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YIELD AND MORPHOLOGY OF WARM-SEASON PERENNIAL GRASSES AT STEPHENVILLE AND TEMPLE

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Summary

Eight warm-season perennial grasses were transplanted at Stephenville and Temple, TX, in 1993. Plots were harvested three times at each location in 1994 and 1995. The number of tillers per plant, individual tiller weight, and forage yield were measured at each harvest. 'Ermelo' weeping lovegrass (*Eragrostis curvula*) and 'WW-B.Dahl' old world bluestem (*Bothriochloa bladhii*) were the highest yielding entries in 1994 and 1995. Buffelgrass (*Cenchrus ciliaris*), flaccidgrass (*Pennisetum flaccidum* Griseb.), and *Pennisetum orientale* performed poorly at Stephenville and were invaded by weeds.

Introduction

Livestock operations within the 20- to 30-in. rainfall zone of Texas often combine rangeland with cropland and tame pastures. These pastures and haylands frequently are planted to warm-season perennial grasses which meet a significant forage need during the summer months. Many of the improved grasses used for hay and pasture are introduced species. *Digitaria eriantha* is a plant introduction from South Africa that has not been evaluated in Texas. It is a tufted form of digitgrass, whereas 'Pangola' digitgrass is a stoloniferous form of digitgrass (Ocumpaugh and Sollenberger, 1994). WW-B.Dahl old world bluestem (*Bothriochloa bladhii*) was released in 1994 (Dewald et al., 1995), and few data are available on its performance in central Texas. We compared these two introduced species with several others for yield and morphological traits at Stephenville and Temple.

Procedure

Eight species of warm-season perennial grasses were established from transplants at Stephenville and Temple, Texas, in 1993 (Table 1). The soil at Temple is a Houston black clay and at Stephenville a Windthorst fine sandy loam. In 1994, plots at both locations were burned

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in March, and 60 lbs of nitrogen (N) and 70 lbs of P₂O₅ were applied at Stephenville, and 70 lbs of N was applied at Temple. In 1995, plots were clipped in March and 70 lbs N/acre were applied at each location. Plots were harvested three times per year at each location. At each harvest, four plants per plot were clipped by hand to determine tiller number and individual tiller weight. The experimental design was a randomized complete block with four replicates.

Results and Discussion

Ermelo weeping lovegrass and WW-B.Dahl old world bluestem produced more forage than other species in 1994 and 1995 at Stephenville and Temple (Table 1). Ermelo and WW-B.Dahl also had the greatest number of tillers per plant. *Digitaria eriantha* produced as much forage as kleingrass. 'Carostan' flaccidgrass, *P. orientale*, and buffelgrass were the lowest yielding entries and had fewer and lighter tillers compared with other entries. Although Ermelo had relatively light tillers, it had more tillers per plant than other grasses.

Buffelgrass, *P. orientale*, *P. flaccidum*, and 'Palar' Wilman lovegrass were slow to grow in the spring of 1994 and 1995 at Stephenville. These species may be sensitive to low winter temperatures. By late summer at Stephenville, these species had very little regrowth and plots had become infested with crabgrass (*Digitaria decumbens*) and Coloradograss (*Panicum texanum*). These species were also the lowest yielding entries at Stephenville. Rainfall at Temple during July, August, and September of 1994 was below normal, which limited regrowth during summer and delayed the final harvest until October. Additional years of data are necessary to evaluate the persistence of *Digitaria eriantha* and WW-B.Dahl old world bluestem.

Literature Cited

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Table 1. Annual dry matter yields of warm-season perennial grasses in 1994 and 1995 averaged for two locations.

Scientific name	Common name	Cultivar	Yield		Tillers per plant ^a		Tiller weight ^a	
			1994	1995	1994	1995	1994	1995
			--lb/acre--		-----no.-----		----grams-----	
<i>Digitaria eriantha</i>	digitgrass		6824	5060	39	48	0.76	0.39
<i>Cenchrus ciliaris</i>	buffelgrass	409-704	5066	3027	49	52	0.42	0.22
<i>Eragrostis superba</i>	wilman lovegrass	Palar	5882	3858	33	38	0.83	0.43
<i>Pennisetum orientale</i>	Oriental Pennisetum	PI 269961	4254	3003	44	47	0.42	0.23
<i>Bothriochloa bladhii</i>	old world bluestem	WW-B.Dahl	8289	6019	84	111	0.49	0.31
<i>Pennisetum flaccidum</i>	flaccidgrass	Carostan	3407	3624	26	40	0.40	0.26
<i>Panicum coloratum</i>	kleingrass	Selection-75	6872	4390	46	50	0.70	0.38
<i>Eragrostis curvula</i>	weeping lovegrass	Ermelo	8476	6979	99	202	0.42	0.17
	LSD (5%)		775	468	10	3	0.106	0.14

^aAverage of three harvests and two locations.