CR-2111
0190

OSU Current Report

Cooperative Extension Service • Division of Agriculture • Oklahoma State University

HYBRID FORAGE SORGHUM PERFORMANCE TRIALS IN OKLAHOMA, 1989

S.E. Hawkins, R.W. McNew, and G.L. Strickland

Performance trials for hybrid forage sorghums are conducted each year in Oklahoma to provide producers with useful information in making hybrid selections. These trials, which are carried out in various locations throughout the state, indicate which hybrids are adaptable to general areas and growing conditions. These trials are conducted in fulfillment for Oklahoma State Department of Agriculture, Rules and Regulation to the Oklahoma Seed Law, Section 8-112.

Performance trials for sorghum hybrids were conducted in 1989 at four locations, Eastern Research Station, Muskogee County; South Central Research Station, Grady County; Irrigation Research Station, Jackson County; Southwest Agronomy Research Station, Tillman County.

Entries for hybrid and forage sorghums and hybrid sudangrasses are all listed in Table 1. This table includes company and hybrid name and hybrid characteristics. This information is provided by the company.

Twelve hybrid forage sorghums (Table 1) were tested in a randomized complete-block design of four replications (Tables 2 to 5). To provide some indication of yield stability, the overall means and ranking of hybrids grown for two years at a given location are given in Tables 6 and 7. Only hybrids that were entered for two years are presented in these tables.

Planting conditions were good at all locations and early plant growth was excellent. All experiments were fertilized in accordance with OSU soil test recommendations. The Jackson County location received supplemental irrigation while all other sites were rainfed. Tractor-powered cone planters were used to plant all tests. Seeding rates were adjusted to account for germination differences among hybrids.

Forage sorghum entries were harvested as each entered into the soft dough stage. Two hybrids did not initiate the reproductive phase were harvested before first frost. Mid-bloom is not reported for these two hybrids. Days to mid-bloom measure maturity by number of days between planting date and the date when half of the main heads have some florets in bloom.

A system to produce a quality forage sorghum will generally not differ between hybrids, except the timing of harvest. Harvesting at soft dough stage provides the higher quality forage. **Delaying harvest will not result in a significant accumulation of dry matter, but will result in a decrease in forage quality.**

Small differences among hybrids

should not be overemphasized. Least significant differences (L.S.D.) are shown at the bottom of each performance table. Unless two entries differ by at least the L.S.D. shown, little confidence can be placed in one entry being superior to another. If differences between two entries exceed the L.S.D. (0.05) value given for that data, the chances are approximately 95 out of 100 that the apparent difference is real.

The coefficent of variability (C.V.) can be used to estimate the degree of confidence one may have in published data from replicated tests. In this testing program, C.V.'s below 15 percent generally indicate reliable, uniform data, whereas C.V.'s over 15 percent are common and may lack precision, but the data may be useful in some general comparisons.

Producers interested in comparing hybrids for consistent yields over two years in an area of the state should consult Tables 6 and 7. The yield levels may differ between years, but the relative rankings remain similar for most hybrids. Producers looking for hybrids with above average yield potential should consider the hybrids ranking in the top five entries over two years. Hybrids that do not bloom may have lower levels of carbohydrates which are essential in ensiling. Without grain on the head, a producer may consider mixing another source of carbohydrates with the silage as it is put in the silo.

To stay updated on current hybrids and new releases, producers should consult yield trials conducted by seed companies as well as other associated sources. Producers are encouraged to plant some of the hybrids they presume will perform well in their location in small areas on their farm. This allows the producer to evaluate performance under their own conditions.

Table 1. Hybrid Forage Sorghum Entry Designation and Characteristics, 1989.

Company	Entry Designation	Type of Cross	Color Seed Coat	Endo-Sperm Type	Bird Resistance	Greenbug Resistance
CARGILL HYBRID SEEDS	CARGILL FS466	SX			N	S
DELTA AND PINE LAND CO.	FUNK'S G-1990	SX				S
JACQUES SEED CO.	J62	SX	R		Y	S
JACQUES SEED CO.	JxSUE	MSX	BR		Y	S
LEMCO INDUSTRIES	SWEET BALE	SX	W			
NC+HYBRIDS	NC+940	SPX	R	N	N	S
NC+HYBRIDS	NC+965	SPX	R	N	N	S
NORTHRUP	HI KANE II	SX	R			
PIONEER HI-BRED INT'L	837F	SX	BR	N	Y	S
PIONEER HI-BRED UBT'L	811F	MSX				T
RICHARDSON SEEDS INC.	SILO MASTER D					
TAYLOR EVANS SEED CO	T-E-X-863259	SX	R	N	N	S

