



2000 Summer Forage Annuals Report

R.F. Spitaleri, J.C. Henning, D.C. Ditsch, G.D. Lacefield, and W. Turner

Introduction

The summer annual grasses are an important forage crop in Kentucky. These are mainly used as emergency or supplemental hay and pasture crops. Little Kentucky information is available on the yield potential of the newer cultivars of these grasses. The purpose of this publication is to summarize 2000 yield trials with pearl millet, sudangrass, sorghum-sudangrass hybrids, and forage sorghums.

Considerations in Selecting a Variety

The major factor in selecting a variety of summer annual grass is yield, both total and seasonal. Growth after first cutting is strongly dependent on available moisture and nitrogen fertilization. Summer annual grasses in general have different characteristics and uses. Pearl millets vary considerably in height and can be used for both pasture and hay. Pearl millet has the advantage of not having any prussic acid (HCN or cyanide) poisoning potential. Sudangrasses, sorghum-sudangrass hybrids, and forage sorghums are all related grasses (in the sorghum family). These all have prussic acid or cyanide poisoning potential when immature shoots are grazed. Sudangrasses are considered to have the least potential for prussic acid poisoning and forage sorghums the most, with sorghum-sudangrasses being intermediate. Sudangrasses have smaller, finer stems than sorghum-sudan hybrids, which have finer stems than forage sorghums. Consequently, sudangrasses and sorghum-sudan hybrids are more easily cured for hay than forage sorghums. Pearl millets, sudans, and sorghum-sudans are typically harvested multiple times during the growing season, while forage sorghums are usually harvested only once.

Description of the Tests

A summer forage annuals variety test was established at Lexington and Quicksand in 2000 as part of the forage variety testing program. Annuals tested included pearl millets, sorghum-sudangrasses, and a forage sorghum. The soils at Lexington (Maury) and Quicksand (Pope) are well suited to annual grasses in that they are generally well-drained silt loams. Plots were 5 ft x 15 ft in a randomized complete block design with four replications. In each location pearl millet, sorghum-sudangrass, and forage sorghum were sown at 25, 30, and 15 pounds of seed per acre, respectively, into a prepared seedbed using a disk drill. Plots were harvested with a sickle-type forage plot harvester. Fresh weight samples were taken at each harvest to calculate percent dry matter production. All tests were man-

aged for establishment, fertility, pest control, and harvest according to University of Kentucky Cooperative Extension Service recommendations. Pests were controlled so that they would not limit yield. Nitrogen was applied at 60 pounds per acre two weeks after planting and immediately after each harvest.

Results and Discussion

Weather data for Lexington and Quicksand are presented in Table 1. Temperature and rainfall during the 2000 growing season were closer to normal than in recent years.

Yield data (on a dry matter basis) for all tests are reported in Tables 2-5. Varieties are listed in order from highest to lowest total production. Yields are given by cutting and as a total for the year. Statistical analyses were performed on all yield data to determine if the apparent differences are truly due to variety or just due to chance. Varieties not significantly different from the highest numerical value in a column are marked with one asterisk (*). To determine if two varieties are truly different, compare the difference between the two varieties to the Least Significant Difference (LSD) at the bottom of the column. If the difference is equal to or greater than the LSD, the varieties are truly different when grown under the conditions at a given location. The Coefficient of Variation (CV), which is a measure of the variability of the data, is included for each column of means. Low variability is desirable, and increased variability within a study results in higher CVs and larger LSDs.

Table 6 summarizes information about proprietors, distributors, and yield performance across locations for all the varieties included in the tests discussed in this report. Varieties are listed in alphabetical order. In Table 6, shaded areas indicate that the variety was not in that particular test (labeled at the top of the column), while white or unshaded blocks mean that the variety was in the test. A single asterisk (*) means that the variety was not significantly different from the top-yielding variety based on the 5% LSD. It is best to choose a variety that has performed well over several years and locations as indicated by the asterisks. Make sure seed of the variety is properly labeled and will be available when needed.

Summary

Summer annual grasses can be an important supplemental source of pasture, hay, and silage in Kentucky. Varieties should be selected for their seasonal and total yield characteristics and for their suitability for the method of harvest to be employed (pasture, hay, or silage).

	Lexington				Quicksand			
	Temp		Rainfall		Temp		Rainfall	
	°F	DEP	IN	DEP	°F	DEP	IN	DEP
MON	32	+1	3.48	+0.62	34	+3	2.25	-1.04
JAN	43	+8	4.97	+1.76	44	+11	3.12	-0.48
FEB	48	+4	3.47	-0.93	51	+10	2.16	-2.18
MAR	53	-2	4.10	+0.22	55	+2	4.55	+0.45
APR	67	+3	2.96	-1.51	68	+6	7.79	+3.31
MAY	73	+1	3.22	-0.44	73	+3	8.86	+5.04
JUN	74	-2	3.42	-1.58	73	-1	4.16	-1.09
JUL	74	-2	3.38	-0.55	73	0	6.24	+2.23
AUG	66	-2	5.47	+2.27	67	+1	3.84	+0.32
SEP	59	+2	0.92	-1.65	59	+5	0.43	-2.48
OCT	43	-2	1.59	-1.80	46	+4	1.11	-2.77
NOV								

DEP is departure from the long-term average for that location.

