



2001 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 2001 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 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 2001 as part of the forage variety testing program. Annuals tested included pearl millets, sorghum-sudangrasses, and a forage sorghum. 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. 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 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. Temperature and rainfall during the 2001 growing season were close to normal.

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. 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 across locations for all the varieties included in the tests discussed in this report. Varieties are listed in alphabetical order. In Table 3, 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).

Table 1. Temperature and rainfall at Quicksand, Kentucky in 2001.

MON	Quicksand			
	Temp		Rainfall	
	°F	DEP	IN	DEP
JAN	34	+3	2.5	-0.8
FEB	43	+10	3.7	+0.1
MAR	42	+1	2.2	-2.2
APR	61	+8	1.7	-2.4
MAY	66	+4	4.4	-0.1
JUN	70	0	4.2	+0.4
JUL	73	-1	6.4	+1.2
AUG	75	+2	2.4	-1.6
SEP	66	0	1.1	-2.4
OCT	58	+4	1.4	-1.6
NOV	55	+13	1.8	-2.1

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

Table 3. Characterization and performance of summer forage annual varieties in 2001.

Variety	Species	Proprietor/Kentucky Distributor	Quicksand
DMP3SR	PM	Ga Exp Sta	*
DMP4SR	PM	Ga Exp Sta	*
DMP5SR	PM	Ga Exp Sta	*
Greengrazer V	SS	Proseeds	
Leafy Green	PM		*
Milhy 500	PM	Proseeds	*
Millex 32	PM		
NK 300	FS		
Tifleaf 3	PM	Ga Exp Sta	*
Tift Exp. 4	PM	Ga Exp Sta	*
Tift Exp. 6	PM	Ga Exp Sta	

FS = forage sorghum, SS = sorghum-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.

Table 2. Dry matter yields (tons/acre) of pearl millet, sorghum-sudangrass, and forage sorghum varieties sown 15 June 2001 at Quicksand, Kentucky.

Variety	Type ¹	2001 Harvests		Total 2001
		Aug 6	Oct 10	
Commercial varieties – available for commercial use				
Tifleaf 3	PM	1.89	2.93	4.82*
DMP3SR	PM	1.98	2.75	4.73*
DMP4SR	PM	1.69	2.96	4.65*
Milhy 500	PM	1.41	3.21	4.62*
Leafy Green	PM	1.79	2.71	4.49*
DMP5SR	PM	1.63	2.70	4.33*
Greengrazer V	SS	1.59	2.12	3.70
Millex 32	PM	1.99	1.64	3.62
NK 300	FS	1.74	1.43	3.17
Experimental varieties – not available for farm use				
Tift exp #4	PM	2.17	2.73	4.90*
Tift exp #6	PM	1.79	2.46	4.25
Mean		1.79	2.51	4.30
CV, %		13.6	13.69	10.55
LSD, 0.05		0.35	0.50	0.66

¹ PM = pearl millet, SS = sorghum-sudangrass, FS = forage sorghum.
* Not significantly different from the top-ranked variety in the column, based on the 0.05 LSD.

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