

# 2002 Summer Forage Annuals Report

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## 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 information is available on the yield potential of the newer cultivars of these grasses in Kentucky. The purpose of this publication is to summarize 2002 yield trials with pearl millet and sorghum-sudangrass hybrids.

## 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 generally 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 Quicksand in 2002 as part of the forage variety testing program. Annuals tested included pearl millets and sorghum-sudangrasses. The soil at Quicksand is a Nolin silt loam and is well suited to annual grasses. Plots were 5 ft x 15 ft in a randomized complete block design with four replications. Pearl millet and sorghum-sudangrass were sown at 25 and 30 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 managed 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 Quicksand are presented in Table 1. After a wet spring, the 2002 summer was the fourth hottest and driest on record.

Yield data (on a dry matter basis) for all tests are reported in Table 2. Varieties are listed in order from highest to lowest total production. The sorghum-sudans were less productive than the pearl millets up to August 6 but produced considerably more dry matter late in the season (Table 2). 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 3 summarizes information about proprietors, distributors, and yield performance. Varieties are listed in alphabetical order. 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.

**Table 1. Temperature and rainfall at Quicksand, Kentucky, in 2002.**

	Quicksand			
	Temp		Rainfall	
	°F	DEP	IN	DEP
JAN	41	+10	3.84	+0.55
FEB	39	+6	1.27	-2.33
MAR	47	+6	7.81	+3.47
APR	60	+7	3.84	-0.26
MAY	62	0	5.12	+0.64
JUN	74	+4	4.61	+0.79
JUL	77	+3	5.14	-0.11
AUG	76	+3	1.83	-2.18
SEP	71	+5	6.26	+2.74
OCT	58	+4	6.47	+3.56
NOV	45	+3	3.81	-0.07
<b>AVG</b>	<b>59.1</b>	<b>+4.6</b>	<b>4.6</b>	<b>+0.6</b>

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

## 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).

**Table 2. Dry matter yields (tons/acre) of pearl millet and sorghum-sudangrass varieties sown June 19, 2002, at Quicksand, Kentucky.**

Variety	Type <sup>1</sup>	Maturity <sup>2</sup> Aug 6, 2002	2002 Harvests		Total 2002
			Aug 6	Nov 14	
<b>Commercial Varieties — Available for Farm Use</b>					
SS 220 BMR	SS	45	2.18	3.31*	5.48*
SS 200 BMR	SS	46	1.89	2.87	4.76
DMP 3 SR	PM	53	2.64*	0.61	3.26
DMP 5 SR	PM	52	2.49*	0.66	3.15
DMP 4 SR	PM	52	2.46*	0.68	3.15
Leafy Green	PM	34	2.39*	0.75	3.14
Milhy 500	PM	36	2.46*	0.64	3.10
<b>Experimental Varieties — Not Available for Farm Use</b>					
Tift Exp 4	PM	36	2.77*	0.92	3.69
Tift Exp 3	PM	34	2.64*	0.72	3.36
Tift Exp 6	PM	35	2.49*	0.84	3.33
Mean		42	2.44	1.20	3.64
CV, %		3.26	12.79	22.02	11.95
LSD, 0.05		1.99	0.45	0.38	0.63

\* Not significantly different from the highest numerical value in the column based on the 0.05 LSD.

<sup>1</sup> PM = pearl millet, SS = sorghum sudangrass.

<sup>2</sup> Maturity rating scale: 37 = flag leaf emergence, 45 = boot swollen, 50 = beginning of inflorescence emergence, 58 = complete emergence of inflorescence, 62 = beginning of pollen shedding.

**Table 3. Characterization and performance of summer forage annual varieties in 2002.**

Variety	Type	Proprietor/Kentucky Distributor	Quicksand
DMP3SR	PM	University of Georgia Experiment Station	
DMP4SR	PM	University of Georgia Experiment Station	
DMP5SR	PM	University of Georgia Experiment Station	
Leafy Green	PM		
Milhy 500	PM	Proseeds	
SS 200 BMR	SS	FFR/Southern States Cooperative	
SS 220 BMR	SS	FFR/Southern States Cooperative	*
Tift Exp 3	PM	University of Georgia Experiment Station	
Tift Exp. 4	PM	University of Georgia Experiment Station	
Tift Exp. 6	PM	University of Georgia Experiment Station	

FS = forage sorghum, SS = sorghum-sudangrass.

\* Not significantly different from the top-ranked variety in the test.

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