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Hybrid Sudangrass Performance Trials in Oklahoma, 1989

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Each year, performance trials for hybrid sudangrasses are conducted 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. To stay updated on current hybrids and new releases, producers should consult yield trials conducted by OSU, seed companies and other sources. Producers are encouraged to plant some of the hybrids they presume will perform well in their location to evaluate their performance under producer conditions in small areas on their farms. These trials are conducted in fulfillment for Oklahoma State Department of Agriculture seed regulations, section 8-112.

Hybrid sudangrasses and pearl millets are listed in Table 1. This table includes the company, hybrid name, and type of hybrid cross.

Twenty four sudangrass hybrids and four pearl millets were tested at four locations (Tables 2 to 5). The locations are: Eastern Research Station, Muskogee County; South Central Research Station, Grady County; Irrigation Research Station, Jackson County; Southwest Agronomy Research Station, Tillman County. A randomized complete block design was used at each location.

Planting conditions were good at all locations and early plant growth was excellent. All locations were fertilized in accordance with OSU soil test recommendations. Each location was cut prior to seed head exertion and were top dressed, if necessary, to provide adequate nitrogen for secondary growth.

Tractor-powered cone planters were used to plant all tests. Approximately 300,000 seed (17-20 lbs depending on hybrid seed size) of each hybrid with 90% germination was planted per acre. Recommendations on seeding rates will vary with

company and hybrid. To calculate the pure line seed rate desired, use the following equation:

$$\text{Recommended pure line seed per acre} + \text{germination \%} = \text{lbs of seed to plant.}$$
 Supplemental irrigation was applied at the Jackson County location and the other sites were rainfed. Plots were harvested with a Carter harvester and yields are based on 16% moisture as is recommended for hay production.

Small differences should not be overemphasized (Table 2 to 5). Least significant differences (L.S.D.) are shown at the bottom of each 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 coefficient of variability (C.V.) can be used to relate the precision of these yield tests with tests results from companies.

Producers interested in comparing hybrids for consistent yields over two years in an area of the state should consult Tables 2 and 3. Yield data for 1988 and 1989 are presented for hybrids entered in those years. 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 top 5 or 6 hybrids in a group.

Sudan and sudan hybrids can vary a great deal in quality (protein and digestibility). Production and harvesting practices can control much of this variability.

All proteins contain nitrogen. One ton of forage testing 12.5% crude protein contains 40 lbs of nitrogen. Some nitrogen will be available from the soil but without the addition of fertilizer nitrogen, production will be limited to about 1.5 tons per acre for the year.

Fifty pounds of actual nitrogen per acre applied at planting time plus 50 lbs of nitrogen topdressed after each cutting will allow near maximum forage production and reduce the risk of nitrate accumulations.

Optimum yield and digestibility can be obtained by harvesting at the "boot" stage of growth (just before the head appears). Digestibility drops rapidly as a forage plant starts to produce seed and only a small increase in tonnage occurs during that time.

Additional information can be found in OSU Extension Facts No. 2568, *Protein-Nitrogen*

Relationships in Forages and at your local OSU County Extension Center.

Hybrid sorghum-sudangrasses and hybrid sudans may contain potentially harmful levels of nitrate and prussic acid. Proper management of grazing, haying, and ensiling can reduce potential risks. Additional information on nitrate and prussic acid can be found in OSU Current Report No. 3272, *Nitrate and Prussic Acid Poisoning in Cattle* and at your local OSU County Extension Center.

Contributors

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

Table I. Hybrid Sudangrass Performance Entries, 1989.

