
Northrup-King 212	106.9	70.1	103	0.5	2.6	3.1	0.6	0.6	51
RS 610	104.8	72.4	108	0.8	2.6	3.8	0.3	0.5	54
Asgrow-Rico	103.8	73.9	93	0.1	1.3	2.5	0.0	0.2	50
Okla 613	102.0	70.2	110	0.2	4.7	2.8	0.3	0.5	50
Pioneer 861	101.8	69.6	125	0.1	4.2	3.6	0.1	0.2	47
RS 626	99.7	69.8	123	0.6	2.4	3.5	0.7	0.4	48
RS 624	99.2	73.0	98	0.1	1.7	2.4	2.6	0.6	48
Paymaster-Ute	98.9	74.4	112	0.1	3.0	2.7	0.2	0.7	47
Northrup-King 255	98.5	70.5	80	0.1	4.2	2.2	0.5	0.2	44
Frontier 401	98.2	72.1	89	0.1	4.4	2.6	0.4	0.5	45
RS 640	97.9	71.0	85	0.4	2.5	1.7	0.0	0.7	42
RS 625	93.6	71.0	109	0.5	4.2	3.0	0.1	0.6	46
RS 619	92.8	72.1	105	0.3	3.2	3.0	0.2	0.9	46
Martin	87.3	74.1	130	0.1	3.6	3.3	0.1	0.2	48
Mean	108.6	71.8	103	0.4	3.0	2.7	0.6	0.5	50