TYPE OF CROSS	COLOR CODES	ENDOSPERM TYPE CODE	INSECT RESISTANCE CODE	BIRD RESISTANCE
SX - SINGLE	BR - BROWN	N - NON-WAYY	S - SUSCEPTIBLE	N - NO
MSX - MODIFIED SINGLE	W - WHITE		T - TOLERANT	Y - YES
DX - DOUBLE	R- RED			
SPX - SPECIAL				

Table 2. Muskogee County, Forage Sorghums Eastern Research Station, Haskell, OK.

Entry Designation	Forage 68% Moisture (tons/A)	Oven Dry Forage (tons/A)	Mid-Bloom (days)	Plant Height (in.)
NC+965	29.68	9.50	74	92
FUNK'S G-1990	28.52	9.13	*	109
CARGILL FS466	27.98	8.95	76	82
T-E X-863259	26.13	8.36	61	85
811F	26.07	8.34	*	95
SWEET BALE	24.84	7.95	81	99
SILO MASTER D	23.68	7.58	75	93
NC+940	20.05	6.41	63	88
J62	20.01	6.40	70	60
837F	19.55	6.26	76	64
HI KANE II	15.94	5.10	62	83
JxSUE	15.53	4.97	60	94
Overall Mean	23.16	7.41	70	87
LSD(0.05)	4.86	1.56		7
C.V. 14.6%				

Soil Name: Taloka silt loam
Plant spacings: 5.5-inches Row width: 30-inches
Monthly Rainfall (in.):

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.
1.98	3.18	2.25	0.76	8.48	5.63	3.51	2.57	2.03

Fertilization: N: 100 lbs./A P_2O_5: 80 lbs./A K_2O: 80 lbs./A
Planted: 6-19-89 Last Entry Harvested: 9-26-89
* Did not bloom

Table 3. Jackson County, Forage Sorghums Irrigation Research Station, Altus, OK.

Entry Designation	Forage 68% Moisture (tons/A)	Oven Dry Forage (tons/A)	Mid-Bloom (days)	Plant Height (in.)
SWEET BALE	37.75	12.08	86	105
FUNK'S G-1990	37.61	12.04	*	103
811F	33.60	10.75	*	104
CARGILL FS466	33.48	10.71	89	96
J62	29.88	9.56	78	75
SILO MASTER D	29.45	9.42	78	100
T-E X-863259	26.06	8.34	64	80
NC+965	24.91	7.97	79	100
837F	24.70	7.90	84	81
NC+940	24.53	7.85	66	90
JxSUE	22.29	7.13	61	87
HI KANE II	19.13	6.12	62	85
Overall Mean	28.62	9.16	75	92
LSD(0.05)	6.69	2.14		6
C.V. 16.3%				

Soil Name: Tillman-Hollister clay loam
Plant spacings: 3-inches Row width: 40-inches
Monthly Rainfall (in.):

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.
1.57	1.25	2.36	0.34	3.51	7.66	1.97	2.01	5.26	0.0

Irrigation: 12 inches at 4 inches/irrigation on 7-24, 8-7, 8-21,
Fertilization: N: 131 lbs./A P_2O_5:0 lbs./A K_2O:0 lbs./A
Planted: 6-23-89 Last Entry Harvested: 10-3-89
* Did not bloom

Table 4. Grady County, Forage Sorghums South Central Research Station, Chickasha, OK.

Entry Designation	Forage 68% Moisture (tons/A)	Oven Dry Forage (tons/A)	Mid-Bloom (days)	Plant Height (in.)
811F	52.52	16.81	*	133
SWEET BALE	43.97	14.07	74	132
FUNK'S G-1990	42.92	13.73	*	130
J62	35.00	11.20	71	71
CARGILL FS466	29.99	9.60	75	109
NC+965	28.92	9.25	72	116
SILO MASTER D	28.91	9.25	70	122
HI KANE II	22.97	7.35	58	106
837F	22.23	7.11	75	89
JxSUE	22.10	7.07	56	108
NC+940	21.14	6.77	62	109
T-E X-863259	20.27	6.49	60	101
Overall Mean	30.91	9.89	67	110
LSD(0.05)	7.45	2.39		9
C.V. 16.6%				

Soil Name: Reinach silt loam
Plant spacings: 3.0 inches Row width: 40-inches
Monthly Rainfall (in.):

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.
1.55	2.55	2.01	0.27	6.29	7.30	3.14	3.19	5.33

Fertilization: N: 128 lbs./A P_2O_5:0 lbs./A K_2O:0 lbs./A
Planted: 6-21-89 Last Entry Harvested: 9-27-89
* Did not bloom

Table 5. Tillman County, Forage Sorghums Southwest Agronomy Research Station, Tipton, OK.