COMPANY	ENTRY DESIGNATION	TYPE OF CROSS
AR-B SEEDS INC.	AR-B SWEET	A
AR-B SEEDS INC.	AR-B SWEET II	B
CAL WEST SEEDS	MONARCH V	C
CARGILL HYBRID SEEDS	CARGILL SWEET SIOUX V	B
CARGILL HYBRID SEEDS	CARGILL SS111	A
COFFEY SEED COMPANY	SUGAR QUEEN	B
COFFEY SEED COMPANY	SUGAR GRAZE II	A
DELTA AND PINE LAND CO.	FUNK'S FP-5	A
EAST TEXAS SEED COMPANY	PLANTERS PRIDE	A
GREEN SEED CO.	G-683	B
GROAGRI SEED COMPANY	MILGRO 110 (PEARL MILLET)	
GROAGRI SEED COMPANY	RANCHERS DELIGHT SWEET	B
HOBART SEED COMPANY	EXPERIMENTAL 811	B
JOHNSTON SEED CO.	EXP.#1000	B
LEVELLAND DELINTING INC.	ALL-TEX	A
MORRIS SEED CO.	AH MORGRAZE	A
NC+HYBRIDS	NC+862	A
NORTHRUP KING CO.	HI DAN 36	A
NORTHRUP KING CO.	MILLEX 24 (PEARL MILLET)	
OKLAHOMA SEED CO.	OKLAHOMA BEST	A
PIONEER HI-BRED INT'L.	979	A
RAINBO SEEDS	RAINBO GOLD	B
R.C. YOUNG SEED CO.	N/S(4692xRED.)xGREENLEAF	A
SEEDCO CORP.	SEEDCO WONDERGROW	B
SEEDTEC SEED CO.	SS 2000	A
TAYLOR EVANS SEED CO.	T-E X-863214	A
TAYLOR EVANS SEED CO.	T-E HORSEPOWER (PEARL MILLET)	
TAYLOR EVANS SEED CO.	T-E MILGRAZER (PEARL MILLET)	

HYBRID TYPES

- A) SORGHUM-SUDANGRASS
- B) SORGO - SUDAN
- C) SUDAN X SUDAN

Table 2. Muskogee County, Hybrid Sudangrasses and Pearl Millets, Eastern Research Station, Haskell, OK.

Entry Designation		Yield @16% Moisture		Yield 1st Cut @16% Moisture	Yield 2nd Cut @16% Moisture
		1988	1989	(Tons/A)	
SUGAR GRAZE II 979	Sorghum-Sudangrass	9.82	11.69	7.23	4.45
T-E X-863214 NC+862	Hybrids	10.36	11.18	7.12	4.06
CARGILL SS111		11.07	10.93	6.92	4.00
HI DAN 36		9.96	10.89	6.21	4.68
SS 2000		9.56	10.47	6.29	4.18
AR-B SWEET		8.97	10.15	6.59	3.55
OKLAHOMA BEST		-	10.04	6.23	3.81
ALL-TEX		9.08	9.85	5.94	3.91
AH MORGRAZE		-	9.56	5.81	3.75
PLANTERS PRIDE		9.25	9.48	5.63	3.85
FUNK'S FP-5		9.09	9.40	5.69	3.72
N/S(4692xRED.)xGREENLEAF		9.34	9.28	5.43	3.86
		8.70	8.98	6.07	2.91
		8.50	8.57	4.96	3.60
CARGILL SWEET SIOUX V	Sorgo-Sudangrass	10.70	12.16	7.70	4.47
SEEDCO WONDERGROW	Hybrids	-	11.47	7.03	4.43
RAINBO GOLD		-	10.83	6.36	4.47
G-683		8.62	10.23	5.51	4.72
RANCHERS DELIGHT SWEET		-	10.07	5.86	4.21
SUGAR QUEEN		9.31	9.89	5.72	4.17
EXP.#1000		-	9.62	6.12	3.50
AR-B SWEET II		8.89	9.28	5.71	3.56
EXPERIMENTAL 811		8.86	9.16	5.23	3.93
MONARCH V	Sudan-Sudan Hybrid	7.92	7.74	5.52	2.22
T-E HORSEPOWER	Pearl Millets	-	10.04	8.69	1.35
MILLEX 24		-	9.23	7.83	1.40
MILGRO 110		-	8.06	6.94	1.12
T-E MILGRAZER		-	7.34	5.54	1.80
Overall Mean		9.80		6.30	3.60
LSD (0.05)		1.90		1.80	0.80
C.V. 16.0%					

Soil Name: Taloka silt loam Row width: 12-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:

Preplant N: 100 lbs./A P₂O₅: 80 lbs./A K₂O: 80 lbs./A

Planted: 6-20-89

Harvested: 8-4-89, 9-18-89

Table 3. Jackson County, Hybrid Sudangrasses and Pearl Millets Irrigation Research Station, Altus, OK.