Variety	Type ¹	Maturity ² Jul 14	2000 Harvests			2000 Total
			Jul 14	Aug 28	Oct 13	
Commercial varieties—available for farm use						
Tift Exp. 4	PM	44.5	7.33	1.91	0.86 *	10.09 *
MilHy 500	PM	39.3	6.14	2.08 *	0.94 *	9.15 *
Tift Exp. 11	PM	37.0	6.39 *	1.79	0.89 *	9.08 *
Leafy Green	PM	39.3	6.29 *	1.68	0.95 *	8.93 *
Millex 32	PM	57.3 *	6.60 *	1.61	0.57 *	8.79 *
Tifleaf 3	PM	40.3	6.25*	1.70	0.80 *	8.75 *
Trudan 10	SU	54.3 *	4.71	2.58 *	0.84 *	8.14
Sordan 79	SU	49.5	4.69	2.60 *	0.83 *	8.12
NK 300	FS	45.3	4.48	1.88	0.32	6.68
Mean		45.2	5.88	1.98	0.78	8.64
CV, %			12.92	22.54	33.51	10.89
LSD, 0.05			1.11	0.65	0.38	1.37

¹ PM = pearl millet, SU = sudangrass, FS = forage sorghum
² Maturity rating scale: 37 = flag leaf visible 45 = boot swollen 50 = beginning of inflorescence emergence
58 = complete emergence of inflorescence 62 = beginning of pollen shedding.
* Not significantly different from the top-ranked variety in the column, based on the 0.05 LSD.

Table 3. Dry matter yields (tons/acre) of pearl millet, sudangrass, and forage sorghum varieties sown 23 May 2000 at Quicksand, Kentucky.				
Variety	Type ¹	2000 Harvests		2000 Total
		Jul 25	Oct 11	
Commercial varieties—available for commercial use				
Tift Exp. 4	PM	3.48 *	2.24	5.72 *
Sordan 79	SU	2.18	3.52*	5.70 *
NK 300	FS	2.32	2.92 *	5.23 *
Tift Exp. 11	PM	3.51 *	1.62	5.13 *
Trudan 10	SU	1.80	2.99 *	4.79
Leafy Green	PM	2.83	1.66	4.49
MilHy 500	PM	3.06 *	1.42	4.48
Tifleaf 3	PM	2.52	1.58	4.10
Millex 32	PM	2.97	1.10	4.06
Mean		2.74	2.12	4.86
CV, %		12.16	20.49	11.22
LSD, 0.05		0.49	0.63	0.80
¹ PM = pearl millet, SU = sudangrass, FS = forage sorghum.				
* Not significantly different from the top-ranked variety in the column, based on the 0.05 LSD.				

Table 4. Dry matter yields (tons/acre) and maturity of sorghum-sudangrass varieties sown 19 June 2000 at Lexington, Kentucky.			
Variety	2000 Harvests		2000 Total
	Jul 25	Oct 13	
Commercial varieties—available for farm use			
FFR 211A	2.91 *	2.01 *	4.92 *
Greengrazer V	2.80 *	2.07 *	4.87 *
Greengraze 2	2.86 *	1.73 *	4.59 *
Greengraze Supreme	2.59 *	1.83 *	4.42 *
DK SX 17	2.14	1.92 *	4.07
SS 220 BMR	2.22	1.46	3.69
Maxi Gain	2.20	1.47	3.67
Greengraze Extra	2.05	1.45	3.51
Mean	2.47	1.74	4.22
CV, %	12.24	17.47	12.85
LSD, 0.05	0.45	0.45	0.80
* Not significantly different from the top-ranked variety in the column, based on the 0.05 LSD.			

Table 5. Dry matter yields (tons/acre) of sorghum-sudangrass varieties sown 23 May 2000 at Quicksand, Kentucky.

Variety	2000 Harvests		2000 Total
	Jul 25	Oct 11	
Commercial varieties—available for farm use			
Greengraze Supreme	2.58 *	2.62 *	5.20 *
Greengrazer V	2.34 *	2.80*	5.14 *
Greengraze 2	2.24 *	2.60 *	4.84 *
FFR 211A	2.08	2.71 *	4.79 *
DK SX 17	2.28 *	2.34*	4.62 *
Greengraze Extra	1.77	2.20	3.97
Maxi Gain	1.98	1.61	3.59
Mean	2.18	2.41	4.59
CV, %	12.59	16.29	10.37
LSD, 0.05	0.41	0.58	0.71

* Not significantly different from the top-ranked variety in the column, based on the 0.05 LSD.

Table 6. Characterization and performance of summer forage annual varieties across locations in 2000.

Variety	Species ¹	Proprietor/Kentucky Distributor	Lexington	Quicksand
DK SX 17	SS	Dekalb		*
FFR 211A	SS	FFR/Southern States Cooperative	*	*
Greengraze 2	SS	**	*	*
Greengrazer V	SS	**	*	*
Greengraze Extra	SS	**		
Greengraze Supreme	SS	**	*	*
Leafy Green	PM	Green Seed Co.	*	
Maxi Gain	SS			
MilHy 500	PM	**	*	
Millex 32	PM	Novartis	*	
NK 300	FS	Novartis		*
SS 220 BMR	SS	FFR/Southern States Cooperative		
Sordan 79	SS	Novartis		*
Tifleaf 3	PM	Ga Exp Sta	*	
Tift Exp. 4	PM	Ga Exp Sta	*	*
Tift Exp.11	PM	Ga Exp Sta	*	*
Trudan 10	SU	Novartis		

¹ FS = forage sorghum, SS = sorghum-sudangrass, SU = sudangrass, PM = pearl millet.
 Shaded boxes indicate that the variety was not in the test.
 Open boxes indicate the variety was in the test but yielded significantly less than the top-ranked variety in the test.
 * Not significantly different from the top-ranked variety in the test.
 ** Proprietor formerly was ABT. Present ownership unknown.

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