Entry Designation	Forage 68% Moisture (tons/A)	Oven Dry Forage (tons/A)	Mid-Bloom (days)	Plant Height (in.)
CARGILL FS466	39.07	12.50	82	91
SWEET BALE	36.05	11.53	84	101
FUNK'S G-1990	35.91	11.49	*	94
SILO MASTER D	33.74	10.80	77	95
NC+965	30.59	9.79	78	101
811F	29.70	9.50	*	98
837F	27.89	8.93	78	74
J62	26.71	8.55	76	65
NC+940	25.17	8.05	63	91
T-E X-863259	24.06	7.70	60	89
HI KANE II	23.97	7.67	56	85
JxSUE	23.85	7.63	53	92
Overall Mean	29.72	9.51	71	90
LSD(0.05)	10.04	3.4		2
C.V. 23.5%				

Soil Name - Tipton-silt loam
Plant spacings: 3-inches Row width: 40-inches
Fertilization: N: 170 lbs./A P_2O_5:0 lbs/A K_2O:0 lbs./A
Planted: 6-22-89 Last Entry Harvested: 10-2-89
* Did not bloom

Table 6. Muskogee County, Forage Sorghums Eastern Research Station, Haskell, OK.

Entry Designation	Forage Yield at 68% Moisture (tons/A) 1989 Mean	Rank	2-Year* Mean	Rank
NC+965	29.68	1	34.91	1
811F	26.07	5	34.78	2
CARGILL FS466	27.98	3	32.80	3
FUNK'S G-1990	28.52	2	32.38	4
T-E X-863259	26.13	4	26.90	5
NC+940	20.05	6	24.75	6
HI KANE II	15.94	7	18.70	7

*1988 and 1989 Data

Table 7. Jackson County, Forage Sorghums Irrigation Research Station, Altus, OK.

Entry Designation	Forage Yield at 68% Moisture (tons/A) 1989 Mean	Rank	2-Year* Mean	Rank
811F	33.60	2	33.34	1
FUNK'S G-1990	37.61	1	32.29	2
CARGILL FS466	33.48	3	31.95	3
NC+965	24.91	5	29.08	4
NC+940	24.53	6	26.63	5
T-E X-863259	26.06	4	24.31	6
HI KANE II	19.13	7	23.04	7

* 1988 and 1989 Data

The following people have contributed to this report by gathering data or assisting in its final preparation: Eugene Reeves, Rocky Thacker, Mike Goodson, Jerry Walker, Don Hooper, and Bea Peters.

The Oklahoma State University
Cooperative Extension Service
is celebrating 75 years of

TURNING THE GOOD THINGS OF SCIENCE INTO THE GOOD THINGS FOR LIFE.

1914 - 1989

Science is wonderful, but only if you can understand it. It can enrich your life, but only if you can use it. For 75 years, the Oklahoma State University Cooperative Extension Service has been using the knowledge gained from scientific research to help Oklahomans improve their lives--through increased agricultural productivity and profitability, better family relationships, improved diet and nutrition, economic development activities, better community services, and the development of our youth.

Since May 8, 1914, the Cooperative Extension Service has served as a means for taking the results of research done at Oklahoma State University and other land-grant colleges to the people of Oklahoma, with an OSU Cooperative Extension Office in every county in the state. That county, state, and federal partnership has resulted in an effective and flexible organization, one that is proud of its achievements in the past, eager to tackle the problems of today, and ready to meet the challenges of the future.

Join the Oklahoma State University Cooperative Extension Service in celebrating its 75th anniversary, as it continues the tradition of turning the good things of science into the good things for life--for the people of Oklahoma.

Oklahoma State Cooperative Extension Service offers its programs to all eligible persons regardless of race, color, national origin, religion, sex, age, or handicap and is an equal opportunity employer. Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Charles B. Browning, Director of Cooperative Extension Service, Oklahoma State University, Stillwater, Oklahoma. This publication is printed and issued by Oklahoma State University as authorized by the Dean of the Division of Agriculture and has been prepared and distributed at a cost of $292.71 for 2,475 copies. AI-9207 0190 CC