Entry Designation		Yield @16% Moisture		Yield 1st Cut @16% Moisture	Yield 2nd Cut @16% Moisture
		1988	1989	(Tons/A)	
CARGILL SS111	Sorghum-	8.11	8.68	5.29	3.39
T-E X-863214	Sudangrass	7.62	8.35	5.91	2.45
NC+862	<u>Hybrid</u>	7.17	7.49	4.76	2.73
PLANTERS PRIDE		7.26	7.48	4.20	3.28
AH MORGRAZE		7.41	7.40	4.63	2.77
N/S(4692xRED.)xGREENLEAF		6.15	7.31	4.20	3.11
SUGAR GRAZE II		6.44	7.20	3.94	3.27
FUNK'S FP-5		6.66	6.91	4.42	2.49
OKLAHOMA BEST		-	6.69	4.11	2.58
AR-B SWEET 979		6.73	6.43	3.73	2.69
HI DAN 36		6.95	6.21	4.31	1.90
SS 2000		6.22	6.02	3.77	2.25
ALL-TEX		-	5.80	3.61	2.20
		6.14	5.59	3.59	2.00
EXPERIMENTAL 811	Sorgo-	6.81	8.29	4.97	3.33
SEEDCO WONDERGROW	Sudangrass	-	8.09	5.09	3.00
AR-B SWEET II	<u>Hybrids</u>	7.07	7.38	3.98	3.40
EXP.#1000		-	7.33	4.70	2.63
SUGAR QUEEN		6.02	7.04	4.52	2.52
G-683		6.58	6.81	4.24	2.57
RANCHERS DELIGHT SWEET		-	6.68	4.03	2.65
RAINBO GOLD		-	6.65	4.65	2.00
CARGILL SWEET SIOUX V		6.77	6.36	3.75	2.61
MONARCH V	Sudan- Sudan <u>Hybrid</u>	6.79	7.07	4.35	2.72
MILLEX 24	<u>Pearl Millets</u>	-	6.34	4.21	2.13
T-E HORSEPOWER		-	5.06	3.12	1.93
T-E MILGRAZER		-	4.98	2.84	2.13
MILGRO 110		-	4.61	2.74	1.87
Overall Mean			6.80	4.20	2.60
LSD (0.05)			2.20	1.70	NS
C.V. 23.0%					

Soil Name: Tillman-Hollister clay loam

Row width: 12-inches

Monthly Rainfall (in.):

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

Fertilization:

Preplant N: 138 lbs./A P₂O₅: 0 lbs./A K₂O: 0 lbs./A

Planted: 6-22-89

Harvested: 8-16-89, 9-27-89

Table 4. Grady County, Hybrid Sudangrasses and Pearl Millets, South Central Research Station, Chickasha, OK.

Entry Designation		Yield	Yield	Yield
		@16%	1st Cut @16%	2nd Cut @16%
		Moisture	Moisture	Moisture
		(Tons/A)		
NC+862	Sorghum-	18.53	9.19	9.35
HI DAN 36	Sudangrass	16.03	7.65	8.37
979	<u>Hybrids</u>	14.93	7.42	7.51
SUGAR GRAZE II		14.40	7.27	7.12
AH MORGRAZE		14.20	6.97	7.24
FUNK'S FP-5		13.93	7.75	6.18
PLANTERS PRIDE		13.78	7.27	6.50
SS 2000		13.21	6.72	6.50
CARGILL SS111		12.90	6.02	6.89
N/S(4692xRED.)xGREENLEAF		12.59	5.63	6.96
OKLAHOMA BEST		12.32	5.01	7.32
AR-B SWEET		12.31	5.88	6.44
T-E X-863214		12.24	5.96	6.28
ALL-TEX		11.13	4.99	6.14
RAINBO GOLD	Sorgo-	16.93	8.06	8.87
G-683	Sudangrass	15.13	6.99	8.15
EXP.#1000	<u>Hybrids</u>	14.06	7.69	6.38
SEEDCO WONDERGROW		13.88	6.19	7.69
AR-B SWEET II		13.39	6.86	6.53
EXPERIMENTAL 811		13.37	7.72	5.65
RANCHERS DELIGHT SWEET		13.09	6.80	6.29
SUGAR QUEEN		12.74	6.76	5.98
CARGILL SWEET SIOUX V		12.62	6.79	5.83
MONARCH V	Sudan- Sudan <u>Hybrid</u>	10.67	6.18	4.49
T-E HORSEPOWER	<u>Pearl Millets</u>	13.59	10.14	3.45
T-E MILGRAZER		12.93	8.16	4.78
MILLEX 24		11.96	8.94	3.02
MILGRO 110		9.93	7.79	2.14
Overall Mean		13.50	7.10	6.40
LSD (0.05)		3.60	1.90	1.90
C.V. 19.2%				

Soil Name: Reinach silt loam

Row width: 12-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	5.30

Fertilization:

Preplant N: 126 lbs./A P₂O₅: 0 lbs./A K₂O: 0 lbs./A

Planted: 6-21-89

Harvested: 8-9-89, 9-28-89

Table 5. Tipton County, Hybrid Sudangrasses and Pearl Millets, Southwest Agronomy Research Station, Tipton, OK.

Entry Designation		Yield	Yield	Yield
		@16% Moisture	1st Cut @16% Moisture	2nd Cut @16% Moisture
		(Tons/A)		
OKLAHOMA BEST	Sorghum-	10.57	6.12	4.45
FUNK'S FP-5	Sudangrass	10.55	6.64	3.91
AR-B SWEET	<u>Hybrids</u>	9.79	5.93	3.85
SS 2000		9.61	5.97	3.64
PLANTERS PRIDE		9.40	6.40	3.00
ALL-TEX		8.90	5.77	3.13
T-E X-863214		8.85	5.38	3.47
HI DAN 36		8.66	4.92	3.74
979		8.05	4.64	3.40
AH MORGRAZE		7.82	4.56	3.26
CARGILL SS111		7.78	4.87	2.91
NC+862		7.74	4.91	2.83
SUGAR GRAZE II		7.68	4.79	2.89
N/S(4692xRED.)xGREENLEAF		7.63	5.01	2.62
SEEDCO WONDERGROW	Sorgo-	10.58	7.48	3.10
EXPERIMENTAL 811	Sudangrass	9.70	6.21	3.49
G-683	<u>Hybrids</u>	9.45	5.96	3.49
RAINBO GOLD		8.98	5.29	3.69
RANCHERS DELIGHT SWEET		8.87	4.55	4.32
EXP.#1000		8.79	4.73	4.05
CARGILL SWEET SIOUX V		6.93	4.46	2.47
SUGAR QUEEN		6.86	4.18	2.68
AR-B SWEET II		6.79	3.93	2.85
MONARCH V	Sudan- Sudan <u>Hybrid</u>	7.41	4.66	2.75
MILGRO 110	<u>Pearl Millets</u>	8.24	5.44	2.80
T-E HORSEPOWER		5.98	4.47	1.51
MILLEX 24		5.87	4.50	1.37
T-E MILGRAZER		5.84	4.10	1.74
Overall Mean		8.30	5.20	3.10
LSD (0.05)		2.70	1.80	1.40
C.V. 22.7%				

Soil Name: Tipton silt loam

Row width: 12-inches

Fertilization:

Preplant N: 137 lbs./A

P₂O₅: 0 lbs./A

K₂O: 0 lbs./A

Planted: 6-22-89

Harvested: 8-15-89, 9-27-89



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